

**School of Nursing and Midwifery
Curtin Health Innovation Research Institute**

**Improving care for people undergoing percutaneous coronary
interventions: *Elements of effective interventions***

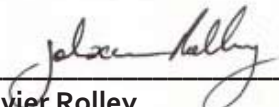
John Xavier Rolley

**This thesis is presented for the Degree of
Doctor of Philosophy
of
Curtin University**

November 2009

Declaration

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgment has been made. This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.



John Xavier Rolley

17th December 2009

Date

Abstract

Percutaneous coronary interventions (PCIs) are a frequent strategy for myocardial revascularisation in both the elective and emergency setting. In contrast to surgical techniques such as coronary artery bypass grafting (CABG), there is less procedural burden and a reduction in hospitalisation times. This rapid treatment means a reduced exposure of the individual to healthcare providers in the acute care setting-limiting the time to prepare individuals and their families to cope and adjust to living with a chronic condition.

In spite of the expansive research in respect of acute coronary syndromes (ACS), PCI and CABG, there is substantially less person-centred research focussing on the needs of the individual undergoing PCI. Similarly, in spite of the number of evidence-based practice guidelines for ACS and PCI, evidence supporting specific PCI nursing practice remains of a low level and minimally mentioned in practice guidelines. This thesis was undertaken to address these gaps in knowledge.

The Chronic Care Model (CCM), promoting evidence based practice, communication and coordination of care for people with chronic conditions has informed the study design, implementation and interpretation of findings.

Using the approach of the patient-journey and the CCM, a sequential mixed-method study was undertaken to describe the barriers and facilitators to improving the care outcomes of people undergoing PCI. Firstly, a study describing the clinical and demographic characteristics of individuals undergoing PCI and their perception of cardiovascular risk was completed. Secondly, a qualitative multi-method study investigating patients', carers' and healthcare providers' perceptions of the barriers, facilitators and opportunities for improving PCI care was conducted. Thirdly, an online survey of cardiovascular nurses' beliefs, values, and practices. This survey was informed by a comprehensive literature review and issues identified through a consensus-conference.

Fourthly, clinical practice guidelines for PCI nursing care were developed to address limitations in providing coordinated and evidence-based nursing care. A systematic method was adopted from the National Health and Medical Research Council's recommended approach for developing guidelines. This project was conducted under the auspices of the Australasian Cardiovascular Nursing College and the Cardiovascular Nursing Council of the Cardiac Society of Australia and New Zealand; both peak cardiovascular nursing bodies in Australia and New Zealand.

Finally, based upon study findings identifying challenges in communication and coordination across care settings, elements of effective interventions aimed at improving risk reduction and secondary prevention uptake have been identified.

The series of studies presented in this thesis have contributed to the ability of nurses to improve the health outcomes of individuals undergoing PCI across the care continuum. Information obtained from the series of studies in this thesis has provided useful information for further research in developing and implementing effective strategies to improve care for individuals undergoing PCI.

Dedication

A PhD journey is never accomplished alone.

As the Igbo people of Nigeria say,

'it takes a village to raise a child'

the same is true for doctoral students.

Therefore, I dedicate this thesis to the many who supported this process:

To Murray Ferguson,

my partner, soul-mate and one constant companion in this journey, this could not have happened without your love and considerable patience!

To my parents whose love and belief in me has always been there regardless,

George and Mary Rolley

Mather and Kathleen Ferguson

To the best supervision team any student could dream of having, it a great honour to work with you,

Professor Patricia 'Trish' Davidson, Principal

Associate Professor Yenna Salamonson, Co-Supervisor

Associate Professor Cheryl Dennison, Co-Supervisor

To my fellow students, past and present, your friendship and immense capacity for compassion and collegiality, it is an honour to know each of you

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and especially, Anne Wheeler – You're a star!

To some talented collaborators from whom I have learned much,

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To my UWS School of Nursing and Midwifery colleagues with whom I commenced this life-changing journey,

And especially, to the study participants whose data has informed and inspired me on this journey.

The Igbo people have a tradition where all their children take as part of their name the title 'Nwa ora' meaning 'child of the community'. For me, rather than being a designation of authority, 'Dr' has come to represent my nurturing connection to this wonderful yet diverse research community.

AMDG

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In particular, I acknowledge my three Supervisors: Professor Patricia Davidson, Associate Professor Yenna Salamonson, and Associate Professor Cheryl Dennison. You are collegially generous and always look out for how your students can succeed.

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Consensus Development Panel members – whose varied contributions are the heart and soul of the PCI Nursing Clinical Practice Guidelines. Please see Appendix 8 for their names and affiliations.

I would also like to acknowledge the considerable financial support provided by an Australian Postgraduate Award which allowed me the luxury to complete this task full-time.

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1.6	Coronary stent	Dreep / Dreamstime.com <i>Stock Royalty Free</i>	14/10/2009 NA
2.1 5.4	Chronic Care Model	Effective Clinical Practice American College of Physicians	03/12/2009 ROECP0916437
2.2	Innovative Care for Chronic Conditions framework	World Health Organization	16/11/2009 41760
3.1	Patient Journey Framework for PCI	Journal of Clinical Nursing, Wiley-Blackwell	03/12/2009 NA
3.2	Patient Journey and Implications for Nursing Practice	Journal of Clinical Nursing, Wiley-Blackwell	03/12/2009 NA
5.7	Challenges to patient-care relationship due to perceived competing perspectives	Journal of Clinical Nursing, Wiley-Blackwell	03/12/2009 NA
6.1	Wilcoxon Signed Rank Test – priority and implementation of PCI nursing practice	Journal of Cardiovascular Nursing Wolters Kluwer / Lippincott, Williams & Wilkins	<i>Permission requested, approval pending</i>
7.1	PCI nursing clinical practice guidelines development process	Australian Critical Care Elsevier	<i>Permission requested, approval pending</i>

Publications Arising from this Thesis

Based on Chapter	Type / Status/ Permissions	Year	Journal	Authors	Title
Two	PRJ / In Press <i>Work not directly used in thesis</i>	-	Collegian	Hickman, L Rolley, J X Davidson, P M	Can principles of the Chronic Care Model be used to improve care of the older person in the acute care sector?
Three	PRJ / Published/ <i>Permission granted to use paper in thesis</i>	2009	Journal of Clinical Nursing Vol 18(17)	Rolley, J X Salamonson, Y Fernandez, R Dennison, C R Davidson, P M	Nursing care for patients undergoing percutaneous coronary interventions: A patient journey approach
Four	PRJ / Revised manuscript Under Review	-	International Journal of Nursing Studies	Davidson, P M Rolley, J X Salamonson, Y Fernandez, R Andrew, S Frost, S Newton, P	Discrepancy between actual and perceived cardiovascular risk in patients undergoing percutaneous coronary intervention.
Five	PRJ / In Press/ <i>Permission granted to use paper</i>	-	Journal of Clinical Nursing	Rolley, J X Smith, J DiGiacomo, M Salamonson, Y Davidson, P M	The caregivers experience following percutaneous coronary interventions
Six	PRJ / Accepted/ <i>Permission applied for</i>	2010	Journal of Cardiovascular Nursing	Rolley, J X Davidson, P M Salamonson, Y Dennison, C R	Cardiovascular nursing care following percutaneous coronary intervention: An Australian & New Zealand Online Survey
Across chapters Four - Seven	PRJ / Revising manuscript <i>Work not directly used in thesis</i>	-	Australia Health Review	Phillips, J L Rolley, J X Davidson, P M	Developing targeted health service interventions using the PRECEDE-PROCEED framework: Two Australian case studies.

PRJ=Peer Review Journal *See Appendix 8 for permission documents

Seven	PRJ / Published Online / <i>Permission request pending</i>	2010	Australian Critical Care Journal	Rolley, J X Salamonson, Y Dennison, C R Davidson, P M	Clinical practice guidelines for the nursing care of people undergoing percutaneous coronary interventions: An Australian & New Zealand collaborative approach
Seven	PRJ / Under Review / <i>Permission request pending</i>	-	Australian Critical Care Journal	Rolley, J X Salamonson, Y Wensley, C. Dennison, C R Davidson, P M	Nursing Practice Guidelines: Percutaneous Coronary Interventions

PRJ=Peer Review Journal *See Appendix 8 for permission documents

Conference Presentations Arising from this Thesis

Based on Chapter	Type	Year	Conference	Authors	Title
Seven	Invited Oral Presentation	2010	Australian Cardiovascular Nursing College Annual Conference, Brisbane	Rolley, J X Salamonson, Y Dennison, C Davidson, P M	PCI Nursing Clinical practice guidelines: An Australian and New Zealand Collaboration
Five – Seven	Invited Oral Presentation	2009	Central Region Cardiology Scientific Meeting, Wellington, NZ	Rolley, J X	PCI Nursing Clinical Practice Guidelines: An Australian and New Zealand Collaboration
Seven	Invited Oral Presentation	2009	Cardiac Society of Australia and New Zealand, Sydney	Rolley, J X Salamonson, Y Dennison, C Davidson, P M	A collaborative Australian & New Zealand approach to improve nursing care for interventional cardiology
Five-Seven	Invited Oral Presentation	2009	Cardiovascular Nurses Council – Cardiac Society of Australia and New Zealand, Sydney	Rolley, J X Salamonson, Y Dennison, C Davidson, P M	Standards and competencies: Cardiovascular steering future directions - PCI Practice Guidelines
Six	Invited Oral Presentation	2009	Australasian Cardiovascular Nursing College, Sydney	Rolley, J X Salamonson, Y Dennison, C Davidson, P M	Views of cardiovascular nurses regarding PCI care
Six	Poster Presentation	2009	Australian Cardiovascular Health and Rehabilitation Association, Sydney	Rolley, J X Salamonson, Y Dennison, C Davidson, P M	Cardiac rehabilitation rates no. 1 as the preferred site for patient education
Six	Poster Presentation	2009	American Heart Association, Quality of Care and Outcomes Research in CVD and Stroke, Washington DC	Rolley, J X Salamonson, Y Dennison, C Davidson, P M	Cardiovascular nurses attitudes, beliefs and values of post-interventional cardiology care

Five	*Poster Presentation	2008	Australian Cardiovascular Rehabilitation Association, Alice Springs	Smith, J M Rolley, J X DiGiacomo, M Salamonson, Y Davidson, P M	Carers tell their story: The experience following percutaneous coronary intervention
Five	*Oral Presentation	2008	NSW Cardiac Rehabilitaiton Association, Canberra	Rolley, J X Smith, J M DiGiacomo, M Salamonson, Y Davidson, P M	A carers' perspective: percutaneous coronary interventions
Four	Oral Presentation	2008	Cardiac Society of Australia and New Zealand	Rolley, J X Salamonson, Y Davidson, P M	Diabetes: a global and local epidemic and a key consideration for cardiovascular nurses

*Presentation won the prize for its category

Abbreviations

Abbreviation	Full Term
ACC	American College of Cardiology
ACRA	Australian Cardiovascular and Health Rehabilitation Association
ACS	Acute Coronary Syndrome
ACNC	Australasian Cardiovascular Nursing College
AHA	American Heart Association
AMI	Acute Myocardial Infarction
BMS	Bare metal stent
CCM	Chronic Care Model
CHD	Coronary Heart Disease
CINAHL	Cumulative Index of Nursing & Allied Health Literature
CK-MB	Creatinine Kinase – MB
CNC	Clinical Nurse Consultant
CNC-CSANZ	Cardiovascular Nurses Council – Cardiac Society of Australia and New Zealand
CNE	Clinical Nurse Educator
CNS	Clinical Nurse Specialist
CPG	Clinical Practice Guidelines
CR	Cardiac Rehabilitation
CSANZ	Cardiac Society of Australia and New Zealand
CVD	Cardiovascular disease
DES	Drug-eluting stent
ECG	Electro-Cardiogram
ED	Emergency Department
GoR	Grade of Recommendation
GP	General Practitioner
KPI	Key Performance Indicator
LoE	Level of Evidence
MeSH	Medical Subject Headings
NGT	Nominal Group Technique
NHF	National Heart Foundation of Australia
NSTEMI	Non-ST Elevation Myocardial Infarction

PCI	Percutaneous Coronary Intervention
PHQ-2/PHQ-9	Patient Health Questionnaire 2 and 9
RN	Registered Nurse
STEMI	ST Elevation Myocardial Infarction
SX	Symptom
TIB	Time-in-bed

Glossary

Term	Definition
Acute coronary syndrome	A sequela of coronary artery plaque disruption leading to varying signs and symptoms associated with myocardial ischaemia ¹
Cardiac rehabilitation	A sub-group of cardiac secondary prevention strategies carried out over several phases yet mostly conducted in the outpatient setting, community or person's home.
Carer	A person, regardless of relationship, who provides informal and often unpaid care for people with a chronic illness or disability. ²⁻⁴
Chronic illness	Many definitions exist. In essence, it is a condition lasting longer than 30 days with long-term impacts on how the person lives their life and requires varying degrees of adaptation, support and intervention to manage its effects. ^{5,6}
Delphi technique	A method of assimilating expert opinion with group consensus. ⁷
Drug Eluting Stents	Metal stents with a polymer coating engineered to release chemotherapeutic agents designed to modify arterial hyperplasia and minimise the risk of restenosis. ⁸
Index Event	Any singular event that triggers a course of action, <i>e.g.</i> a myocardial infarction leading to hospitalisation
Mixed-method	A research method employing quantitative and qualitative approaches to investigate complex phenomenon with the intention of developing a synthesis of findings. ⁹
Multi-method	A research method where two or more varying qualitative methods are used.
Percutaneous coronary intervention	A procedure used to revascularise occluded coronary arteries using angioplasty balloons and/or stents and is less invasive than coronary artery bypass surgery.

RAND	A non-profit multi-disciplinary policy research and development group
Secondary prevention	A category of interventions designed to minimise the risk of disease progression in those with a primary diagnosis of the disease.
Self-management	A person-centred approach aimed at empowering the person to engage in the management of their own chronic condition. It is a goal of most secondary prevention programs such as cardiac rehabilitation.
Support person	An alternative term for carer.
Thrombolysis	The process of breaking down a thrombus or clot using pharmacological agents targeting the fibrin structure of the clot. ¹⁰

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Chapter One

Introduction

Chapter 1 – Introduction

1.1 Introduction

Nursing care for percutaneous coronary interventions (PCIs) is challenged by rapidly changing treatment patterns, workforce shortages and increasing pressure for efficiency. This thesis presents a series of studies seeking to identify effective elements of interventions to improve the care of people undergoing PCI. These issues are multifactoral and complex, therefore a design allowing both descriptive and exploratory methods was used, employing a sequential mixed methods approach. The discrete yet linked studies reported in this thesis draw on a range of methodological approaches including surveys, in-depth interviews, focus groups, group interview, and consensus-based guideline development. Figure 1.1, below, graphically demonstrates how these studies link together. A 'patient journey' framework embedded in the Chronic Care Model¹ informed the study design. The patient journey approach facilitates a focus on the needs of the individual.² This stance identifies discrete clinical events within the patient's experience.¹

In highlighting the need for this research, this chapter provides a summary of the burden of coronary heart disease (CHD), the increasing use of PCI and secondary prevention strategies.

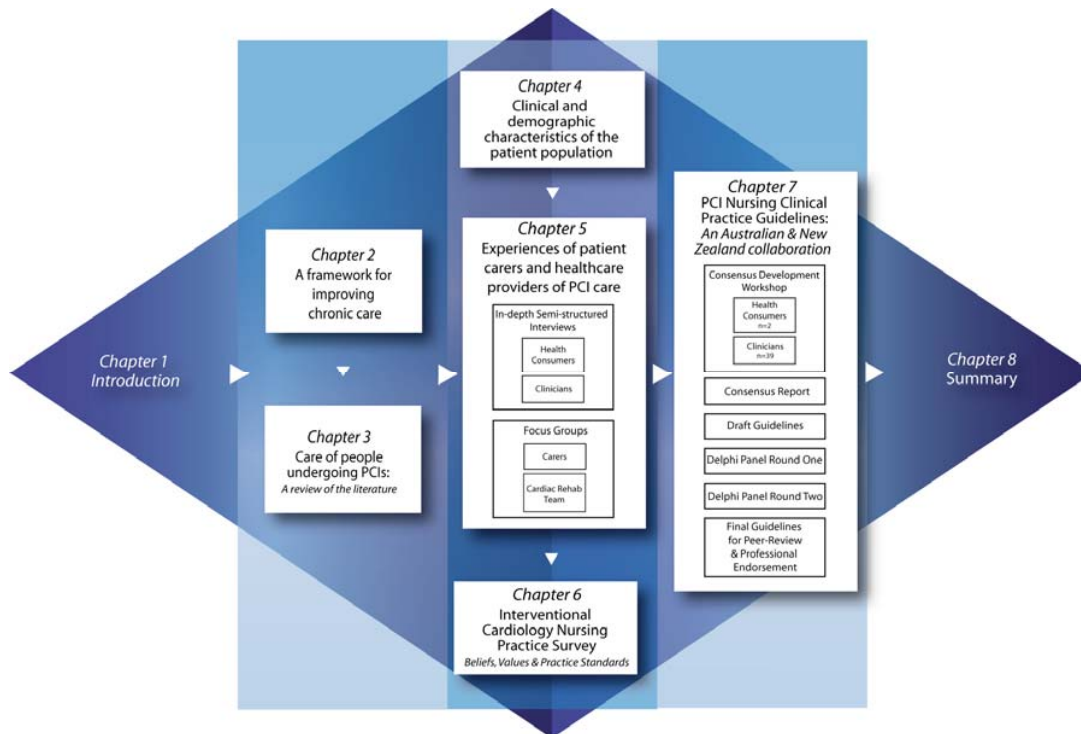


Figure 1.1 –Thesis flow diagram

1.2 Study aims

This sequential mixed-method study sought to:

1. Describe the risk factor burden and perception of the risk of a future cardiac event among individuals undergoing PCI in Western Sydney;
2. Investigate the barriers and facilitators to CHD risk modification in people undergoing PCI from the perspective of: (i) Patients; (ii) Carers and families; (iii) Healthcare providers; and, (iv) Healthcare systems;
3. Determine key elements of an intervention to address: (i) Risk factor modification in the immediate PCI post-procedural period; and (ii) Effective standards of care to impact on patient-focused outcomes;
4. Develop clinical practice guidelines for nursing practice in PCI care; and
5. Propose interventions to improve secondary prevention strategies following PCI.

1.3 Background to the Study

1.3.1 Coronary Heart Disease

Coronary heart disease (CHD) refers to a complex disease process of the coronary arteries specifically. It is a sub-class of cardiovascular disease (CVD) along with cerebrovascular disease, peripheral vascular disease and heart failure.³ Figure 1.2 identifies the relationship between vascular diseases.

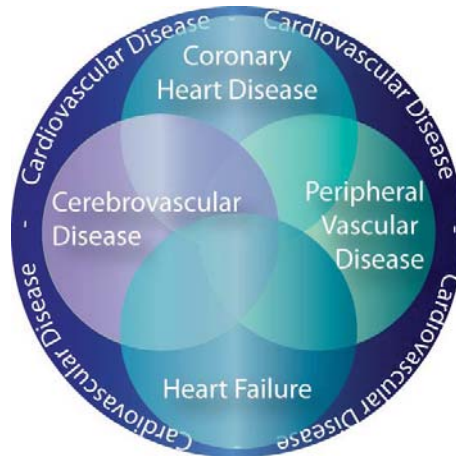


Figure 1.2 – Cardiovascular disease and the four main disease sub-classes³

Coronary heart disease involves the complex processes associated with the deposition of plaque and atherosclerosis involving inflammatory processes.⁴ Figure 1.3 illustrates this process.⁴ In the case of plaque rupture, signs and symptoms of myocardial ischaemia may include shortness of breath, nausea and/or vomiting, and chest discomfort.⁵

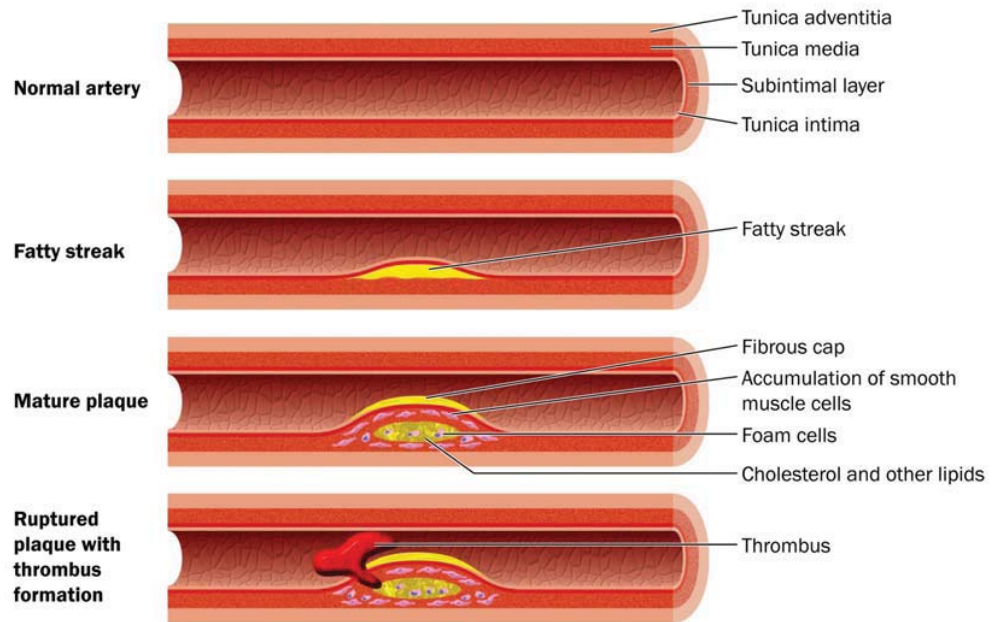


Figure 1.3 – The process of atherosclerosis development in the coronary arteries. Used with permission.

Many factors have been identified contributing to atherosclerotic disease and are categorised as either modifiable or non-modifiable.⁶ Figure 1.4 illustrates the relationship between non-modifiable and modifiable risk factors, and prevention and intervention strategies.⁶ Lifestyle issues including physical inactivity, obesity, hypertension, hypercholesterolaemia and smoking are among the largest contributors to overall risk.⁷⁻⁹ In addition, co-morbid disease processes such as diabetes¹⁰⁻¹² and depression¹³⁻¹⁵ can further compound a person's risk. However, other risks including genetic factors,⁷ age, and gender also impact on a person's overall risk for CHD, yet are not modifiable.⁶ Rather than simply being accumulative, risk factors may be synergistic in creating higher levels of risk.⁸

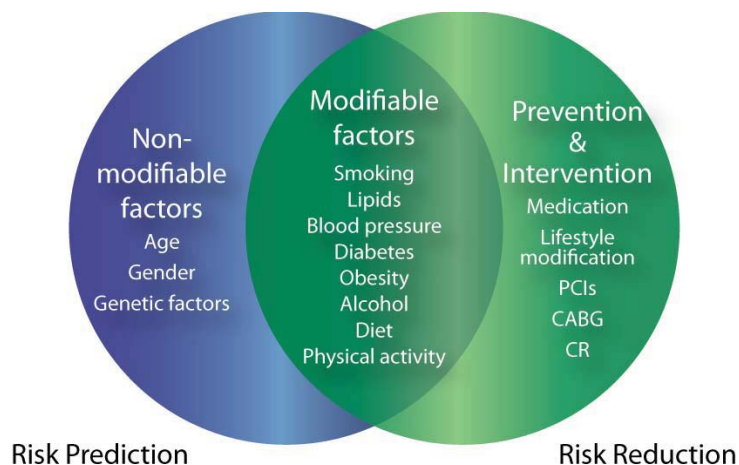


Figure 1.4 – Modifiable, non-modifiable risk factors and risk reduction strategies – Adapted from Gaziano, Manson and Ridker; and INTERHEART^{6, 12}
PCI = Percutaneous coronary interventions; CABG = Coronary artery bypass grafts; CR = Cardiac rehabilitation

1.3.2 Prevalence and cost of CVD and CHD

Cardiovascular disease is the number one cause of mortality among men and women in Australia.⁹ This disease burden is typical for both developed countries¹⁰⁻¹² and, increasingly, developing countries experiencing rapid economic growth.¹² Coronary heart disease is the leading contributor to mortality and morbidity.³ Although mortality rates of CHD are decreasing,^{13, 14} lifestyle factors, such as diabetes, obesity and inactivity challenge these improvements.^{12, 15}

In Australia in 2002, CVD accounted for 50,294 deaths falling to 46,134 deaths in 2005.¹⁶ Of the later figure, 23,570 deaths were due to CHD.³ However, an estimated 3.67 million people were further affected, with 1.10 million of these being reported as having a long term disabling condition as a result of their cardiovascular disease.¹⁷ A total of 458,615 hospitalisations in 2005-2006 were the result of CVD: accounting for 6% of all admissions in Australia.³ Although significant improvement in survival rates from CVD has occurred in the last decade, largely due to advances in medical and surgical interventions,¹⁸ this improvement has come at a substantial cost. Cardiovascular disease health-related expenditure was estimated at \$5.5 billion in 2004 climbing to over \$5.9

billion in 2005,^{3, 19} a figure which is projected to increase significantly in the future.^{17, 20} Figure 1.5 demonstrates the relationship between CVD health expenditure to the other six highest expenditure disease groups.

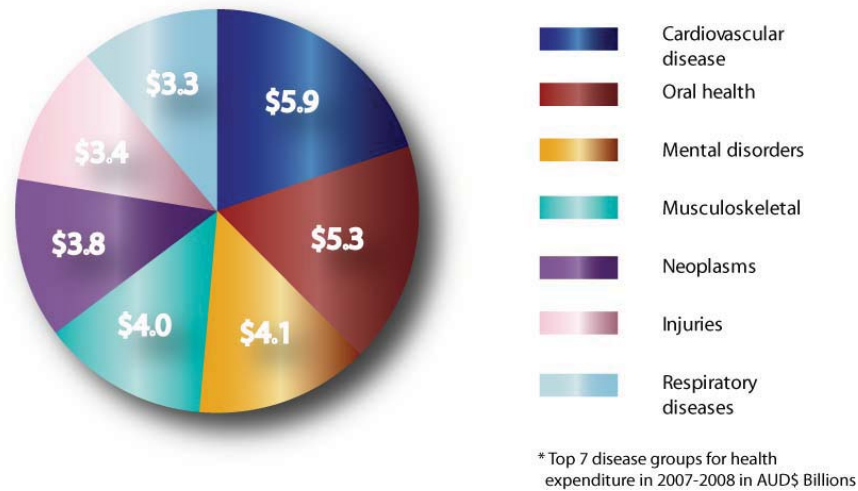


Figure 1.5 – Top seven disease groups' contributions to health expenditure in Australia in 2007-2008, AUD\$ Billions¹⁹

1.3.3 Percutaneous Coronary Interventions

Definition and history of PCI

Percutaneous coronary intervention (PCI) is a revascularization strategy for CHD including angioplasty and stenting.²¹ This involves the revascularisation of an occluded coronary artery by inserting a balloon catheter via the brachial, radial or femoral artery with or without the deployment of a stent. Balloon angioplasty was first introduced in the 1977²² with the first bare metal stents (BMS) being used in the 1990s.²³ See Figure 1.6 for a diagram of catheter insertion approaches and stent deployment.

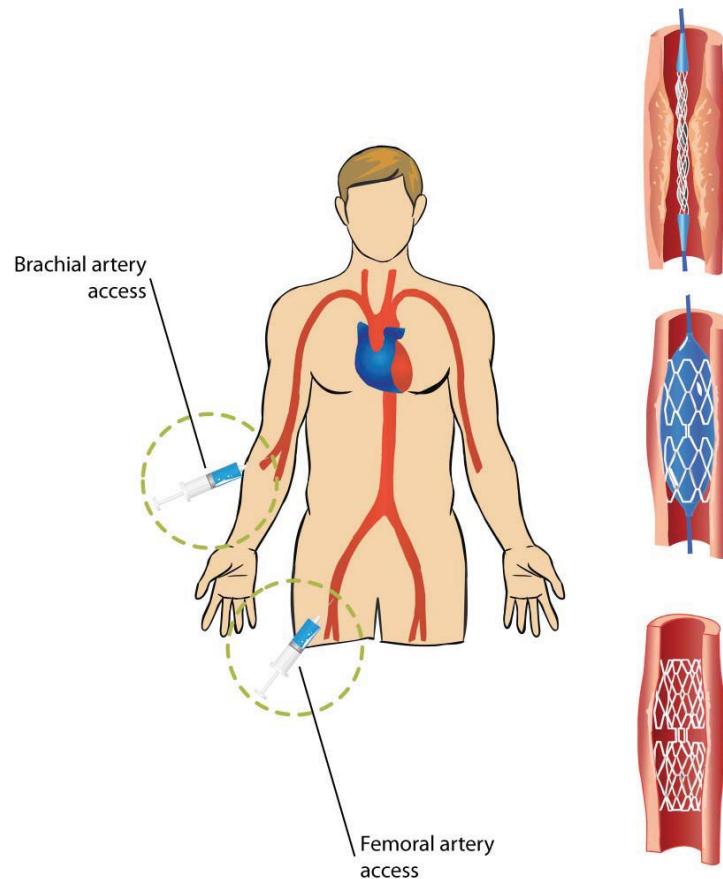


Figure 1.6 – Percutaneous coronary intervention; brachial and femoral approaches; and stent over balloon deployment. Used with permission.

Coronary artery bypass grafting (CABG) began in 1968 and since then, PCI has been added as a revascularisation strategy with comparative studies undertaken.²² Earlier attempts at evaluating outcomes were limited by the duration of follow-up.²² A recent systematic review of 23 randomised controlled trials (RCTs) ($n=5019$ PCI; $n=4944$ CABG) found no significant 10-year survival rate difference between groups.²⁴ Those receiving CABGs were more likely to have a stroke, yet were found to have better long-term angina control and lower repeat revascularisation procedures.²⁴

The less invasive nature of PCI, compared to CABG is an attractive treatment option. The number of PCI procedures currently outnumber coronary artery bypass grafting in NSW 10,000 to 4,100 as of 2005.¹⁴ Since 1996-1997, there has been a doubling in the use of PCI with a decline in the number of CABG being performed in Australia.³

There are three general categories of PCI: primary, rescue and elective.²⁵ Primary PCI are categorised as urgent procedures to restore flow to an occluding artery.²⁵ The success of this approach depends on how promptly the patient can be admitted following symptom onset to arriving in the cardiac catheter laboratory.²⁶ Measured in one of several ways, the so-called 'door-to-balloon-time' (D2B) refers to the time recorded from admission to the emergency department to the inflation of the catheter in the target coronary lesion. Guidelines recommend a D2B of less than 90 minutes.²⁵ Reducing delay in treatment increases the chance of preserving the myocardium.²⁷ 'Rescue' PCI refer to procedures that follow on from failed reperfusion using fibrinolytic therapy.²⁵ While the use of this approach reduces mortality, it has been found to increase the risk of embolic stroke.²⁸ Elective PCI are scheduled, non-urgent procedures.

Over recent decades, technological advances, adjuvant therapies and new indications for stenting have increased the utilisation of PCI.¹⁸ Drug eluting stents (DES) were introduced in 2003 in the United States and have been widely adopted internationally.²⁹ In initial trials, DES, particularly sirolimus-eluting stents (SIRIUS Study), over bare metal stents (BMS) demonstrated lower incidence of repeat revascularisation.³⁰ In a five-year follow-up study of the SIRIUS-Eluting Stent in De Novo Native Coronary Lesions study (SIRIUS), significantly less target vessel revascularisation was required when sirolimus-eluting stents were compared with BMS as a control.³¹ No differences in death or myocardial infarction were noted.³¹ Similar findings were reported in a five-year follow-up study of paclitaxel-eluting stents in the TAXUS II paclitaxel-eluting stent system clinical trial (TAXUS II).³²

The rapid uptake of stent based PCI have meant that long-term outcomes are still being studied.^{33, 34} In-stent re-stenosis remains an important issue. Stent types, particularly DES, and adherence to antiplatelet medication such as clopidogrel are important considerations. Since 2006, the long-term safety of DESs has been called into question.³⁵ Spaulding and colleagues³⁰ suggest earlier more favourable studies were underpowered. In a Swedish registry³⁶ evaluating

over 19,771 patients treated with either BMS or DES, the long-term risk for death was significantly higher in patients treated using DES between six months and 3 years.³⁶

Currently, work is underway on polymer stents which eventually absorb into the vessel wall.³⁷ While the results of such developments are some years away, the concept is showing promise particularly with issues of vessel wall physiology and anticoagulation.³⁷

1.3.4 Importance of secondary prevention and cardiovascular risk

Escalating health costs have increased scrutiny of the cost-benefits of medical interventions.^{38, 39} It is also recognised that greater absolute benefit can be gained from treating patients with higher CHD risk. Moreover intensive management may not be feasible or appropriate across all clinical groups.^{40, 41} At the same time, there is mounting evidence of the benefits of CHD assessment and the use of risk stratification algorithms of care.^{42, 43} These risk assessment and stratification systems are predominantly aimed at changing the practices of health care professionals to achieve optimal and cost-effective care.⁴⁴ They can also be used to increase health consumer awareness to take more personal responsibility for their own health care, such as by engaging health behaviours that would modify their cardiovascular health risk profiles.⁴⁴ This is particularly crucial for those with established CHD.⁴⁴

Secondary prevention strategies, particularly comprehensive cardiac rehabilitation (CR), have consistently demonstrated improved patient outcomes in reducing risk and improving adherence to treatment. Improving referral and uptake rates for CR remains a substantial challenge.⁴⁵⁻⁴⁷ Shorter periods of hospitalisation and lower rates of morbidity have lead some individuals to underestimate the likelihood of further CHD.⁴⁸ This lower perception of risk may decrease favourable health behaviour changes.⁴⁸

1.3.5 Perception of cardiovascular risk

In order to engage in secondary prevention activities, individuals need to perceive they have a problem. Risk perception is the subjective assessment of information that determines an individual's appraisal of their vulnerability or personal harm. It has been shown to influence the degree to which risk reduction and preventive health behaviours are adopted.⁴⁹ Several theories and models have emerged attempting to explain health behaviour with three of the most influential being the Health Belief Model,⁵⁰ the Self Regulatory Model,⁵¹ and the Theory of Planned Behavior.⁵²

The Theory of Planned Behavior explains beliefs people hold in relation to health behaviour. Specifically:

- Behavioural beliefs related to the consequences of actions;
- Normative beliefs involving the expectations of the others; and
- Control beliefs concerning the barriers and facilitator to the behaviour.⁵²

Ajzen emphasises the relationship between control and self-efficacy where perceived self-efficacy and perceived controllability together comprise a larger construct, perceived behavioural control.⁵² In other words, a person's belief they can carry out a behaviour (self-efficacy), and the perception they can sustain or control the behaviour.^{52, 53} Figure 1.7 illustrates this relationship. This highlights the challenges faced by people who have undergone PCI. The short journey through the acute care setting may be insufficient to provide the person with the adequate resources and skills to support the complex process of behaviour change.

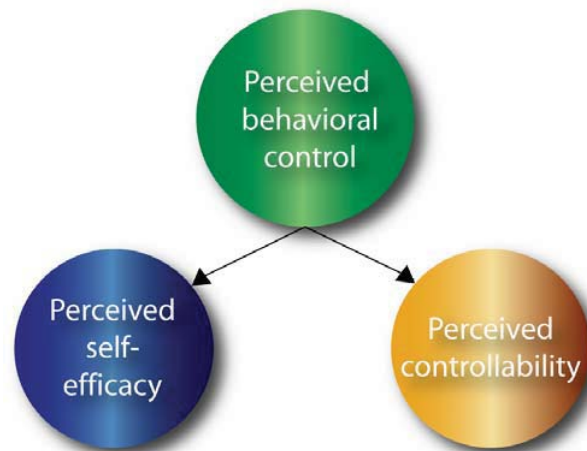


Figure 1.7 –Ajzen’s Theory of Planned Behavior⁵²

Poor treatment adherence underscores both the dilemma and importance of understanding how people perceive risk or threat to health. The perception of personal cardiovascular risk is an important factor in engaging preventive health behaviours and behaviour change.^{49, 54} A number of studies have consistently shown a mismatch between perceived and actual cardiovascular risk among people with or without established CHD.⁵⁵ Factors associated with this gap in risk perception include age, gender, education and income, as well as psychological factors such as depression and anxiety.⁵⁶⁻⁶¹ Negative mood is also known to affect subjective appraisals of health by increasing bias in recall of illness-related memories.⁶⁰ Broadbent and colleagues⁶² reported a study exploring perception of risk in 79 individuals post AMI. In this study there was no correlation between perceived risk score and clinical risk assessment, (Thrombolysis In Myocardial Infarction risk score and troponin-t), or demographic factors, such as age or gender. Even those with traditional risk factors, such as being a smoker, having diabetes mellitus, a family history of CHD, or having had a previous AMI, failed to accurately perceive their risk of a future cardiac event.⁶² These findings are consistent with data reporting the delay in hospital presentation of AMI patients, and which showed that smokers and diabetics did not perceive themselves to be at higher risk.⁶³

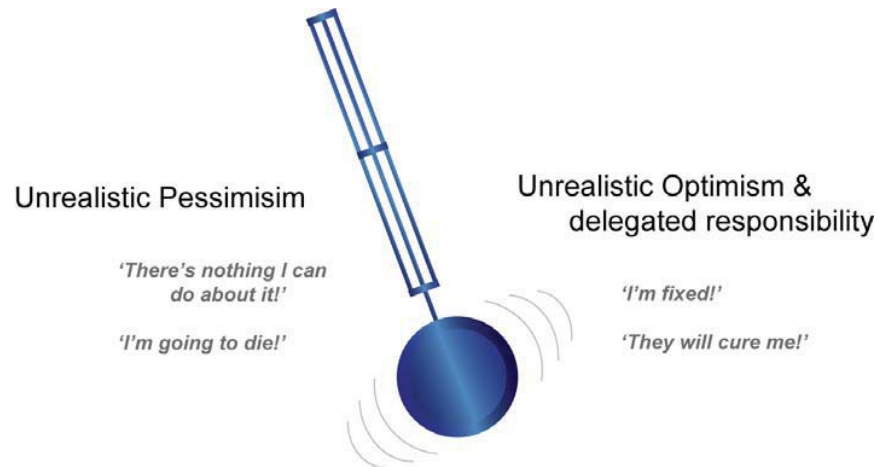


Figure 1.8 – Unrealistic pessimism versus unrealistic optimism^{49, 54}

According to Weinstein, unrealistic pessimism and unrealistic optimism are opposing ends of a continuum.^{49, 54} Figure 1.8 illustrates how variations in perceived risk can alter a person's approach to risk modification. Health beliefs about CHD also contribute to the disparity between perceived and actual risk. Inaccurate causal attributions,⁵⁵ cardiac misconceptions, misconceived or maladaptive beliefs^{64, 65} and risk minimisation are factors impacting on inaccurate risk perception.⁶⁶ Although the impact of risk minimisation on health outcomes has not been reported, cardiac misconceptions and causal attributions that were seen as uncontrollable have been shown to have a deleterious effect on patients following an acute coronary event.^{65, 67, 68} On the other hand, perceived risk of CHD has been positively related to the intention of risk-reducing behaviour changes.^{58, 69} In other words, what people believe about their illness and its treatment there is an important driver in behaviour change.

1.4 Percutaneous coronary intervention in the context of chronic care

The fall in mortality and rise in longevity has resulted in a burgeoning chronic illness burden internationally. Chronicity has been defined in diverse ways.⁷⁰ Curtin and Lubkin⁷¹ define it as,

"...the irreversible presence, accumulation, or latency of disease states or impairments that involved the total human environment for supportive care and self-care, maintenance of function, and prevention of further disability". (pg. 6-7)

Engaging in effective management of chronic conditions requires a change in care paradigms. The prevailing approach is orientated toward a hospital-centric⁷² focus. Even the language used to describe the expectations and interventions demonstrates this including 'compliance' and 'patient education'.⁷³ It implies passivity on the part of the person receiving care and paternalism on the part of healthcare providers. The alternative relies on person-centred approaches emphasising health-partnership between patients, family and healthcare providers.^{1, 74}

While an acute cardiac event requires urgent and decisive treatment, the challenge is to achieve cardiovascular risk reduction. To date, the role of behaviour change following PCI has been poorly described, particularly in the Australian setting. Further, it is impossible to comprehensively address the care of people with PCI without considering patient, provider, and system level issues.

1.5 Evidence-based practice and practice guidelines

Effective management of chronic conditions relies on implementing practice based on current evidence. Barriers to accessing and implementing evidence are important considerations in achieving optimal health outcomes.⁷⁵⁻⁷⁹ Barriers experienced by clinicians include knowledge on how to access, critique and assimilate research findings;⁷⁷ a reliance on historical practice patterns by many health professionals;^{77, 80} limitations in resources and time to access material;^{80, 81} and, contention as to what constitutes evidence. According to Sackett and colleagues,⁸¹ evidence-based practice concerns the "...conscientious, explicit and judicious use of the best evidence..." (pg. 71) in planning and implementing care. Local culture and policy can also impact on implementing evidence. To bridge the gap between the evidence and practice, the development of practice

guidelines to guide clinical practice has increased in the past 10 years.^{18, 25, 82} Clinical guideline development follows a systematic and prospective method.⁸³ In the absence of high level evidence derived from adequately powered randomised controlled clinical trials, the use of consensus methods is required.⁸⁴ Although controversy surrounds clinical practice guidelines, evidence shows the effectiveness of clinical practice guidelines in improving patient outcomes.^{85, 86}

1.6 The Australian healthcare system

1.6.1 The current funding structure

The Australian healthcare system is complex with funding derived from government and non-government sources.⁸⁷ Funding and policy responsibilities are spread across three jurisdictions: Commonwealth, state and/or territory, and local government.⁸⁷ The Australian healthcare system has been heavily influenced by the United Kingdom. This influence is seen in the structure and ethos of health professions and the adoption of universal health coverage. Medicare, the universal health insurance agency administered by the Commonwealth government, was introduced in Australia in 1973, and provides subsidised or free healthcare to Australian Citizens and residents.⁸⁸ While the majority of funding for healthcare comes from the Commonwealth, it is the states and territories that operate acute care services.^{3, 89} Two nationally funded schemes exist: Medicare and the Pharmaceutical Benefits Scheme (PBS). The aim of the PBS is to provide affordable medication,⁹⁰ where most common treatable conditions are covered.⁹¹

In addition to government funding sources, healthcare is provided by a burgeoning private system.⁸⁷ The trend toward an increasing private sector presence has occurred over the last decade.⁹² See Figure 1.9 for a breakdown of funding across government and non-government sectors. While not isolated to the Australian context, pressure from an increasing ageing population, healthcare workforce challenges and a global financial downturn, potentially places great strains on the Australian healthcare system.

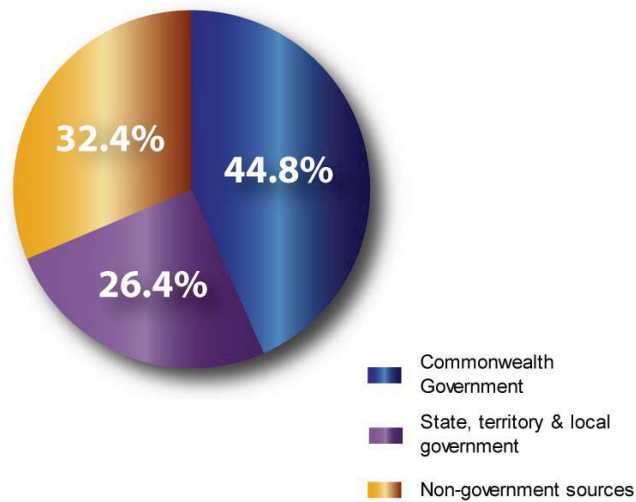


Figure 1.9 - Funding sources for healthcare delivery in Australia³

Despite universal healthcare, the socioeconomic diversity in Australia impacts on health and access to healthcare. Those living in rural and remote locations and Indigenous people are vulnerable to adverse health outcomes.⁹ Specifically, those living in remote areas and Indigenous people as a whole carry greater than average burdens of CHD including death and hospitalisation.⁹ Delivering access to effective affordable interventions that are culturally appropriate remains a challenge for healthcare policy makers and providers.

1.6.2 Healthcare reform in Australia

The influence of policy and politics cannot be ignored.⁹³ The increasing pressures on the health care system have provided an impetus for reform from both government and the community. Recently in Australia, an in-depth enquiry has provided recommendations for healthcare reform.^{94, 95} The report of the Health and Hospital Reform Commission addresses three key issues for reform:

1. Tackling major access and equity issues that affect health outcomes for people;
2. Redesigning the health system so that it is better positioned to respond to emerging challenges; and
3. Creating an agile and self-improving health system for long-term sustainability.⁹⁵

Achieving these reforms is not possible without understanding clinical practice, policy as well as perspectives of consumers and health professionals. Decisions made by government will affect the health outcomes of those living with chronic conditions.⁹³ Failure to appreciate and respond to these issues will perpetuate fragmentation and inequity.

This doctoral program of research presents a novel and unique contribution in approaching PCI care across the patient-journey from the perspective of a chronic illness trajectory, recognising the importance and intersection of acute and chronic care. In particular, this thesis focuses on the nursing role in optimising patient outcomes.

1.7 Thesis Format

A sequential mixed-method design was undertaken to address the study aims as shown in Figure 1.1.

Chapter One – Percutaneous coronary intervention – This chapter has provided the background to the study and presents the study aims and outline of the thesis.

Chapter Two – A patient journey approach and the Chronic Care Model – are positioned as conceptual approaches for improving the care of people undergoing PCI.

Chapter Three – Literature Review– provides a critique of nursing management in PCI care.

Chapter Four – Clinical and demographic characteristics – provides clinical and demographic characteristics of 220 participants scheduled for PCI to identify factors to be considered in intervention development.

Chapter Five – An in-depth exploration of the experiences of patients, carers and clinicians: A qualitative multi-method approach – reports a multi-method approach to understanding the complex nature of the patient journey from the perspectives of patients, carers and healthcare providers.

Chapter Six – Interventional Cardiology – Nursing Practice Survey – This chapter provides the method and outcomes of a survey describing practice standards, values, education needs and practice environment of cardiovascular nurses in Australia and New Zealand.

Chapter Seven – PCI Nursing Clinical Practice Guidelines – presents the procedure of and outcomes from developing a set of clinical practice guidelines for PCI care.

Chapter Eight – Summary – This chapter integrates findings of studies presented in this thesis. These findings will be summarised to recommend strategies for developing effective interventions aimed at improving care. The implications for policy, practice, research and education together with strengths and limitations of the study will also be discussed.

1.8 Summary

This chapter has presented the background to the study and presents the study research questions, aims and outline of the thesis. The sequential studies have been designed to obtain an in-depth understanding of the barriers and facilitators to improving care for people undergoing PCI using a person-centred approach. The following chapter presents a conceptual framework merging the Chronic Care Model with the notion of the patient journey.

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Chapter Two

A framework for improving chronic
care

Chapter 2 – A framework for improving chronic care

2.1 Introduction

Chapter One provided an overview of clinical and healthcare policy issues impacting on PCI care. This chapter outlines the conceptual framework adopted for the thesis. Conceptual elements are derived from the Chronic Care Model (CCM) developed by Wagner^{1, 2} and adopted by the World Health Organization³ as the Improving Care for Chronic Conditions Framework. Within this framework the patient journey approach is blended to integrate elements to increase the interface between acute and chronic care.

2.2 *Self-management: an essential component of chronic illness management*

An essential component of improving the outcomes of people with chronic illness is the level to which they can manage their own conditions. Self-management involves people obtaining support from health care professionals to enable them to make informed choices, adopt healthy behaviours and develop problem-solving skills.⁴ Although the terms 'self-care' and 'self-management' are often used synonymously,^{5,7} Riegel and colleagues⁸ model of self-care identify these as discrete constructs, defining self-care as the everyday decisions people make regarding their health. Within this model, self-management is a deliberate, active decision-making process whereby a person with an illness engages in either maintenance or management of their condition and is part of the broader construct of self-care.⁷⁻¹⁰ Barlow¹¹ defines self-management as, '...the individual's ability to manage the symptoms, treatment, physical and psychosocial consequences and life style changes inherent in living with a chronic condition.'(pg. 547) These authors emphasise the importance of

self-management to promote quality of life.⁹ Where strong congruent clinician-patient relationships are established, improvements in adherence to treatment results are more likely.¹² This likely explains the improvements demonstrated in disease management interventions in conditions such as heart failure.¹³

The core concepts emerging from Bandura's work on self-regulation are central to self-management.¹⁴ Achieving a level of self-management is challenged in acute care.¹⁵ Bandura¹⁵ argues for a focus on, "The treatment of chronic disease...over the lifetime rather than on cure." (p. 299) The way in which acute care health systems engage a person with chronic illness may impact on the person's ability to self-manage.¹⁵ Several factors found to influence self-management are personal, behavioural and environmental and each of these domains require particular consideration.¹⁴

Developing models of care that support and enhance a person's sense of self-efficacy and their capacity to self-manage are essential to improving chronic illness outcomes such as CHD.

2.3 The Chronic Care Model

2.3.1 Development of the Chronic Care Model

The Chronic Care Model (CCM) has strongly influenced the management of chronic conditions.¹⁶ The CCM developed by Wagner and colleagues,¹ is an organising framework for improving chronic illness care and informing interventions at the individual and population levels. This model focuses on the needs of patients and their families and promotes autonomy and independence in dealings with health professionals.^{16, 17} Table 2.1 outlines the seminal papers considered to be core to the development of the CCM.

Table 2.1 – Articles considered seminal to the development of the Chronic Care Model by Coleman and colleagues¹⁶

Authors	Year	Title
Wagner, Austin & von Korff ²	1996	Organizing care for patients with chronic illness [<i>Literature Review</i>]
Wagner, Austin & von Korff ²	1996	Improving outcomes in chronic illness
Wagner ¹	1998	Chronic disease management: What will it take to improve care for chronic illness? [<i>Editorial</i>]
Wagner <i>et al.</i> ¹⁷	2001	Improving chronic illness care: Translating evidence into action
Renders <i>et al.</i> ¹⁸	2002	Interventions to improve the management of diabetes mellitus in primary care, outpatient and community settings [<i>Systematic Review</i>]
Bodenheimer, Wagner & Grumbach ¹⁹	2002	Improving primary care for patients with chronic illness
Bodenheimer, Wagner & Grumbach ¹⁹	2002	Improving primary care for patients with chronic illness: The Chronic Care Model – Part Two

The CCM first emerged following a literature review² and quality-improvement initiatives in a primary care setting and was validated via benchmarking.¹⁷ An expert panel was also engaged to refine the model.¹⁷

The CCM focuses on patient, provider, and system level interventions as a way of improving care outcomes. This approach recognises that an acute procedural care model is poorly configured to address chronic issues, such as cardiovascular disease. This would include the experiences of people undergoing PCI procedures. Furthermore, the model takes a proactive and organised approach requiring clinicians to develop systems that include these elements.¹⁶

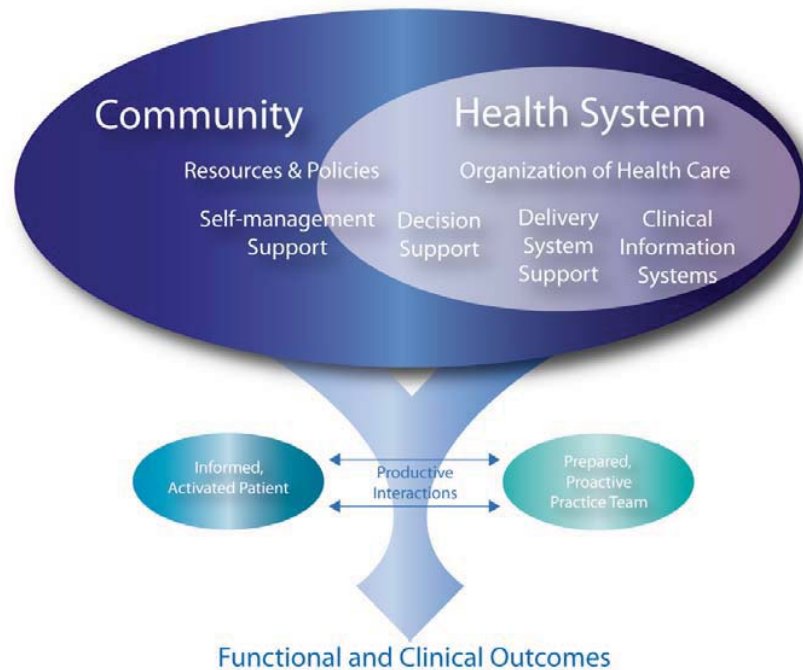


Figure 2.1 – Chronic Care Model¹ *Used with permission.*

2.3.2 Key elements and concepts

There are six essential elements of the CCM and that contribute to improving patient outcomes. These are:

- Resources and policies
- Organisational health care
- Self-management support
- Decision support
- Delivery system support
- Clinical information systems.^{1, 16}

2.3.3 World Health Organization - Innovative Care for Chronic Conditions Framework

Since the early work of Wagner and colleagues,¹ this model has been adopted by the World Health Organization.³ The WHO uses the elements of the CCM for a global approach targeting policy development as a key consideration. As illustrated in Figure 2.2, key considerations are:

- The needs of the patient and their families should be the focus of care;

- Executive support and enabling, positive policies should inform care delivery;
- Collaborative interventions between informed, motivated patients and clinicians who have access to evidence based information and appropriate skills;
- Self-management support that empowers patients to take greater responsibility for their own health;
- Decision-support tools that assist clinicians in providing evidence based care; and
- Clinical information systems that facilitate the care of individual patients as well as populations.

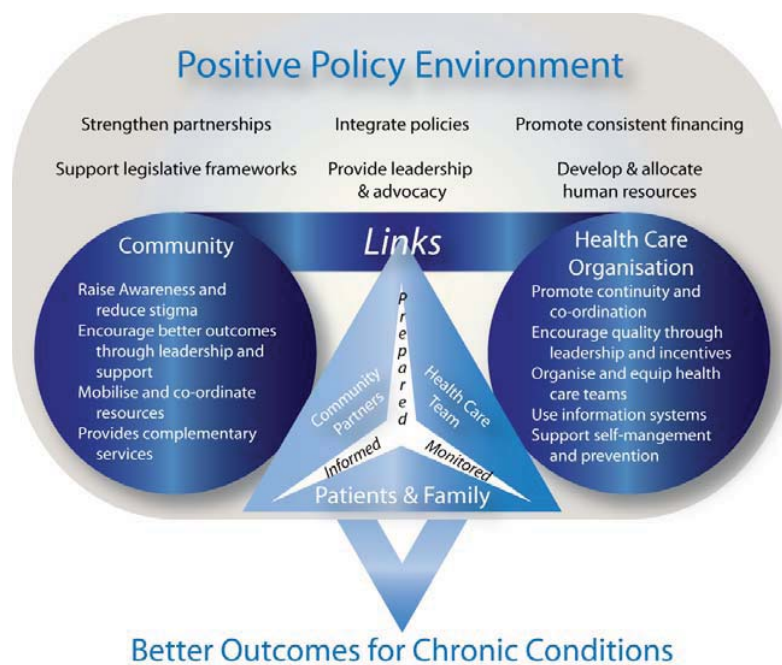


Figure 2.2 - Innovative Care for Chronic Conditions Framework – adapted from the World Health Organization³ Used with permission.

Contrasting the CCM with a disease focused approach demonstrates stark differences. Table 2.2 lists the differences.

Table 2.2 – Contrasting a disease focused and Chronic Care Model approaches^{1, 2, 16}

Disease focus model	Chronic Care Model
Reactive	Proactive
Short-medium term	Long-term
Curative	Illness management
Diagnosis	Ongoing assessment
Disease	Illness
Treatment compliance	Management partnership
Patient as passive recipient	Patient as partner
Clinician focused	Person-focused
Acute care setting	Linkages across settings
Family & carers more peripheral	Family & carers integral
Diagnostic disciplinary ‘silos’	Interdisciplinary integration
Single event records – admission	Longitudinal registries

2.3.4 Uptake and evidence for the Chronic Care Model

Across a diverse range of settings and nations, the CCM has been adopted and evaluated. While predominantly orientated toward primary practice settings,^{1, 20} other clinical areas such as rehabilitation, home-based delivery, and acute hospital settings^{21, 22} have used this approach.¹⁶ In most cases, only selected elements of the model are incorporated into practice.¹⁶ Whereas, the model is designed to engage broad practice change. As a result, the cost of implementation is high initially. Cost saving is not the prime objective for the model, although, in the long-term, this approach is cost-effective in reducing health service utilisation. Other patient management systems, particularly in the US, are aimed specifically at reducing costs by managing patient groups across institutions. This approach has been criticised of being payer-focused rather than patient and primary care provider focused.¹⁶ Embedding the patient journey approach within this model may increase the applicability and relevance to improving PCI care.

2.4 The Patient Journey

2.4.1 Introducing the Patient Journey

The journey of the patient through the acute care setting is integral to this thesis. A number of approaches have been undertaken to define the patient journey. Cleland and colleagues²³ describe the patient journey as consisting of four aspects: longevity, days in hospital, well-being or symptoms, and need for intensification of therapy. Cleland and colleagues²³ quantified each factor to produce a total score to represent the 'patient journey'. However, the natural complexity inherent in the human experience may necessitate a broader approach. Layton, Moss and Morgan²⁴ contrast the patient journey to that of the modern traveller with a well laid out plan with the patient's experience more akin to an explore constantly being confronted with uncertainty. The challenge then lies in partnering with the patient to facilitate their navigation of the unknown.

Using metaphors to describe complex processes is limited although useful in describing the construct. This term implies an experience over time, but also assumes a destination. The need for partnerships between patients, carers and clinicians to enable self-management^{4, 8, 12} which can be embraced in the patient journey and the CCM has been well documented.

To continue the metaphor, the terrain experienced by the patient as traveller is also often uncertain and uncharted. Transition and adjustment are key concepts central to managing chronic illness.²⁵ The uncertainty experienced at the start of the journey into chronic illness, often characterised by crisis, may obscure the person's ability to traverse the experience.²⁶

The patient's experience of the health care system is unique to the individual and is dependent on physical,²⁷ social, psychological²⁸ and cultural factors.²⁹ In caring for people with chronic conditions there is an increased emphasis on person or person-centred care.³⁰ Increasingly, the patient journey is being used to describe the patient's experience, and inform intervention development

appropriate to their needs.^{31, 32} Thus in order to encapsulate the depth and breadth of the patient's experience, all dimensions of the patient's journey and experience need to be acknowledged and as a consequence considered in developing nursing care plans. Coronary heart disease is a common and frequent condition requiring:

- A basic level of knowledge by the patient in detecting symptoms and obtaining timely treatment;
- Participating in treatment decision-making; and,
- Engaging in secondary prevention strategies to aid adjustment to the chronic elements of CHD and engage in effective behaviour change.

The essential elements of this figure include the person's context in which they live out their lives, the community. The acute care patient setting is a specialised, yet unique element of that context. It is still a foreign environment although, importantly, not isolated or disconnected from the wider community. The person transitions through the acute care setting to emerge back within their broader context. However, the landscape, following the cascade of events and treatment, may appear altered. The need for supported adjustment in this transition to maximise the potential for improving long-term health outcomes is magnified. It also recognises the risk for readmission. See Figure 2.3 below.

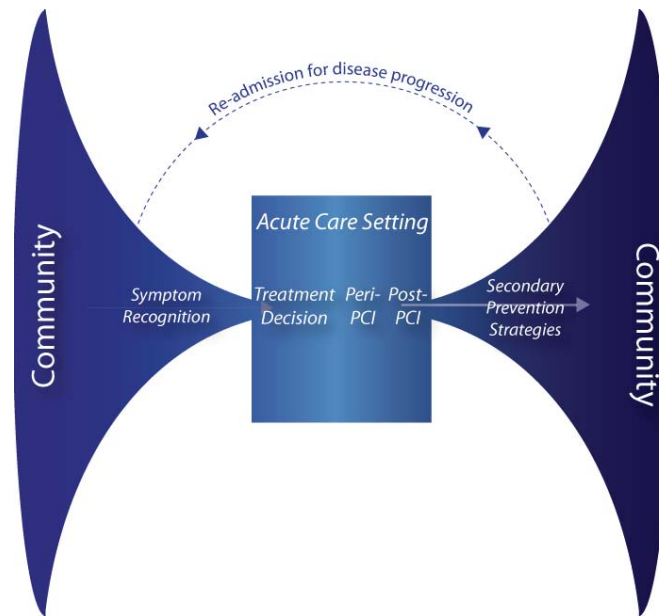


Figure 2.3 A conceptualisation of the 'patient journey'

The 'patient journey' provides a potential strategy for linking acute and chronic care for achieving person and family-centred care.³³⁻³⁵ The person-centred approach of the 'patient-journey' emphasises the individual's experience of the health care system. As such, it is illness rather than disease focused and reaches beyond the acute care setting. Gender,²⁷ psychological and social support²⁸ as well as racial and cultural factors impact on the individual's experience.²⁹ Although there is increasing discourse on person-centred care, it is often difficult to achieve due to a range of system and provider issues.³⁶ Many of these issues have been covered in the discussion into the CCM above.

2.4.2 Common concepts between the CCM and the patient journey

A patient journey approach is congruent with the CCM in many ways. Firstly, a patient journey approach assumes the centrality of the person to the healthcare experience. Secondly, it embraces more of the experience than the acute care diagnostic and treatment process. Thirdly, it assumes a broader social context from which the person emerges and to which they return following discharge.

2.5 The patient journey as part of the chronic care model

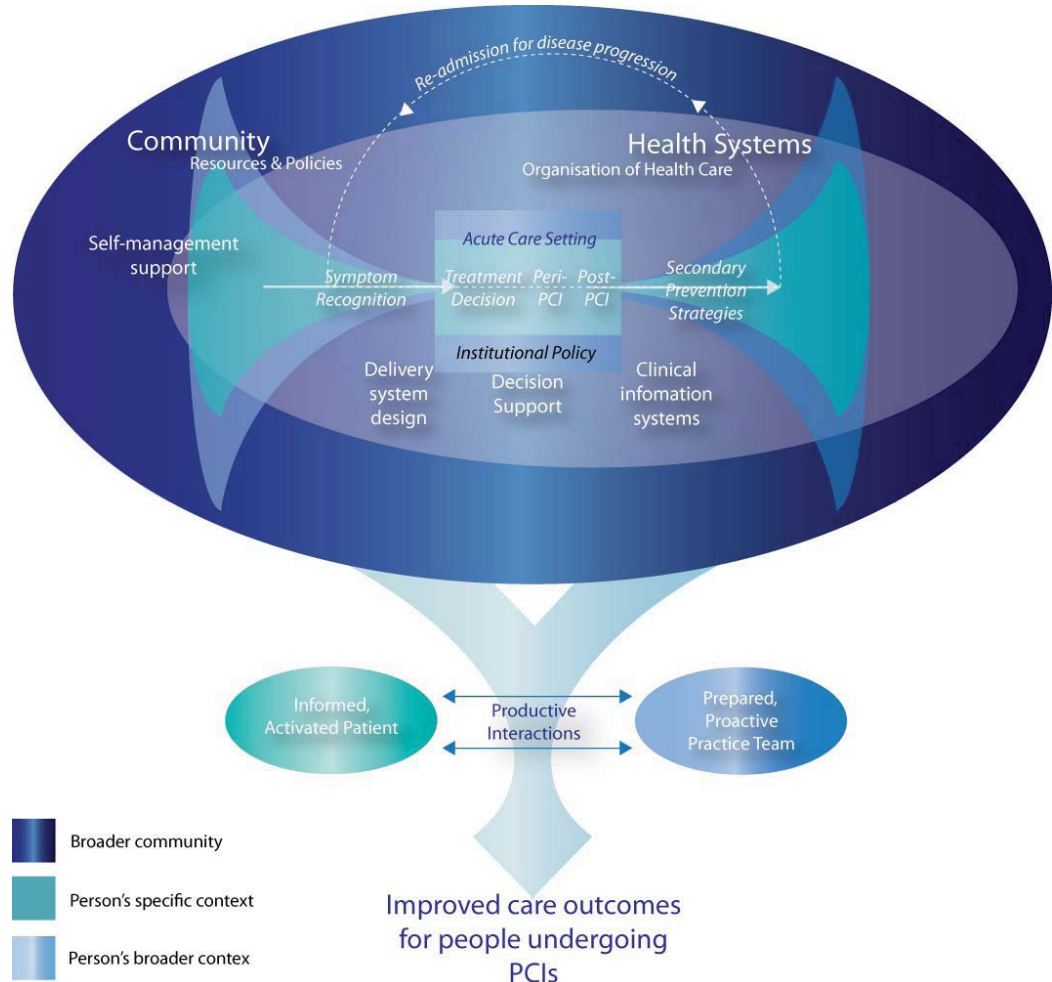


Figure 2.4 – The Chronic Care Patient Journey framework for people undergoing PCI – an adaptation of the CCM to incorporate the patient journey

2.5.1 An adapted framework: the Chronic Care Patient Journey

This thesis has focused on exploring the most appropriate, effective and sustainable interventions to address CHD risk burden in people following PCI. This level of complexity indicates a need to engage in a process that includes healthcare system policy and process as well as community related factors. This is particularly important in developing interventions that have applicability to

current health care systems and are likely to be sustainable in the usual care setting.

The CCM, developed by Wagner¹ as a way of engaging primary care in the management of chronic illness and has been motivated by issues impacting the care and self-management of those living with chronic illness including poor education and care coordination.³⁷ The CCM sees the healthcare system embedded in the community and patients and their families the focus of health services reform.¹⁷

2.5.2 The patient journey and Chronic Care Model: a framework for reform

It is impossible to comprehensively address the care of people with PCI without considering patients, their journeys, healthcare providers, and system level interventions. This is an area where this doctoral program of research will present a novel and unique contribution. The CCM relies on the integration of three essential groups of stakeholders:

1. Empowered health consumers and families;
2. Informed providers; and
3. Positive policy environment embodied by the healthcare system.¹

Each of these three aspects have unique goals and aspirations regarding their expected outcomes of care. The processes engaged by each of these stakeholder groups are key mediators to achieving desired goals and aspirations. Figure 2.5 illustrates the essential partnerships formed when patients, their family and carers and healthcare providers cooperate in achieving the shared goal of improved health outcomes. It is the integration of the whole as a team rather than the individual stakeholders that makes the greatest impact.



Figure 2.5 – Relationship dynamic between key stakeholders: patients, carers & healthcare providers

The quality of outcomes experienced by each of the stakeholder groups is dependent on the level of shared goals and partnership between each stakeholder group. The greater the congruence between stakeholders, the more likely it is for improved outcomes.

2.6 Conclusion

Improving patient outcomes in the face of increasing chronic illness, healthcare workforce and fiscal pressures compels the case for innovation. In terms of healthcare reform, approaches that maximise the input of all key stakeholders is essential toward ameliorating the impact of chronic illness and improving the uptake of primary and secondary prevention. Orienting healthcare reform towards a patient-centred perspective requires an appreciation of the facilitators and barriers patients experience along the illness trajectory. Therefore, embedding the patient journey within the Chronic Care Model provides a framework for engaging in this reform.

Cardiovascular nurses are an essential component of PCI care delivery and engage the patient, carers, family and other members of the interdisciplinary team. The knowledge and skills required to deliver quality patient outcomes is considerable and constantly evolving. Chapter Three presents a review of the

literature pertaining to nursing care of people undergoing PCI. The patient journey, as discussed here, forms a framework on which to discuss the findings.

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Chapter Three

Nursing care of people undergoing
percutaneous coronary
interventions: *A review of the
literature*

Chapter 3 – The nursing care of people undergoing percutaneous coronary interventions: A review of the literature

3.1 Introduction

Although several evidence-based guidelines for the medical management of PCI and secondary prevention strategies are available,¹⁻³ there is minimal description of the nurse's role and impact on health related outcomes. In order to generate information to improve PCI care, this chapter critiques the literature related to the nursing care of people undergoing PCI using the method of an integrative literature review.⁴ Conceptual underpinnings discussed in Chapter Two frame the interpretation and synthesis of information.

3.2 Methods

An integrative literature review appraises published literature based on a question or hypothesis that guides the retrieval and synthesis of literature.⁴ This method synthesises information to present the state-of-the-science without the restraints associated with a systematic review.⁵

A series of sequential steps were undertaken. Firstly, as part of the review process, guidelines related to acute coronary syndromes (ACS), PCI and secondary prevention were identified, recommendations reviewed and key articles retrieved and analysed for material relevant to the review. Secondly, electronic data bases were searched via the Cumulative Index of Nursing and Allied Health Literature (CINAHL), Medline, Cochrane and the Joanna Briggs data bases. Key terms used in this search include: (angioplasty, transluminal, percutaneous coronary), nursing care, post-procedure complications

(haemorrhage, ecchymosis, and haematoma), rehabilitation, emergency medical services (transportation of patients, triage. In addition, terms such as 'patient outcomes', 'patient journey', 'secondary prevention', patient positioning, bed rest were also used as they are not included in current MeSH (Medical Subject Headings) libraries. This search strategy was supervised by a university health librarian.

In order to reflect the contemporaneous management of PCI,¹ the literature search was restricted to studies published since 2000. Only papers published in English language and those that were peer-reviewed were included. Articles were considered suitable for the review if they were: (1) descriptive and/or intervention studies describing nursing care; (2) systematic reviews of related studies; or (3) patient care guidelines derived using empirical methods. Reference lists of articles falling within these categories, and popular search engines such as Google Scholar, were also explored as a potential source of articles. All abstracts were reviewed and then retrieved if they met the search criteria of information relevant to nursing care. Reference lists of retrieved articles were also appraised for potential information.

3.3 Results

Using the patient journey model, shown in Figure 3.1 and discussed in Chapter Two, findings were summarised under the headings: Symptom Recognition, Treatment Decision, Peri-PCI Care, describing the acute management and Post-PCI Management representing discharge planning and secondary prevention initiatives. This approach was seen to emulate the patient journey and allow organisation of recommendations for nursing practice. These are discussed below.

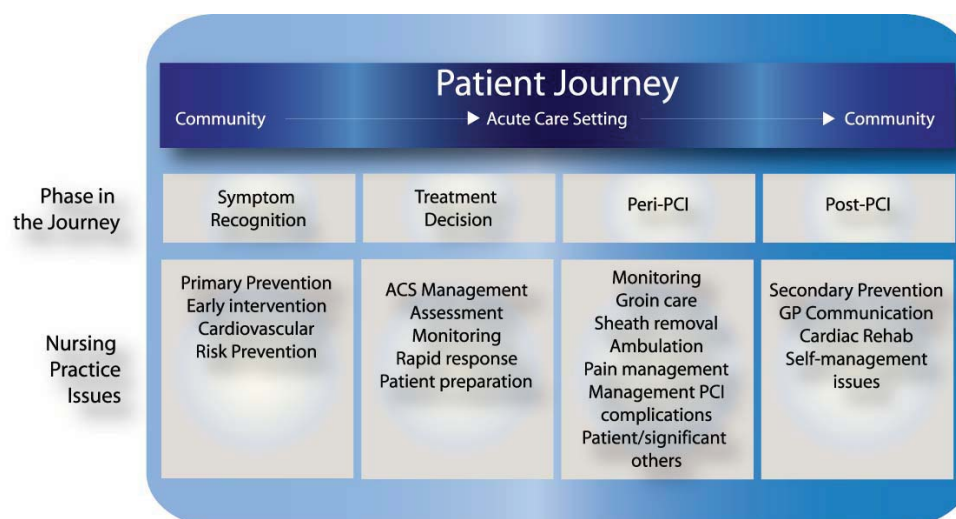


Figure 3.1 - Patient Journey Framework for PCI. Used with permission.

3.3.1 Symptom Recognition

Despite the therapeutic advancements in CHD, obtaining definitive treatment is dependent on the appropriate recognition of symptoms and accessing care. While much improvement has occurred, due to the advancements in PCI technology, little progress has been made in reducing the time from first recognition of cardiac symptoms to seeking help and hospital admission.⁶ Reported times to seeking assistance vary significantly.⁷ Many studies have been undertaken to identify the clinical and socio-demographic factors impacting on symptom recognition and the decision to access treatment.⁶ Factors associated with delay are numerous and complex including gender, socioeconomic disadvantage, diabetes, the quality of social support networks and previous cardiac history.⁶ Strategies to increase awareness of potential CHD and heart attack provide inconsistent findings and generally reflect the complexity of cognitive decision making and risk appraisal.⁶ A number of interventions to address pre-hospital delay have been undertaken with limited success, underscoring the importance of developing long term multifaceted strategies to address the social and psychological barriers that impact on decisions not to seek treatment, as well as system related factors, such as access to emergency response teams.^{8, 9} Interventions targeting those at highest risk, such as those with diabetes¹⁰ and tailored to specific racial or cultural groups,

may be advantageous given greater incidence and prevalence of CHD in these populations.¹¹

3.3.2 Treatment Decision and allocation

Treatment decision is dependent on the context of the PCI; that is whether it is an emergent, planned or rescue procedure. The decision to treat requires a complex negotiation of professional, ethical and legal issues. Many clinical guidelines adequately describe the medical diagnosis and management in ACS and treatment, such as PCI.^{1, 2} However, absent from these guidelines are the nursing specific issues which impact significantly on procedural and longer term outcomes.¹² In the context of AMI and primary angioplasty the nurse plays a critical role from diagnosis in the emergency room through to facilitating adequate triaging, assessment of hemodynamic stability, access to electrocardiography and drawing of bloods. It is not uncommon that many nurses may also have the added pressure of facilitating transfer to a referral facility undergoing PCI.¹³⁻¹⁵ The inverse relationship between time to accessing revascularisation and patient outcomes has been well described.^{16, 17} Clinical pathways and protocols that focus on patient and family information and services can alleviate stress and facilitate the recovery process.¹⁸

In the elective context, the issues are different and yet no less complex. Assisting patients to appraise the risk of procedures and to prepare adequately for the procedure is no less important. Bernstein and colleagues¹⁹ studied 217 patients referred for PCI procedures. Randomised into two arms, the patients received either an audio-visual presentation regarding treatment options (treatment arm) or usual care (control). The results demonstrated a significant increase in knowledge for the treatment arm but also decrease in satisfaction.¹⁹ The process of patient consent is also a complex process and in people from culturally and linguistically diverse groups - knowledge, attitudes and beliefs may vary including levels of comprehension.²⁰ In the elective context the nurse has more time to assess for potential risks. Patients should have a complex cardiovascular assessment, including weight, co-morbid conditions and

medication history. Musculoskeletal disorders can be distressing to many patients who are restricted in movement for long periods. Also people with a history of anxiety and/or claustrophobia can find the sterile confines of the cardiac catheter laboratory distressing. Nurses should be attuned to the higher risks of particular patients including those with renal dysfunction.²¹

3.3.3 Peri-PCI Care

Nurses within the cardiac catheter laboratory play an integral role in assisting with the procedure and the peri-PCI care of the patient. Following PCI, the major objectives that guide nursing care for patients include: (1) assessing for and reducing the risk of sub optimal outcomes such as recurrent myocardial ischemia, vascular access site complications, and contrast agent nephropathy; (2) Promoting patient comfort; (3) Intervening in emergency situations; and (4) patient education. A number of trials²²⁻²⁴ and evidence based guidelines^{1, 2, 25} have been published on the medical aspect of PCI, with limited definitive data relating to the nursing management following PCI. Reducing the risk of complications involves monitoring, methods of sheath removal,^{26,27} haemostasis strategies^{26, 28, 29} and time to ambulation.

The need to consistently recognise the clinical signs of life-threatening complications emphasises the need for nursing specific practice guidelines. After PCI, symptoms of myocardial ischemia can identify those at risk for acute vessel restenosis, yet there is limited literature on monitoring regimes post PCI.³⁰ In spite of this, there is increasing support for continuous ST segment elevation with the lead demonstrating the most ST elevation during the procedure the lead of choice.³⁰ All patients who have signs or symptoms suggestive of myocardial ischemia during or after PCI and those with complicated procedures should have CK-MB and troponin I or T measured. However, there is limited research relating to monitoring regimes and therefore in the clinical setting this practice is generally based on institutional guidelines and individual clinician preferences.

Removal of the introducer sheath is a procedure commonly undertaken by registered nurses,³¹ there is limited evidence to guide policies for the removal procedure in order to reduce suboptimal outcomes. Making best practice recommendations is also made difficult due to methodological heterogeneity and small sample sizes of the available trials. There is also no consensus relating to the use of analgesia and/or sedation administration prior to sheath removal and decisions on this practice is generally made by the individual³² and not necessarily based on evidence-based guidelines.

Several studies have investigated techniques for achieving haemostasis and the prevalence of post-PCI vascular complications.²⁶ One systematic review was identified that investigated strategies to maintain homeostasis.³³ Findings from this review involving 12 studies were included: 8 RCTs ($n=2,998$), 2 non-randomised controlled trials ($n=3,975$) and 2 descriptive studies ($n=299$).³³ Four comparisons vascular site management strategies were assessed in the review: mechanical versus manual compression; two different forms of mechanical compression; mechanical compression versus other compression techniques and mechanical compression versus no compression.³³ The incidence of bleeding after femoral sheath removal did not demonstrate a statistically significant difference between any study interventions. The authors of this review argue for prospective randomised controlled trials to address this question. The findings from this review may also not be applicable to current practice given the advancement in technology that now has more effective arterial closure devices. In addition, the rapidly moving target of anticoagulation strategies makes it difficult to generalise previously conducted studies to current practice.^{34, 35}

A systematic review of 30 trials involving 4000 patients investigated the effect of any arterial closure devices with standard compression.³⁶ The findings did not demonstrate that the arterial closure devices were significantly more effective. However there was an increased risk of hematoma formation and pseudo-aneurysm.³⁶ These findings should be viewed with caution as they were reported

to be of low methodological quality.³⁶ It is, therefore, important to note that the risk for complications remain, regardless of the chosen haemostasis method.³⁷ In addition, factors such as sheath size, anticoagulation and body weight also impact on the risk of vascular access complications.

These alternate methods of achieving haemostasis not only reduce vascular complications but also promote patient comfort by reducing the length of bed rest. Prolonged periods of bed rest can cause back pain and discomfort. Factors associated with vascular site complications include: age and gender;³⁸ sheath size and duration in-situ;^{1, 39} anti-coagulation therapy;³⁷ and, having a PCI procedure,³⁸ as opposed to diagnostic angiography alone, and should be considered during the management of the patient.

As with other aspects of peri-PCI care, there is little consensus or consistently applied standards for issues such as time-in-bed (TIB) and positioning together with its effects on patient comfort such as back pain.⁴⁰ Studies investigating bed-rest and access site complications have found little evidence for increased risks for vascular issues when the time in bed is shortened to as little as 2 hours.⁴⁰

Positioning has also been subject to several studies looking to determine factors relating to patient positioning. In this study, patients were given control of the degree of elevation of the head of the bed.⁴⁰ Findings showed no significant increase in the number of complications experienced in relation to self-determined head of bed elevation.⁴⁰ Furthermore, there is little consensus as to what should the maximum level of head-of-bed elevation be. The literature reports ranges from 0 to 50 degrees, providing limited scope for definitive recommendations.^{32, 40, 41}

Integral to patient positioning, patient comfort is a significant factor in overall patient experience.³² Restriction of patient positioning, particularly confinement to bed for long periods of time, has been associated with increased agitation. This puts the person at risk of vascular complications such as bleeding and

haematomas. Yet, little evidence exists for the overall efficacy of maintaining bed-rest beyond 4-6 hours post sheath removal.⁴²

3.3.4 Post PCI management

Using the search strategy for this article, patient education was the most commonly identified topic related to nursing activities. The majority relied on descriptive self-report^{43, 44} or retrospective studies.⁴⁵

It is recommended that the patient and their significant others should be supported to achieve greater levels of insight into the nature of the disease, education regarding the prevention of further disease progression and referral to post-discharge rehabilitation services.⁴⁶ In spite of the need for effective pre-discharge information and education,^{47, 48} the ability to provide quality patient education during the acute care admission remains controversial; with referral and participation in comprehensive cardiac rehabilitation (CR) programs continue to be poor.⁴⁹

Considerable research exists regarding secondary prevention programs, such as CR. Critique of this research has led some to comment on the quality of studies.^{46, 50} This includes study design issues such as participant selection,⁵⁰ adequate implementation of control groups,⁵⁰ heterogeneity of program designs,⁴⁶ fiscal impact⁴⁶ and lack of data on long-term effectiveness,⁴⁸ specifically the inclusion of long-term follow-up interventions in programs.⁵¹ Integral to follow-up, the issue of lasting adherence to lifestyle modification remains a concern for cardiovascular clinicians.⁵²

In spite of these limitations, there remains significant evidence that secondary prevention programs aid in improving health outcomes for people following acute cardiac events and procedures.^{2, 48, 50, 51} Benefits include reduced mortality,^{48, 53} improved quality of life and functional capacity,^{48, 54} and cost-effectiveness.⁵⁵ However, referral and up-take into these programs remains low globally with two Australian studies, one a prospective audit into cardiac care finding referral rates less than 11%,⁵⁶ while Scott and colleagues⁵⁷ reported a

29% referral rate. Similar figures are cited for the UK and the USA. In the UK, 13-20% of all discharged with a diagnosis of ischemic heart disease participated in cardiac rehabilitation in 2000.⁴⁶ The United States has reported comparable participation with rates between 10-20%.⁵⁸

The low referral, uptake and completion rates also underscore the issue of cost of providing optimum service. By way of example, based on 2001 UK data, to provide services to 85% of people discharged with a diagnosis of AMI would require a further 200-750% investment on top of the current funding levels.⁴⁶ However, the diversity of program structure and length make estimating cost difficult.⁴⁶ Developing evidence-based innovative approaches to secondary prevention measures are essential.

3.4 *Issues emerging from the literature review to inform the thesis*

Nurses play an important role in ensuring optimal outcomes following PCI, both in their independent and collaborative practice roles. Monitoring outcomes and ensuring best practice is dependent on evidence based guidelines for sheath removal, time to ambulation and monitoring of cardiovascular and hemodynamic status. This review has generated priority areas for research and practice development. Consensus on guidelines for the use of manual pressure, sandbag or assist devices [Femostop® or C-clamp®], dressings to puncture site, bed elevation, analgesia for sheath removal time to ambulation are important considerations in developing evidence-based guidelines.

Effective nursing care impacts on the health and well-being of patients⁵⁹ and it is likely that this influence is amplified in the critical peri-procedural period of the PCI. Nursing sensitive outcome indicators demonstrate the relationships between the nursing interventions patients have received and their subsequent health outcomes.⁴² Existing nursing sensitive outcome indicators include patient complications, such as urinary tract infections, pressure ulcers, hospital acquired pneumonia and deep vein thrombosis.⁶⁰⁻⁶² Leeper¹² suggests nursing sensitive

outcomes relating to PCI should include: cost of care, mortality and morbidity, symptom management, functional status (including health related quality of life), patient or family knowledge, patient responses and behaviour, and home/occupational functioning post PCI. See Table 2.1. Dumont,⁴¹ identifies that bed rest and blood-pressure control are the most significant factors influencing clinical outcomes. The rationale for this view is that the presence of the nurse during the critical time following the procedure where the nurse can assess and intervene in a timely manner.⁶³

Clinical pathways or care maps can be used to ensure continuity of care and generally proceed in a linear fashion from the individual's contact with the health care system.⁶⁴ Perhaps a more inclusive perspective for achieving care that is truly person-centred and meets the needs of the individual is to conceptualise the individual's illness experience in terms of their journey as outlined in Figure 3.1. This allows considering factors that will potentially influence the individual's clinical course and capacity to engage in secondary prevention strategies.

Table 3.1 - Nursing Interventions to address an outcome focused approach based on a structure adapted from Leeper¹² Table used with permission.

Outcome	Nursing actions
Mortality	<ul style="list-style-type: none"> Patients and families aware of risk²¹ Monitoring for adverse outcomes⁴²
Morbidity	<ul style="list-style-type: none"> Effective base-line risk assessment Vascular access site monitoring and haemostasis^{37, 42, 65} Monitoring coagulation status^{37, 42, 65} Monitoring hemodynamic status^{32, 63} Coronary vascular closure/re-stenosis monitoring⁴² Monitoring for psychological distress⁶⁶ Management of co-morbid conditions, including diabetes Strategies to maximise patient comfort and minimise distress^{32, 40, 67} Ensure standardized communication skills to ensure effective communication across care sectors⁶⁸
Cost of Care	<ul style="list-style-type: none"> Improving care quality to reduce length of stay⁴² Provide evidence based care, such as reducing 'time to ambulation',^{32, 42} Prevention of adverse outcomes
Symptom Management	<ul style="list-style-type: none"> Monitor for myocardial ischemia²¹ Assess for back-pain associated with bed rest^{40, 42} Utilise evidence in choosing optimal time-to-ambulation^{32, 42} Utilise evidence in choosing optimal bed elevation^{32, 42} Monitor for vascular access site pain⁴²
Functional Status	<ul style="list-style-type: none"> Provide reassurance and strategies to engage in early ambulation and activities of daily living Screening for actual and potential complications including depression, anxiety & social status⁴² Monitoring for adverse psychological reactions⁴²
Patient & Significant Other Knowledge	<ul style="list-style-type: none"> Ensure nursing care is delivered within a culturally competent and appropriate framework Providing access to appropriate healthcare information in a format understood by the patient and their family⁴² Providing carers/support people with appropriate information for post-discharge care⁴² Ensuring communication across the continuum of care, particularly with family care providers. Negotiate plans for effective secondary prevention and treatment adherence
Patient Responses & Behaviour	<ul style="list-style-type: none"> Maximise support people through referring to cardiac rehabilitation services⁴²

Nurses have the capacity to bridge the chasm between the acute and chronic care paradigms. However, in order to move cardiovascular care from an acute care paradigm to a more comprehensive chronic care approach, an increased emphasis on an evidence base guidelines and practice standards is a necessary component.⁶⁹ This review has identified implications for policy, practice and research that are summarised in Figure 3.2.

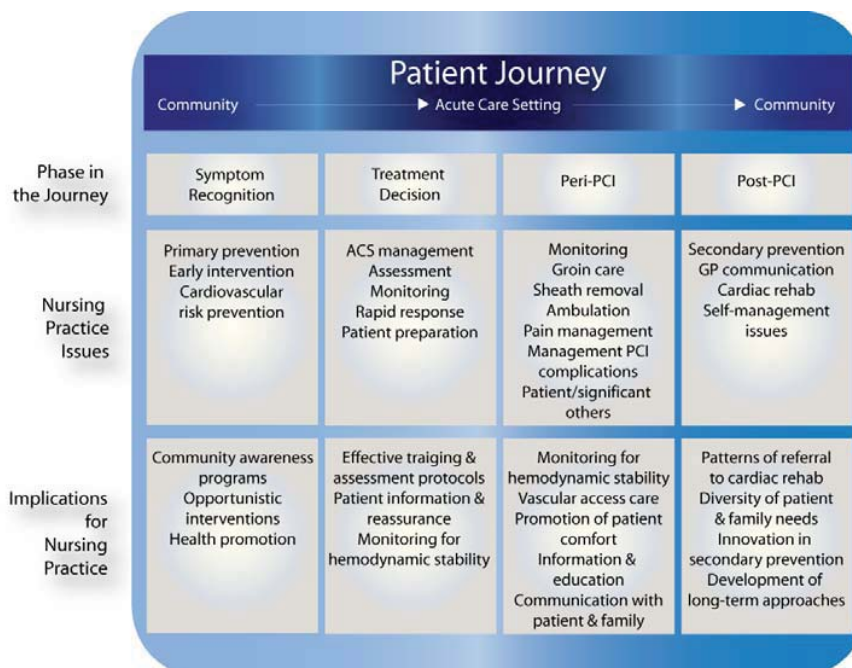


Figure 3.2 - Patient journey and implications for nursing practice

Used with permission.

Further research is required in developing and evaluating interventions that seek to assist PCI patients modify their risks for further CHD. Not only do clinicians need to consider improving referral, uptake and completion rates, but also the need for developing effective interventions to aid sustained health behaviour modification incorporating innovative, culturally sensitive and person-centred approaches.^{70, 71} Furthermore, while funding and reimbursement models limit length of programs, physical resources and staffing, the need to invest in long-term follow-up is equally important. Integral to this discussion is the diverse nature of the potential participants where greater understanding of differences in age, gender, cultural and psycho-social barriers and facilitators is needed to provide flexible programs that support the sustainability agenda being

presented in the literature. The short length of hospitalisation, the rapid return to work and lesser perception of risk are important considerations in developing programs for people undergoing PCI.⁷²

3.5 *Developing guidelines using a consensus approach*

This literature review formed the basis of a report presented to a consensus conference called as part of the PCI nursing clinical practice guidelines development process. The conference consisted of a panel of expert nursing clinicians, consumer representatives, researchers and academics. Four sub-groups, using the patient journey approach reported in this chapter, were convened: Symptom recognition, treatment decision, peri-PCI and post-PCI. Each group developed and prioritised key issues pertaining to their aspect of the patient journey. These recommendations along with the review presented in this chapter formed the basis for developing the first draft of recommendations. See Appendix 10 for a copy of the initial and follow-up reports. See Chapter Seven for a full discussion of the process and output of the guidelines development.

3.6 *Conclusion*

The integrative review presented in this chapter has identified existing knowledge as well as gaps to inform practice, policy and research for the nursing care of individuals undergoing PCI. The diversity of practice and the need for evidence-based practice guideline have been highlighted. In order to tailor nursing care to individuals it is important to have an understanding of sociodemographic and clinical characteristics. Chapter Four reports the demographic and clinical characteristics of a sample of patients undergoing PCI admitted to public hospitals within the Western Sydney region in order to assist in formulating approaches to nursing care.

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Chapter Four

Clinical and demographic
characteristics of people
undergoing interventional
cardiology procedures

Chapter 4 – Clinical and demographic characteristics of people undergoing interventional cardiology procedures

4.1 Introduction

The preceding chapters discussed the role of PCI in CHD, the challenges of providing chronic care, and presented a critique of the literature pertaining to nursing care of individuals undergoing PCI. Developing a comprehensive picture of the health status, perceived and actual risk for CHD, as well as key sociodemographic data, is important in informing interventions to increase the uptake of secondary prevention and promote treatment adherence. Although there are numerous clinical trials of PCI, less is known of how individuals view the impact of this intervention. In order to further the understanding of the risk factors and prevalence of this risk within the Western Sydney region, a cross-sectional study was undertaken as part of a larger program of research.¹

4.2 Aim

This chapter sought to:

- Describe the risk factor burden and perception of the risk of future cardiac events among individuals undergoing PCI in Western Sydney.

4.3 Methods

Patients diagnosed with CHD presenting for an angiogram and/or PCI at a tertiary referral setting in metropolitan Sydney, Australia were invited to participate in the Actual and Perceived Risk in Percutaneous Coronary Angiogram/Angioplasty (APRICA) Study. Patients presenting to acute care with

CHD often undergo angiography with the intention to engage treatable lesions yet this can only be established during the angiogram. At that point, the decision to proceed with PCI, CABG or medical management is made. The aim of this study was to identify individuals at high risk for subsequent cardiovascular events. Eligibility for the study included those individuals undergoing elective, emergent and rescue procedures. Patients were excluded from this study if they had a cognitive disorder such as dementia; those with poor English literacy or had communication difficulties that precluded them from completing the survey. Following ethics approval and obtaining informed consent from participants, sociodemographic and clinical details concerning the cardiac admission were collected. Participants were asked to complete a questionnaire to provide details on sociodemographic status and their cardiac risk perception.

4.3.1 Setting

The Western Sydney region is diverse in terms of culture and socioeconomics. Geographically it is spread over a 9000 km² area taking in urban, sub-urban and rural settings with a combined population exceeding 1,147,800.² The impact on health outcomes by factors including language barriers, social support, equity and access to healthcare and effective and affordable transportation are important policy and practice considerations. In spite of its population and geographical size, the region has only one tertiary referral public hospital that provides full cardiology medical and cardiac surgical services. In addition, its location in the eastern sector of the Western Sydney region increases access difficulty to the hospital. Regional hospitals are reliant on transferring patients for tertiary services face long transport times, in addition to reduced referral options. Private hospitals in the Western Sydney region provide cardiology medical and surgical treatment. This is limited, generally to elective cases. Equally important are the barriers to achieving an accurate perception of CHD risk, as described in Chapter One, where there is congruence between actual and perceived risk.

4.3.2 Sociodemographic and risk factor questionnaire

Sociodemographic variables measured included age, gender, highest educational achievement, language spoken at home and marital status. Nine self-reported cardiovascular risk factors, based upon the National Heart Foundation Reducing Risk in Heart Disease guidelines,³ were used to calculate actual cardiovascular risk (1 = presence of risk, 0 = absence of risk): diabetes, high blood pressure, high cholesterol, cigarette smoking, previous history of CHD, family history of CHD, depression, overweight or obese, and physical inactivity using the Physical Activity Scale (PAS) by Aadahl and Jorgensen.⁴ Cardiovascular risk factors were verified through medical record audit by research personnel. These factors were computed to generate a Personal Risk Score with values ranging from 0 to 9. See Appendix 3 for a copy of the instrument.

4.3.3 Hospital Anxiety and Depression Scale (HADS)

The HADS was first reported by Zigmond and Snaith⁵ in 1983 as an emotional disorder screening tool for use in acute medical and surgical settings. It intended to measure two constructs: depression and anxiety independently. This has since been disputed by Crawford and colleagues,⁶ in establishing normative data for the HADS, found the constructs were moderately correlated. As such, the HADS total score can serve as an indicator of psychological distress.⁶

Anxiety and depression are measured by 7 items, 14 items in total.⁵ A four-response scale is provided for respondents with items alternatively reversed scored to decrease response bias.⁵ One-hundred participants were recruited to test the HADS which was correlated with a psychiatric interview.⁵ The original correlation scores were significant ($p > 0.001$): depression sub-scale ($r = 0.70$) and anxiety sub-scale ($r = 0.74$).⁵ Cut-off scores were derived from the data for both subscales: 0-7 negative screen; 8-10 doubtful screen; and 11-21 positive screen.⁵

Since its development, over 747 published studies worldwide have used the HADS.⁷ The HADS has been found to be a valid, reliable and clinically meaningful tool for psychological screening and is sensitive to changes during

the course of diseases.⁸ The HADS also is sensitive to change over time and has been used frequently within acute and primary care settings.^{8,9}

Its two-factor structure has borne out in further analysis⁷ along with its sensitivity, reliability and validity. Of importance to busy clinical settings, its brevity has been specifically valued.¹⁰ Concerning this study, the HADS has been validated in cardiovascular patients.⁸ The constructs are measured using 7 items each.⁵ See Appendix 3 for a copy of the instrument.

4.3.4 Perceived Stress Scale (PSS)

The PSS was developed to measure perceived stress in the community.¹¹ The PSS, originally a 14-item scale,¹¹ is a 10-item instrument using a 5-point Likert-type scales anchored by *never (0)* and *very often (4)*. Higher total scores reflect higher levels of perceived stress.¹¹ The PSS was originally validated using three groups of participants (total $n=510$): 2 college student groups ($n=332$ & $n=114$) and 1 group of participants of a tobacco cessation group ($n=64$).¹¹ The scale was found to be valid and reliable in measuring perceived stress and correlated well other life-event scales used in the study.¹¹ This has since been confirmed in other studies including psychiatric adult¹² and adolescent,¹³ general health promotion and cardiac rehabilitation populations.¹⁴ See Appendix 3 for a copy of the instrument.

4.3.5 Physical Activity Scale (PAS)

The PAS is a valid and reliable scale for measuring physical activity in 24 hours of work, leisure time and sports during an average weekday.⁴ The scale was developed using a Danish sample of 2500 males and females aged between 20 and 60 years of age.⁴ Participants were asked to keep a physical activity diary as well as use an accelerometer. A strong correlation was found between the scale and the participant diaries ($r=0.74$, $p=0.000$).⁴ See Appendix 3 for a copy of the instrument.

The PAS is arranged into a grid with 9 categories of increasing exertion. Commencing with 'sleep/rest', the participant recalls the number of minutes

(divided into 15 minute segments) and hours (divided into 1 hour intervals to a maximum of 10 hours) for each level of activity. The final activity is high exertion.⁴ The total score is then converted to a 'metabolic equivalent' (MET) which takes into consideration basal metabolic rate. In a subsequent study by Aadahl, Kjaer and Jorgensen,¹⁵ 1640 people were asked to report physical activity as well as have BMI, waist circumference, cholesterol, and blood pressure measured. Several variables showed significant association with MET.¹⁵ These included hip-waist ratio, waist circumference and triglycerides.¹⁵ As such, those with a MET up to 4.5 showed strong links between physical inactivity and cardiovascular risk.¹⁵ A MET of 4.5 is considered moderate exertion.

4.3.6 Perceived Heart Risk Questionnaire (PHRQ)

No valid and reliable measure designed to assess an individual's perception of risk was able to be found. Following a literature review, a 4-item, 11-point Likert scale was developed: the Perceived Heart Risk Questionnaire (PHRQ). This scale measures two dimensions of health threat: perceived seriousness (the level of anxiety and attention directed towards a phenomenon) and perceived susceptibility (level of vulnerability), as theorised by Weinstein.¹⁶ These items were:

- i) How serious do you think your current heart condition is?
- ii) How do you rate your chance of having the same, or developing the same heart problem again in your lifetime?
- iii) Compared to other people of your same age and gender, how would you rate your chance of having the same heart condition again?
- iv) How bad would it be for you, if you were to have the same heart problem again?

4.3.7 Data analysis

The data were analysed using SPSS version 14.0.1 (Chicago, IL, USA). Perceived risk scores were calculated by summing the scores of the 4-item PHRQ. Data

from the PHRQ were subjected to an exploratory factor analysis yielding a one-factor solution with factor loadings ranging from 0.53 to 0.82. Internal consistency was analysed using Cronbach's alpha which was 0.63. Actual risk scores were obtained by summing the scores of the self-report cardiovascular risk factors. A Personal Risk Score was developed. Except for body mass index (BMI) and physical inactivity, the remaining 7 cardiovascular risk factors were dichotomous measures. A BMI of 25 kg/m² or more was used as the cut-off for classifying 'being overweight or obese', and 45 on the 24-hour Metabolic Equivalent Unit (MET)-Time was used as the cut-off for physical inactivity, based on validation generated by Aadahl and Jorgensen who developed the PAS⁴. As the Personal Risk Score data were normally distributed, the correlation between the Personal Risk Score and the Perceived Heart Risk Questionnaire was assessed using the Pearson product-moment correlation coefficient. A *p*-value of less than 0.05 was considered to indicate statistical significance.

4.3.8 Ethical considerations

Approval was obtained from University and Hospital Ethics Committees prior to the conduct of this study. See Appendix 1 for approval documents. Informed consent was obtained prior to recruitment. See Appendix 2 for participant information sheets and sample consent forms. Healthcare providers were consulted before any potential participants were approached. Participants were reminded of the voluntary nature of the study along with reassurances regarding the secure and confidential handling of their data. Data was secured in locked cupboards in rooms out of public access with electronic data being password protected. Only lead researchers had access to data.

4.4 Results

4.4.1 Demographic characteristics

Two hundred-twenty participants were recruited between March 2006 and August 2007. We estimate that this sample represented 31% of procedures undertaken during the study period. Of those potential participants screened,

78% met the study inclusion criteria. The most common reason for ineligibility was insufficient English language literacy to complete study instruments. Logistical issues such as research staff being unable to interview participants prior to discharge, and patients feeling unwell were major reasons for non-participation. Table 4.1 provides a description of baseline characteristics of study participants.

4.4.2 Clinical characteristics

No baseline differences were observed between those who were undergoing primary, elective or emergent interventions. Cardiovascular risk burden was evident among study participants. In particular, more than 75% of the sample were overweight or obese, and physically inactive. The HADS categories discussed above, show 25.5% of the sample had a positive screen for depression while only 7.3% returned a positive screen for anxiety. Table 4.2 describes the scores obtained on the Personal Risk Score and the Perceived Heart Risk Questionnaire. The correlation between actual risk (Personal Risk Score) and perceived risk (PHRQ) was $r=0.26$ ($p<0.01$). Following controlling for depression, anxiety and stress that could potentially mediate this relationship, the strength of the relationship remained ($r=0.24$). There were no statistically significant differences between the Personal Risk Score and the Perceived Heart Risk Questionnaire for those participants undergoing elective, emergent or rescue PCI procedures. However, a statistically significant difference was observed between those with and without an acute coronary syndrome (ACS) diagnosis ($t=2.167$, $p=0.031$). No other socio-demographic or clinical factors were significant in a model to predict the accuracy of risk perception.

Table 4.1 – Demographic, medical history and other clinical characteristics

Characteristic	
Demographic	
Mean age, years (SD)	60.7 (11.2)
Male (%)	78
Born overseas %	40.9
Aboriginal or Torres Strait Islander %	1.4
Language other than English %	18.2
Partnered (married or <i>de facto</i>) %	70.9
Primary schooling only	3.6
Up to secondary schooling only	53.2
Up to vocational training	22.7
Up to tertiary education	20.5
Previous Medical History (%)	
Coronary heart disease	46.8
Hypertension	60.9
Hypercholesterolemia	58.2
Diabetes	29.7
Current cigarette smoking	37.7
Family history of coronary heart disease	65.9
Stroke	11.8
Depression	18.2
Anxiety	14.2
Other Clinical Data	
'Rescue' PCI procedures this admission %	29.2
Diagnosed with ACS this admission %	65.5
BMI, kg/m ² mean (SD)	28.29 (5.13)

Table 4.2 – Mean scores (and SD) from instruments

HADS and Perceived Stress Scale	
Hospital Anxiety and Depression Scale	
Total, mean (SD)	12.69 (6.64)
Anxiety, mean (SD)	7.75 (4.09)
Negative screen, <i>n</i> (%)	174 (79.1)
Doubtful screen, <i>n</i> (%)	30 (13.6)
Positive screen, <i>n</i> (%)	16 (7.3)
Depression, mean (SD)	4.94 (3.47)
Negative screen, <i>n</i> (%)	111 (50.5)
Doubtful screen, <i>n</i> (%)	53 (24.1)
Positive screen, <i>n</i> (%)	56 (25.5)
Perceived Stress, mean (SD)	19.57 (7.31)

Table 4.3 – Personal risk score and the Perceived Heart Risk Questionnaire scores

	Personal Risk Score <i>n</i> =219	Perceived Heart Risk Questionnaire <i>n</i> =220
Minimum / Maximum Score	0,9	0,40
Mean (SD)	4.63 (1.71)	25.5 (7.04)

4.5 Discussion

The sample reported in this study had comparable risk factor burden to other study populations. In particular, the diabetes prevalence in this sample is in keeping with data from other Australian and international studies ranging from 25-32%.¹⁷⁻¹⁹ Hypertension as a risk factor compares the Global Registry of Acute Coronary Events (GRACE) data (this sample - 60.9%; GRACE 61%).^{20, 21} Whereas hypercholesterolemia is higher in this study (58.2%; GRACE 42%) and current smoking lower (this sample: 37.7%; GRACE 47%).²¹ The lower overall prevalence of smoking in the Australian and NSW state populations may explain

this. Furthermore, the GRACE2 figures are aggregate data from 31,982 patients across 25 countries.²¹

The prevalence of depression varies among other studies and health reports.^{22, 23} This prevalence is due, in part, to diversity of instruments used to measure the construct. The increased risk for further morbidity and mortality in people with CHD and concomitant psychological distress, particularly depression has been established.²⁴ Furthermore, the risk is on par with that of smoking.²⁵ In a meta-analysis of the risk of mortality in CHD patients with depression, the risk for death within 2 years was double that of non-depressed patients.²⁴ As a result of the growing evidence linking depression and heart disease, the AHA and ACC issued guidelines recommending the screening of CHD patients for depression.²³ The findings from this study, using a valid and reliable tool, highlight the impact depression has on people with CHD and their uptake of secondary prevention strategies.

This study confirms the poor congruence between actual and perceived cardiovascular risk found by other investigators.^{20, 26} A group within the sample, those with diabetes, stood out. In spite of the significantly increased risk for further CHD, they had low to moderate perceptions of risk. Merz and colleagues likewise found those with diabetes who were yet to be diagnosed with heart disease, reported a low perception of risk for developing cardiac complications.²⁷ Failure to address this issue may exacerbate readmission rates and accelerate disease progression thereby compounding the management of this co-morbid chronic condition. Taking a patient journey chronic care approach, people experiencing comorbid chronic conditions require complex management that bridges across individual institutional settings.^{28, 29} Engaging a range of healthcare providers and services are required to ensure appropriate referral to, and uptake of, secondary prevention strategies and health behaviour modification. Paying closer attention to issues of health literacy is equally important.³⁰ It is not sufficient to provide didactic education approaches in isolation rather flexibility and consistency are required.³⁰ As these challenges require a medium to long-term approach, emphasis needs to be on transition

from the acute care setting to primary care and secondary prevention services, and adjustment to self-management rather than sole reliance on brief didactic in-patient education. Further, understanding how individuals perceive their risks is important.

Beyond those with comorbid diabetes, many individuals commonly hold erroneous beliefs regarding their health conditions.^{31, 32} Misconceptions are potentially greater for individuals who come from culturally and linguistically diverse backgrounds and those who have lower levels of education. As such, the need to assess health literacy is important. Lower levels of health literacy have been associated with increased prevalence of chronic illness, such as diabetes and hypertension, and the level of adherence people with diabetes have to treatment.³³ Baker and colleagues found that participants with fewer than 8 years of formal education had lower levels of literacy than those with greater than 12 years had higher levels.³⁴ Difficulty, however, was found identifying those with more than 9 years yet less than 12 without the use of formal testing methods.³⁴

It was beyond the scope of this study to identify predictors of inaccurate risk perceptions but this should be the focus of future investigations. While initial exploration did not identify predictors, causality cannot confidently be determined in this single site cross-sectional analysis as it is not possible to control for unknown confounding variables. These findings suggest that developing strategies to identify people with erroneous risk perceptions will facilitate delivering tailored interventions for communicating risk and implementing effective risk strategies.

4.5.1 Limitations and strengths of the study

An important limitation of this study is the use of a convenience sample, single site, cross-sectional study design. However, these data are consistent with the recent report by Broadbent and colleagues.³⁵ This study shows that there is a significant mismatch between actual and perceived risk in people at high risk for subsequent coronary events. This study is the first step in development of the

PHRQ. The PHRQ has been generated informed by theoretical principles and was well accepted with participants and demonstrated satisfactory internal consistency. Further evaluation of the psychometric properties of this instrument is warranted given the absence of a validated measure to explore cardiovascular risk.

The crude measurement of actual cardiac risk is also acknowledged. It was the original intention to assess risk by measures such as the Global Registry of Acute Coronary Events (GRACE), 'Thrombolysis In Myocardial Infarction (TIMI) and Platelet glycoprotein IIb/IIIa in Unstable angina: Receptor Suppression Using Integrilin Therapy trial PURSUIT scores.³⁶ However, because only 65% of study participants had their PCI associated with an ACS event, this limited the use of these previously validated measures for all participants. The poor correlation between the two scores may be explained by a measurement error in one or both scores and it is important for further studies to confirm or refute this observation.³⁷

The instrument used to measure depression and anxiety, the HADS, has, since the proposal of this project, been challenged. In particular, questions have been raised over whether or not the HADS actually measures the two constructs of depression and anxiety in a two-factor fashion.³⁸ During the period of this project, other instruments such as the Patient Health Questionnaire 2 and 9 have received greater attention.²³

4.6 Conclusion

The demographic and clinical characteristics of this sample of people undergoing PCI highlights the challenges facing healthcare systems and providers in improving the accuracy of risk perception as well as care outcomes. The sample is derived from a diverse population marked by higher than average levels of people born overseas, speaking a language other than English, and lower levels of education. It is the low correlation between risk factor burden and how individuals perceive this risk that is of great concern. In particular, high-

risk groups such as those with diabetes require a more innovative approach in fostering a more accurate perception of risk. These findings have a broad impact on policy, practice, research and healthcare provider education. Investigating strategies to increase the congruence between actual and perceived risk is important strategy in reforming policy and practice through planning and implementing effective person-centred interventions which engage an interdisciplinary and cross-institutional approach. The emphasis is then on supporting transition between care settings and adjustment to engaging in self-management behaviours.

The following chapter will report in greater depth the PCI experiences of patients, carers and healthcare providers. In-depth interviews, focus groups and group interview techniques were applied to obtain rich data to provide greater understanding of the barriers and facilitators to improving care and developing effective interventions in meeting that end.

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Chapter Five

Experience of patients, carers and
healthcare providers of
interventional cardiology care

Chapter 5 – Experiences of patients, carers and healthcare providers of interventional cardiology care

5.1 Introduction

This chapter describes the patient journey as a multi dimensional construct and includes the perspective and experiences of 1. People who have undergone PCI; 2. Carers of those who had undergone PCI; and 3. Healthcare providers engaged in their care in the hospital and cardiac rehabilitation setting. A detailed description of the setting, sampling, data collection, analysis of data and the strategies used to enhance data quality is provided.

5.2 Key stake-holders in the Patient journey

The Chronic Care Model, together with a patient journey approach, as discussed in Chapter Two, underpin this thesis. Central to this conceptual framework is the partnership between patients, carers, family and healthcare providers. Figure 5.1 illustrates the inter-dependence of these relationships combined to create intentional partnerships for improving care outcomes.

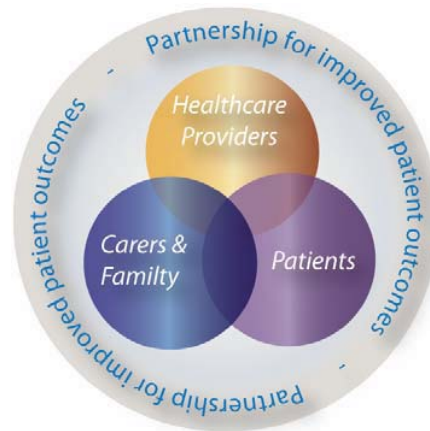


Figure 5.1 – Partnerships for improved patient outcomes

As illustrated in Figure 5.1 the partnership with the key stake-holders is central to the patient’s PCI journey. Family and carers of people undergoing PCI engage with them prior to, during and following the acute care admission. Whilst healthcare providers are integral to this process, they come from medical and allied health disciplines. They bring varying philosophical and scientific approaches to providing care, communicating and interacting with other stakeholders.

5.3 Aim

The aim of this multi-method study was to:

- Investigate the barriers and facilitators to CHD risk modification in people undergoing PCI from the perspective of: (i) patients; (ii) carers; (iii) healthcare providers; and (iv) healthcare systems.

Figure 5.2 graphically demonstrates the aim, samples and method for this chapter.

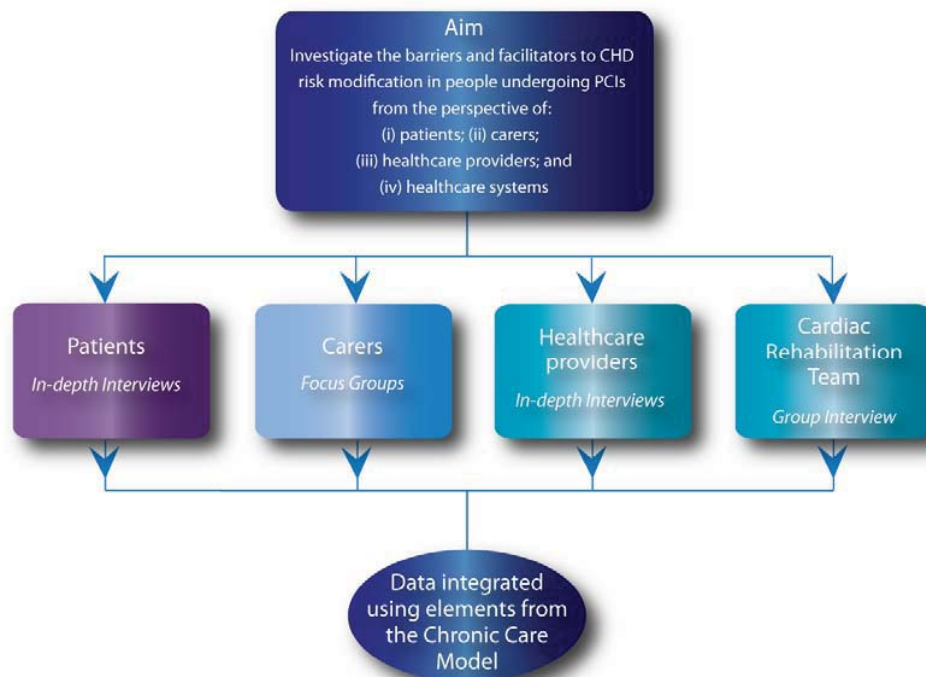


Figure 5.2 – Study aim, sample and methods

5.4 Method

A multi-method qualitative approach was selected. In depth interviews, focus groups and one group interview were used to investigate and describe the barriers and facilitators to improving PCI patient related care.

5.4.1 Setting

This multi-method qualitative study was conducted in acute cardiology and cardiac rehabilitation units within the Sydney West Area Health Service (SWAHS). The setting is described on page 69 – refer to section in Chapter Four.

5.4.2 Patients and Clinicians In-depth interviews; Design, sampling and study procedures

Design

An in-depth semi-structured one-on-one interview design was chosen to give depth of understanding of the patient and healthcare providers' meanings and experiences.

Sampling

Purposeful homogenous sampling¹ of PCI in-patients together with expert healthcare providers engaged in their care, was used to select and invite participants into this phase of the study. Homogenous sampling was used to select participants. A homogenous sampling technique involves selecting participants who have one or more characteristics in common around which the researcher constructs the sample.¹ In this study, the following inclusion characteristics were chosen to form each of the two samples:

- Patients: All who belonged to the sub-class of 'people who have undergone a PCI' were selected for the patient sample;
- Healthcare providers: All those belonging to a sub-class of 'expert nurses and/or medical officers' working within a 'cardiology clinical' setting¹

Study procedures

In-depth interviews –patients

Patients from the target population were invited to participate in in-depth semi-structured interviews. An interview schedule was constructed based on a review of the literature and results from Chapter Four of this thesis. See Appendix 4 for the interview schedule. Clinical staff recruited potential participants based on the above inclusion criteria. Participants were interviewed while still enrolled in a comprehensive cardiac rehabilitation program. Interviews took place in a private interview space located in the CR. Each interview was recorded using a digital audio recording device with the researcher also keeping detailed interview field notes.²

The interview schedule commenced with some initial demographic questions, before proceeding to open-ended questions aimed at eliciting detailed responses regarding participants recalling their acute hospitalisation experience, expectations, knowledge of their condition and the interactions between them and the healthcare providers, issues impeding and facilitating their care, and the

impact of healthcare policy on their experience. See Appendix 4 for interview schedules. The questions intended to uncover integrated perceptions of the patient journey together with the barriers and facilitators the participants experienced. Follow-up questions aimed at probing were then used by the researcher when required.

Following the first interview, the data was analysed to determine the thoroughness of the interview schedule. Adjustments to the interview schedule were made prior to conducting further interviews.

In-depth interviews – healthcare providers

Healthcare providers from the acute care setting were invited to participate in in-depth semi-structured interviews. Healthcare providers were interviewed at a time and place convenient to them to ensure minimum interruption to the workplace, personal time and/or space. While the most convenient location may have been an interview room in the clinical setting, this was negotiated between the researcher and participant. Each interview was recorded using a digital audio recording device. The researcher also kept detailed interview field notes.²

5.4.3 Carers' Focus Groups: Design, sampling and study procedures *Design*

This study was a cross-sectional qualitative investigation into caring for someone who had undergone a PCI. Dual-moderated focus groups³ were held within the CR setting of a tertiary referral hospital in metropolitan Western Sydney, Australia. The dual-moderation method of data collection was adopted to ensure data quality as difficulties have been noted in single-facilitator studies where the sole facilitator asks questions as well as keeps field notes.⁴ The focus groups were used to obtain data from participants whose shared experiences would be elicited through the group process. Advantages to using focus groups include encouraging involvement by participants who may be reluctant to agree to one-on-one interviews, supports participation of people with low literacy levels, and creates an environment which encourage normally quiet participants to actively engage.⁵

Sampling

A convenience sample of English-speaking individuals over the age of 18 years who provide regular support to a person previously admitted for a PCI was obtained. The clinical nurse consultant who led the cardiac rehabilitation program approached individual patients inviting their carers to the focus groups. In addition flyers and posters aimed at appealing to the broadest possible audience with no specific mention of relationship or gender were positioned throughout the recruitment setting. Potential participants were targeted regardless of their relationship to the participant, *i.e.* spouse, child or friend.

Data Collection

Focus group questions were developed following a literature review and in consultation with CR specialists.⁶⁻⁸ See Appendix 4 for interview schedules. One of the moderators was a senior cardiac rehabilitation nurse, who acted as a content expert and second moderator. In this capacity the second moderator was able to probe responses to further elicit discussion. Focus groups were held in a relaxed atmosphere where participants sat in a circle with each moderator sitting among the participants.⁵ Nametags were used to aid interaction. Refreshments were available before and after the group to facilitate a relaxed approach.⁵ During the focus group sessions, feedback and paraphrasing was used by the moderators to reflect back to the participants important discussion points. All sessions were digitally audio-recorded and transcribed verbatim to allow independent analysis by the team. Field notes were written and debriefing sessions between the facilitators were held immediately following the data collection sessions, with these activities informing the data analysis process.

5.4.4 CR multidisciplinary team group interview: Design, sampling and study procedures

Design

This arm of the study used a single, semi-structured single-moderator group interview design.

Sampling

A convenience sample of CR staff was recruited from the same unit from which the patients for this study were recruited. As the CR team was small, a large proportion of the team members agreed to participate in the interview. The researcher approached the staff directly following negotiation with the unit manager. All healthcare providers employed to work in the unit were invited to participate.

Study procedures

Following provision of information regarding what was required for participation, informed consent was obtained.

Informal non-recorded 'wind-down' time was provided to the staff following their work day prior to commencing the group interview. This was to provide them with space to prepare for the interaction of the group. The group interview commenced with a series of opening questions being asked. This included asking each participant to describe their experience of engaging people who have had a PCI. See Appendix 4 for the interview schedule.

The interview continued until the topic seemed to naturally come to a close. Each participant was asked if they had anything further to add or comments they wished to express prior to the completion of the interview.

5.4.5 Data Analysis

Data were analysed using the method described by Halcomb and Davidson.² The researcher listened to the recordings to verify transcription. Varying from the method described by Halcomb and Davidson,² transcription was also conducted to assist with quality control methods, described below. Preliminary analysis was conducted by the researcher prior to discussing the results with expert qualitative researchers. This entailed immersing in the transcripts and recordings of each interview and focus group separately noting themes pertinent to each participant or group. This process was then repeated for each sample as a whole noting common themes and any sub-themes clustering

around the main themes. Detailed notes and interpretive statements were written concurrently to these preliminary and secondary phases with exemplars provided. In the case of the carers' focus groups, data were analysed by three of the researchers independently at the preliminary and secondary phases prior to meeting to engage thematic analysis. For the remaining data, an expert qualitative researcher was consulted and asked to review the data and content analysis. The final step was to capture the emergent themes and sub-themes from across the four samples. See figure 5.3 for analysis steps taken.



Figure 5.3 – Pragmatic data analysis approach as described by and adapted from Halcomb & Davidson² *Transcription is not a standard feature of the Halcomb & Davidson approach

An additional step for this study was to analyse the integrated data by mapping the findings to the elements of the CCM as discussed in Chapter Two. The CCM model has been repeated below, Figure 5.4, for ease of reference.

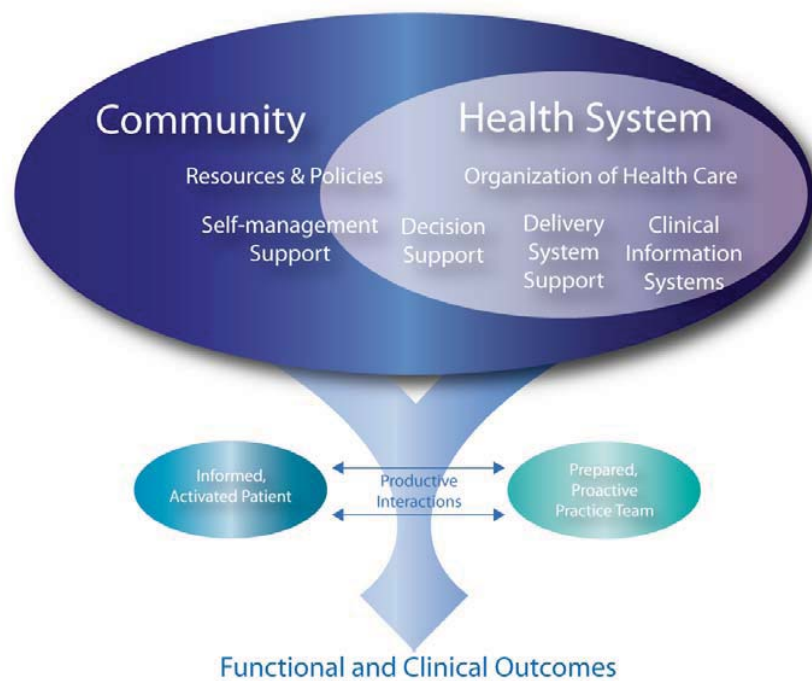


Figure 5.4 - Chronic Care Model

5.4.6 Methods to enhance data quality

Methods to enhance data quality were employed for data collection and analysis. Rigorous strategies were required to ensure conclusions were valid. Cheek argues that the quality of qualitative research relates to the degree of ethical rigour inherent in each aspect of the study.⁹ Examining the researcher's pre existing frame, multi-method design, peer debriefing and engaging the participants' context, were employed in the design to ensure both rigour and quality.

Examining the researcher's pre-existing frame

The researcher, as a nurse with cardiovascular clinical experience, approached the study with an established frame derived from that experience. That entailed assessment and monitoring together with intervening to improve outcomes and provide education to people admitted with CHD. The role of researcher contrasts with the clinical role. In particular, the need to transition from 'information provider' to 'information gatherer' was a challenge requiring constant reflection. However, interacting with potential participants, patients

and healthcare providers, within their context facilitated an examination of, and insight into, the researcher's frame. This process continued through the analysis.

Multi-method design

Three methods were chosen to address the aims proposed in this chapter. Using multiple methods in this way aids overcoming bias in single-method approaches.^{1, 10, 11} A 'within-methods' approach was used in this chapter as the data collection methods and the phenomenon under investigation were similar.¹⁰ The outcomes of these methods were complementary and provided a means of uncovering converging themes during the integrated data analysis.

Peer debriefing

Immediately prior to thematic analysis, data was presented to the wider research team to maintain an appropriate level of rigour. With focus group and group interview analysis, insights gleaned by the researchers were tested for congruence by holding meetings between the three researchers undertaking the analysis to compare findings.

Engaging the participant's context

An important aspect to developing credible data is the emersion of the researcher in the context and culture of the people being studied. As such, the researcher spent substantial amounts of time in the clinical settings where the data was eventually collected. This included informal discussion with healthcare providers on the ward, attending on-ward education and social functions, and spending time at cardiac rehabilitation sessions to participate in the programs with the patients and carers. This engagement took place throughout the two years of the data collection phase for this study. This process enabled the researcher to glean insights from the interactions between groups of people and develop a clearer understanding of their context.

5.4.7 Ethical considerations

Clearance was obtained from the university and hospital based ethics committees prior to commencing the study. Patients were recruited by a

healthcare provider not involved in the study and then interviewed by the researcher. Prior to contact with the researcher, the participants were provided with written information regarding the study. Informed consent was obtained from each participant at the time of data collection. Prior to commencing each interview or focus group, participants were asked to give their permission to be audio-recorded. In addition, prior to each focus group, participants were asked to respect the privacy and confidentiality of other participants by not divulging comments other participants made outside of the context of the group. Transcripts were de-identified prior to analysis. Consent documents, audio-recordings, field-notes and transcripts were secured in locked cupboards and where stored electronically, password protected.

A discussion of the results will now follow guided by Figure 5.5 outlining sample size and emergent themes of each sub-study.

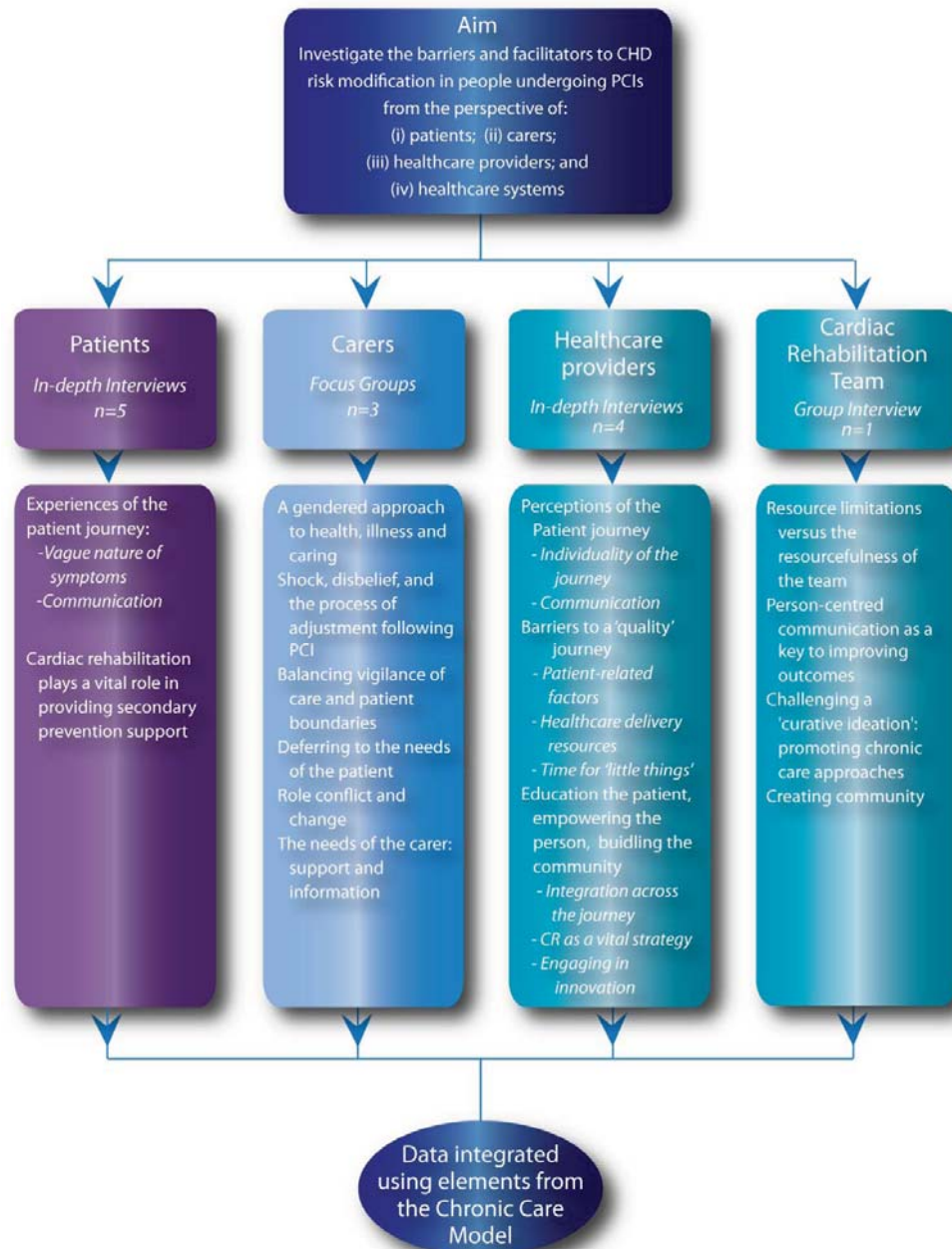


Figure 5.5 – Themes and sub-themes emerging from the data

5.5 Results - In-depth Interviews: Patients

5.5.1 Sample characteristics - patients

Data saturation was reached, in that no new themes emerged, with five people who had undergone PCI and were attending CR at the time of the interviews agreed to participate. All of the participants had been treated with stents during the PCI. Of these, 3 (60%) were male. The median age of the participants was 49 years. All the participants were married and currently employed, at least part-time, with the exception of one participant who was retired. The median length of interview was 26 minutes (range 23.7 – 34.1 minutes). See table 5.1 for participant characteristics.

5.5.2 ‘Experiences of the patient journey’ by people undergoing PCI

Each participant reported a different clinical journey which is expected given their varying risk profiles and presentations. In the midst of this variation are a series of sub-themes relating to their journey that cast light both upon their individual and collective journeys. While they were all grateful to be alive, acknowledged the benefit of having life-saving cardiovascular treatment readily available, and empathised with healthcare professionals over visible resource shortages, they each described issues that impacted on their individual journey outcomes. Some issues have high-level policy impacts such as the need for greater public awareness of heart disease while others relate to the need for enhanced interdisciplinary and interpersonal communication. The following sub-themes have been identified from the transcripts as common among the participants to varying yet important levels:

- Before – The vague nature of cardiac symptoms
- During – the importance of communication of the right information at the right time and in the right way
- After – The importance of cardiac rehabilitation

Table 5.1 - Participant characteristics

Characteristic	<i>n</i>	
Sex, Male %	3	60
Age - Median (IQR)	5	49 (13)
Country born (Australia) %	4	80%
Language spoken at home (English)%	4	80%
PCI procedure (PTCA plus stent/s) %	5	100%
First diagnosis with CAD (Yes)%	3	60%
Relationship (Married) %	5	100%
Occupation		
Professional	2	40%
Semi-professional	1	20%
Unskilled	1	20%
Retired	1	20%
Highest level of education		
Left high school before Yr 10	1	20%
Completed Yr 10	1	20%
Completed Apprenticeship/Trade	1	20%
University degree*	2	40%
Weight - Median (IQR) Kg	5	91.0 (40.0)
BMI - Median (IQR) Kg/m ²	3**	28.72 (6.09)
Risk factor profile		
Diabetes	2	40%
High blood pressure	4	80%
High blood cholesterol	3	60%
Smoker	1	20%
Previous coronary heart disease	2	40%
Family history of coronary heart disease	5	100%
Stroke / Cerebrovascular disease	0	0%
Depression	1	20%
Anxiety	0	0%

*1 participant did not complete degree **2 participants were not able to recall their height

The vague nature of cardiac symptoms

The nature of the participant's cardiac symptoms caused confusion which resulted in delay in seeking treatment. Non-typical locations for pain ranging

from epigastric to neck pain and flu-like symptoms left some participants unsure of what treatment to seek. As a result, they reported delaying emergency help, visiting the GP, and resting. For one participant (**P-4**), this was linked to a lower level of health education and awareness, as discussed in the above themes. The following are excerpts from the transcripts describing this phenomenon:

P-1 ♂: "Well I was taking my tablets and doing everything right...we went pushbike riding on a Thursday night and when I came back...I had these pains in the neck and my wife said, 'What's wrong with you? I said, 'I've got pains in my neck.' We just put it down to riding the bikes so I didn't worry about it very much."

P-2 ♂: "Well I had the flu and I thought it was something to do with my lungs and breathing and stuff."

P-4 ♂: "If there is anything that we can find out beforehand that this pain is not [in]-digestion because they told me it was very hard to assess but I have been up here [hospital] a few times for that sort of problem but they've never ever told me that there is a heart problem I have."

An example of the decisions made by participants in relation to acting on their symptoms was varied. One participant waited some time until his son arrived home before going to the hospital. He related the following:

P-1 ♂: "Thinking back, I probably made a mistake getting my own bloke [his son] to drive me up here and not getting an ambulance."

Another participant, with a diagnosis of diabetes, presented late. She relates her experience:

P-3 ♀: "He [husband] rushed me straight to my Heart Specialist and he got me into [hospital] within a week and they did the tests [angiogram]."

In response to some of these experiences, some participants underscored the need to have rigorous chest-pain public awareness campaigns that went beyond the message of what to do when someone experiences chest pain, and included information on the variations in symptoms people experience.

Communication between the patient and healthcare providers

Participants relayed concerns about communication of important information with varying levels of emotion. Sub-themes included communication of information about treatment, communication by healthcare providers with family and carers, the approach and methods of information delivery, and consistency in the health information provided by healthcare providers. Inherent is the unique nature of each participant's expectation and needs from how they interact with their family and engage their support in care, to how healthcare providers approach them with health behaviour change information.

Participants expressed diversity in ways they engaged their family members and carers during the acute care admission. There was little ambiguity in their responses as to the importance their spouse, carer or family member played in their experience; however some participants treated the family and carers differently. One participant tried to shield his wife from the event leading to his hospitalisation. He recounted,

P-1 ♂: "I didn't tell [name of wife] a lot and that's why I let the young bloke drive me but she managed to get a car and get up here [hospital] anyway."

Another participant, whose hospitalisation had been complex and protracted with multiple acute admissions, had a very different expectation. During the second admission, the participant was woken in the night to be told she had had an infarct. She provided the following description of the events which followed:

P-5 ♀: "He [doctor] was saying all the wrong things ... 'What the hell! Can you ring my husband?' No-one in the family knew, so [nurse] rang them and they [nurse] said that I'd be fine in the morning... When the doctors came in I said, 'Please ring my husband and tell him I've had a heart attack and that I need him'. I was scared then. So they rang him and they still didn't tell him on the phone...they just told him to come in... That's the only thing in the whole situation that made me angry with them..."

The above exemplar demonstrated the need for this participant to maintain contact with her husband. To her, the healthcare providers were expected to aid the inclusion and involvement of her partner and keep communication channels

open with the family. In the context of this participant's interview, this incident stood out as a defining experience.

Woven into the theme were the ways in which participants perceived the healthcare providers' approaches in their communication with patients. One patient was anxious about her impending PCI and reported feelings of impending doom and the imminence of a heart attack, as she described it, (P-5 ♀) "There was something inside me saying something bad was going to happen". This perceived dismissal of her concerns was echoed further:

P-5 ♀: "I don't know, just sit and talk to me. It was just thrown away. They said, 'Don't worry about it, it happens all the time.' They said, 'You'll be fine, don't worry.' That was it...I felt like they had dismissed what I was saying."

Another participant reported being quite angry with the doctor who attempted to provide him with health-education. The participant perceived a lack of understanding, on the part of the healthcare provider, for the enormity of health behaviour change he was facing. This excerpt relays the interaction as he described it:

P-2 ♂: "The doctor at [hospital] came and had a talk...he was really going on at me and he said, 'You know you've had a serious thing', and was going on about tablets and all that and I said to him, 'I'm sorry but this is a big learning curve for me. You do this as part of your job, right, this is my life and this has actually happened to me.'"

It is important to note that it seems less about not receiving adequate information than it is about the consistency in which health education is delivered. Participants admit to receiving varying levels of information from very little to being overwhelmed.

Consideration for the effect the acute care setting has on patients who may have little to no experience in such contexts is important. In addition, the delivery of care seemed complex to these participants. Not only is the environment alien and the technology incomprehensible, or as one participant (P-1) described it as, "...sort of gobbledegook", the perception of what good care should be was complex.

Participants expressed putting off requesting assistance from healthcare providers during their admission. The need to reduce the burden of, what they perceive as, already stretched staff, overrode their own needs. This exemplar expresses this well:

P-3 ♀: "...I feel sorry for all the nurses. The nurses are fantastic...I just knew they were doing the best they could. One of the patients was ringing the bell and saying, 'I want this', and 'I want that'. I knew they were flat-chat with the man next door so I didn't want to ring my bell..."

5.5.3 Cardiac rehabilitation plays a vital role in providing secondary prevention support

A resounding theme throughout the interviews was the importance CR plays in the lives of people who have had PCI. Patients' need for effective communication of secondary prevention information, appropriate support to facilitate self-management, and person-centred engagement were evident sub-themes within this main theme

Without exception, patients identified, above all other settings, the CR setting as the place where they received what they thought was key information to make critical health behaviour changes. The following illustrate this view:

P-1 ♂: "I don't know who pays for this but it's really top stuff. There are things I know now. I do know why I was taking the tablets but I didn't know what they did and [CR nurse] explained what each one did. At least I know now why I'm taking these tablets. The exercise sessions are really great...This program has been really good as I now know how to use the stuff."

P-2 ♂: "With the things that happened at the hospital, we asked here [CR]."

P-3 ♀: "They [ward clinicians] didn't actually sit down and say, 'well you can have a heart attack this way and that way.' These girls [CR team] have. I didn't know that being a diabetic sometimes you could have heart attacks like that...I found a lot out going through here [CR]."

When asked by the researcher at what point along the patient journey did you find the most information you needed to be able to cope with it, these participants replied emphatically:

P-1 ♂: "From here."

P-5 ♀: *"Probably coming here [CR] I think. The nurses in here [CR] are excellent."*

Supporting CR attendees to achieve confidence in managing their own health was emphasised in the interviews. This included how the monitoring assisted patients to overcome the fear of further exacerbation of their condition. The following exemplar is from a participant whose acute-care admission was marked by high levels of anxiety:

P-4 ♂: *"In the beginning stage I was fearful about doing too much and that maybe some problems could start, but they have all the metres here and it makes me comfortable to come here. Now I am in more of a routine which is good for me."*

A way in which this confidence was being built was through creating connections with others with similar health experiences. As such, being able to engage with other people who had undergone PCI was important to some of the participants, as seen in the following excerpt:

P-5 ♀: *"Everyone is different, and I wanted to talk to other people who had had the stents as well."*

When the researcher asked about the importance of having had an opportunity to meet with people who had similar treatment, the participant talked about a series of interactions that assisted her in developing a broader perspective about her cardiac experience and condition:

P-5 ♀: *"I think that would be better. I think it would be really, really good to hear about their [others who have had PCI] experience. On Tuesday when I was here [CR] I was talking to another gentleman and he had the stent but after four weeks he's had no problems, no pain, no nothing. So I think everybody's different. Then there was another man who agreed with what I was saying...he was scared so maybe his experience was similar to mine. He just said that he was very scared...I think to speak to someone else who's been through it and get their experiences, would be a lot better."*

5.6 Results - In-depth Interviews: Healthcare providers

5.6.1 Sample Characteristics

Four healthcare providers agreed to participate in an interview. Three participants (75%) were nurses and while one was an interventional cardiologist, and was the only male. All participants had extensive experience in cardiovascular health with three working in acute cardiology settings while one, a Clinical Nurse Specialist, worked in an outpatient cardiac rehabilitation unit.

5.6.2 'Perceptions of the patient journey' by interdisciplinary healthcare providers

Seeing the patient as a person was a common yet vital thread in the combined participant narratives. They spoke of the person as an individual, whole, and complex; of the challenges and outcomes of communicating complex information across diverse personal and therapeutic relationships; of the person's lived-context with their families; and of the diversity of roles required in the care of someone who has experienced a PCI. Within this broad framework, discussion into barriers and potential interventions to achieve improvements in care outcomes were also made including issues distinctive to PCI.

The individuality of the journey: everyone is different

The patient journey, as discussed by the participants, demonstrated their appreciation for the centrality of the person's experience, the integrated nature of their lived-experience and by extension, its uniqueness. The following exemplars demonstrate these insights:

HCP-2: "...and by patient...I refer to a whole being...the whole unit that surrounds that person...the carers and all that...goes with it..."

HCP-3: "Now when I think of the PCI journey, I think of the circumstances that lead up to the PCI because I think that the PCI journey is different for the different patients."

The journey starts with shock

In the midst of the uniqueness of the patient's experience, the participants acknowledged the threatening circumstances precipitating the patient's admission. The following excerpt reflects the intensity as perceived by this participant:

HCP-3: "I think in the acute care setting after a heart attack, it is certainly life changing and so after myocardial infarction often there needs to be a radical change in the person's lifestyle...that often comes as a shock to them...They [patients needing Primary PCI] will need a fair bit of counselling...but it is life-changing...therefore I see it as very important."

The shock of the events that brought them into the healthcare system is further compounded by patients' short length of stay. The following excerpt is from a participant expressing the challenge healthcare providers face in preparing patients to adopt risk factor modification given the short period of admission, when the patient is shocked at the gravity of their situation:

HCP-2: "Now in that time [acute care admission] this is their first ever presentation of coronary artery disease, they've never had it in their totally immortal mind that they've...had a heart attack...they've got something wrong with their heart."

Communicating effectively: Engaging all the stakeholders in improving care

The data revealed two care encounters where the importance of communicating vital information effectively is paramount, and that is: how healthcare providers interacted with patients, family and carers; and the effectiveness of communication between healthcare providers. Concern was expressed as to the potential ineffectiveness of current communication patterns and behaviour.

One participant reflected on the change in nurses' approach to patients over her years of experience:

HCP-4: "We do the intervention side really, really well. I don't think we do the rest really well. Often I am very appalled at the way staff talk to patients these days and that seems to be getting more common."

Another participant discussed this issue from the perspective of generational and societal change:

HCP-2: "I think a lot of it nowadays as in the last 5-10 years is societal changes...have changed the people going into nursing...their interpersonal skills...now are completely different...[nurses] don't want to see the fear...you put a label on it like 'the difficult person' or you just think that way and judge them [patients] that way."

Reflecting on the experience of patients interacting with cardiologists, this participant, a CR nurse, stated a need to empower patients to seek appropriate information from the medical specialist. She states:

HCP-1: "A lot of cardiologists will just say [to patients] 'do this, do that' and it's just in and out. We're trying to educate the patients to take a list when they go in and ask all the questions and don't let the cardiologist hurry them out...just about trying to make them more confident about approaching the medical profession."

The role of the support person or carer in the patient journey

The support person or carer featured as an important role in the care and recovery of the person undergoing PCI. Yet the level of engagement family and carers experience, according to the participants, varied greatly: as one participant described it, engaging patient and carers together is (**HCP-4**) "...very *ad hoc*." The following excerpts illustrate the various discussions:

HCP-3: "Often I interview my patients in my rooms with their partners and their partners take a very important part. Often chronic heart disease is in males generally so often it's the wife who does the cooking and after it's the wife who looks after the husband so they have a vital role to play."

HCP-4: "Interacting with carers is vital in the patient journey and I always try and fit in time when carers are around to do my education and I've found that that has lots of benefits...I always try to do that deliberately to involve other family members...often you'll find men don't care for their own health, but the wife will and she'll make sure that they eat the right stuff, see the doctor and do all the right things."

The impact on the carers' in terms of burden of care was also discussed. The following is an excerpt highlighting the effects of caring in this context:

HCP-3: "It [caring] impacts on the carer because the carer doesn't want to lose the person."

Protective behaviours on the part of carers were also discussed. This took the form of vigilance of the partner or taking on activities of daily living usually undertaken by the person themselves. One participant observed that how

patients responded to the being hospitalised was influenced by ethno-cultural norms. The following excerpt discusses an observation she made:

HCP-2: "...they are in their four-bedded room having a great time with their mates and...showing themselves, walking around the ward doing this and doing flights of stairs...but as soon as the wife's come in they're a dying swan...and they have to get their wife to help with eating...but the wives ... take it very seriously."

5.6.3 Barriers to a 'quality' patient journey

The short length of stay

The participants noted the impact the reduced length of stay has had on the patient's care experience. Nurses compared the current care environment with that prior to the advent of angioplasty and stenting. The biggest impact of this shift concerns the way in which the patients, their families and carers are orientated toward the uptake of appropriate secondary prevention strategies, particularly risk factor modification. The following exemplar contrasts with previous practice and underscores the dilemma they face:

HCP-4: "We used to have wards full of men with their infarcts(s) or chest pain...and it used to be quite fun because they were all getting on very well together...They were often there for 5 to 10 days so you used to get to know them and get them to make their own beds and do their education as part of their post MI recovery. It was all very different than what it is today...They come and go really quickly...The turnover for the heart patient...is pretty quick."

Patient-related factors

Age

Regarding age, some participants felt there has been a reduction in the age of patients requiring PCI and that this has an effect on their long-term health management. The following was a reflection from a nurse who commenced her cardiology nursing career in 1984:

HCP-4: "...when I started the...typical patient was...probably in their 50's and 60's... You often see a lot of people in their 40's now, sometimes 30's having an infarct. It seemed a lot rarer back then [early career] but now it seems to be quite a bit more common, we have 30 year olds with their infarcts."

Motivation to change

An important barrier to secondary prevention was the motivation to change. One participant, in describing the type of person to benefit most from cardiac rehabilitation stated this:

HCP-3: "I send all the patients but I find that the ones who go are the ones that are willing to learn."

Another participant echoed this from the perspective of personal responsibility for change being inalienable from the patient:

HCP-2: "...I've got a concern...that health professionals feel as though they are responsible for that person from there on in with their disease process...if by...cardiac rehab and that person still doesn't own their disease process, we're in deep shit."

Yet another participant, when asked what they perceived would be the proportion of people interested in engaging in behaviour modification, she replied:

HCP-4: "...but, put down to experience, in the hospital situation, it's probably only about 15-20%"

Those with depression and lower social support were identified as high risk.

HCP-4: "I think it's an individual thing... You get quite a few people who are single, like men or women who have lost their partners and they seem to have given up a bit of their drive to want to change. You get a lot of depressed people... Depression seems to be widespread. It really, really complicates things like helping them to be motivated to change because they really just don't care."

Socio-economic factors

The socio-economic challenges faced featured highly. In particular, the issue of having flexible enough employment to allow attendance at appropriate secondary prevention programs was seen as an issue. The following exemplar was relayed by a CR nurse in her attempts at providing the patient the most basic education due to the patient's work schedule:

HCP-1: " There are quite a few employers who will let the patients come to the program, but some people just aren't in that financial position. I had one man actually, 30 something, a cigarette smoker, who rang me one day and

said he was going back to work two days later but I got him in the next day and that was the only day that I could get him in....If I couldn't have got him in then, that was it, he wouldn't have had any education at all."

Literacy was an issue raised by one participant who illustrated the point by relaying an interaction she had with one patient who was embarrassed over his inability to read effectively. The participant particularly remarked that in this circumstance, more flexible patient education resources are required beyond brochures requiring adequate reading ability. She recounts:

HCP-2: *"...I sat down with one bloke who kept telling me he didn't have his glasses so he couldn't read it and in the end it got the better of me on the third day and I said, 'Listen, mate, are you having...do you want me to read this to you...are you having a bit of trouble?' So he was as happy as a pig in mud then. Then I did the readability test on the [organisation's material] and they are geared toward year 11 & 12 [secondary school]...education levels. That doesn't meet our population here out in the west."*

When asked about the proportion of patients she perceived as having issues with literacy, she replied, (HCP-2) *"...we are probably looking at about 10%."*

Curative ideas

How patients perceived their need for behaviour change was reflected in participant discussion. Either described as denial or the belief of being 'fixed', healthcare providers identified this tendency as a barrier to achieving positive long-term outcomes. One participant expressed this in terms of one of two extremes:

HCP-2: *"Those with a lot of risk factors are often worse they either deny it altogether...or they [patient] are totally responsible for it."*

In particular, this participant relayed an example where one patient held their workplace to be responsible by stating, *"...I'm [patient] going for workers comp for this!"* In further comments, this participant discussed this issue in terms of society's unrealistic expectations.

HCP-2: *"...community expectations of healthcare are totally ridiculous. The expectation is no matter what...health [care services] will be able to do something to help them [patients]."*

Healthcare delivery resource limitations impact on care

The theme of healthcare resource limitations was apparent. Participants recalled particular services that once existed that no longer do due to these pressures. The following illustrate this:

HCP-4: "They [cardiac rehabilitation staff] used to [be seen regularly on the ward during admission] but because of the staff shortage they've not been allowed to do that for many years now."

Local healthcare policy

Related to resources, local healthcare policy was identified as a barrier to improving outcomes in terms of its role in supporting practice. The dilemma of having policy in place yet inadequate resources to deliver the needed outcomes impacted on healthcare providers' morale. The following participant stated it well:

HCP-4: "I think cardiac education [patient education] should be reflected in our hospital policy... You find that people [policy makers] put things in policies but they don't give you the extra staffing needed to put the policy into action... They [healthcare providers] can't do it and they know they're not fulfilling the policy and they just get very distressed and demoralised and it's worse."

5.6.4 Educating the patient, empowering the person, building community: Exploring opportunities to improve the patient journey

Patient education featured regularly in the discussions, highlighting the topical nature of this aspect of interdisciplinary practice. There was consistency regarding the settings and circumstances for effective delivery together with the barriers leading to its failing. A common thread in the broader discussion was around the need to integrate patient education across the patient journey in meaningful ways that didn't overwhelm the patient or their family yet met the needs of the person at that time. Above all, and in keeping with the patient interview data reported above, CR was regarded as the most effective setting for patient education delivery. Frank admission was made by participants of the continuing challenge facing healthcare providers in improving the uptake of appropriate secondary prevention by patients. Several suggestions were made

by the participants as potential innovations to meet these challenges. As a whole, the discussion involved going beyond the education of a patient. It aims at empowering the person to engage in self-management by encouraging the building up of the community around them. Supporting family and carers who journey with the patient is one vital aspect yet should also include the broader community through sustainable and economical strategies to enable healthy choices.

Integration across the patient journey

Participants indicated a broad and integrated approach was required, while at the same time admitting the limitations of the acute care setting to provide sufficient education for the patient and their family and carer. Regarding those limitations, the participants shared these reflections:

HCP-1: "Not as effective as some say it [patient education in the acute setting] is. I know because I've done both. I've done education in the acute setting and often they've got other things on their mind so they don't take it all in. They come to us [CR team] and they say, 'Nobody ever told me this.' Probably they have been told but they just don't remember or it hasn't sunk in."

CR is a vital strategy

Cardiac rehabilitation as a secondary prevention and risk reduction strategy was unanimously supported as a vital aspect of the patient journey. The following are some extracts of their transcripts:

HCP-3: "I encourage all my patients to take up cardiac rehab because I believe that patient education is vital and their understanding of their condition is vital."

While the importance of secondary prevention strategies was emphasised by participants, it was also acknowledged that greater flexibility is needed to meet the needs of a diverse population of patients undergoing PCI. The following comment is echoed, not only by these participants, but across the studies reported in this chapter:

HCP-4: "Definitely extended hours because we only have a morning session so we need an afternoon and evening session which is pretty obvious, for

the workers. Most of our workers, if they're 9 to 5 workers or regular hours during the week, are culled immediately and they're quite a large percentage of our patients."

Engaging in healthcare delivery innovation

Several potential interventions or strategies for engaging in the redesign of care provided to people undergoing PCI was offered by the participants. Suggestions ranged from increasing the role GPs play in providing secondary prevention education to developing new roles for nurses and implementing social marketing campaigns aimed at increasing awareness of CHD. All comments spoke to the need to develop broader more integrative strategies for promoting risk management and secondary prevention.

Engaging the GP

Participants discussed the GP playing a greater role in facilitating secondary prevention uptake with patients who have undergone PCI. The following excerpt is from a participant's reflections of the role of the GP in secondary prevention in similar ways other chronic health conditions are managed in that setting:

***HCP-1:** "Put an ad in the local doctor's surgery about heart education...Just from my local doctor that we go to, they do some prevention stuff for asthma so if that same local doctor was able to do preventative stuff for heart patients, they're going to get a lot of people..."*

A 'PCI-Educator' intervention

A nurse-led initiative was suggested by one participant who was not a nurse. The suggestion involved having a dedicated nurse who followed the patient through the PCI process and provided appropriate information and support suitable to the stage of the journey they were in. The following exemplar outlines the participant's thoughts:

***HCP-3:** "...it is the doctor's role to provide the acute information for the...procedure [for primary and rescue PCI]...the elective [angiograms and stents] the nurse educators, called 'PCI-educators' [similar to]...that we have in diabetic areas, or you can call them angina educators, or whatever you like, but personally, I think that [they are a] specialised group of people will prepare people and educate patients. I think heart disease and diabetes are very similar - they're both chronic conditions. The more that the patient*

knows, the more he or she is empowered and I think that provision of information is a very important role."

Health Promotion

Similarly to some concerns raised by patients in the in-depth interview data, one participant advocated for a social marketing approach to reaching beyond the limits of the healthcare setting. One participant suggested taking the message to the 'market-place':

HCP-1: "Why can't we go down to [locality] mall and do it [risk factor screening] there? That might make a difference."

5.7 Results - Carers focus groups

Three focus groups, lasting an average of 90 minutes and each comprising 5-7 participants, were conducted with carers of individuals who had undergone PCI. Of the 18 participants, 3 (16.6%) were born overseas and spoke a language in addition to English. The remaining participants self-identified as Anglo-Celtic. Time since discharge from the acute care setting ranged from 3 weeks to 18 months. Despite the efforts of the research team and advertising for the study in gender and relationship neutral terms, no men or other family members were recruited; - therefore the sample was comprised of only female spouses. For many of these participants, the focus groups represented their first opportunity to discuss their experiences with others in similar situations. The groups expressed a diverse range of emotions including humour and conviviality intermingled with deep reflection and occasional tears.

5.7.1 A gendered approach to health, illness and caring

All participants were women married to male patients who had undergone a PCI. The language used by the participants to describe their interactions with their husbands reflected a gendered approach to health, illness and caring. One interaction illustrates this:

"I still wasn't happy with his health, but he said he's a macho man and nothing was going to touch him and he said, 'I'm fine! I'm fine!'"

The conflict evident in this dialogue is expressed in terms of a gendered lens to health. The partner who is recovering from the index event responds along culturally determined gender approaches to managing his disease. He is rejecting not just perceived interference with his health, but also the incursion on his self-concept of manhood.

Challenges to the ways in which roles were expressed were evident throughout the women's dialogue. From a gender perspective, domestic tasks traditionally designated as masculine, underwent re-negotiation which resulted in strained relationships. As one participant recalls:

"I wanted to mow the grass but he wouldn't let me do it as he said he would be embarrassed seeing me mow the grass. I'd do the back [garden] but he wouldn't let me do the front."

This excerpt depicts the patient's adherence to traditional gender roles despite the impracticalities of maintaining these physically demanding behaviours following an invasive heart procedure. This patient felt his masculinity, strength, and virility, would be jeopardised if others were to see his wife engage in this activity.

5.7.2 Shock, disbelief, and the process of adjustment following PCI

A striking feature of the focus groups was the vivid recall of the cardiac events by carers. Participants readily recalled exact dates and times, the sequencing of events, clinical details of their partners' coronary artery disease, emotional responses, and interactions with health professionals and family experienced along the way. They also described the shock associated with these experiences, as one participant recounted:

"I said, 'I think I'm in shock...it was so quick'. He wouldn't have been in here 15 minutes and they were all working and I was just standing there. When they asked him out of 10 how did he feel when he came in, I remember that he said '9 out of 10 or 11 out of 10' and then he was sick."

The tremendous impact of the PCI on the lives of the carers in conjunction with the short length of stay and seeming brevity of treatment lead to confusion

regarding its gravity. The following excerpt depicts an interaction by two participants which underscores this confusion:

"One of the things I felt and that made me a bit concerned was the fact that it's such a serious problem and it's almost like falling of a log because you're in, you have your procedure and you're out. I'm confused between the severity of it and how you should actually feel."

"I think that's one of the difficult things to deal with. You're caught between these two feelings and you don't know which road to take."

By contrast to the acute care admission, the post-discharge recovery time was lengthy and contributed to the contradictory nature of the experience, as depicted in the following interaction between two participants:

"I think he's coming to terms with it, but it's taken a long time. It's over a year now."

"It's a bit like a whirlwind, you're in, you're out, and you think, what was all that about? Then you have to pick up your life afterwards."

The participants reported the impact of prolonged recovery time, often describing a post-discharge change of mood enduring far beyond. Some participants described this as a wall or barrier between themselves and their partners that adversely impacted on their relationship.

5.7.3 Balancing vigilance of care and patient boundaries

Almost without exception, participants acknowledged being persistently vigilant, watchful and protective of their husbands throughout the PCI experience. Although it was acknowledged that this was a normal part of their everyday role, the cardiac event intensified this pattern. As these participants expressed:

"You just don't want to leave them out of your sight. I was sort of very aware. I'd say, 'Where are you going now?' 'Are you all right?' It's a bit like '20 Questions'."

"I was worried about him for so long. I followed him around and said things like, 'I don't think you should be lifting that', or, 'That's too heavy.'"

These excerpts depict the ways the roles of the dyad (patient and spouse) existed. Some participants expressed a sense of frustration regarding the change in roles and relationships and potentially a grieving for past roles. One participant said "...it felt like I was looking after a 5 year old child."

Being vigilant was not without its cost for both the patients and their spouses. Conflict was often reported as bringing strain to the relationship and role confusion for the spouse-patient. One participant described one such incident:

"I'd say, 'Are you alright, love?', and then he would say, 'For god's sake, Judith, shut up!'"

Such interactions meant participants had to learn to ways of coming to terms with their vigilance by not encroaching on their husbands' challenged independence and sense of self. Given these occasional hostile outbursts, wife-carers recognized the need to 'back off' or detach somewhat from the role of protector or nurse. Two participants described backing off as:

"And that's when my husband was depressed because he felt, 'Well, what next.' I've learned to back off a lot but I think you have to, don't you?"

"Well you do. Someone's got to be strong and it's usually the spouse. If you're a bit feeble or whatever, well, what good is it for them, so you sort of try to remain strong for them."

This dialogue depicts the wife-carers as recognising the need to refrain from becoming too immersed in the psychological decline of the husband, yet remaining supportive. This does not mean that the anxiety elicited by the PCI event had subsided for the wife-carer, rather, it was internalised, as depicted below:

"...I keep on worrying, I know it's stupid, but I don't say anything anymore but I think, 'Oh gosh, not all over again!'"

This statement reflects the wife-carer's decision to suppress her own worry and anxiety, so as not to abet the husband's concerns or infringe upon his personal boundaries.

5.7.4 Deferring to the needs of the patient

Most of the participants expressed, in some way, the need to put their own needs aside in order to care for their husbands. This often took the form of deferring their own health needs, particularly those who had chronic conditions. This deference to spouse does not appear to end with discharge, as some participants reported the need to provide ongoing support beyond 12 months following the procedure, as depicted below:

"I am in a lot of pain all the time but I walk up that hill with him, just behind him, a bit slower...I just can't let my husband go alone, I just can't do it."

One woman, talking about how her husband has adopted a healthier lifestyle, stated she was having the opposite experience for herself. In her words,

"He's lost it [weight] and I've gained it. I'm monitoring his food and looking after him but you tend to forget about yourself."

These excerpts illustrate the tendency the participants to focus on their partner's needs at the expense of their own. Several participants had their own chronic health issues they needed assistance with, often from their partners. For them, a dramatic role reversal took place. Two participants recalled this type of experience:

"For a couple of years he was looking after me and all of a sudden I had to totally forget all my own problems and be there for him."

"The last 18 months I was sick and he was the one who looked after me all the time and then all of a sudden it's the other way around."

In an apparent need to manage the crisis of the sentinel event, participants expressed putting aside their emotions as an important contribution to their partners' coping. One participant relayed her experience of being told her husband had "...a few blockages in the heart":

"...When he told me, I just lost the plot. For him, I stayed reasonably calm but I just couldn't believe it ..."

5.7.5 Role conflict and change

Participants revealed much about the roles they inhabit from the initial symptom recognition phase through to discharge and into the

rehabilitation/secondary prevention phase of acute coronary syndrome (ACS). Advocacy, in several forms, was a predominant role expressed by these women such as encouraging urgent action and participation in secondary prevention. Participants recalled initiating hospital presentation and ongoing access to secondary prevention measures. Three specific examples are:

"I said, 'Come on, I'm going to take you to the doctor straight away,' and he said, 'I'm fine! I'm fine!', I said, 'No you're not. Come on, get in the car.' So I took him to the Doctor straight away."

"My husband didn't want to come [to CR] and I said, 'You're going'".

"Every time my husband goes to see a doctor now, I go with him because I know he'll only tell me what he wants to tell me."

The perspectives of the participants and their partners, as patients, seemed divergent in that during the recovery phase, the participants focused on their partner's survival while the partner seemed to focus on quality of life. The following narrative presents an account of an incident between a participant and her partner which illustrates this perspective disconnect:

"...he was getting tired and he was getting cross and his sexuality is not as good and that upsets them. I said, 'Look, I don't care, you're alive for goodness sake! Just move on!' but no, it really worries him."

5.7.6 The needs of the carer: support and information

The importance of connecting with supportive others was a critical need which enabled them to overcome isolation and facilitated coping. One participant described the process she undergoes with her daughter-in-law as a way of coping:

"...what my daughter-in-law and I do is have a dumping session...When my husband was in hospital she said, 'how are you?', and I said, 'I need a dumping session'. So we dumped. You don't say anything, you don't agree, you just listen."

Although the support of family and friends was discussed by several of the wife-carers, others explained that support resources were variable or that external perspectives were beneficial. One participant expressed the need for further support in the following excerpt:

"Possibly you could have a support night occasionally just for carers. If they have problems with their loved ones, they can talk about it in a group. Just once in a while"

"Sometimes when they're complete strangers I think it's better. I always feel that if it's a friend, they may disagree because it's me and they may want to make me feel good. So if it's complete strangers, I think it would be more honest."

The need for such a strategy was summed up by two participants' retorts related to the variability of support resources available to some people:

"...not everyone wants to listen".

"Yes, but a lot of people don't have that [support]."

In addition to social support afforded by family and friends, interactions with health professionals also featured as part of discussions during the focus groups. Regarding interaction with nurses, there were mixed experiences described, yet these generally reflected a positive perception of nurses' intentions to engage spouses in the process of care. The emergency department and CR services received the most praise, depicted by the example below:

"I've got to admit that the staff down there [emergency] were brilliant...one of the nurses in Emergency...she came up and put a blanket on him and fluffed up his pillows and I thought 'she's doing that TLC'...I felt comfortable in leaving him and going home and getting some rest myself."

"I think the staff in the Emergency Department are great. They explained every single thing that they were doing, to me, as well as to my husband. They were great, they were really wonderful."

Many participants commented on the quality of information sharing they experienced during the acute care admission. Integral to this complexity is the short length-of-stay characteristic of PCI procedures. One participant, advocating for quality information and support stated clearly:

"I think there is a need for the carers to get a certain amount of very basic information like the sex aspect of it. What are some of the things that my husband can do when he comes home?"

Participants described exemplars of interactions with healthcare professionals. While many reflected a positive interaction, not all were characterised as such.

When asked about who provided health information during the admission, one participant said:

"The doctor has spoken to me in [hospital], yes. I didn't get much information afterwards though. No information was given to him [the patient] at all except for a couple of little booklets we picked up off the table later from [CR nurse] lecture."

One participant struggled to locate her partner after his transfer to another hospital. She states:

"...he got sent to [hospital] and that's the only time I really panicked. When I tried to contact him to see how he was going, I couldn't find him..."

The role of CR staff in providing reliable information that the carers and their partners were able to assimilate was emphasised throughout the focus groups.

This participant stated:

"My husband has become so much more aware and conscious of his diet since coming to rehab. It made him aware of a lot of things. No matter how much I had spoken to him about it, he's taken more notice of what he's been told here, so rehab is valuable."

"When I talk to [CR nurse] on the phone, you don't know how much relief [this] gives me and how calm it makes me. After talking...about any little quirky things or problems I've had with [partner] at home, I come off the phone feeling relieved so [CR nurse] really has a big impact on me when [CR nurse] talks to me on the phone."

"I agree there because I've phone [CR nurses] a few different times too."

"It's good to have someone reassuring"

5.8 Results - CR Multi-disciplinary team group interview

A total of six members of the cardiac rehabilitation team attended the meeting. These included the team leader, a cardiology CNC, aboriginal health worker, a registered nurse and two enrolled nurses. The group interview went for 45 minutes not including the informal social time prior to the group interview to allow the participants to relax from the busy morning in CR.

5.8.1 Resource limitations verses the resourcefulness of the team

The group discussed early on in the session the need for greater staffing levels. This was in the context of extending the service to meet the needs of an already diverse and diversifying patient population as well as the challenge of maximising patient referral and secondary prevention education. This was couched in an integrated context between the acute care setting and CR. One participant who sees patients in both settings as part of the referral and education process was concerned enough to say:

"...they definitely need more staffing so that the hours could be more flexible... We...need to ensure that every PCI patient gets a decent education after the procedure...sometimes they don't get it at all...I'm the only one that does it. If I'm not there, which is several days a week sometimes, they just don't get it."

While fiscal restraint was a barrier to further service development, present in the forefront of the team's discussion, the team seemed motivated to brainstorm potentially new ways of improving attendance and completion of secondary prevention programs. As such, the participants demonstrated resourcefulness in countering at least some of the effects of human resource and fiscal limitations. When asked about what they saw as the issues concerning service redesign, participants said the following:

"Maybe with more staff we could have night-time sessions or maybe even a weekend session but with current staffing we just couldn't at the moment."

"What we've discussed a lot at our meetings is programme dates increasing to maybe four and a half days [a week] and an additional Wednesday evening but I don't think that's possible at the moment."

"...At the end of the day it's always something to do with money."

Fiscal and human resource limitations were not the only discussed. The impact of disadvantage experienced by the population they serve was highlighted as a barrier. In particular, transport, educational, developmental delay and employment factors were seen as barriers of note. Two participants spoke up about this in tandem:

"...especially the [local area] area. Maybe 25% don't have transport. There's no such thing as a rush of traffic at [local area]."

"Within the area they've got lower levels of education. People in administrative type work can get time off work if we write a letter to their employer but labourers, it's not on."

"I had an interesting man who was from a group home and had a bit of developmental delay..."

In the face of these barriers, the team discussed repeatedly the desire to offer alternative services to meet the needs of the people needing to access the service. In addition to extended hours of operation involving evening and weekend exercise programs, networking with a local gym to provide stage 3 rehabilitation at a reduced rate for people completing CR has been negotiated.

The following discussion elaborates on this theme:

"We have a lot of people who ask whether there is a night-time session or weekend session. At the moment in my referral book I have 5 people that I have to contact when this is all happening. We've just been offered [name of gym] as a stage 3 rehabilitation and we thought about using that for people who can't come to the programme at stage 2 that we can refer them to them straight away."

Another key element to the team's resourcefulness is how they engage CR referees. They seem very aware of the difficulties of recruiting people who have undergone PCI. Their attempts at persuading patients to attend CR seem well developed. For example, these two exemplars demonstrate the skills they have had to develop:

"What I do is give them a ring, right? If they're not interested I push a little bit. I always tell them, 'Give it a go...just come in and see how you go.'" Then I leave it at that and if they say, 'Yes, I'll come', well that's good. We don't have many people say no."

"We had one guy, [name of patient]. He said, 'I'll start when I'm ready.' He was in ICU for 6 weeks and he lost a lot of muscle mass and basically he had to learn to walk and talk again so when he came to our session he said, 'I'm not starting cardiac rehab', and we said, 'why?' He said he wasn't ready yet. We said, 'You are ready now, just come for one session and see how you go.' After that, he never stopped coming."

5.8.2 Person-centred communication as a key to improving outcomes

Participants reinforced the centrality of appropriate communication with CR participants. This was described, not in terms of didactic teaching, rather in how they engage the patient as a person. There was an appreciation for the broader context of the person beyond their disease and treatment. Integral to this was listening to the person's story. As one participant stated, *"Its about talking to people."* The following interaction stands out as a pertinent exemplar:

"Sometimes you get stuck with one patient for half an hour because you can't say 'no' if they want to talk about something."

When asked about the types of content of these discussions, the participants replied:

"It's everything."

"One particular patient, after he had his accident many years ago, he wasn't about to go back to work and basically he said to me during his assessment, that this was the first time that he'd been out of the house during the week doing something for himself instead of cooking and cleaning etc. So he was very lonely and he wanted to talk about anything."

"Another patient when he joined said to me..., 'Can you tell me how much longer, if I exercise so many minutes a day, it is going to add to my life.' It was really depressive stuff."

"We could spend up to two and a half hours doing an assessment."

When asked if this was a common experience, they responded emphatically that this was quite typical.

This person-centred engagement produced outcomes. In an exemplar presented in the previous theme, contact with people reluctant to join the program resulted in eventual attendance and adherence. An added challenge is the level of diversity of the patient population. Yet, participants acknowledged that direct contact with the person led to desired outcomes. As one participant said, *"I have a bit more success when I go and see them in the ward [during their acute admission]."*

In particular, they discussed the case of one "...young fellow", who they felt "...got lost in the hospital somewhere...", referring to the substantial delay in being referred to the CR team. The discussion ensued as follows:

"I couldn't get him on the phone which was the number the cardiologist referred so I did a home visit. He came in for an assessment. He was getting pains so his doctor sent him [to the CR team]...to do the 6 minute walk test. He came from the country...a one doctor town, so with the choice of doctors here he didn't communicate very well as there was too much of a selection...We wrote a letter for his doctor...so he's on the aspros [aspirin], he's on the cholesterol medication...I drove him home [from the assessment] and he started talking."

During that conversation, he revealed his grief at the passing of his wife and his life as a single father. The burden of grief was taking its toll on his adoption of appropriate prevention strategies. The exemplar continues:

"...he was just a time-bomb ready to go. ...when he came to the assessment he was on three types of aspirin and he wasn't taking any of them and his cholesterol was high, his blood pressure was through the roof and he was not doing anything about it."

The engagement with the team brought about improved outcomes. One of the team then relayed the outcome of this process.

"...his girlfriend said to me this morning that he's walking to the station which is a good hike, he's changed his diet, he's taking his medication...he's going to come to the Monday night group."

The final response to this story sums up their approach: *"Again, its communication."*

Coming to terms with the cultural and ethnic diversity has been a challenge as well as a strength for the team regarding communication. The diversity is in terms of people born in countries other than Australia, people who speak languages other than English and a large Indigenous community. As an example of the diversity experienced by the team, one participants stated:

"One day I was doing an exercise session and there were thirteen patients in the room and eleven of them were non-white Australians and two people were from England..."

Highlighting the linguistic challenges, one participant referred to a regular CR participant:

"...one gentleman on the program who's Serbian and he only knows one English word which is 'hi'."

5.8.3 Creating community

If person-centred communication is an important emerging theme in the group as a means to improving outcomes, then developing strategies that build-up communities is also important. This is present in other themes and will be elaborated on here.

Social disadvantage, transport access issues and lower levels of education were identified by the group as barriers to health improvement in an earlier theme. Yet, it was acknowledged that both the wider community, often maligned due to its socio-economic disadvantage, was a strong community. As one participant stated:

"[Name of community] has always been extremely community minded. That's what I love about it. You've only got to look at the Neighbourhood [Centre] program."

The CR program was an extension of the dynamic at work within the wider community. The diversity, engaging people at various stages of their program, encouraging peer support all go to creating a health-positive environment. The team indicated that in 'linking' people up, particularly a new-referee with an established CR participant, has impacts on adherence and outcomes. In describing their approach, one of the team stated:

"...and they you try to match them up. You know, get [them] on the bike near that one that's been here for a while and then they start talking."

An example of how this plays out is recounted in the following exemplar:

"This morning one lady was on the treadmill and a gentleman was ready to do his part and basically he wouldn't do it away from this lady because he wanted to talk to her. They egged each other on. He'd say, 'I'll do 15 minutes if you'll do 15 minutes.'"

The creation of community is evident in the journeys the CR participants make: From reluctance about attending CR, to engagement for long-term change. This is aptly demonstrated in the following anecdote:

"I had a lady at [name of CR program] who joined cardiac rehab. At first she said she wasn't going to join but she came in for the assessment anyhow. She wasn't going to do any exercise or anything but at the end of the assessment she said she was going to join. She's now been with us 3 years [as a volunteer]."

5.8.4 Challenging 'curative ideations'

The group as a whole identified the need to challenge the notion that PCI lead to cure. One participant immediately repeated what she felt was the common misunderstanding regarding this issue:

"The main thing is that if we can get them in the door then we can fix them."

In their context, this assumption leads to a denial of the need to engage in secondary prevention. They linked this to the need for effective communication by healthcare providers in the acute care setting where the use of simplistic information regarding the disease process can lead to misleading or partial understanding. By way of example, they conveyed some common responses from patients upon being told they are not 'cured':

"They say, 'Nobody's actually told me that before.'"

"They say, 'Oh, is that what that means', or, 'I didn't know that.'"

The team agreed that engaging the participants in this dialogue is important for facilitating secondary prevention uptake. One exemplar illustrates this well with the patient demonstrating reluctance to attend CR due to her assumption that she was cured.

"I had a lady this morning who had no intention of coming to cardiac rehab because she thought she was fixed until I pointed out to her that no, she wasn't fixed. She said, 'Oh, OK.' And it was just that realisation that she's not fixed and she does need to look after her weight and give up smoking, exercise and do all those things..."

5.9 Mapping the findings to the Chronic Care Model elements

This chapter combines data from three key stakeholders in the PCI journey. While findings were largely specific to the participants' individual position, themes emerged elucidating the patient journey and the challenges faced to engage in the modification of risk for further CHD. As a method of embedding the findings in the conceptual framework of this thesis, findings were mapped to the six elements of the CCM, discussed in Chapter Two. Figure 5.6 is a copy of the CCM figure incorporating the 'patient journey' from Chapter Two. These elements include:

- Resources and policies
- Organisational health care
- Self-management support
- Decision support
- Delivery system support
- Clinical information systems.^{12, 13}

It is important to see the integration existing between these elements. While engaging individual elements of the CCM has been effective, it is in their collaboration that significant outcome achievements are made.¹² Discussion is set out according to the elements of the model. Figure 5.7, over page, outlines the themes and CCM elements.

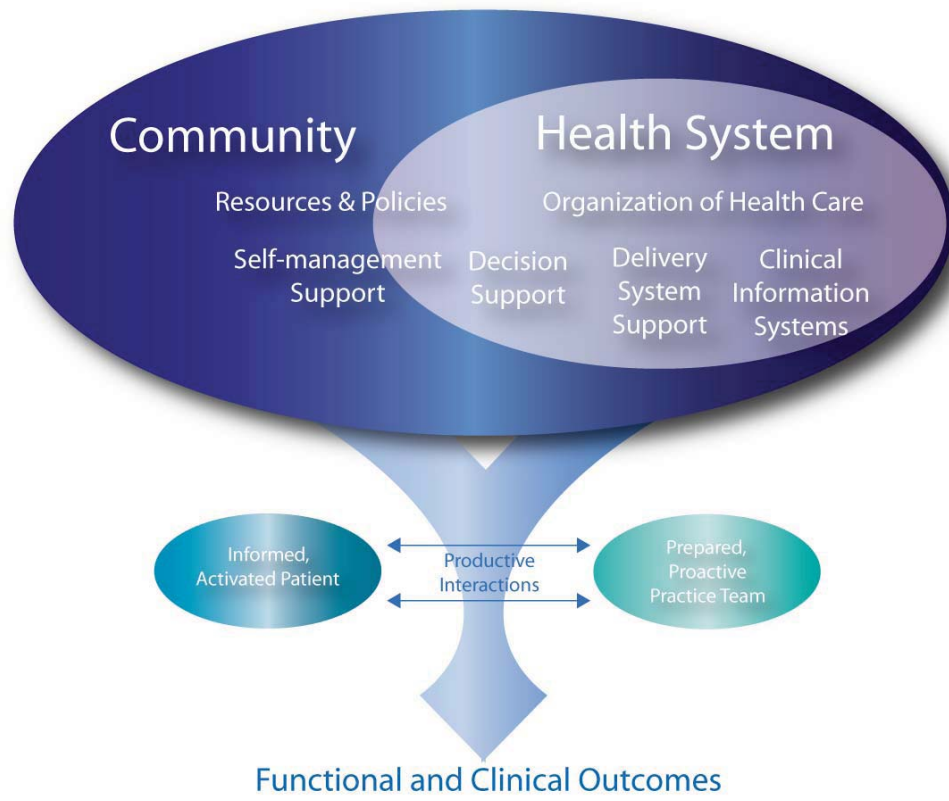


Figure 5.6 – The Chronic Care Model



Figure 5.7 – Integrated themes flowing from the integrated data

5.9.1 Resources and policies

Each sample in this study discussed resource shortage as a barrier to improving care and outcomes. It was expressed as sympathy for healthcare providers, in particular nurses, by the patient participants: Putting aside their own needs in order to reduce the burden on an already stretched system. Healthcare providers, on the other hand, expressed frustration at not being able to engage in what they saw as person-centred care. In particular these resources included time, information technology, personnel, and systems.

Strategies to improve outcomes emerged from each sample. Linked to resources and communication, suggestions were varied depending on the perspective of the participants. Methods of consistent reinforced communication that demystify the journey, engage carers and family and provide linkages between settings and providers were suggested.

Health care policy is an overarching construct in improving care, particularly for those experiencing chronic and complex conditions.^{13, 14} The policy conditions contribute to the healthcare environment and either facilitate or hinder healthcare outcomes. Policy issues affected all the participants. Areas of concern included providing appropriate public health information, service funding and workforce, consistency in care standards, access to and integration of health services, and transition from acute care to secondary prevention.

5.9.2 Organisational healthcare

Patients, their family and carers are required to negotiate several healthcare organisations leading up to an acute admission, during the admission and post-discharge. Patients spoke of the barriers to negotiating emergency transport services including a lack of understanding of the nuance of CHD symptoms. Carers, however, discussed issues concerning engaging healthcare professionals in general, and diversity in the quality of information and service provided.¹⁵ Parallel to these two groups, healthcare providers expressed frustration at the silo nature of clinical settings citing it as a barrier for effective behaviour change. By 'silo' it is meant that clinical settings are often exclusively aligned to disease

disciplines, *i.e.* cardiology, respiratory, gastroenterology; and care paradigms, *i.e.* acute medical or surgical versus chronic, primary care, preventative or palliative approaches. This issue has been debated for some time, particularly in the US where the cost of care and complexity of its delivery are highlighted.^{16, 17} Within the Australian state of NSW, the Garling Report highlighted the need to reengineer care to avoid 'silos' of care in favour of more integrated measures.¹⁸ Similar recommendations were made by the National Health and Hospital Reform Commission's¹⁹ report calling for "...continuity and integration of care through collaborative team models of care" (pg. 7). The need for health services reform to ensure appropriate care throughout the cardiovascular patient journey underscores this issue and was particularly important for the healthcare providers in improving methods of communicating vital health information.

5.9.3 Self-management support

Self-management is central to sustainable health-behaviour change and risk reduction. Traditionally, nurses and other healthcare providers have relied on didactic methods of patient education to convey complex behaviour change messages.¹³ While such approaches can provide important information, it is rarely effective in changing long term health behaviour.¹³ Partnership between healthcare providers, patients and carers/family are essential to improve care outcomes because they offer the greatest opportunity to support treatment adherence.²⁰

In each sample, participants expressed the belief that communication is a vital component in achieving positive patient outcomes. Patients and healthcare providers during in-depth interviews underscored this in terms of the patient journey. The passivity patients experienced has been found elsewhere looking at the experience of patients diagnosed with acute coronary syndrome. Radcliffe and colleagues²¹ focused on the patient's experience and expectations of primary angioplasty and found patients were generally satisfied with the experience yet felt passive in receiving treatment.²¹

The carers focused on the patients and supported the need for consistent information reinforcement: congruent with the patient interview data. However, they also emphasised the need for provider-carer/family communication to be open and consistent; in particular, negotiating the acute care setting's facilities and policy.²² For carers, the effect of the hospitalisation, and events leading up to it, upon the dynamics of their relationship with the patient, was challenging.²² Figure 5.8 illustrates the effects on the dyad as derived from the carers' focus group data. Compounding this challenge, the carers took on greater responsibility to assist the patient in engaging secondary prevention and risk modification.²² As such, carers are a vital and often underutilised self-management resource. Paradoxically, they expressed a certain helplessness during the acute care admission particularly when they perceived a lack of adequate information to support them.²²

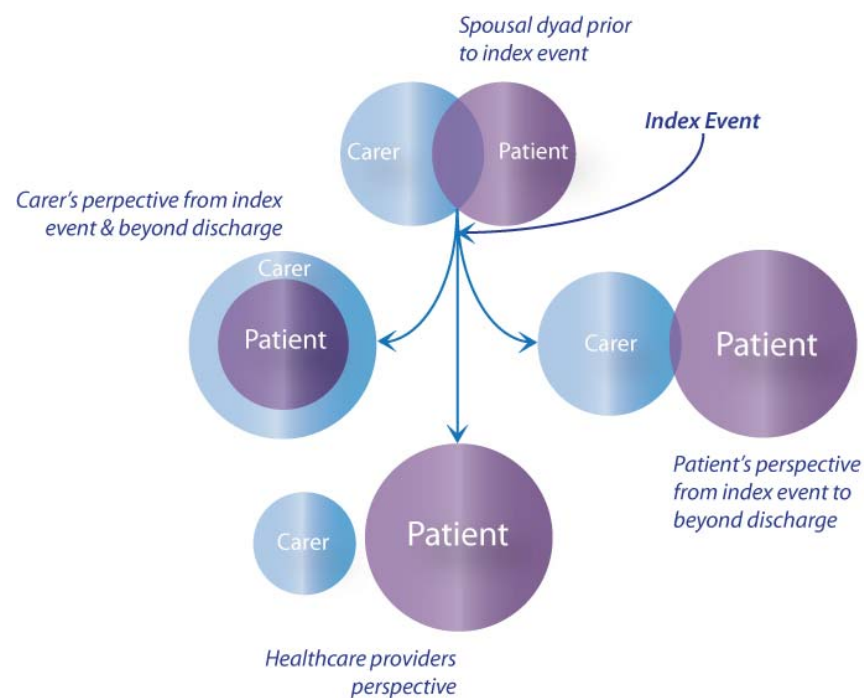


Figure 5.8 – Challenges to patient-carer relationship due to perceived competing perspectives²²

The setting where patients and carers²² found the greatest support for health behaviour change was the CR setting. It is important to note the bias this introduces into the findings as people attending CR may be motivated to change and not reflect the wider PCI patient population. The CR team particularly

emphasised the approach to communicating vital cardiovascular health information. Regular visits by patients to the CR program are a key element in this success. Wagner and colleagues state that regular contact between providers and patients is essential for the management of chronic illness.¹³ This contact is not restricted to face-to-face interactions, rather other approaches, such as telephone or web-based solutions, could be effective.¹³ This is particularly important for populations experiencing issues of access to secondary prevention services.²³

A barrier to self-management in this patient population was identified by the healthcare providers. Patient's perceptions that the PCI procedure was a curative intervention alarmed health professionals. This patient view led to an overly optimistic assessment of risk, and inversely, less inclination to engage in behaviour modification.²⁴ Ensuring health information is consistent and reinforced was identified as integral to enabling self-management.¹³

The results from this study show that patients want to be actively engaged in their care; carers desire to have greater cooperation with healthcare provision; and healthcare providers are seeking more innovative approaches to enabling this cooperation. Above all, it is critical to ensure patients are empowered, engaged and supported in their healthcare including the long-term management of their conditions.²⁵

5.9.4 Decision support

Consistency of treatment and information were important issues for participants in this study. The diversity of practice was identified by the healthcare providers as a barrier to care. While there are clinical practice guidelines covering medical-related aspects of PCI care,²⁶⁻²⁸ nursing specific guidelines are missing.^{22, 29}

Evidence-based clinical practice guidelines provide an important support to guide healthcare providers and patients in making treatment decisions.^{12, 13, 25} While controversy continues to surround their implementation,³⁰ their role in supporting the decision making in chronic illness management is emphasised.¹³

5.9.5 Delivery system support

The ongoing challenges to improving secondary prevention uptake leading to risk reduction underscores the need for a closer look at how healthcare for people undergoing PCI is delivered. Patients and carers spoke of the gaps between the acute care setting and CR. Short length of stay was an important identified factor. Carers experienced this particular issue in paradoxical terms: the severity of condition yet seeming simplicity and speed of treatment followed by discharge.²² Effective communication and continuity of care between the acute care setting and post-discharge services are important.

5.9.6 Clinical information systems

Engaging in effective communication between healthcare providers across institutional boundaries was raised as a barrier for effective outcomes. In particular, the role of the general practitioner as a primary health provider was identified. Moves toward greater sharing of patient medical information across institutions are underway and will ultimately be enhanced through the wide spread adoption of electronic medical records.^{31, 32} The CCM identifies this as an important component to effective management of chronic illness.^{12, 13} Given the complexity of engagement with numerous health services, improving clinical information sharing would improve in the management of conditions and the health-partnerships between the patients, providers and systems.

5.9.7 Study Limitations

The limitations often observed in all qualitative research is shared by this study. The reliance on participants to freely give accurate accounts of experiences and perceptions are limited. Being able to recall particular circumstances and feelings may have been hampered by the passage of time. In particular, the carers' focus groups involved some participants whose partners were up to 18 months post-discharge.

The sample sizes were small further limiting the findings. In particular, only one group interview was held with the CR team as a majority of the team attended the interview. However, due to the nature of the issues addressed by the

participants, data saturation, identified as observing no new themes emerging from each of the data sources, was obtained. The aim of the research was not to draw conclusions generalisable to other patients, carers and healthcare providers experiencing PCI care. Rather, to provide a depth of understanding enabled by participants giving voice to their experiences and perceptions.

Regarding the carers' sample, several groups were not represented in this sample and therefore were not able to contribute their experience: male carers of PCI patients, non-English speaking carers, those who did not attend CR, and those unable to attend due to the timing of the focus groups. As such, the voice unique to these other groups of potential participants was not included.

5.9.8 Study Strengths

This chapter has explored a complex set of issues using methods that were appropriate and pragmatic for each stakeholder group. The use of in-depth interviews for patients and healthcare providers enabled a confidential forum to voice perceptions and experiences, and freedom of expression that other methods may have constrained. Whereas for carers, the focus group method provided them with an opportunity to compare and contrast their experiences with others as well as feeling validated. This was an effective tool in uncovering mutually held perspectives as well as highlighting the diversity that naturally exists in groups. As a result, the information provided was very useful to the service setting in which the study was undertaken. These data have also provided insight into the caring phenomenon within the context of PCI care, which has not previously been reported. Similarly, the CR team was able to engage the group dynamic which yielded rich data to inform the study.

The strength of this multi-method qualitative study is in the way the findings synthesise to form a level of consistency and coherence enabling a broad and inclusive picture to emerge of the patient journey of those undergoing PCI. While the samples were divergent, the shared experience of the patient journey led to a congruency in the data to improve approaches in PCI care.

5.10 Conclusion

The patient journey of people undergoing PCI is complex and yet there are commonalities between how patients, carers and healthcare providers view that journey. Developing interventions that will impact positively on health outcomes will need to incorporate insights from these themes. Integration between healthcare settings and services will need to encompass the patient journey. Healthcare providers will need to embrace partnerships with patient and their family and carers in supporting transition of the acute care setting and adjustment to the chronic nature of CHD. However, it is the reorientation of the healthcare system including resources and policy which will need the greatest investment to support the needed paradigm shift from 'silo' healthcare settings to clinical integration across the patient journey. The current National Health and Hospital Reform agenda reflects the findings of this study and has put forward recommendations that would address the themes raised by the participants of this study.¹⁹

An important aspect of engaging in healthcare reform is basing clinical practice on sound evidence and supported by rigorous clinical practice guidelines. As discussed in previous chapters, guidelines for nursing practice in PCI care are sparse in spite of the frequency and importance of the role. Chapter Six will report the findings from a purpose developed survey of the beliefs, values and practice standards of a group of Australian and New Zealand cardiovascular nurses.

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Chapter Six

Interventional Cardiology - Nursing
Practice Survey: *Nurses' beliefs,
values and standards regarding PCI
care*

Chapter 6 – Interventional Cardiology - Nursing Practice Survey: Nurses' beliefs, values and standards regarding PCI care

6.1 Introduction

Chapter Three of this thesis presented the literature supporting PCI nursing care. Diversity of practice and lack of clinical practice guidelines characterised the findings. In spite of this, nurses play an important role in optimising patient outcomes following PCI. The healthcare provider findings from Chapter Five further highlight the impact clinicians, particularly nurses, have on patient care together with the challenges faced following PCI. Challenges include: technological innovation, resulting in decreased lengths of stay, which challenge traditional models of nursing care. In turn, implementing ongoing assessment of care standards is integral to improving outcomes.¹ In order to determine the impact of nurses' care on the barriers and facilitators for improving outcomes, a description of the values, beliefs and standards as perceived by nurses is important.

This chapter will report the findings from a prospective online survey of cardiovascular nurses in Australia and New Zealand. Issues pertaining to participants' beliefs, values and practice were explored. The findings from this chapter inform the identification of barriers and facilitators to effective interventions for PCI nursing care.

6.2 Evidence-based practice and practice guidelines

In spite of the high level evidence to guide optimal medical care constituted into several clinical practice guidelines for management of PCI, ²⁻⁵ there are less explicit clinical practice guidelines to support quality nursing care.

This study is one element of a systematic approach to guideline development using the following sequential steps:

1. An integrative literature review;⁶
2. A consensus conference;⁷
3. A national survey (this current report);⁸ and
4. Consensus recommendation for guideline development using a modified Delphi technique.⁹

Following an integrative literature review,¹⁰ existing evidence for clinical practice guidelines for management of PCI care was identified. Strategic recommendations for practice were then developed during an initial consensus development workshop consisting of 41 senior cardiovascular nurses, representatives of professional organisations, researchers and consumer representatives. Key findings of the literature review included the limitations of existing studies and the need for nursing practice guidelines for PCI care.⁹

6.3 Aim

This study sought to describe the nursing practice standards, work place beliefs, values and educational needs for PCI care of cardiovascular nurses in Australia and New Zealand.

6.4 Method

6.4.1 Design

This study used a prospective descriptive survey development and implementation design. An online platform was chosen to capture data from a larger geographical region with limited funding.

6.4.2 Item generation

Survey items were generated from an integrative literature review reported in Chapter Two,⁶ and a consensus conference conducted as part of the guidelines development process to be discussed in Chapter Seven. Thirty-two participants identified priorities⁷ for PCI in conjunction with current clinical guideline documents.^{2,3,11} An initial bank of 128 items was identified from these processes. An expert panel was convened ($n=12$) separately from the consensus conference panel consisting of expert cardiovascular clinicians and researchers. The panel was asked to complete the survey online and rate the quality of the survey in terms of face and content validity, the time required to complete the survey as a corollary for responder burden, and ease of navigation and layout. Based on feedback, a reduction to 116 items was made.

6.4.3 Survey design

The survey has six sections in addition to demographic items: Post-PCI nursing practice (4 items); healthcare delivery values (16 items); clinical practice standards (6 items); knowledge and capacity (14 items); adjustment and recovery (46 items); and clinical practice environment (30 items). The Post-PCI nursing practice section included categorical response options while all other sections used a ten-point Likert item (1=strongly disagree or low priority/perception, while 10=strongly agree, high priority/perception).¹² See Table 6.1 for categorical items. The rationale for the choice of items emerged from the consensus conference and the identification of six key issues of concern.⁷ This meeting concluded that existing guidelines addressed many aspects of PCI care.^{2-4, 11, 13} Therefore items included in the survey related to nursing care specific items, hence the lower number of items in the post-PCI

nursing practice, healthcare delivery values and clinical practice standards sections. At the conference, many of the clinicians identified that current practice patterns, including primary angioplasty and inter-hospital transfers, challenged providing care, particularly relating to secondary prevention. Further, they identified that many organisational aspects impacted on their potential to provide care. Therefore, these items were explored in the survey to inform guideline implementation strategies of the ACNC and CNC-CSANZ. A decision to use a 10 item Likert scale was based on the notion that lower numbers of items may increase mean scores compared with 10 item scales.¹⁴

Table 6.1 – Categorical variables

Variable
Optimal post-procedure ambulation time
<ul style="list-style-type: none"> • < 1 hr • 1 hr • 2 hrs • 3 hrs • 4 hrs • 5 hrs • 6 hrs • 8 hrs • > 8 hrs
Most appropriate interventional to achieve haemostasis (ranked)
<ul style="list-style-type: none"> • Manual compression • Mechanical compression • Arterial closure device • Sandbag
Optimal elevation of head of bed post PCI
<ul style="list-style-type: none"> • Flat • 10 – 19 Degrees • 20 – 29 Degrees • 30 – 39 Degrees • 40 – 49 Degrees
Drugs of choice for controlling pain during sheath removal
<ul style="list-style-type: none"> • Mild opioid • Mild opioid + sedative • Non-opioid • Non-opioid + sedative • Strong opioid • Strong opioid + sedative

Web-based survey methods have developed rapidly over the past two decades.^{15, 16} There is evidence that online approaches improve response rates¹⁵ and provide access to samples difficult to access otherwise.¹⁷ However, design of the survey becomes an important issue with complex web-page layout leading to poorer response or increased drop-out rates.¹⁸ Sample bias are among the limitations of the method.¹⁹ In particular, the degree to which web-based technology has penetrated the target population may bias the sample toward information-technology literate participants.¹⁶ In particular, the sample for this chapter was drawn from a stratum of nurses familiar with online environments as these technologies pervade the cardiovascular clinical setting. Data security has been raised as an issue due to increased risk from criminal activity.¹⁶ For this survey, data encryption was employed to protect the information provided by participants. Notwithstanding, the enduring nature of internet activity should be taken into consideration when designing web-based methods.¹⁶

Both Australia and New Zealand support a system of universal health care coverage. A cross-sectional on-line survey design was used to administer the survey. Australia and New Zealand do not have a national register of cardiovascular nurses. Respondents therefore, were targeted through two cardiovascular nursing organizations, the Australasian Cardiovascular Nurses College (ACNC) and the Cardiovascular Nurses Council - Cardiac Society of Australia and New Zealand (CNC-CSANZ). It is estimated that these two organisations have a membership of 145 with many members belonging to both organisations. An email was sent to the Executive of each organisation who arranged for each member with a valid email address to receive the invitation. The survey was not restricted to members of professional organizations. In order to give other cardiovascular nurses an opportunity to participate, we used a strategy for gradual or snowball sampling by inviting the respondents to pass on the invitation to other colleagues with whom they worked.²⁰

When the respondents completed the online survey, no identifying information was collected which enabled anonymity for the respondents. Ethical approval was obtained from the University Ethics Committee.

6.4.4 Pilot phase

Following establishing content validity a pilot ($n=12$) was undertaken to determine clarity and estimate completion times. The average time taken to complete the survey was 22 minutes. A short evaluation questionnaire was administered with the items to obtain feedback from pilot respondents. Only minor changes to wording and item grouping were made following the pilot. In particular, attention was applied to issues relating to the clarity and meaning of the items.

6.4.5 Data Collection

The survey was administered via a commercial online survey platform. The use of online survey data collection methods has been shown to compare favourably with more traditional mail-based collection methods, decreasing cost and time for completion (for both researcher and respondent), and enhancing completion rates and data quality.²¹ In particular, the advantage of accessing a sample over a vast geographical area²² meant collecting quality data at a lesser cost of mail-based survey methods. This method also provided greater anonymity for the respondents as no identifying information was collected at any stage.

6.4.6 Data Analysis

Following the end of the data collection period, the data was downloaded into SPSS™ Version 15 for analysis. Descriptive statistics including: frequency; mean and standard deviation, were used to analyse the data. To compare perceived priority of practice and perceived implementation of that practice, the Wilcoxon Sign-Rank test was used as data were not normally distributed. The internal consistency was assessed for each section, using Cronbach's alpha.

6.5 Results

Data were collected from February 2008 to March 2009. This survey was kept open for an extended period of time to maximize completion around a number of target cardiovascular nursing meetings. A total of 148 respondents (Australia

$n=121$, 81.1%; New Zealand $n=11$, 7.4%; country of origin missing data $n=17$, 11.5%) attempted the survey with 110 (74.3%) completing all items. The internal consistency of items in the five of the six sections is provided in Table 6.2. Due to the nature of the data for section 6, (post-PCI nursing practice), internal consistency were not calculated. For example, this section asked specific and discrete questions, such as time to ambulation, head of bed elevation and sheath removal analgesia.

Table 6.2 - Internal consistency of survey items

Section	Item n	Cronbach's alpha
Health care delivery values	16	0.88
Adjustment and recovery	46	0.91
Clinical practice standards	6	0.65
Clinical practice environment	29	0.95
Knowledge and capacity	14	0.89

All respondents were registered nurses, with a mean age of 42 years (SD 9.81) and a mean of 12.31 years (SD 7.61) of cardiovascular nursing experience. A total of 118 (86.8%) of the respondents reported having interventional cardiology services on site at their facility. 47.4% ($n=64$) of respondents were working within cardiac medical settings (coronary care unit, cardiac high dependency unit/step-down, and cardiac medical units). Sixty-two percent ($n=85$) of respondents had completed a post-graduate qualification. Demographic data are summarised in Table 6.3.

Table 6.3 – Respondent characteristics

Variable	N	% or Mean (SD)
Age		42.0 (9.81)
Sex (% female)	117	86.0
Australia as Country of Origin	131	81.1
Interventional cardiology service in your workplace (% yes)	118	86.8
Years in cardiovascular sub-specialty	136	12.31 (SD 7.61)
Pattern of employment		
• Up to 20 hrs per week	40	29.4
• 20 to 40 hrs per week	88	64.7
• Greater than 40 hrs per week	8	5.9
Employment designation		
• Registered Nurse	41	30.1
• Clinical Nurse Specialist	24	17.6
• Clinical Nurse Consultant	18	13.2
• Nurse Educator / Clinical Nurse Educator	12	8.8
• Nurse Unit Manager / Nurse Managers	19	13.9
• Academic / Researcher	21	15.5
Cardiac sub-specialty		
• Cardiac medical units (CCU, 'step-down' & medical)	64	47.4
• Cardiac Catheterisation Laboratory	25	18.5
• Cardiac surgical units	4	3.0
• Cardiac outpatient services (rehabilitation etc)	27	20
Post-graduate cardiac qualifications		
• None	30	22.1
• Hospital certificate (institution based award)	21	15.4
• Graduate certificate	36	26.5
• Graduate diploma/Masters Coursework	38	27.9
• Higher research degree (PhD, DNSc, Masters)	11	8.0

6.5.1 Post-PCI Nursing Practice

A total of 110 (74.3%) of all respondents completed these items. A wide distribution of responses was noted in three out of four of the items in this section (time to ambulation, sheath removal pain management and patient positioning) as shown in Table 6.4. This indicated a diverse range of practice among the respondents. The second item, methods for achieving haemostasis, may be explained by variation in local practice due to other factors such as interventional cardiologist choices and hospital policy determining access to

devices. The time to ambulation following post-sheath removal showed greater range of responses. Responses ranged from less than one hour, to greater than eight hours, with the majority of respondents selecting four hours (46.4%). Likewise, pain management choices also varied with 56 (50.9%) of respondents clustering around the mild opioid analgesia (\pm sedation) option.

Table 6.4– Post-PCI nursing practice section results

Variable	n	%
Optimal post-procedure ambulation time		
• < 1 hr	1	0.9
• 1 hr	3	2.7
• 2 hrs	12	10.9
• 3 hrs	12	10.9
• 4 hrs	51	46.4
• 5 hrs	2	1.8
• 6 hrs	17	15.5
• 8 hrs	9	8.2
• > 8 hrs	3	2.7
Most appropriate interventional to achieve haemostasis (ranked)		
• Manual compression	53	48.2
• Mechanical compression	40	36.4
• Arterial closure device	16	14.5
• Sandbag	1	0.9
Optimal elevation of head of bed post PCI		
• Flat	47	42.7
• 10 – 19 Degrees	19	17.3
• 20 – 29 Degrees	24	21.8
• 30 – 39 Degrees	17	15.5
• 40 – 49 Degrees	3	2.7
Drugs of choice for controlling pain during sheath removal		
• Mild opioid	30	27.3
• Mild opioid + sedative	26	23.6
• Non-opioid	20	18.2
• Non-opioid + sedative	12	10.9
• Strong opioid	11	10.0
• Strong opioid + sedative	11	10.0

'Drug of choice for controlling pain during sheath removal' based on the WHO Pain Ladder.²²

6.5.2 Clinical Practice Standards

These items were intended to measure practice standards from two perspectives: what the respondents considered optimal practice, and what actually happened in their workplace. This was considered to be important in measuring an evidence practice gap. The lowest rated item, was 'quality of communication with patients' general practitioners', ($n=112$, mean 5.94, SD 2.54). All items asking participants to rank their perceived level of priority and perceived level of implementation in their workplace were statistically significant. Nursing practice issues covered included discharge planning, assessment, documentation and patient education. See Figure 6.1

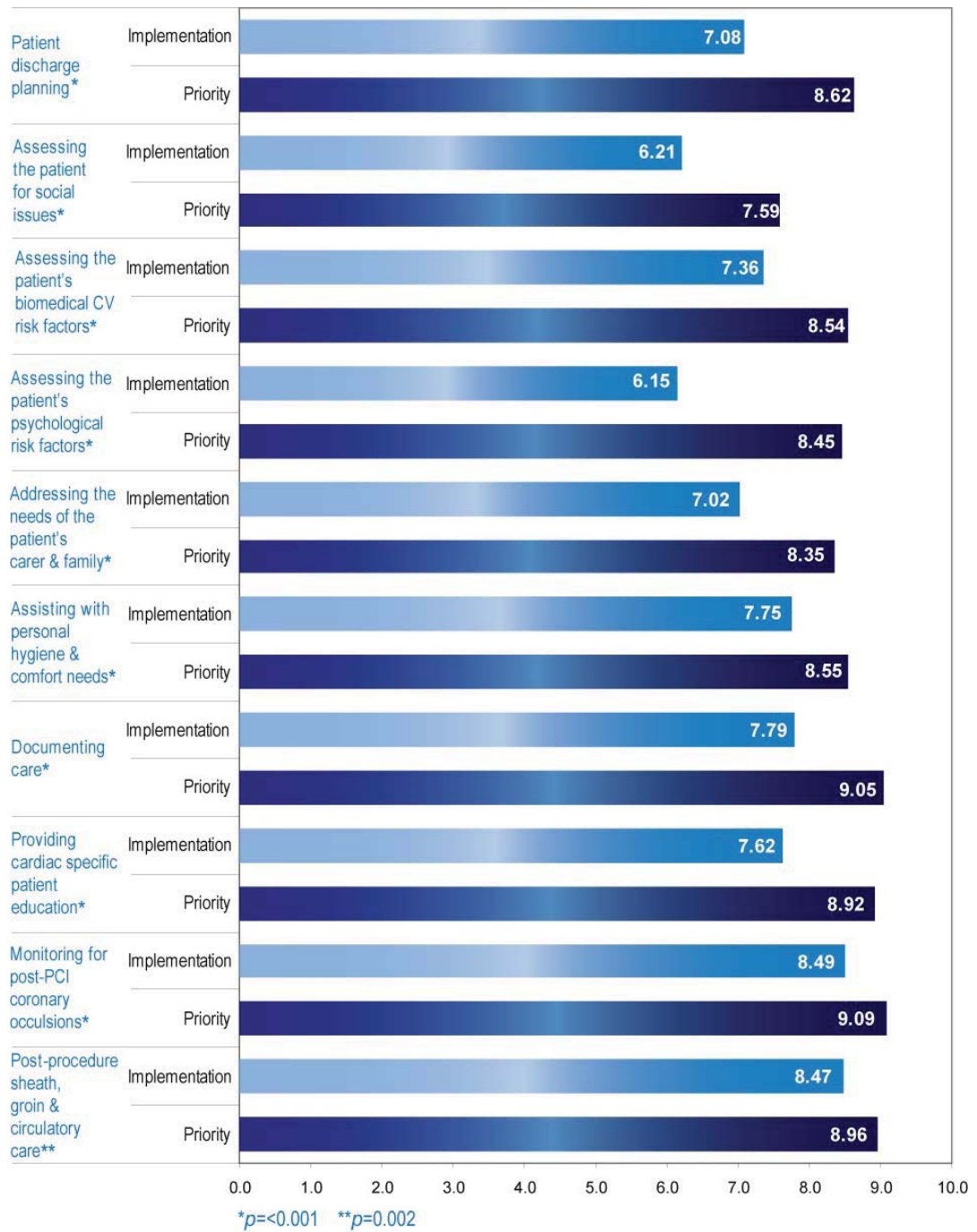


Figure 6.1 - Wilcoxon Signed Rank test (mean sum rank) - priority and implementation of nursing practice (n=110)

6.5.3 Healthcare Delivery Values

Respondents were asked to rate their perception of the level of evidence to support PCI nursing care activities. These were then ranked highest to lowest in terms of perceived level of evidence. See Table 6.5. Cardiac specific risk factor modification was ranked the highest ($n=115$; mean 8.35, SD 1.9). In contrast, psychosocial assessment of the PCI patient was ranked the lowest ($n=115$; mean 5.77, SD 2.54).

Table 6.5 – Healthcare Delivery Values – Respondent ranked perception of the extent of existing evidence for PCI-specific nursing care ($n=115$)

Rank	Variable	Mean (SD)
1	Cardiac specific risk factor modification	8.35 (1.90)
2	Cardiac rehabilitation	8.21 (2.05)
3	Methods for achieving haemostasis	7.19 (2.32)
4	Post-PCI procedure complication monitoring	6.90 (2.32)
5	Arterial sheath removal	6.90 (2.36)
6	Post-PCI education	6.80 (2.32)
7	Post-PCI discharge planning	6.42 (2.26)
8	Pre-PCI procedure orientation/education	6.37 (2.21)
9	Time to ambulation post PCI sheath removal	6.22 (2.52)
10	Psychosocial assessment of the PCI patient	5.77 (2.54)

6.5.4 Knowledge and capacity

As with previous sections, the highest ranked need for further education for nurses was the psychosocial aspects of care ($n=115$; mean 5.19, SD 2.94). The lowest ranking was the need for cardiac rehabilitation ($n=115$; mean 3.81, SD 2.93). Respondents highly endorsed cardiac rehabilitation in their responses health outcomes. See Table 6.6.

Table 6.6 - Nurses' perceived need for further education to support their practice (n=115)

Rank	Variable	Mean (SD)
1	Psychosocial assessment of the PCI patient	5.19 (2.94)
2	Post-PCI discharge planning	4.26 (2.84)
3	Post-PCI procedure complication monitoring	4.13 (2.95)
4	Time to ambulation post PCI sheath removal	4.12 (2.81)
5	Methods for achieving haemostasis	4.10 (2.70)
6	Cardiac specific risk factor modification	4.05 (2.89)
7	Post-PCI education	4.01 (2.89)
8	Pre-PCI procedure orientation/education	3.90 (2.87)
9	Arterial sheath removal	3.84 (2.74)
10	Cardiac rehabilitation	3.81 (2.93)

Levels of knowledge and capacity to provide comprehensive care were rated highly: Providing care to heart disease patients in general (mean 8.44, SD 1.38) and PCI care specifically (mean 8.43, SD 1.58). Awareness of theoretical issues in promoting self-management was rated the lowest (mean 5.47, SD 2.60).

6.5.5 Adjustment and recovery

Two items measured the appropriateness of the acute care setting for delivering patient education. The first item, listed in Table 6.7, simply asked respondents to rate their agreement with the statement, "Patient education is best conducted during the acute care admission" ($n=129$; mean 5.28, SD 2.43). The second item, listed in Table 6.8, asked respondents to rank a series of patient settings for their appropriateness for delivering patient education. The acute care setting was ranked second-lowest ($n=129$; mean 7.0, SD 2.65) marginally in front of private health/lifestyle/fitness centers ($n=129$; mean 6.84, SD 2.83). CR was ranked the most appropriate setting for patient education ($n=129$; mean 9.21, SD 1.62)

Table 6.7 - Patient education-related perceptions and the chronic nature of CVD (n=129)

Variable	Mean (SD)
Patient education related items	
Patient education is best conducted during the patient's acute care admission	5.28 (2.43)
Patient education can be achieved by giving patients accurate health literature	6.33 (2.46)
Counseling based interventions are effective tools in assisting nurses with patient education	7.41 (1.81)
Patient education strategies using reading materials and nurse-to-patient discussion are highly effective	7.41 (1.95)
Assessing health literacy is an important consideration when engaging in patient education	8.70 (1.27)
Assessing culturally specific needs of the patient is an important consideration when engaging in patient education	8.78 (1.38)
CVD as a chronic illness	
On the whole, patients understand that they have a chronic condition requiring lifestyle adjustment	5.64 (2.29)
I believe people undergoing PCI need to adapt to living with a chronic illness	8.19 (2.01)
Understanding the experience of living with a chronic illness should be a high priority for cardiovascular nurses	8.56 (1.45)

Table 6.8 - Ranked appropriateness of settings for delivering patient education (n=112)

Rank	Variable	Mean (SD)
1	Outpatient cardiac rehabilitation program	9.21 (1.62)
2	Outpatient Nurse-Practitioner clinic	8.54 (2.33)
3	General Practice (GP)	8.38 (2.18)
4	Practice Nurse clinic attached to a GP	8.24 (2.41)
5	Outpatient cardiology clinic at acute care setting	8.11 (2.16)
6	Preadmission clinic	7.75 (2.71)
7	Community nursing service	7.71 (2.53)
8	During admission to acute care cardiology unit	7.00 (2.65)
9	Private health, lifestyle or fitness centre	6.84 (2.83)

6.6 Discussion

The respondents in this study were younger than the mean for both Australian (45.1 years; as of 2005) and New Zealand (35% between 40-49 years as of 2004) nursing populations. Similarly, this sample had a higher percentage of males as nurses than the wider nursing population in both countries (Australia; 7.9% as of 2005; New Zealand: 6.4% as of 2004). Both are in keeping with data from other Australian critical care areas where the average age is 41.5 years, with a male population of 11%. Only 25% of those attempting the survey did not complete.

6.6.1 Variation in post-PCI practice and disparity in consistency of practice implementation and policy

Diversity in practice standards is apparent in this study. A range of perspectives on post-procedural ambulation time, head of the bed elevation, and types of pain relief administration for femoral sheath removal, have also been reported in other studies.²²⁻²⁴ The variability in responses is also underscored by the discrepancy between their perceived level of priority and level of implementation of a particular practice, as seen in Figure 6.1. For each aspect of care included in the survey, there was a statistically significant difference between perceived priority and level of implementation indicating a gap between desire for delivering high levels of quality care and actual practice patterns. These were issues flagged in the initial consensus conference and confirmed in the survey findings. Further research into challenges, barriers and equally importantly, the facilitators in implementing best practice, is warranted by these observations.

6.6.2 Time to ambulation

The range of the responses in 'time-to-ambulation' is in keeping with published studies. Heterogeneous populations,²⁵ a range of anticoagulation strategies^{26, 27} and methods of achieving haemostasis challenge evidence to inform practice guidelines.²⁷

6.6.3 Patient positioning

Similarly, the results of this survey regarding position of the patient following a PCI procedure were diverse. In this study, responses varied regarding the angle of the head of bed with a high proportion of respondents (42.7%) choosing to lay patients flat. As found with time to ambulation, recommendations on patient positioning have limited evidence investigating a range of potential strategies to support practice.²⁸

6.6.4 Sheath removal discomfort management

A range of preferences for managing femoral sheath removal discomfort was evident.^{29, 30} The findings from our study indicate that nurses have varying practice preferences and that their preferences, for milder forms of analgesia with or without sedation, have not been adequately studied or supported by research evidence. To improve patient outcomes, further investigation into appropriate patterns of sheath removal pain management is required.²⁹

6.6.5 Need greater emphasis on psychosocial aspects of care

There is a greater understanding of the interplay of depression and low socioeconomic status with cardiovascular pathology as well as confounding recovery and behaviour modification.^{2, 11, 31, 32} Respondents reported having less knowledge and confidence and therefore diminished capacity and comprehension of the links between psychosocial issues and heart disease. As a consequence, guidelines recommend all patients admitted with coronary heart disease be screened for depression.^{11,33} Survey findings revealed that respondents require more knowledge and competence at assessment, first-line intervention and referral for these issues.

6.6.6 Cardiac rehabilitation seen as a valuable and effective tool

In Australia and New Zealand CR is widely endorsed as a valuable secondary prevention strategy and, when offered by government funded institutions, is free of charge.^{2, 13} Despite these factors, participation rates remain low.³⁴ Respondents ranked CR highly as an effective tool in improving health outcomes

likely reflecting high availability and policy recommendations. In spite of ranking CR highly, issues related to prioritising discharge planning, patient education and communication with general practitioners were rated lower. These factors impact on hospital readmission, medication adherence, and quality of post-discharge follow-up care and potentially require greater attention.³⁵

6.7 Strengths and Limitations

There are several limitations in interpreting these data due to the use of self-report survey design. The survey categories may be seen as arbitrary but were developed *a priori* based on the literature review and consultation.^{6,7} In spite of this, items in each section demonstrated a high internal consistency. Due to the snowball sampling method it is not possible to accurately confirm response rates. Further, there is a potential for responder bias. The online platform may have excluded those who have little or no access to the internet. To maximise participation, steps were taken to ensure anyone who chose to complete the survey via a hard copy were undertaken. Positioning of items in a long survey may have resulted in lower response rates to individual items. In spite of these limitations, our survey data confirm that variation in PCI nursing practices exist and are not always consistent with recommended practice.

6.8 Conclusion

Emerging technologies and practice patterns challenge cardiovascular nurses to deliver appropriate, evidence-based care. This survey highlights the diversity of practice among a sample of Australia and New Zealand nurses and emphasises the need for standardized, clinical practice guidelines to support practice. To date, in Australia and New Zealand, institutions have formulated their own nursing practice standards, limiting benchmarking and comparison of clinical outcomes. Data from this survey provides an important baseline for developing and implementing evidence-based guidelines in Australia and New Zealand.

Chapter Seven follows on from these findings by reporting the results of developing a set of PCI nursing clinical practice guidelines. The method and results of the process will be discussed prior to presenting the full guidelines document.

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Chapter Seven

Percutaneous coronary intervention
nursing clinical practice guidelines:
*An Australian & New Zealand
collaboration*

Chapter 7 – PCI-related nursing clinical practice guidelines: An Australian & New Zealand collaboration

7.1 Introduction

The need for a set of nursing clinical practice guidelines to inform PCI nursing practice was highlighted by the range of practice standards reported in Chapters Four and Six. This chapter reports the development process of clinical practice guidelines for PCI nursing care. A collaborative approach was taken to gather a broad range of clinical and consumer input spread across Australia and New Zealand. Face-to-face and online methods were used to assist in overcoming the geographic limitations encountered in Australia and New Zealand.

7.2 Background

Care for individuals undergoing PCI requires an interdisciplinary approach. Clinical practice guidelines (CPGs) have minimal coverage of nursing issues. Heterogeneity in nursing practice for PCI care has been noted as well as gaps in evidence.^{1, 2}

The number of CPGs has risen over the past two decades although guidelines have been published as early as the mid-1970s.³ Field and Lohr⁴ describes CPGs as "...systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances." (p. 2) Implementing CPGs helps overcome the limitations of individual institutions producing their own practice guidelines and assists in setting benchmarks and monitoring outcomes.⁵

The strength of a CPG is dependent on the rigour of the methods used in development.⁶ One approach used by the AGREE collaborative is to view a

'good' CPG as "...one that eventually leads to improved patient outcome."⁷ (p. 18) Developing best-practice guidelines is pivotal to achieving this goal. Systematic and rigorous methods are needed to ensure reliability and validity.^{5, 8}

The efficacy and reliability of CPGs are contested.^{7, 9, 10} In particular, the absence of evidence upon which to base practice¹¹ and subsequent reliance on consensus level recommendations has been criticised.^{9, 10} Barriers to effective implementation are complex. They include clinician adoption^{10, 12} and adherence to guidelines recommendations. In addition, substantial resources are often needed to ensure successful implementation and evaluation; such as the ongoing campaign by the American Heart Association's 'Get With the Guidelines' program.¹³ This program has demonstrated improved outcomes for cardiac patients regarding treatment and secondary prevention uptake, yet more needs to be done.^{14, 15}

Cardiovascular clinicians have been early adopters of CPGs. The American Heart Association published their first set of guidelines in 1993.¹⁶ Many professional societies have followed in publishing guidelines to support cardiovascular practice.¹⁷⁻¹⁹ As stated above, current PCI guidelines do not address nursing care in sufficient detail.¹ For example there is limited guidance for monitoring post-PCI, arterial sheath removal pain management, positioning and discharge planning. Workforce pressures, decreased length of stay and demands on senior clinician's time contribute to the value of guidelines as a tool to achieving optimal care.⁵

7.3 Using consensus as guideline development strategy

Clinical expert consensus is often employed to bridge gaps in the evidence.⁹ Prospective structured approaches in using consensus methods are the most reliable.^{11, 20} Techniques such as Nominal Group Technique (NGT)¹¹ and Delphi methods are often used to achieve consensus.²¹ The former relies on group contact, i.e. conference or workshop settings,¹¹ while the later uses anonymous

methods of collecting information including mail-out questionnaires.²¹ The result of using these methods should be rigorously derived recommendations.

There are strengths and weaknesses in consensus development approaches. Clearly, consensus recommendations are inferior to having empirically-derived evidence.²⁰ As such, recommendations relying solely on consensus must be treated with caution.⁹ Inversely, engaging clinicians from a variety of settings using a facilitated method to debate contentious areas of practice can lead to consensus that would not be attainable otherwise and potentially fuel implementation initiatives.^{11, 20}

7.4 Aim

This chapter reports the process of developing consensus derived and evidence-based clinical guidelines for the nursing care of people undergoing PCI in Australia and New Zealand so as to augment existing medical PCI guidelines.^{17,}

^{22, 23}

7.5 Method

7.5.1 Design

A multi-method design was applied to a clinical practice guideline development process to achieve consensus and endorsement. The process was conducted under the auspices of professional cardiovascular nursing organizations: Australasian Cardiovascular Nurses College and Cardiovascular Nurses Council - Cardiac Society of Australia and New Zealand.

The National Health and Medical Research Council (NH&MRC) guidelines were used as a format for designing the method and were modified to suit the particular circumstances of the clinical problem⁸ The project consisted of a literature review (reported in Chapter Three), consensus conference, clinical practice survey (reported in Chapter Six), and a modified Delphi technique,

comprising an online survey method and content analysis of an email discussion. Figure 7.1 on page 169 shows this process.

Sampling

The guidelines development panel was recruited to provide a representation of clinical, consumer and research expertise. Invitations were sent out using existing cardiovascular professional networks. Some participants were directly invited due to their expertise in a particular aspect of the study. Consumers were recruited by a healthcare policy group who maintains a register of consumer representatives and contacted them on the research team's behalf.

Panel Inclusion Criteria

People were invited to participate as panel members provided they were either a clinician or health policy professional working within a CVD specialty, an academic with links to CVD research or a health consumer with experience in representing consumer needs.

7.5.2 Procedure

Literature Review

A literature review was the first step of the guideline development process and was reported in Chapter Three.¹

Consensus Development Conference

A consensus panel was then called to address the facilitators, barriers and outcome indicators for the care of a person undergoing PCI. Panel participants were invited from a broad group including expert consumer representatives, cardiovascular nurses, researchers, medical officers and health-policy experts. Participants were invited to attend a one-day face-to-face workshop with pre-reading sent out to panel members two weeks prior. Pre-reading consisted of current clinical practice guidelines,^{17-19, 24} a draft of the literature review, proposed schedule for the workshop and key considerations in preparation for attendance.

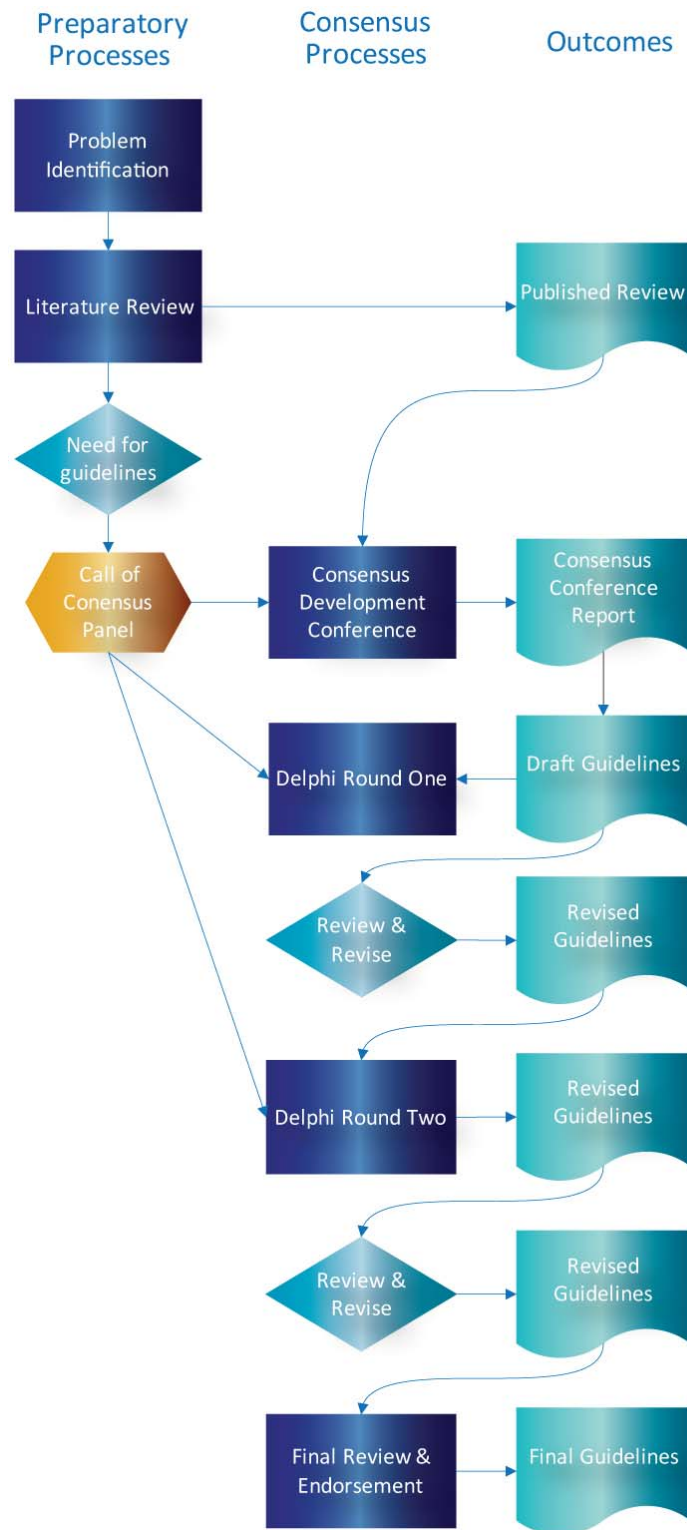


Figure 7.1 – Guideline development process

On the day of the conference, participants were given an orientation session outlining the conference goals, procedures and an overview of the literature. Panel members were then divided into one of four groups representing the patient journey (See Figure 7.2):

- Symptom recognition
- Treatment decision and allocation
- Peri-PCI
- Post-PCI and secondary prevention strategies.

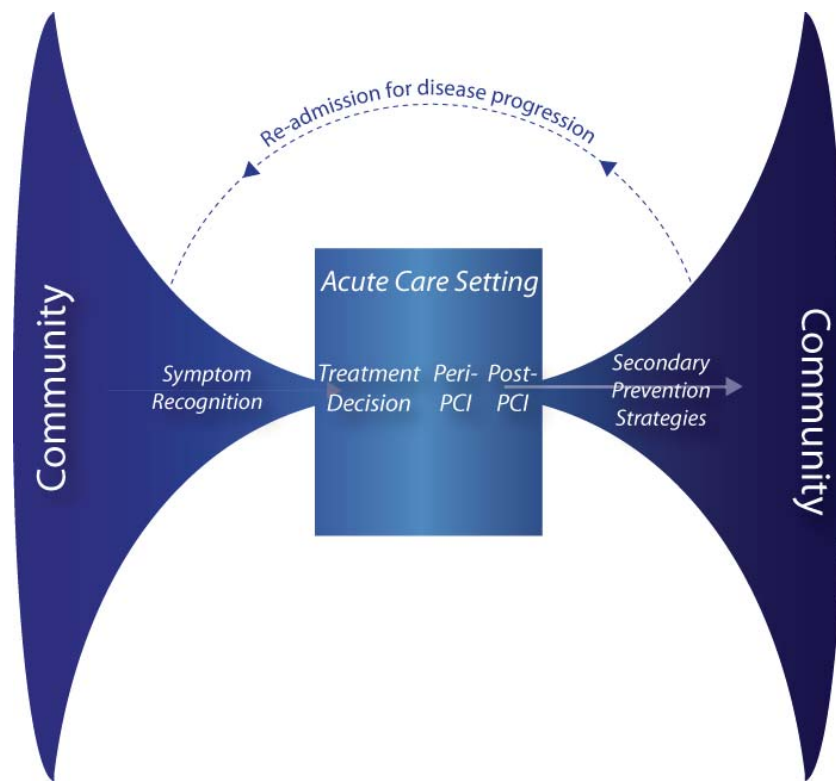


Figure 7.2 – The patient journey

Delphi Round One

Following analysis of the initial consensus conference, a preliminary set of guideline recommendations were developed. The system of grading recommendations and evidence was adapted from the National Heart Foundation and Cardiac Society of Australia and New Zealand's ACS guidelines. An additional grading of recommendation was added as consensus was not

reached on two recommendations. These are noted with an 'N'. See Table 7.1. The consensus panel was reconvened to assess the guideline recommendations using an online approach consisting of two data sources: 1. Online survey; and 2. Facilitated panel email discussion.

Table 7.1 – Grades of recommendation and levels of evidence

*Level of Evidence	Study Design	**Grade of Recommendation	Description
I	Evidence obtained from a systematic review of all relevant randomised controlled trials.	A	Body of evidence can be trusted to guide practice
II	Evidence obtained from at least one properly designed randomised controlled trial.	B	Body of evidence can be trusted to guide practice in most circumstances
III-1	Evidence obtained from well-designed pseudo-randomised controlled trials (alternate allocation or some other method).		
III-2	Evidence obtained from comparative studies with concurrent controls and allocation not randomised (cohort studies), case-control studies, or interrupted time series with a control group.		
III-3	Evidence obtained from comparative studies with historical control, two or more single-arm studies, or interrupted time series without a parallel control group.	C	Body of evidence provides some support for recommendations but care should be taken in its application
IV	Evidence obtained from case series, either post-test or pre-test and post-test.	D	Evidence is weak and recommendation should be applied with caution. Consensus based on expert opinion only.
			N

*Adapted from: National Health and Medical Research Council. A guide to the development and implementation and evaluation of clinical practice guidelines. Canberra: NHMRC, 1999

**Adapted from: US National Institutes of health. Clinical guidelines on the identification, evaluation, and treatment of overweight and obesity in adults: executive summary. Expert panel on the Identification, Evaluation and Treatment of Overweight in Adults. American Journal of Clinical Nutrition, 1998; 68:899-917.

Online survey

Delphi One online survey consisted of nine (9) items per each of the 59 recommendations in the round. The items asking panel members to rate their agreement with the guidelines used a 10-point Likert scale. A cut off median of 7.5 was chosen to help determine when consensus was reached for a given recommendation.^{5, 11} In addition, opportunities were given for the participants to provide feedback on potentially missing recommendations and rewording existing recommendations. See Table 7.2 for the items used to evaluate each recommendation.

Table 7.2 – Modified Delphi round one items

Item	Level of measurement	Response type
I agree with this recommendation	Scale	10-point Likert
I agree with the level of evidence for this recommendation	Scale	10-point Likert
I agree with the grade of recommendation	Scale	10-point Likert
I consider this recommendation to be an important aspect of PCI care	Scale	10-point Likert
This recommendation is already being implemented in my workplace	Scale	10-point Likert
I believe this recommendation will impact positively on patient outcomes	Scale	10-point Likert
If you disagree with the wording of the recommendation, please provide an alternative	String	Qualitative response
Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?	Ordinal	Yes; No; Not applicable to my practice
Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?	String	Qualitative response

Facilitated Panel Email discussion

Panel members were invited to contribute to an email discussion on areas of PCI nursing practice or the guidelines in general. This was facilitated by two investigators. Data was in the form of email transcripts.

Delphi Round Two

Following descriptive analysis (survey data) and content analysis (email panel discussion), refinement of the recommendations was undertaken. The panel was then reconvened to assess, in a second round, the revised recommendations. This process was less formal than round one. Draft guidelines were emailed to panellists and they were asked to comment.

Review

Once final revisions were made, a draft of the guidelines was sent out to an expert interdisciplinary panel of reviewers who were not participants in the Delphi process.

7.5.3 Data Analysis

Quantitative data derived from the survey (reported in Chapter Six) and Delphi round one were analysed using SPSS Version 15. Descriptive data (mean and SD [IC-NPS]; Median and IQR [Delphi One]) were obtained. The methods and results for the IC-NPS have been reported elsewhere.²⁵

Content analysis using a pragmatic approach was applied to the email-based panel discussion during the first Delphi round.²⁶ Themes were derived from an analysis of the email data to determine areas of consensus and divergence among the panel members. These findings were then compared with the survey data to determine consistency in responses and highlight critical areas of contention.

7.5.4 Ethical Considerations

Prior to the commencement of the study, ethical clearance was obtained from the University Ethics Committee. See Appendix One for documentation. With the exception of the consensus conference and email panel discussion as part of the Delphi rounds, all data collection was anonymous with no identifying information collected. The online format of Delphi round one aided in maintaining anonymity during this crucial phase of the project. As participation was voluntary, there was no coercion to participate, as such, panel participants were free to withdraw at anytime.

7.6 Results

7.6.1 Consensus Conference

The initial consensus conference, held in June 2008, was called via expressions of interests emailed to a group of interdisciplinary clinicians. Expert consumers were approached by a health-policy organisation due to their links with experienced consumer representatives who serve on health-related policy boards. A total of 41 participants agreed to attend the conference, of which 32 participated directly in the deliberations. A further 3 people assisted in facilitating and supporting the panel members. Although included in the invitation, no physicians (cardiologists or GPs) were able to attend the conference. See Table 7.3 for a breakdown of the participants.

Table 7.3 – Professional designations of the participants

Category	<i>n</i>	%
Consumer Representative	2	6.3
Clinical Nurse Consultant	9	28.1
Clinical Nurse Specialist	1	3.1
Clinical Nurse Educator	1	3.1
Healthcare / Research / Academic	7	21.9
Nurse Manager	4	12.5
Nurse Practitioner	1	3.1
Professional Associations / Policy	1	3.1
Registered Nurse	4	12.5
Academic	2	6.3

Panel members divided into four groups, as outlined in the methods. See Table 7.4 for a breakdown of groups.

Table 7.4 – Subgroup membership sizes

Sub-Group	<i>n</i>	%
Symptom Recognition	6	18.8
Treatment Decision and Allocation	5	15.6
Peri-PCI	10	31.3
Post-PCI	11	34.4

7.6.2 Delphi Round One

Online Survey

A total of 49 people were invited to participate in the first Delphi round. These included all the original participants of the consensus conference together with additional clinicians who had expressed interest in participation. Of those, a total of 27 (55.1%) completed the online survey.

Fifty-nine recommendations were submitted to the panel for evaluation. Using a median cut-off score of 7.5 to indicate consensus, 44 (74.6%) recommendations scored a median of 10.0, 9(15.3%) recommendations scored a median of 9.0; 4(6.8%) recommendations scored a median of 8.0; while only 2 (3.4%) of the recommendations scored below the cut-off. These recommendations related to

fasting patients prior to the PCI procedure (median 3.5, IQR 5.75) and the use of ACT for pre-sheath removal anti-coagulation measures (median 7.0, IQR 5.5).

Email Discussion

A total of 14 (28.6%) of the invited panel took part in the email discussion associated with the round. In addition, two of the investigators acted as moderators of the discussion.

Several key clinical practice areas dominated the discussion including:

- Sheath removal discomfort management;
- Sedation prior to sheath removal;
- Use of activated clotting time (ACT) to determine coagulation status prior to sheath removal;
- Time to ambulation following sheath removal/puncture site device insertion;
- Fasting and fluid management practices.

When compared with the Delphi online data, there is consistency between the areas of contention discussed in the email debate and the recommendations achieving lower median scores. Diversity of opinion was evident. The following series of exemplars demonstrates some of that diversity:

Australia - CNC: *"We have recently removed midazolam (patient's still receive fentanyl for analgesia) from our post sheath removal protocol... The rationale for removal of sedation was we were unsure if nurse's administering sedation without a Dr [doctor] present was within the Anaesthetic Society guidelines... Also some of the other standards around staffing (min no of staff present etc) we were unsure if we could comply with 100% of the time."*

Australia - Cardiac Assessment Nurse: *"At [hospital] we stopped fasting patients, stopped any routine premed for pulling sheaths..."*

Australia - RN: *"We use a premed for sheath removal of local anaesthetic around sheath site and midazolam 1mg unless patient is quite sedated from...premed."*

New Zealand - CNS: *"The implications for practice was that the use of clinical judgment and consideration of participant preferences is required to identify those who may potentially benefit from pain relief."*

Issues relating to clinical practice guidelines

Several key themes emerged pertaining to the guideline development process:

1. Reliance on anecdote versus published evidence;
2. Broad principles based guidelines versus specific recommendations regarding specific practice;
3. The frustration of developing guidelines alone; and
4. Clinical practice in the face of a lack of evidence.

Reliance on anecdote versus published evidence

Participants discussed the processes used in their institutions to measure outcomes. Few formal processes were described with many recognising they had to rely on anecdotal evidence. The factors leading to this are many and include human, fiscal and temporal resource limitations. The following exemplars demonstrate this issue:

Australia - CNC: *"...most of our patients do not receive morphine. Anecdotally we haven't had any complications while pulling the sheath and the system seems to be working well."*

Australia - Cardiac Assessment Nurse: *"...we stopped fasting pts [patients], stopped any routine premed for pulling sheaths, and then some time later stopped temazepam premeds. Unfortunately we have not audited but anecdotally have a lower vasovagal rate."*

Australia - CNC: *"...there are hospitals out there using PCI protocols which might be working well at a local level but with little back up in regards to available literature...case in point sheath removal without a pre-med v [versus] sheath removal with."*

Broad principles based guidelines versus specific recommendations regarding specific practice

Discussion was had about the level of detail to which the guidelines should include to guide practice. Some were arguing for considerable detail while others stated a desire for a broad principles-based document which would then

be translated at the local level into institutional policy. The following was a response to an extended submission by a participant:

Australia - RN: *"Keep the guidelines simple so that the principles can be flexed to each individual clinical situation."*

Australia - CNC: *"I think be aimed at principles of practice that are translated at the local level."*

Australia - CNC: *"I agree with [name]. Hence 'guidelines'. Practice should always be adapted to suit the individual patient's needs."*

The frustration of developing guidelines alone

The lack of evidence for certain practices is a frustration expressed by two of the panel. In particular it impacts on their ability to develop and update guidelines for their teams' use, in the absence of comprehensive nursing practice guidelines. The following exemplars illustrate this point:

Australia - Cardiac Assessment Nurse: *"We are aiming for evidence based practice, but where is the audit of no sheath premed versus premed; and no fasting versus fasting?"*

Australia - CNC: *"...lack of evidence is frustrating especially when you are trying to update your protocols. I am in the final process of doing that....What I ended up with [was] a document with some evidence based practices and a bits-and-pieces from other hospital protocols."*

Clinical practice in the face of a lack of evidence

The lack of evidence to support care is parallel to the frustration with maintaining evidence-based protocols. The panellists discussed several issues related to this not the least of which was patient safety. The following panel member was emphatic:

Australia - Cardiac Assessment Nurse: *"If there is insufficient evidence it is surely safer and more in line with principles of best practice not to use that intervention."*

The process of discussing these issues was important for panel members as it gave them an opportunity to examine their practice in relation to others. One

panellist shared the collaboration they are involved in to help address the evidence-challenges:

New Zealand - CNS: *"I agree that a lot of the evidence is lacking for the PCI patient group, so a good reason to have these discussions. For the last 3 years, we have had an evidence-based practice group for cardiology every 2-3 months or so."*

7.6.3 Guidelines development following Delphi round one

Of the 59 recommendations put to the panel, 29 (49.2%) of the recommendations were altered, one recommendation was deleted (1.7%) and two recommendations combined (3.4%). Four (6.8%) were contentious and required further discussion among the team. The panel suggested additional recommendations be added from which an additional six were suggested. In the course of the final analyses of the findings, some recommendations were split to improve clarity and flow.

7.6.4 Delphi Round Two

Given the detailed approach to the first Delphi round, the second Delphi round consisted of qualitative feedback on the revised recommendations from round one. A summary of the results from round one was provided in the email inviting the panel to the second round. A total of 49 panel members were invited to respond, of which, 5 (10.2%) responded after two reminders. The areas of concern reflected the issues of greatest contention across the process including: sedation, patient positioning, use of local anaesthetic during sheath removal and fasting. On the whole, panel members who responded were prepared to endorse the guidelines.

7.6.5 Review

Following completion of the second Delphi round and draft revisions to the recommendations, a group ($n=9$) of leading senior clinicians were approached to review the recommendations. This was an open review process. Their comments were incorporated into the final draft prior to submission for publication and

endorsement by peak cardiovascular bodies. The review team was interdisciplinary in nature.

7.6.6 Endorsement

Upon completion of the final reviews and deliberation on the results, a final draft was submitted to several peak cardiovascular nursing bodies in Australia and New Zealand:

- Australasian Cardiovascular Nurses College²⁷
- Cardiovascular Nurses Council - Cardiac Society of Australia and New Zealand.²⁸
- Australian Cardiac Health and Rehabilitation Association

7.7 The Guidelines

7.7.1 Pre-Procedural Nursing Practice

Pre-procedural orientation, assessment and screening

Table 7.5 – Pre-PCI Pre-procedural Orientation, Assessment & Screening Recommendations

Recommendation	Grade of Recommendation
Pre-procedure Orientation	
In the case of emergency, strategies should be implemented to decrease 'door to balloon time'. ¹⁷	A
All patients should receive informed consent according to institutional policy. ²⁹	D
Family members should be involved in care planning and informed of: <ul style="list-style-type: none"> ·PCI procedures & pathway ·key contact details for the hospital & units ·visiting policies ·potential discharge date. 	D
Patients scheduled for elective PCI procedures should be strongly encouraged to attend a pre-admission assessment clinic where available.	D
Assessment	
A full assessment should be conducted upon admission including baseline observations, height, weight, FBE, urinalysis/biochemistry, electrocardiogram (ECG), health history, allergies, blood sugar level (BSL), history of IV contrast use/allergy, history of PCI procedures and vascular observations (baseline). ^{17, 30}	D
Screening	
All patients should be screened for factors placing them at increased risk of complications including: <ul style="list-style-type: none"> ·diabetes ·ACE inhibitor use ·renal insufficiency ·vascular disease ·untreated infection ·haematological disorders ·obesity ·electrolyte imbalance ·uncontrolled hypertension.³¹ 	B
All patients should be screened for major bleeding associated risk including: <ul style="list-style-type: none"> ·age≥75 ·female ·renal insufficiency (CrCl≤60ml/min) ·diabetes ·anaemia ·ST segment deviation >1mm ·elevated troponin ·hypertension 	B

·no previous PCI.³²

The interventional cardiologist should be informed if the patient has an allergy to iodine or iodine-containing foods. If appropriate, the patient may be commenced on a desensitising regime.³³

B

Pre-procedural orientation

Urgent interventions, or Primary PCI, aim to optimise survival within a limited time frame.¹⁷ Patient care should focus on reducing door-to-balloon times to improve short and long-term survival (LoE-I).¹⁷ Primary patients face an urgent need for treatment yet reduced opportunities for clinicians to orientate and educate them.³⁴ Elective procedures provide clinicians more time to explore the concerns and knowledge gaps of the patient and their family/carers. Factors known to effect uptake of information include the stressful nature of the event itself,³⁵ and cultural and linguistic diversity groups where varying knowledge, attitudes and beliefs may impact their ability to comprehend medical information.³⁶ Yet, providing quality patient education during the acute care admission remains controversial.

How information is presented is also an issue. McDonnell, in a systematic review found conflicting evidence concerning pre-procedural information giving.³⁷ Likewise, the evidence for using decisional aids as part of this process is also unclear and conflicting.^{29, 38} Bernstein et al.³⁸ studied 217 patients referred for PCI procedures randomised into two arms. The patients received either an audio-visual presentation regarding treatment options (treatment arm) or usual care (control). The results demonstrated a significant increase in knowledge for the treatment arm but also decrease in satisfaction.³⁸ Inversely, Astley and colleagues, conducting a randomised control trial using various decisional aids found no difference in recall, patient satisfaction or anxiety levels.²⁹ Regardless of these findings, the legal requirements of obtaining informed consent remain even if there are questions as to the effectiveness due to time, workforce and patient-specific factors.^{29, 39} In summary, the need to investigate the barriers and facilitators of information sharing and retention in relation to obtaining informed consent is needed.

Assessment

Patients should have a complex cardiovascular assessment.³⁰ A thorough assessment is required and includes: baseline vital signs, blood sugar level, height and weight, haematology and biochemistry workup, electrocardiogram, health history including pharmacological and food allergies, and previous history with PCI or other procedures using iodinated. Depending upon the level of urgency, it is preferable to complete this before the PCI procedure.

Screening

Guidelines recommend all CVD patients should be screened for conditions impacting on procedural outcomes.^{17, 19, 31} In particular, diabetes increases the risk of contrast induced nephrotoxicity³¹ with people on insulin therapy being at higher risk for post-PCI complications. Depending on the type of insulin, length of the procedure and time of day the procedure takes place, insulin should be reduced (LoE: IIa).⁴⁰

Screening for risk of bleeding is an important indicator in post-PCI recovery (LoE: IIa).³² Effects on mortality have been associated with major bleeding events peri-procedurally.^{41, 42} Developing pre-procedural assessment has been found effective. In particular, several factors have been found to be predictors of potential major bleeding complications including:

- Age (≥ 75 years)
- Sex (Female)
- Anaemia (measured as: Men Hb $<13\text{g/dl}$; Women Hb $<12\text{g/dl}$)
- Renal insufficiency (measured as creatinine clearance $<60\text{ml/min}$)
- Diabetes
- Hypertension
- No previous PCI procedures.³²

Iodinated contrast media is a source of adverse reaction in 15% of the those receiving ionic contrast media.⁴³ Those at greatest risk include people with a history of asthma, previous iodine allergy, age, food allergies, pre-existing renal conditions, medication use, cardiac conditions, fluid status, anxiety and

haematological disease.⁴³ Thorough assessment of risk for iodine allergy should be undertaken prior to the PCI (LoE: IV). This should include iodine-related food allergies. Management of iodinated contrast allergy is varied and controversial with more research into effective strategies required.⁴⁴

Fasting, Fluids, Managing Risk for Renal Impairment and Medication Consideration

Table 7.6 – Pre-PCI Fasting, Fluids, Managing Risk for Renal Impairment and Medication Consideration Recommendations

Recommendation	Grade of Recommendation
Fasting and Fluids	
Based upon available evidence, the practice of routine fasting of PCI patients is not justifiable, fasting should be based on clinical judgement on a case-by-case basis. Some clinicians still strongly recommend fasting.	N
Intravenous fluids should be administered prior to commencing the procedure and continue until the patient is able to freely consume fluids. Administration of IV fluids should take into account co-morbid conditions. ³⁰	D
Managing risk for Renal Impairment	
Patients undergoing PCI can be at varying levels of risk for contrast-induced renal impairment. The following should be considered:	
·IV fluids should be provided to aid contrast clearance where increased hydration is clinically warranted for patients already at risk (renal impairment, primary PCI). ^{31, 45}	B
·Diabetic patients on metformin should discontinue their medication on the morning of the procedure and not recommence medication for 48 hours following the procedure. ³¹	B
·Where considered appropriate, an N-acetylcysteine (NAC) regime may be considered prior to and following the procedure ⁴⁵ , however, there is evidence to say NAC may not be effective. ^{43, 46}	D
Medication Considerations	
Patients with diabetes who have been ordered to fast prior to the procedure should have:	
·appropriate reduction of short-acting insulin ^{5,6} ·be listed first on each case list ·no changes to long-acting insulin ·4th hourly BSL.	D
Aspirin should not be discontinued prior to PCI and commenced for those not already taking daily aspirin ^{24, 47} if not contraindicated.	B
Clopidogrel should be loaded at least 6 hours prior to PCI. ⁴⁸ <i>Daily dose should not be withheld.</i>	A
Enoxaparin (low molecular weight heparin) should be withheld on the day of the PCI.	A

Fasting and fluids

The issue of fasting prior to procedures where sedation or analgesia is administered is based on traditional practice rather than empirical evidence.⁴⁹⁻⁵¹ Green and colleagues, writing a consensus based clinical practice advisory for ED patients needing sedation and analgesia set out steps for the physician to take in assessing risk.⁴⁹ These include:

- Patient risk (age, oesophageal reflux conditions, history of intubation difficulty, presence of systemic disease)
- Recent oral intake - which are divided into four grades of increasing severity
- 1 - Nothing ingested in the past 3 hours
- 2 - Clear fluids only ingested in the past 3 hours
- 3 - Light snack (solid food) ingested in the past 3 hours
- 4 - Larger meal (solid food) ingested in the past 3 hours
- Urgency of the procedure
- Sedation depth and length of time.⁴⁹

The American Society of Anesthesiologists' guidelines recommend a fasting time of 2 hours for clear fluid ingestion and 6 hours for light meals regardless of age.⁵⁰ The Australian and New Zealand College of Anaesthetists recommend the assessment of fasting status for a patient receiving pre-procedural sedation and/or analgesia.⁵² Fasting prior to PCI procedures varies from institution to institution. During the development of these guidelines, substantial debate regarding fasting led to a recommendation for clinicians rely on local policy and clinical judgment rather than consensus on a specific position. Further evidence is required before definitive statements regarding fasting PCI patients can be made.

Managing the risk for renal impairment

Patients with diabetes managed on metformin should have their medication discontinued prior to the procedure and not recommence until 48hrs following the procedure (LoE: II).³¹ Percutaneous coronary intervention guidelines state

this is a precaution for preventing nephrotoxicity due to interaction with the IV contrast, even though this is rarely seen.³¹ To reduce potential renal effects and maintain hydration, PCI patients should be commenced on IV fluid replacement at fasting or prior to the PCI and continue until after the recovery period to aid clearance of the IV contrast (LoE: IV).³⁰ The use of N-acetylcysteine has not been found effective in reducing adverse outcomes for at-risk patients.^{43, 46} Following sheath removal, oral fluids should be encouraged to aid renal clearance. Nurses should be aware of the higher risks of particular patients including those with renal dysfunction.⁵³

Biological, psychological and social risk factors

Table 7.7 – Pre-PCI Assessment and Management of Biological, Psychological and Social Risk Factor Recommendations

Recommendation	Grade of Recommendation
Biological Risk Factors	
Patients should have a comprehensive risk factor assessment conducted during their acute care admission, including screening for: <ul style="list-style-type: none"> ·hypertension ·hypercholesterolaemia ·BMI and/or waist circumference ·smoking ·diabetes ·physical activity ·nutrition/dietary behaviour ·depression ·alcohol intake.^{17, 19, 23} 	A
Psychological Risk Factors	
Patients should be screened for depression using a validated measure for depression such as the Patient Health Questionnaire - PHQ-2 at an appropriate time during their admission. ⁵⁴	B
Where patients score positively for depression on the PHQ-2, the PHQ-9 ⁵⁴ or other valid and reliable measure should be administered, results documented and appropriate referral made during admission.	B
Social Risk Factors	
Patients' socioeconomic status should be noted for impact on their ability to afford medication, transport barriers and other ongoing treatment costs. ⁵⁵	C
Social isolation is a barrier to effective disease management. Where potential risks are noted, referral to a social worker should be prioritised. ⁵⁵	C

Biological risk factors

The role of biological risk factors in developing heart disease is more widely understood. Yet variations between various demographic characteristics including sex, age and biological race warrant caution (i.e. people from Sub-Continental Indian descent are at higher risk for hypertension than Caucasians). Guidelines now reflect this and recommend all patients be screened for these factors (LoE: I).^{17, 19, 23}

Psychological and social risk factors

In a recent survey of cardiovascular nurses in Australia and New Zealand, participants reported lower perceived levels of evidence of links between psychosocial factors and heart disease, and have less perceived confidence, knowledge and capacity to provide psychosocial care.²⁵ In spite of this finding, psychological issues such as depression^{32, 55-57}, and sociological issues such as low socioeconomic status^{55, 58} and low social support^{55, 57, 59} have important associations with heart disease and can confound recovery and behaviour modification.⁶⁰ Spangler and colleagues reported on confounding associations between depression, CVD and smoking.⁶⁰ Their study found patients who smoked and concomitantly diagnosed with diabetes and CVD were less likely to give up smoking.²⁴ More evidence is emerging⁵⁵ regarding the importance of assessing and intervening in psychosocial issues such as depression.^{61, 62} In spite of the number of studies, conflicting highlight the need for ongoing research.⁵⁵

Several guideline statements (CSANZ/NHF; AHA/ACC) outline recommendations of the assessment and management of psychological issues such as depression and anxiety (LoE: I). In particular, clinicians are encouraged to adopt simple screening measures such the Patient Health Questionnaire (PHQ) 2 and PHQ-9.⁵⁴ The PHQ-2 is first-line screening where patients who score a 'Yes' (or if the version uses a numerical scale – 0-3, then 3 or greater), on either question are directed to complete the PHQ-9.⁵⁴ Both tools are simple to administer and are designed for ease of use in the clinical setting.

Critical pathways, planning for discharge and discharge medications

Table 7.8 – Pre-PCI Critical Pathway, Planning for Discharge & Discharge Medications

Recommendation	Grade of Recommendation
Critical Pathway	
All patients should have a critical pathway to increase staff adherence to guidelines. High risk patients should be referred to community providers. ^{63, 64}	C
Planning for Discharge	
Comprehensive discharge planning should commence upon admission for all PCI patients in accordance with local institutional policy. ⁶⁵	D
17. Prior to discharge, patients, and where relevant, carers, should be assessed to determine their understanding of the treatment recommendations including: <ul style="list-style-type: none"> ·taking medications ·CV risk reduction strategies ·post-PCI groin care ·attendance at cardiac rehabilitation or secondary prevention program. ·follow-up education, either written or verbal, should be provided to individuals prior to discharge.^{17, 23} 	D
18. During the 3-7 days following discharge, patients should be contacted for the purpose of checking groin recovery, advocating involvement in CR, and referral to services where needed.	D
Discharge Medications	
19. Prior to discharge, patient's medication should be assessed and where needed, action taken to promote adherence to current guidelines including: <ul style="list-style-type: none"> ·anti-platelet therapy (aspirin & clopidogrel) ·ACE Inhibitors / ARBs ·beta-blocker ·statin ·short-acting nitrates ·aldosterone antagonists ·other anticoagulants.^{17, 23} 	A

Critical Pathways

The Consensus Development workshop participants suggested the development of critical pathways to guide the patient journey so as to avoid potential gaps in care. Evidence supports the use of clinical care pathways for reducing unwarranted variations in treatment and overall care costs.⁶⁴ Utilisation of clinical pathways can vary. Hyett and colleagues⁶³ reported that regular analysis of the variance from pathways is an important factor in improving outcomes (LoE: IV). Above all, clinical pathways need to be grounded

in a strong evidence base with thorough implementation and evaluation in the clinical setting.

Planning for discharge and discharge medications

Discharge planning remains a challenge for healthcare providers with evidence tending to support an early discharge planning process.⁶⁵ Benefits include reduced cost and lower readmission rates.⁶⁵ The increasing burden of chronic illness adds emphasis for clinicians to proactively assist patients transition from the acute care setting to effective post-discharge services, such as cardiac rehabilitation and primary care. Achieving optimal pharmacotherapy prior to discharge is a key element in this process (LoE: I).²³ Both high level evidence and extant clinical practice guidelines demonstrate the need for all patients to be commenced on and educated concerning a minimum range of therapies including: Aspirin,^{22, 66} ACE inhibitors or ARBs if ACEIs are not tolerated,^{19, 22} Beta-blocking agents (refer to NHF/CSANZ guidelines for ACS for exceptions),^{17,} ²² clopidogrel for all stent (DES) recipients,¹⁷ and statins (LoE: I).²² Nurses play an important role in ensuring all patients receive this basic therapy.⁶⁷

7.7.2 Peri- Procedural Nursing Practice

Assessment and Monitoring

Table 7.9 - Peri-PCI Assessment and Monitoring Recommendations

Recommendation	Grade of Recommendation
Patients should be monitored throughout the procedure and recovery period. Observations should include: <ul style="list-style-type: none"> ·continuous ECG ·respiratory rate ·SaO2 monitoring ·blood pressure (BP). Nurses should frequently assess the patient and document the observations in a regular and timely manner in the patient's medical record. ⁶⁸	D
The most appropriate leads to use for detection of ischaemia during a PCI procedure are: V2-V4, III and aVF depending on the artery being treated. ⁶⁹	C

While few randomised trials exist to support the use of continuous ECG monitoring during and after PCI procedures, extant guidelines suggest ECG monitoring for ischaemic changes in all PCI patients during the procedure (LoE: IV).^{68,70} Except for stable elective PCI patients, monitoring should continue for at least 24 hours or more particularly if any ischaemic changes or arrhythmias have been noted.⁶⁸ Stable elective PCI patients showing no ischaemic changes can be removed from monitoring between 6-8 hours.⁶⁸ Patients who undergo balloon angioplasty without stenting should be monitored for up to 24 hours due to risk of re-stenosis.⁶⁸ The most appropriate leads to detect ST changes during the PCI procedure are leads V₂ - V₄, III and aVF (LoE: IV).⁶⁹

Comfort and pain management

Table 7.10 - Peri-PCI Comfort and Pain Management Recommendations

Recommendation	Grade of Recommendation
All patients should be offered mild sedatives prior to the procedure with patients at higher risk of discomfort or anxiety given further sedation during the procedure. ^{47, 71}	B

Patients are often required to lie flat prior to, during and following a PCI, for extended periods of time. Careful assessment of potential complicating comorbid conditions is important. Sedatives administered prior to the procedure have been found to assist with peri-procedural discomfort (LoE: II).⁷¹ Sedation should be administered one hour prior to admission to the catheterisation lab.⁴⁷ This issue was, however, controversial during the development of these guidelines regarding the use of sedation during and following the PCI.

7.7.3 Post-PCI Procedural Nursing Practice

Post-PCI Vital Signs Observation, Arterial Access Site Monitoring, Limb Circulation Observation, Monitoring Coagulation and Assessing Renal Function

Table 7.11 - Post-PCI Vital Signs Observations, Arterial Access Site Monitoring, Limb Circulation Observation, Monitoring Coagulation and Assessing Renal Function Recommendations

Recommendation	Grade of Recommendation
Vital Signs Observation	
All patients should be managed on continuous ECG monitoring in order to detect signs of ischemia and arrhythmias. ⁶⁸ Regular assessment of respiratory rate, pulmonary ventilation (where sedation has been used), BP and SaO ₂ measures is necessary. Where sedation or a high risk for respiratory compromise is suspected, regular auscultation or alternatively, ETCO ₂ monitoring may be necessary. ⁷² All observations should be regularly documented at the time of assessment.	B
Automated monitoring alarm settings should be checked by each attending nurse upon receiving a patient from the cath lab and where necessary, settings altered in accordance with individual patient requirements.	D
In addition to routine cardiac assessment, where ischaemic changes are noted following the PCI procedure an ECG and cardiac biomarkers should be undertaken. ¹⁹	D
The ECG monitoring leads most appropriate for detecting ischaemic changes are leads III, aVL & V ₂ . ⁶⁹	C
Arterial Access Site Monitoring	
All post-procedural patients should be monitored at regular intervals for signs of localised puncture site complications (regardless of chosen method of haemostasis) including: ·bleeding ·haematoma ·swelling ·ecchymosis ·pseudo-aneurysm.	D
Assessment of the puncture site should be documented accurately at the time the assessment.	D
Where both right and left femoral arteries have been accessed, assessment of the puncture sites on both limbs is required.	D
Limb Circulation Observation	
Limb circulation observations should be conducted each time the puncture site is assessed and include: ·Peripheral pulses (compared against a baseline measurement at anatomical sites marked prior to the procedure) ·warmth ·capillary return ·sensation ·colour. Limb circulation observations should be documented accurately at the	D

time the assessment is made. The puncture site should be easily visible to the nurse with minimal obstruction whilst maintaining the patient's privacy. <i>The use of sandbags is not recommended.</i>	D
Monitoring Coagulation	
In settings where activated clotting time (ACT) is routinely measured prior to sheath removal, ACT should be <160 sec. If GP IIb/IIIa infused, ACT to be <150 sec. It is important to note that the evidence for the efficacy of ACT prior to sheath removal is lacking and requires further evidence to strengthen the recommendation. Institutions may have values that vary from this recommendation.	N
Assessing Renal Function	
Due to the risk of renal impairment following contrast use, patients should be observed for signs of renal impairment. Pre-procedural baseline eGFR, UA and/or biochemistry should be collected. The day following the PCI, UEC should be checked and again 2-7 days following. Where patients are noted to be at higher risk of renal impairment, closer monitoring may be required.	D

Vital Signs Observation

The need to recognise the clinical signs of life-threatening complications consistently emphasises the need for nursing specific practice guidelines. After PCI, symptoms of myocardial ischemia can identify those at risk for acute vessel restenosis, yet there is limited literature on monitoring regimes post PCI.⁷⁰ In spite of this, there is increasing support for continuous ST segment elevation with the lead demonstrating the most ST elevation during the procedure the lead of choice (LoE: IV).⁷⁰ Leads considered most effective in detecting acute ischaemic changes are III, aVL and V₂.⁶⁹ All patients who have signs or symptoms suggestive of myocardial ischemia during or after PCI and those with complicated procedures should have and 12-lead ECG and cardiac enzymes measured (LoE: IV). The prognostic value of measuring cardiac enzymes, particularly Troponin-I following PCI has been established in the past.⁷³ In a follow-up study were all stable angina patients undergoing PCI, with no enzyme rise prior to PCI, were routinely screened post-procedurally for Troponin rises (Post-PCI, 30 days, 6 months & 18 months).⁷³ The study found a Troponin rise in 31% (n=99) of patients post-PCI, 12% of which were asymptomatic.⁷³ There is limited research relating to monitoring regimes and therefore in the clinical setting this practice is generally based on institutional guidelines and individual clinician preferences.

Arterial Access Site Monitoring and Limb Circulation Observation

The most effective method of detecting localised vascular complications is direct observation by the nurse.⁷⁴ Complications include bleeding, haematoma, swelling, ecchymosis and pseudoaneurysm and regular assessment is a vital element of post-PCI management.⁷⁵ This recommendation stands for all methods used to achieve haemostasis given their varying yet inherent risks of failure.^{76, 77} Even though the outcomes of arterial access closure devices are improving, a 2.5% failure rate has been reported.⁷⁸ Vigilance is still required during the post-PCI period. A comprehensive approach to observations (local puncture site assessment, limb and systemic observations, and patient-reported data, i.e. pain, sensation, orientation etc) is recommended as vital signs alone have not been shown to provide diagnostic clues to localised vascular complications such as haematoma, ecchymosis or bleeding.⁷⁴

Monitoring Coagulation

Bleeding during PCI has been found to have a greater impact on mortality than was previously thought.⁴¹ Screening for at-risk patients using a prognostic risk tool may impact on adverse outcomes.⁴² Regarding monitoring of coagulation prior to sheath removal Mixed results have been reported concerning the use activated clotting time (ACT) to monitor coagulation prior to sheath removal.⁴² This has not prevented clinicians recommending the routine use of ACT testing prior to sheath removal.^{77, 79} While some suggest an ACT value of <180 seconds,^{79, 80} there was considerable variation in institutional values found during the guideline development process. Consensus was not reached in the development of these guidelines regarding ACT. Given the lack of clarity, further evidence is required to provide stronger recommendations.

Assessing Renal Function

Patients undergoing PCI are at varying risks for renal impairment, as discussed above. Observing the patient for signs of renal impairment is vital. This is

particularly important where the person is diabetic, having a Primary PCI or has a history of renal impairment or IV contrast sensitivity.

Sheath Removal Discomfort Management

Table 7.12 – Post-PCI Sheath Removal Discomfort Management Recommendations

Recommendation	Grade of Recommendation
While sheath-removal pain is generally considered mild, clinical judgment on a patient-specific basis is still necessary as some patients experience moderate levels of sheath-removal related pain. Assessment of the patient for risk of increased pain should be undertaken prior to sheath removal	D
Intravenous opioids and levobupivocaine (local infiltration) have been found to reduce sheath-removal related pain. ⁸¹	C
There is evidence to suggest pre-sheath removal pain relief administration is more effective than administering break-through pain relief	D
There is not sufficient evidence to suggest use of lignocaine (local infiltration) is effective in controlling sheath-removal related pain ⁸¹	B

Pain and discomfort is experienced by virtually all patients undergoing sheath removal, however the amount of distress experienced is generally mild.⁸²⁻⁸⁶ While there is some consensus that routine administration of pain relief may not be required the findings from the IC-NP Survey²⁵ indicate that analgesia protocols vary considerably amongst the cardiovascular nurses in the sample.

A recent systematic review⁸¹ involving four randomised control trials,^{84, 87-89} 971 participants, assessed the efficacy of pain relief during femoral sheath removal in adults after interventional cardiology. Intravenous pain regimens (morphine only, fentanyl only, fentanyl/midazolam combination) and subcutaneous levobupivacaine appeared to produce reductions in pain score not seen with subcutaneous lignocaine or control. The lack of effect with subcutaneous lignocaine is consistent with the findings of one non-randomised study⁸⁶ an observational study⁹⁰ and, increasingly, clinical opinion. There is no evidence to support the addition of midazolam as an important aspect of the effectiveness of IV opioids. Limitations of the findings of this systematic review are the small number of studies involved and methodological weaknesses within the studies.

In addition, interpretation of the clinical relevance of these findings is difficult as the reduction in pain scores is small.

Given these limitations, and the subjective nature of pain, the use of clinical judgment is required to identify those who may potentially benefit from pain relief. As moderate levels of pain are experienced by some patients during sheath removal^{84, 87, 91} individualised assessment of patient need for pain relief is recommended. Factors influencing pain relief requirements may include any pre-existing musculoskeletal pain, a longer PCI procedure, patient tolerance to groin pressure prior to sheath removal,⁹² the overall level of comfort and anxiety, previous experience of sheath removal and the adequacy of patient preparation.⁸⁵ When pain relief is given, local protocols should be developed to support its safe administration.⁹³

Decreasing the risk of complications is a commonly stated rationale for use of pain relief during sheath removal. Wensley et al.⁸¹ did not identify any correlation between pain relief administration and incidence of vascular and procedural complications but the numbers of adverse events were small and meta-analysis of data from the included RCTs was not possible. Vaso-vagal syncope events during sheath removal have been associated with serious adverse cardiac events^{86, 94} however an increase in this risk was not observed in a 30 day follow-up of 661 patients post-PCI and stent deployment in whom 35 (5.7%) had experienced vaso-vagal syncope during femoral sheath removal.⁹⁵ Although one RCT⁸⁸ identified a higher pain score as an independent predictor of a vasovagal reaction, overall the evidence is insufficient to support routine use of pain relief for the purpose of preventing a vasovagal event.

Achieving Haemostasis

Table 7.13 – Post-PCI Achieving Haemostasis Recommendations

Recommendation	Grade of Recommendation
When a femoral sheath is in situ the femoral artery should be anatomically located correctly. The puncture site location is likely to be affected by body size.	D
Where manual compression is chosen, constant pressure should be applied digitally approximately 1 cm superior to puncture site for 15-20 mins or until haemostasis is achieved.	B
Where a mechanical device is used to achieve haemostasis, it is important for clinicians to consider the limitations of each device including: <ul style="list-style-type: none"> ·potential structural failure ·patient complication rates associated with its use ·regular assessment of the patient and documentation of their observations should occur when mechanical devices are used to achieve haemostasis.⁷⁵ 	B
As there is no evidence for the efficacy of the use of sandbags for maintaining haemostasis and evidence that their use may be detrimental, their use is not recommended. ^{96, 97}	B
Where arterial closure devices are used (e.g. AngioSeal™, PerClose™, StarClose™), the post-PCI observations are identical to any other method as each device has a failure rate and therefore includes risks for vascular complications. Retroperitoneal haematomas have also been reported with arterial closure devices, therefore the same vigilance in assessment and monitoring is required. ⁹⁸	D
Bleeding should be treated immediately with manual (digital) compression applied to the puncture site. Compression should be maintained until haemostasis is achieved. If bleeding continues, urgent consultation with the treating cardiology team is required. Where the nurse is certified to apply mechanical compression devices, this can be deployed until medical advice is obtained.	D

Several studies have investigated techniques for achieving haemostasis and the prevalence of post-PCI vascular complications.⁷⁶ One systematic review was identified that investigated strategies to maintain homeostasis.⁷⁶ Findings from this review involving 12 studies were included: 8 RCTs ($n=2,998$), 2 non-randomised controlled trials ($n=3,975$) and 2 descriptive studies ($n=299$).⁷⁶ Four comparisons of vascular site management strategies were assessed in the review: mechanical versus manual compression; two different forms of mechanical compression; mechanical compression versus other compression techniques and mechanical compression versus no compression.^{99, 100} The incidence of bleeding after femoral sheath removal did not demonstrate a

statistically-significant difference between any study interventions. The authors argued for prospective randomised controlled trials to address this question. The findings from that review may no longer apply given the advancement in technology in arterial closure devices. In addition, the rapidly moving target of anticoagulation strategies makes it difficult to generalise previously conducted studies to current practice.⁹⁸

A systematic review of 30 trials involving 4000 patients investigated the effect of any arterial closure devices with standard compression.⁹⁸ The findings demonstrated marginal evidence that the arterial closure devices were more effective. However there was an increased risk of haematoma formation and pseudo-aneurysm.⁹⁸ These findings should be viewed with caution as they were reported to be of low methodological quality.¹⁰¹ It is, therefore, important to note that the risk for complications remain, regardless of the chosen haemostasis method.¹⁰² In addition, factors such as sheath size, anticoagulation and body weight also impact on the risk of vascular access complications.

These alternate methods of achieving haemostasis not only reduces vascular complications but also promotes patient comfort by reducing the length of bed rest that has been reported in numerous trials to cause back pain and generalised discomfort. Factors needing consideration associated with vascular site complications include age and gender,^{19, 103} sheath size and duration in-situ¹⁰¹, anti-coagulation therapy¹⁰² and having a PCI procedure,^{104, 105} as opposed to diagnostic angiography alone.

Regarding sandbags, there is evidence to suggest they are ineffective or potentially detrimental in achieving or maintaining haemostasis.^{96, 97} As sandbags also obscure viewing of the puncture site, their use cannot be supported.

Patient Positioning and Sheath Removal Ambulation Times

Table 7.14 – Post-PCI Patient Positioning and Sheath Removal Ambulation Times Recommendations

Recommendation	Grade of Recommendation
Patient Positioning	
Patients should be advised against lifting their head forward or increasing intra-abdominal pressure by straining to reduce the risk of bleeding following sheath removal. Patients should be taught how to apply appropriate pressure to splint the puncture site in the event of coughing, vomiting or defaecation. The patient's position and comfort should be assessed to reduce risk of bleeding from excessive movement. ¹⁰⁶	D
Dependant on the type of sheath used, the head of the patient's bed should be positioned from 15-30° progressively prior to sheath removal. During sheath removal, patients should be managed supine (flat). ¹⁰⁶	B
Every effort should be made to support patients with back conditions likely to result in increased pain by appropriately documenting their condition prior to the procedure. Where possible, patients should not be managed lying flat unless the deployed sheath does not permit elevation of the head of the bed. ¹⁰⁶	B
Following sheath removal, patients with increased risk of musculoskeletal discomfort should be regularly repositioned with adequate support to limbs and back to promote comfort and minimise femoral puncture site complications. ¹⁰⁶	B
Patients should be managed for at least 2 hours, but not exceeding 4 hours on bed rest unless clinical conditions indicate otherwise. Increased bed rest has not been associated with any significant decrease in complications.	D
Sheath Removal Ambulation Times	
Post-sheath removal ambulation times will need to vary depending upon the treatment and patient assessment. The following should be taken into consideration:	
-Glycoprotein IIb/IIIa (GP IIb/IIIa) inhibitors used ambulation to be avoided if infusion is ongoing.	B
-Bivalirudin used - post-sheath ambulation time can be reduced to 2 hours unless contraindicated by other clinical circumstances. ^{107, 108}	B
-Patients who have been sedated should be managed in bed until considered capable of ensuring their own safety. Bed side rails should be used judiciously. ^{109, 110}	D

Patient Positioning

The participants reported varied responses to the angle of the head of bed with the majority of respondents choosing to lay patients flat. As found with 'time to ambulation', patient position has limited research evidence to support practice. Chair and colleagues¹⁰⁶ conducted a randomized control study regarding in-bed positioning (supine vs. lateral positioning and elevation of head of bed) of 419

patients from two Hong Kong hospitals following diagnostic angiography. Participants were randomized to either control (managed supine and no more than 15 degrees elevation for duration) or experimental group (patient's position changed regularly and head of bed slowly elevated to 30 degrees). Not only were patient back discomfort reports statistically significantly lower ($p < 0.001$), vascular complications were also lower.¹⁰⁶ Their study observed that institutional differences in policy and procedure could have altered the findings:¹¹¹ underscoring the need for further data to support practice. A more recent study of 105 diagnostic catheterisation patients found patients assigned to the control group had statistically significantly more back discomfort following 3 hours as opposed to the two experimental groups.¹¹² However, sample size may hamper generalisability of the results. Notwithstanding, the results of these studies point toward nurses having greater flexibility to tailor post-PCI patient positioning to meet the needs of the patient with minimal risk for vascular complications. The caveat on this conclusion is the need for larger studies to more accurately establish the likelihood of risk across a wider range of patients particularly in the PCI specific population.

Sheath Removal Ambulation Times

Studies recommending a particular time to ambulation post-sheath removal range from 6 hours¹¹³, to 2 hours.^{114, 115} An additional prospective study with angiography patients found ambulation was safe within 90 minutes of sheath removal.¹¹⁶ A synthesis of studies investigating length of bed-rest following diagnostic cardiac catheterization conducted up to 2007 found no evidence that prolonged bed rest past 3 hours reduced complications such as hematoma or bleeding.¹¹⁷ The length of time the femoral artery sheath is in situ impacts on the risk for femoral access site complications.¹⁰³ All studies found minimal complications such as bleeding arterial puncture site, from varying the length of time spent in bed following the procedure and sheath removal.^{114, 118} A recent study conducted in Australia, using a quasi-experimental design investigating the optimum post-sheath removal time by comparing three groups of patients randomly allocated to either 3, 4 or 6 hour ambulation regimens.¹¹⁹ Walker and

colleagues found that it is was safe and effective to ambulate patients within 3 hours of sheath removal.¹¹⁹ Caution must be taken when interpreting the results from these studies as most studies have quite heterogeneous methods varying in quality¹¹⁷ and populations such as variations in heparin protocols employed;^{114,}¹¹⁵ lack of reporting of methods of achieving haemostasis;¹¹⁵ and inclusion of angiography and angioplasty patients in the same cohort.¹²⁰ It is also important to take note of the advances in PCI technology and application which may reduce the generalisability of previous studies to current treatment populations as treatment options have evolved.¹²¹

Potential Puncture Site Complications

Table 7.15 – Post-PCI Potential Puncture Site Complications Recommendations

Recommendation	Grade of Recommendation
<p>Regular observations of the access site, surrounding tissue and limb are necessary to detect potential complications including:</p> <ul style="list-style-type: none"> ·haematoma ·retroperitoneal bleeding ·compromised limb circulation. <p>Initial observations should be conducted no less than every 15 min. for the first hour and then every 30 min. until sheath removal or, in case of an operator inserted closure device, ambulation.¹²² Factors increasing risk for complications include:</p> <ul style="list-style-type: none"> ·adverse coagulation profile ·older age ·sheath size (≥7Fr) ·female sex.⁷⁵ 	D
<p>Suspected pseudo-aneurysms should be reported to the treating cardiology team immediately. Symptoms may (but not always) include:</p> <ul style="list-style-type: none"> ·pulsatile mass ·audible bruit ·pain ·circulatory compromise. <p>Confirmation is usually made using duplex ultra-sonography.¹²³</p>	C
<p>Retroperitoneal haematomas are rare yet serious complications should be reported to the treating cardiology team immediately. Symptoms may include:</p> <ul style="list-style-type: none"> ·hypovolaemia ·diaphoresis ·lower abdominal/back pain.²⁹ <p>The diagnosis is usually confirmed by computed-tomography.¹⁰ Those at higher risk include:</p> <ul style="list-style-type: none"> ·females ·high femoral artery puncture ·small femoral artery ·multiple punctures of the artery during the procedure.⁸⁰ 	B

Pseudoaneurysms account for between 2% and 8% of PCI related vascular complications.¹²³ Detection is best made by physical examination including palpation, and if necessary, auscultation (LoE: IV). The patient may complain of pain also. In severe cases, decreased nerve conduction and limb circulation can occur. Confirmation of diagnosis is made by duplex ultrasonography.¹²³

Retroperitoneal haematomas are among the most life-threatening events for those undergoing PCI. Occurring in less than 1% of cases, detection is usually noted only after the patient has become hypovolaemic.⁸⁰ In a study seeking to

identify presenting factors to improve early detection, Farouque and colleagues found two factors apparent with a significant number of patients in the cohort: diaphoresis and complaints of lower abdominal pain.⁸⁰ As for vascular risks in general, three precipitating factors were noted: sex (being female), having a high femoral puncture site and small femoral artery size.⁸⁰

7.7.4 Post-PCI Secondary Prevention Practice

Patient / Carer Groin Care Education

Table 7.16 – Post-PCI Patient / Carer Groin Care Education Recommendations

Recommendation	Grade of Recommendation
Patients, their families / carers should receive written instructions advising how to manage the puncture site/s post-discharge including: <ul style="list-style-type: none"> ·avoidance of strenuous activities for 48 hours following the procedure ·following elective PCI, driving should be avoided for 2 days while primary/rescue PCI patients should not drive for 2 weeks.¹²⁴ ·avoidance of lifting heavy object or straining for 48 hours post discharge ·assessment of puncture site for signs of bleeding, haematoma or localised swelling, excessive pain, decreased limb sensation, changes in temperature or colour ·assessment of the patient for diaphoresis, lower abdominal pain or swelling (as potential signs of retroperitoneal haematoma).^{47, 125} 	D
Patients with operator-inserted closure devices should be advised verbally and via a written information sheet to refrain from swimming, bathing or use of a spa for 4 days post-procedure. ¹²⁵	D

The shortening length of stay experienced by PCI patients exposes them, their families and/or carers to the need to manage any complications that occur following discharge. Patients should be taught what can trigger bleeding (hyper-extension of the neck leading to increased intra-abdominal pressure and excessive movement) together with the symptoms of bleeding. Not only is this important for their post-discharge coping, it can also assist the nurse during the acute care admission in rapid detection including sudden sharp pain and warm and wet sensations around the puncture site.⁴⁷

Patient education and promotion of secondary prevention

Table 7.17 – Post-Discharge Planning Patient Education, Chest Pain Action Plan, Family/Carer Involvement and Cardiac Rehabilitation Recommendations

Recommendation	Grade of Recommendation
Patient Education	
Resources used in patient education should consider health and English literacy, be flexible and be in a format of their choosing. ³³	C
The acute care setting should be considered the start of the patient's secondary prevention process with emphasis on enrolment and involvement in a comprehensive CV risk reduction program and communication with primary care providers. ³³	D
Chest Pain Action Plan	
Prior to discharge, patients should have a written chest pain action plan as per existing guidelines. ^{17, 23}	C
Family / Carer Involvement	
Nurses should engage carers or key significant others when providing education to patients. ¹²⁶	C
Cardiac Rehabilitation	
Nurses providing acute care should regularly advocate enrolment and completion of a comprehensive CR/CV risk reduction program following discharge. ²³	A
Ideally, patients should be recruited to CR by members of the CR team while the patient is still admitted to the acute care setting.	D
Patients should receive follow-up contact from CR team members to reinforce the need for enrolment and completion of a comprehensive cardiac rehabilitation program.	D

Patient education

Variance in quality of patient education has been reported in the literature.¹⁰⁵ Clark and colleagues emphasise the need for healthcare providers to seek regular feedback regarding the quality of pre-discharge education.¹⁰⁵ Given the diverse nature of the patient population in terms of health literacy, English comprehension and level of education, appropriate forms of information sharing are required to improve access to and retention of the information shared. Evidence of long-term effectiveness of secondary prevention strategies is still emerging and extant studies tend to be methodologically limited.³³ In a 10-year follow-up study of an RCT of nurse-led secondary prevention programs in primary care settings, Delaney and colleagues^{127, 128} concluded that the closer to diagnosis secondary prevention strategies are employed the greater the chance

patients have for medium to long term survival. Nurses play an important role in advocating for secondary prevention strategies with patients and family.⁶⁷

Chest Pain Action Plan

Chest pain action plans have been advocated in current ACS and PCI guidelines.^{17, 23} This includes prescription of nitrates and a written action plan for patients to follow post discharge including when to seek emergency assistance.¹⁷

Family and Carer Involvement

Support people or carers also play a significant role in supporting the patient during the acute admission and into discharge. There is growing evidence that providing education opportunities to carers as well as patients improves outcomes.¹²⁶ This is particularly important when considering the increased burden family and carers experience when supporting a loved-one through a potentially life-threatening event.¹²⁹

Cardiac Rehabilitation

Guidelines documents outline recommendations for attendance at cardiac rehabilitation and nurses are encouraged to familiarise themselves with these.^{17, 23} Referral and participation in comprehensive cardiac rehabilitation programs continuing to be poor.¹³⁰ On the other hand, considerable research exists supporting the efficacy of cardiac rehabilitation (CR). Critique of this research has led some to comment on the quality of studies.⁶² This includes study design issues such as participant selection⁶², adequate implementation of control groups⁶¹, heterogeneity of program designs⁶¹, fiscal impact^{105, 130} and lack of data on long-term effectiveness¹³¹, specifically the inclusion of long-term follow-up interventions in programs.¹³² Integral to follow-up, the issue of lasting adherence to lifestyle modification remains a concern for cardiovascular clinicians.^{17, 62, 130, 131}

In spite of limitations, secondary prevention programs aid in improving health outcomes for people following acute cardiac events and procedures (LoE: II).^{130,}
¹³³ Benefits include reduced mortality,^{130, 134} improved quality of life and functional capacity¹³⁵ and cost-effectiveness.¹³⁶ However, referral and up-take into these programs remains low globally with two Australian studies, one a prospective audit into cardiac care finding referral rates less than 11%,¹³⁷ while Scott and colleagues⁶¹ reported a 29% referral rate. Similar figures are cited for the UK and the USA. In the UK, 13-20% of all discharged with a diagnosis of ischemic heart disease participated in cardiac rehabilitation in 2000.¹³⁸ The USA has reported comparable participation with rates between 10-20%.⁸² Developing evidence-based innovative approaches to secondary prevention measures are essential.

7.8 Discussion

Developing clinical practice guidelines requires a collaborative interdisciplinary approach so as to minimise potential practice gaps and increase the likelihood of uptake into clinical settings. This chapter has also demonstrated important challenges to this process including practice diversity, limited evidence, institutional-specific standards and an absence of nursing practice guidelines. As summarised in previous publications,^{1, 25, 118} there is a substantial variation in practice and the opinions that underpin that practice.

7.8.1 Collaboration as a key to improved outcomes

Collaboration has been the key to achieving a set of cohesive guidelines to date. As demonstrated in the earlier phases of the study, institutional-focused development of practice guidelines leads to practice diversity;^{11, 12} difficulty in measuring accurately and consistently important outcomes;²⁰ and variable levels of expertise in researching, developing and refining practice guidelines resulting in documents based on varying levels of evidence^{11, 20}. Collaboration has been at the core in this project's approach to developing these guidelines.

This approach provides the largest possible ownership of the CPG by those who will implement the guidelines

7.8.2 From guidelines to practice

Implementation of clinical practice guidelines remains a key challenge for those developing them.¹² Substantial resources are required by organizations. For example, the American Heart Association^{13, 15} and Australia's National Heart Foundation in encouraging engagement and adherence to endorsed guidelines requiring complex resources to market to clinicians and monitor implementation. A key to this project has been the high level of clinician engagement at each stage of development. From that involvement, key sites have identified themselves as potential pilot implementation sites in both Australia and New Zealand.

7.8.3 Limitations and strengths

There are several key limitations noted in undertaking this study. The panel size varied across the various phases of the study despite regular contact with participants. The reasons for this are complex and include increased time demands in a resource-scarce healthcare environment. It is also likely that many participants had felt that they had already provided their perspective and did not have the need to provide further input.

Diverse practice standards and institutional policies made deriving consensus challenging and some key areas of contention remain. The process, in respect of these points, has highlighted to clinicians the issues needing further debate and research. Validity and utility of the guidelines will be determined through implementation of the guidelines in several sites.¹¹

This study has succeeded in generating practice guidelines to improve PCI care. It is important to note that this was undertaken as part of a doctoral project and it is important to recognise the significant effort and cost that is required to develop these guidelines.³ This aspect has particular implications for professional bodies. Encouragingly, several participants indicated that

engagement with this project challenged them to critically review their practice and found the debate and discussion as part of this project engaging and useful.

7.9 Conclusion

In spite of comprehensive medical guidelines for the care of people undergoing PCI,^{17-19, 24} there remain gaps related to nursing-specific care. This chapter has presented a detailed discussion of the process used to develop a set of evidence-informed consensus derived guidelines to further support PCI-related nursing practice. The process has also been successful in highlighting practice areas that remain contentious. More research is required in order to generate evidence to support improvements in the outcomes of people undergoing interventional cardiology procedures.

The following chapter, Chapter Eight, will summarise the findings of the thesis, discussing the implications of the findings on policy, practice research and education. Prior to final comments, a summary of the strengths and limitations of study will be presented.

7.10 References

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Chapter Eight

Summary

Chapter 8 – Summary

8.1 *Introduction*

This thesis has reported a sequence of studies using mixed methods to derive greater understanding of the barriers, facilitators and opportunities in developing effective interventions to improve outcomes for people undergoing PCI. A patient journey approach, embedded in the Chronic Care Model, was used to inform the study design and the interpretation of data.

This chapter summarises key findings associated with each of the study aims. Implications for policy, practice, research and healthcare provider education will be presented prior to concluding remarks on the strengths, limitations and summary of the study. To assist the reader in seeing how discrete chapters contribute to the thesis as a whole, the diagram presented in Chapter One is repeated below (Figure 8.1).

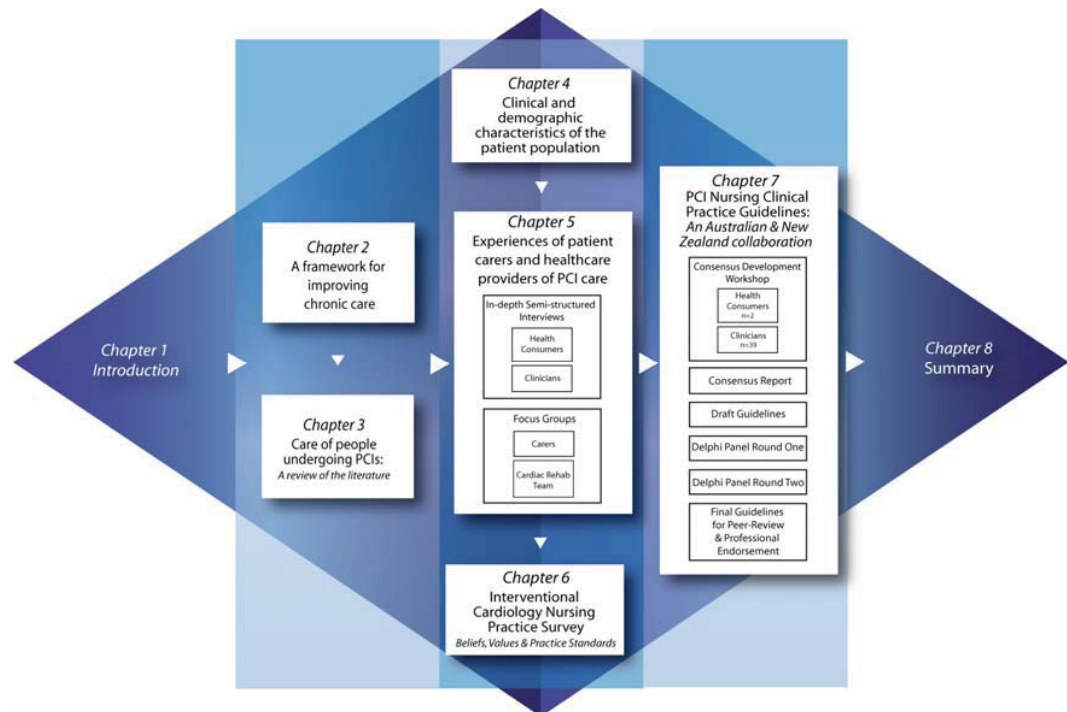


Figure 8.1 – Thesis structure

8.2 Assessing the findings against the study aims

Table 8.1 summarises the findings of this study and how the five study aims have been addressed in the thesis. The aims of this study were:

1. Describe the risk factor burden and the perception of the risk of a future cardiac event among individuals undergoing PCI in Western Sydney.
2. Investigate the barriers and facilitators to CHD risk modification in people undergoing PCI from the perspective of (i) patients (ii) carers and families; (iii) healthcare providers; and (iv) healthcare systems.
3. Determine key elements of an intervention to address (i) risk factor modification in the immediate PCI post-procedural period; and (ii) effective standards of care to impact on patient-focused outcomes.
4. Develop clinical practice guidelines for nursing practice in PCI care.
5. Propose interventions to improve secondary prevention strategies following PCI.

Table 8.1 – Summary of study findings

Study Aims	Chapter/s	Key Findings
Describe the risk factor burden and risk perception among individuals undergoing PCI in Western Sydney	4	<ul style="list-style-type: none"> • Diverse cultural & socioeconomic factors • High risk-factor burden, consistent with other studies • Misconception regarding cardiovascular risk • Low to moderate perception of risk among those with diabetes
Investigate the barriers and facilitators to cardiovascular risk modification in people undergoing PCI from the perspective of: <ul style="list-style-type: none"> • Patients • Carers & family • Healthcare providers, & • Healthcare Systems 	5 & 6	<p>The need for a(n):</p> <ul style="list-style-type: none"> • Focus on the patient journey to improve continuity of care • Effective patterns of person-centred communication to improve outcomes • Resourcing of healthcare services to improve patient outcomes • Increased emphasis of the role of carers and family • Addressing the diversity of practice standards • Greater emphasis on psychosocial aspects of care • Improving standards of care and benchmarking • Promoting uptake of CR
Determine key elements of an intervention to address: <ul style="list-style-type: none"> • Risk factor modification in PCI survivors that can be implemented in the immediate post-procedural period; and • Effective standards of care to impact on patient-focused outcomes 	5 - 7	<ul style="list-style-type: none"> • Elements of effective interventions include: <ul style="list-style-type: none"> • <i>Person-centred</i> • <i>Patient, carer and family focused</i> • <i>Integrated across the patient journey and beyond the acute care setting</i> • <i>Interdisciplinary</i> • <i>Partnerships between patients, carers and healthcare providers</i> • <i>Emphasis on adjustment and transition rather than education</i> • <i>Evidence-based principles and interventions</i> • <i>Improved & integrated support for carers and family</i>
Develop clinical practice guidelines for nursing practice in PCI care	7	<ul style="list-style-type: none"> • Clinical practice guidelines including 68 recommendations developed in 4 domains mapped to the patient journey • Collaborative approach key to achieving consensus
Propose interventions to improve uptake of secondary prevention strategies following PCI	8	<ul style="list-style-type: none"> • Potential models of interventions • PCI Care Coordinator • Carers' support: social networking approach

8.2.1 Aim One - Describe the risk factor burden and risk perception among individuals undergoing PCI in Western Sydney

Chapter Four of this thesis presented clinical and demographic characteristics of a sample of people undergoing angiography or PCI from the Western Sydney Area. The sample was consistent with other studies in terms of CHD disease burden. A surprising result from the study concerned the low to moderate perception of risk held by people with CHD and diabetes.¹ This highlights the benefit of personalising risk estimates based on individual characteristics and behaviours including assisting clinicians in tailoring communications to individual circumstances, including culturally diverse and vulnerable populations. Risk communication interventions have been shown to be effective and individualised risk estimation is a key factor in increasing the benefit of this approach.²

This study confirms the findings of other investigations that cardiovascular risk factors rarely exist in isolation but in clusters.³ Further studies are warranted investigating factors that may facilitate interventions to increase the accuracy of risk perception: for example, improving lifestyle and behavioural risk-factor modification in individuals who rely primarily on pharmacotherapy for management of CHD.

As many individuals undergoing PCI fail to attend CR,⁴ looking at alternate models of secondary prevention are also warranted. Providing access to coordinated approaches that use both pharmacological and non-pharmacological intervention targeting multiple risk factors is more likely to improve health outcomes. For example, interventions to promote physical activity can address excessive weight, hypertension, dyslipidaemia as well as depression.⁵

8.2.2 Aim Two - Investigate the barriers and facilitators to CHD risk modification in people undergoing PCI from the perspective of (i) people undergoing PCI; (ii) carers and families; (iii) healthcare providers; and (iv) healthcare systems.

This aim was addressed in Chapters Five and Six. Chapter Five reported a multi-method qualitative study in which participants were drawn from patients, carers and healthcare provider groups. In-depth interviews, focus group and group interview methods were used. Across all groups, similar barriers and facilitators to risk factor modification were identified. The elements of the patient journey and chronic care conceptual framework supporting this study were used to interpret and categorise study findings. An overwhelming theme was the need for improving communication between healthcare providers and patients, families and carers. Greater cooperation between healthcare delivery settings was also identified. The value of CR was noted but barriers to participation outlined. A limitation of this study was the failure to obtain the perspective of individuals who did not participate in CR- these individuals would provides some interesting insight into care coordination and should be a focus of future investigation.

Chapter Six reported the development and findings of a survey of cardiovascular nurses perceived practice standards, beliefs and values. The online sample included participants from Australia and New Zealand. Barriers to improving included diversity of practice standards in the profession and the need for greater integration of psychosocial aspects of care. Also evident was the gap between desired practice standards and the perception of the standard of care delivered, likely reflecting the pressures on contemporary health care systems.

8.2.3 Aim Three - Determine key elements of an intervention to address (i) risk factor modification in PCI survivors that can be implemented in the immediate post-procedural period; and (ii) effective standards of care to impact on patient-focused outcomes.

Elements key to developing effective interventions were highlighted in Chapters Five, Six and Seven where each key stakeholder group was represented. This approach is aligned with the conceptual framework reported in Chapter Two: integration across disciplines and care settings, patient/family/carer-focused and evidence-based.

The following points summarise the suggested elements of effective interventions for individuals undergoing PCI, as listed in Table 8.1:

- Person-centred approach;
- Patient, carer and family focused;
- Partnership to be facilitated between patients, carers and healthcare providers;
- Interdisciplinary care planning and delivery;
- Integration across the patient journey and beyond the acute care setting to include primary care, community, and secondary prevention services;
- Emphasis on adjustment and transition to a chronic illness rather than an emphasis on providing information and education;
- Appropriately resourced health care professionals and services, enabled by positive policies at institutional, Local, State and Federal levels of government
- Evidence-based practice; and
- Improved & integrated support for carers and family.

Congruence can be seen between the conceptual framework proposed in Chapter Two and the findings of Chapters Five and Six. While a high degree of clinical assessment and procedural skill is required in the acute care setting, it serves only to support the initial experience for people undergoing PCI. The

journey beyond that setting is equally important. Interventions intending to improve long-term uptake of behaviour modification and secondary prevention strategies requires focusing on the needs and experiences of the individual.

The experiences of carers reported in Chapter Five underscored the need for ongoing care and support. They often take up the responsibilities of care beyond discharge and are key resources for providing assistance with health care and activities of daily living. However, the burden of care potentially adversely impacts on relationships and the carer's health. Therefore, two important aspects for improving PCI care are: 1. Integration of carers and families into care planning and delivery; and 2. Providing support for carers and family to facilitate healthy transition and adjustment following PCI.

8.2.4 Aim Four - Develop clinical practice guidelines for nursing practice in PCI care.

Chapter Three presented the results of a review of the PCI care literature. Several medical clinical practice guidelines were found.⁵⁻⁸ Within these guidelines, nursing-specific care was not adequately addressed. Furthermore, limited evidence to support nursing practice together with diversity in practice standards was noted. The need for a set of clinical practice guidelines to meet the gaps in existing standards was apparent. Subsequently, as demonstrated by the degree of collaboration reported in Chapter Seven, considerable interest from clinicians and researchers has confirmed this.

The outcome of the guideline development process was reported in Chapter Seven. A total of 67 recommendations divided into 13 sub-categories were made using the framework of the patient journey. Over 50 clinicians, consumers, researchers and academics from Australia and New Zealand took part in the process. At the time of submission of this thesis, the guidelines are being considered for endorsement. See Table 8.2 for the objectives of the process into the future.

Table 8.2 – Further objectives for implementation of the PCI nursing clinical practice guidelines

Objectives
<p><i>PCI Nursing Clinical Practice Guidelines</i></p> <p>By December 2009, an evidence-based and consensus derived set of PCI nursing clinical practice guidelines will be drafted for endorsement by peak cardiovascular nursing and health bodies: CSANZ, ACNC, and ACRA</p> <p>By December 2010, key clinical settings from rural, regional and urban areas in Australia and New Zealand will be engaged to implement the guidelines and evaluate their efficacy</p> <p>By December 2010, a detailed clinical audit of PCI nursing practice will be underway in key clinical settings from Australia and New Zealand.</p> <p>By December 2011, 90% of PCI patients from key clinical settings implementing guidelines will be followed up by appropriate clinicians following discharge from the acute care setting</p> <p>By December 2011, 80% of PCI patients from key clinical settings implementing guidelines will be enrolled in an appropriate secondary prevention program following discharge from the acute care setting</p>

8.2.5 Aim Five - Proposed interventions to improve uptake of secondary prevention strategies following PCI.

The findings from this study highlighted the need to improve the care of patients and their carers and family. Based upon study findings, two specific interventions, appropriate to the Australian and New Zealand health care system have been developed:

- ***The PCI care coordinator***: An integrated approach to improving secondary prevention uptake among people undergoing PCI
- ***A social-networking intervention*** for carers of people undergoing PCI

These are briefly described below:

The PCI care coordinator

The need for coordination of the patient journey to minimise gaps in treatment and understanding was identified by patients, carers and healthcare providers alike. The findings emphasised the need for healthy transition from the acute care setting back into the community. Supporting adjustment to the new found realities of CHD requires an interdisciplinary approach bridging the various services including primary and specialist care, secondary prevention strategies

and risk factor modification. See Table 8.3 for an outline of the characteristics, method and objectives of the intervention.

Table 8.3 – The PCI Care Coordinator: An integrated approach to improving secondary prevention uptake among people undergoing PCI

Proposed Intervention
<i>The PCI Care Coordinator: An integrated approach to improving secondary prevention uptake among people undergoing PCI</i>
Characteristics
<ul style="list-style-type: none"> • Advanced-practice nursing-led coordination of interdisciplinary care of people undergoing PCI promoting adherence with evidence based guidelines • Patient journey Chronic Care Model based intervention through bridging cross-institutional gaps and enabling meaningful communication between providers • Bridging care from acute care to primary care and secondary prevention/chronic care services • Emphasis on transition and adjustment rather than didactic education through multiple consistent and congruent interactions
Method
<ul style="list-style-type: none"> • Non-blinded, randomised controlled trial with multiple methods to evaluate end-points and cost-benefit analysis, together with gaining greater insight into the patients' and providers' experiences of the intervention.
Objectives
<ul style="list-style-type: none"> • By December 2011, 90% of PCI patients admitted to the acute care setting will be referred to comprehensive cardiac rehabilitation/secondary prevention programs • By December 2011, 80% of PCI patients will be enrolled in an appropriate comprehensive cardiac rehabilitation/secondary prevention program • By December 2011, 100% of PCI patients will have their GPs updated appropriately with relevant information regarding their acute care admission • By December 2011, 80% of PCI patients discharged from the acute care setting will be receiving guidelines-based treatment • By December 2012, 80% of PCI patients will be reporting adherence to guidelines-based treatment

The carers of people undergoing PCI: Piloting a social-networking intervention

The need to support carers and family was emphasised in Chapter Five. From the carers' data, the need for social support networks for carers supporting people undergoing PCI was identified. Such interventions have been put forward

from time to time⁹ however little evidence of empirically evaluated strategies appears in the literature. This approach diverges from psycho-therapeutic group interventions. Rather than being structured around a clinical agenda, social networking groups aim to provide social support networks. The psychosocial aspects of adjustment to caring for a person with a chronic illness strengthen the rationale for proposing this research.

Table 8.3 - The Carers of people undergoing PCI: Piloting a social-networking intervention

Proposed Intervention
<i>The Carers of people undergoing PCI: Piloting a social-networking intervention</i>
Characteristics
<ul style="list-style-type: none"> • Cardiac-rehabilitation nurse-led informal social networking intervention • Support of carers and family during the acute admission and secondary prevention phases • Informal nurse-facilitated non-psychotherapeutic peer-support group • Emphasis on transition and adjustment through peer-support and information sharing • Patient journey Chronic Care Model based intervention
Method
<ul style="list-style-type: none"> • Prospective quasi-experimental design pilot study using pre/post test evaluation of outcomes. • End-points include completion of secondary prevention program, acute cardiac-related readmission or death. • Psycho-metrically evaluated concepts include carer-burden, depression, anxiety, coping, quality of life and cardiac knowledge. • Qualitative methods including interviews and focus groups with carers, patients and healthcare providers to be used to provide in-depth insight into experiences during the intervention
Objectives
<ul style="list-style-type: none"> • By December 2011, 50% of PCI patient carers will be engaged in social support networks following the acute admission of the PCI patient • By December 2011, 50% of PCI patient carers will have engaged with the PCI patient in an appropriate comprehensive secondary prevention / cardiac rehabilitation program

8.3 Implications for policy, practice, research and education

8.3.1 Implications for policy

Policy strategies that determine staffing ratios and monitor procedural outcomes for both medical and nursing clinical indicators are important.¹⁰ Strong platforms for clinical governance are vital for healthcare organisations in order to encourage and monitor practice standards for delivering improved patient outcomes.¹¹

In particular, the findings from this study have three main impacts on healthcare systems and policy in Australia. There is a need for:

1. Policy to incorporate a broader basis for healthcare reform that links the acute care setting to primary, secondary prevention and chronic care services to deliver interdisciplinary seamless care. For people undergoing PCI, the complex journey from symptom recognition to risk factor modification requires the input of several healthcare delivery settings and providers. The current 'silo' acute care focused approach exposes patients, their carers and family to increased gaps in care. In turn, impacting on the uptake of secondary prevention and long-term survival.
2. Greater investment in healthcare resourcing taking into consideration the chronic and complex needs of people with CHD and its trajectory.
3. Increased engagement of healthcare consumers in policy planning and evaluation from a patient-focused perspective that considers the role of families and carers in healthcare decision-making and care delivery beyond the acute care setting.

8.3.2 Implications for practice

As outlined above, there is a lack of high level evidence to support guidelines development for nursing practice in PCI, without the use of a consensus approach. Yet, in the absence of clear guidelines, clinical practice may become individualistic and *ad-hoc*. It is likely that the development of nurse sensitive

patient outcome indicators may facilitate monitoring of practice and quality improvement initiatives.¹² This requires considerable investment in further research. However, applying clinical research findings to usual care practice is inherently problematic due to factors such as patient selection criteria.

In addition, identifying people at higher risk, particularly the elderly, is an important factor in planning and monitoring care.¹³ As such, rather than viewing care solely from procedural perspective, healthcare providers are challenged to engage the broader context of the individual. In so doing, acknowledging the PCI procedure as an important yet passing experience as patients prepare to negotiate the longer trajectory of a chronic condition.

8.3.3 Implications for research

This thesis highlights the need for further research in key areas. These include:

1. Developing and piloting potential interventions to facilitate transition and adjustment by people undergoing PCI, including their family and carers;
2. More detailed audits of clinical practice including development of key performance indicators for measuring outcomes;
3. Further investigation into the phenomenon of risk perception among those with CHD and comorbid conditions, such as diabetes, including key areas for leveraging interventions for modifying risk and secondary prevention uptake;
4. Investigating the efficacy of current interventions used by nurses in the care of people undergoing PCI;
5. Engaging in a consensus approach to standardise PCI nursing care outcomes measures to aid in developing or enhancing existing patient registries; and
6. Further work on PCI guideline implementation and evaluation

8.3.4 Implications for healthcare provider education

Cardiovascular nurses find themselves challenged by technological advances and rapid changes in health care system design. As a result, continuous practice evaluation, re-design and assessment are important in improving health outcomes in people with CHD. Clinicians must also play their part in generating the evidence required for moving practice toward rigorous science-based practice.^{10,14} Further, in undergraduate, post-graduate and continuing professional development it is important to provide information on latest practice trends as well communicating the significance of PCI approaches within a chronic illness trajectory. Reforming healthcare planning and delivery to embrace more integrated approaches will take well developed educational processes across a spectrum of educational delivery settings. Included is the need for graduate education opportunities in chronic care management as well as work-place professional development.

8.4 Conclusion

People undergoing PCI experience a complex disease trajectory the first sign of which is often a life-threatening cardiovascular event. They then engage in an equally complex journey through the healthcare system. The barriers and facilitators contributing to the outcome of that journey are not derived from or experienced by the patient alone, rather within an inter-related set of relationships involving family and carers, healthcare providers and the healthcare system. Likewise, the adjustment required to reducing risk for further CHD is dependent on a complex interplay of factors. Opportunities to intervene and potentially improve outcomes have been identified by this study. In particular, developing greater consensus towards evidence-based clinical practice guidelines for nursing practice were found to be an essential component. The need to provide greater support to patients and their families in transitioning from the acute care setting to secondary prevention strategies was also identified. This thesis has provided an important contribution to nursing

knowledge to improve the care of individuals undergoing PCI in Australia and New Zealand.

8.5 References

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Every reasonable effort has been made to acknowledge the owners of copyright material. I would be pleased to hear from any copyright owner who has been omitted or incorrectly acknowledged.

Appendix One

Human Research Ethics Approval Documents

1.1 Curtin HREC Approval

memorandum

To	Professor Patricia Davidson, Centre for Cardiovascular and Chronic Care (Sydney Campus)
From	A/Professor Stephan Millett, Chairperson, Human Research Ethics Committee
Subject	Protocol Approval HR 07/2008
Date	27 February 2008
Copy	John Rolley (PhD Student) Graduate Studies Officer, Faculty of Health Sciences

Curtin 
University of Technology

Office of Research and Development

Human Research Ethics Committee

TELEPHONE 9266 2784

FACSIMILE 9266 3793

EMAIL hrec@curtin.edu.au

Thank you for your application submitted to the Human Research Ethics Committee (HREC) for the project titled "Improving care for people undergoing percutaneous coronary interventions (PCIs): elements of effective interventions - APRICA2". Your application has been reviewed by the HREC and is approved.

- You are authorised to commence your research as stated in your proposal.
- The approval number for your project is **HR 07/2008**. Please quote this number in any future correspondence.
- Approval of this project is for a period of twelve months **26-02-2008 to 26-02-2009**. To renew this approval a completed Form B (attached) must be submitted before the expiry date **26-02-2009**.
- If you are a Higher Degree by Research student, data collection must not begin before your Application for Candidacy is approved by your Divisional Graduate Studies Committee.
- The following standard statement **must be** included in the information sheet to participants:
This study has been approved by the Curtin University Human Research Ethics Committee (Approval Number HR 07/2008). The Committee is comprised of members of the public, academics, lawyers, doctors and pastoral carers. Its main role is to protect participants. If needed, verification of approval can be obtained either by writing to the Curtin University Human Research Ethics Committee, c/- Office of Research and Development, Curtin University of Technology, GPO Box U1987, Perth, 6845 or by telephoning 9266 2784 or by emailing hrec@curtin.edu.au.

Applicants should note the following:

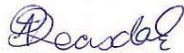
It is the policy of the HREC to conduct random audits on a percentage of approved projects. These audits may be conducted at any time after the project starts. In cases where the HREC considers that there may be a risk of adverse events, or where participants may be especially vulnerable, the HREC may request the chief investigator to provide an outcomes report, including information on follow-up of participants.

The attached **FORM B** should be completed and returned to the Secretary, HREC, C/- Office of Research & Development:

When the project has finished, or

- If at any time during the twelve months changes/amendments occur, or
- If a serious or unexpected adverse event occurs, or
- 14 days prior to the expiry date if renewal is required.
- An application for renewal may be made with a Form B three years running, after which a new application form (Form A), providing comprehensive details, must be submitted.

Regards,



RP

A/Professor Stephan Millett
Chair, Human Research Ethics Committee

1.2 SWAHS HREC Approval

SYDNEY WEST AREA HEALTH SERVICE | NSW HEALTH

HUMAN RESEARCH ETHICS COMMITTEE (Westmead Campus)
Research Office, Room 2020 Clinical Sciences
Westmead Hospital, Hawkesbury Road, Westmead NSW 2145

Telephone: 02 9845 8183

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Committee Secretariat:

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Professor of Public Health &
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Dr Jim Hazel
Secretary
Medical Graduate -
Epidemiologist

Committee Members:

Leonard Burney
Layman

Mrs Patricia Fa
Clinical Trials Plannner

A/Prof Lorraine Ferguson AM
Nursing Research Unit

Mr John Fisher
Lawyer

Ms Janet Fox
Law Graduate

Ms Jillian Gwynne Lewis
Patient Representative

Dr Anthony Harris
Medical Graduate -
Psychiatrist

Ms Jani Kang
Diversity Health Institute

A/Prof Ian Kerridge
Haematologist and Bioethicist

Rada Kusic
Clinical Trials Manager

Rev Sarah Plummer
Minister of Religion

Mr John Shaw
Layman

Dr Geoff Shead
Medical Graduate - Surgeon

Dr Howard Smith
Medical Graduate - Endocrinologist

Mrs Carol Walsh
Laywoman

Ms Shane Waterion
Laywoman

Ms Christine Wearne
Clinical Psychologist

JH/pme HREC2007/7/4.3(2631)

25 September, 2007

A/Prof. Patricia Davidson
Centre for Cardiovascular and Chronic Care
Curtin University of Technology Sydney Campus
Curtin House
39-47 Regent Street
CHIPPENDALE NSW 2008

Dear Professor Davidson

Research Proposal: Improving care for people undergoing percutaneous coronary interventions: elements of effective interventions - APRICA2 - Phases Two and Three.

Thank you for your letter dated 4 September 2007 forwarding your revised Participant Information and Consent Forms Version 2 dated 29/8/07 for the Clinician (Phase Two) and PCI In-Patient (Phase Two) together with the signed letter of acceptance, all in accordance with the requests of the Human Research Ethics Committee letter dated 8 August 2007.

As the Committee's ethical concerns have now been satisfied, **final approval** of the study is confirmed and it may now commence. A copy of the approved Participant Information and Consent Forms Version No. 2 dated 29/8/07 for the Clinician (Phase Two) and PCI In-Patient (Phase Two) are attached for your records.

The Committee wishes you well with the study and looks forward to receiving progress reports in due course.

Yours sincerely,


Dr Jim Hazel
Secretary
Sydney West Area Health Service
Human Research Ethics Committee

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L11-09/1

1.3 SWAHS Scientific Advisory Committee Approval

SYDNEY WEST | NSW HEALTH
AREA HEALTH SERVICE

WESTMEAD SCIENTIFIC ADVISORY COMMITTEE
Research Office Room 2020 Clinical Sciences
Level 2 Westmead Hospital
Hawkesbury & Darcy Roads Westmead NSW 2145
Telephone 02 9845 8183
Facsimile 02 9845 8352
Email address: researchoffice@westgate.wh.usyd.edu.au

Our Ref: RB/TG SAC2007/7/4.3(2631)

Date: 12 July 2007

A/Prof Trish Davidson
14 Mill Hill Road
Bondi Junction NSW 2022

Dear A/Prof Davidson

Research Proposal: 'Improving care for people undergoing percutaneous coronary interventions: elements of effective interventions - APRICA2 - Phases Two and Three'

Your research proposal was reviewed at the Westmead Scientific Advisory Committee meeting held on 9 July 2007.

I am pleased to advise you that our committee has agreed to the scientific validity of the project and that your proposal has now been forwarded to the Human Research Ethics Committee for consideration of the ethical issues.

The committee wishes you all the best for your ongoing research at Westmead.

Please quote reference number **SAC2007/7/4.3(2631)** in all future correspondence.

Yours sincerely



Dr Rosemary Balleine
Secretary
Westmead Scientific Advisory Committee

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LH-001

1.4 SWAHS Student Transfer from UWS to Curtin University of Technology



Westmead Hospital

SYDNEY WEST | **NSW HEALTH**
AREA HEALTH SERVICE

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Chair
Professor of Public Health &
Community Medicine

Dr Jim Hazel
Secretary
Medical Graduate -
Endocrinologist

Committee Members:

Mr Leonard Burney
Layman

Mrs Patricia Fa
Clinical Trials Pharmacist

A/Prof Lorraine Ferguson AM
Nursing Research Unit

Mr John Fisher
Lawyer

Ms Janet Fox
Law Graduate

Ms Jillian Gwynne Lewis
Patient Representative

Dr Anthony Harris
Medical Graduate -
Psychiatrist

Ms Jan Kang
Diversity Health Institute

A/Prof Ian Kerridge
Haematologist and Bioethicist

Ms Rada Kusic
Research Manager

Rev Sarah Plummer
Minister of Religion

Mr John Shaw
Layman

Dr Geoff Shead
Medical Graduate - Surgeon

Dr Howard Smith
Medical Graduate - Endocrinologist

Mrs Carol Walsh
Laywoman

Ms Shane Waterton
Laywoman

Ms Christine Wearne
Clinical Psychologist

1 April, 2008

A/Prof. Patricia Davidson
Centre for Cardiovascular and Chronic Care
Curtin University of Technology Sydney Campus
Curtin House
39-47 Regent Street
CHIPPENDALE NSW 2008

Dear Professor Davidson

Research Proposal: Improving care for people undergoing percutaneous coronary interventions: elements of effective interventions - APRICA2 - Phases Two and Three.

Thank you for your letter dated 27 February 2008 and email dated 24 March 2008 from Mr Rolley concerning the above study.

The Committee appreciates your advice that as Mr Rolley has transferred from UWS to Curtin University of Technology, the Participant Information and Consent Sheets have been altered in accordance with this change. Thank you for forwarding Participant Information and Consent Sheets for both the Clinicians (for Phase Two) and PCI In-Patient (for Phase Two), being version 2.1 dated 19 March 2008, which have been reviewed and approved, an approved copy of which are attached for your records.

Yours sincerely


Dr Jim Hazel
Secretary
Sydney West Area Health Service
Human Research Ethics Committee

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LH-002

1.5 UWS Original APRICA Study (Chapter Four) Approval

Locked Bag 1797
Penrith South DC NSW 1797 Australia

18 April 2006



Associate Professor Patricia Davidson, Dr Yenna Salamonson & Dr Sharon Andrew
College of Health & Science
School of Nursing
University of Western Sydney
NSW 2747

Dear Patricia, Yenna, Sharon

HREC 06/040 Actual and Perceived Risk in Percutaneous Coronary Angioplasty Patients (APRICA) Project

The Committee has reviewed the application presented to the Sydney West Area Health Service Human Research Ethics Committee and has agreed to endorse the approval granted.

Please confirm the BN (Hons) student Jean Hammond has submitted an application to the UWS Human Research Ethics Panel for her component of the study.

You are advised that the Committee should be notified of any further change/s to the research methodology should there be any in the future. You will be required to provide a report on the ethical aspects of your project at the completion of this project. The form is located on the Research Services Ethics Web Page.

The Protocol Number HREC 06/040 should be quoted in all future correspondence about this project. Your approval will expire 30 June 2007. Please contact the Human Ethics Officer, Kay Buckley on tel: 02 47 360 883 if you require any further information.

The Committee wishes you well with your research.

Yours sincerely


Associate Professor Louise O'Brien
Acting Chairperson & Deputy Chairperson
UWS Human Research Ethics Committee

RECEIVED 21 APR 2006

1.6 SWAHS Original APRICA Study (Chapter Four) Approval

RECEIVED 14 FEB 2006

SYDNEY WEST AREA HEALTH SERVICE (Westmead Campus)

HUMAN RESEARCH ETHICS COMMITTEE

Research Office, Clinical Sciences
Westmead Hospital Campus
Westmead NSW 2145

Telephone: 02 9845 8183
Facsimile: 02 9845 8352
Email: researchoffice@westgate.wh.usyd.edu.au

In reply please quote:

HS/pme HREC2005/11/4.16(2238)

Committee Secretariat:

Professor Stephen Leader AO
Chairman
Professor of Public Health &
Community Medicine

Dr Howard Smith
Secretary
Medical Graduate -
Endocrinologist

Committee Members:

Mr Leonard Burney
Layman

Dr Michael Cole
Medical Graduate - Neonatal
Paediatrician

Mrs Patricia Fa
Clinical Trials Pharmacist

A/Prof Lorraine Ferguson AM
Nursing Research Unit

Mr John Fisher
Lawyer

Ms Janet Fox
Law Graduate

Ms Jillian Gwynne Lewis
Patient Representative

Dr Anthony Harris
Medical Graduate -
Psychiatrist

Dr Jim Hazel
Medical Graduate -
Endocrinologist

Ms Vicki Howson
Social Worker

Ms Jan Kang
Diversity Health Institute

A/Prof Ian Kerridge
Haematologist and Bioethicist

Ms Rada Kusic
Clinical Trials Manager

Mr John Shaw
Layman

Dr Geoff Shead
Medical Graduate - Surgeon

Mrs Carol Walsh
Laywoman

Ms Shane Waterton
Laywoman

3 February, 2006

A/Prof. Patricia Davidson
Nursing Research Unit
Locked Building 59
Area Nurse Education Centre
Cumberland Hospital
PARRAMATTA NSW 2150

Dear Professor Davidson

Research Proposal: Actual and Perceived Risk in Percutaneous Coronary
Angioplasty Patients (APRICA) Project (Short Title: APRICA Study)

Thank you for your letter dated 25 January 2006 forwarding your revised Participant Information and Consent Forms Version 3 dated 25/1/06 all in accordance with the requests of the Human Research Ethics Committee letter dated 14 December 2005.

As the Committee's ethical concerns have now been satisfied, **final approval** of the study is confirmed and it may now commence. A copy of the approved Participant Information and Consent Forms Version No. 3 dated 25/1/06 is attached for your records.

The Committee wishes you well with the study and looks forward to receiving progress reports in due course. Could you please forward the signed letter of acceptance to the Research Office.

Yours sincerely



Dr Howard Smith
Secretary
Sydney West Area Health Service
Human Research Ethics Committee

Appendix Two

Participant Information Sheets and Consent Forms

2.1 Participant Information Sheet & Consent Form - Patients



SYDNEY WEST
Area Health Service

PARTICIPANT INFORMATION – PCI In-Patient (Phase Two)

Study Title: Phase Two of Improving care for people undergoing percutaneous coronary interventions: elements of effective interventions - APRICA2 – Phase Two

Chief Investigator:

Associate Professor Patricia Davidson, SWAHS, Nursing Research Unit

Co-Investigators:

*Mr John Xavier Rolley, *PhD Candidate*, Curtin University of Technology, School of Nursing & Midwifery

What is the purpose of the study?

This study seeks to understand the patient's experience and clinician perspectives of the admission process of percutaneous coronary interventions. This is a procedure where a blocked artery is opened by placing a tube into the heart and inflating a balloon. Often a 'stent' which is a form of metal scaffolding is placed to keep the artery open. The information obtained from this study will be used to develop strategies for reducing the risk of heart disease and improving the health of other patients undergoing similar procedures.

**This study forms part of John Rolley's Doctoral research program contributing to a PhD from Curtin University of Technology.*

Who will be invited to enter the study?

All patients admitted for PCI procedure/s will be invited to participate in this study.

What will happen on the study?

If you agree to participate in this study, you will be asked by a nurse researcher to consent to an interview lasting between 45 minutes to no more than 90 minutes. This interview will consist of asking you to discuss your experience through your admission during the hospital. The interview will be **audio-recorded using a digital recording device** and the nurse researcher will also take brief notes during the course of the interview. Once all the interviews have been completed and a report has been written, you may be invited to review the report and provide feedback to the researcher regarding its accuracy. This report would be posted to your postal address and include a reply-paid envelope for you to return the report with any comments to the research team.

Are there any risks?

It is not anticipated that there will be any risks involved if you participate in this research. However, if the research should cause any distress you will have access to counselling offered by the SWAHS.

Confidentiality / Privacy

All information related to the study will be stored securely in the Nursing Research Unit in the Sydney West Area Health Service. All aspects of this study, including results, will be strictly confidential and only the researchers will have access to your personal information. You will be identified by a code number on study documentation and the master list of identifying names will be kept securely by the research team. Any publication of the results from this study will only use unidentified information.

Do you have a choice?

Your participation in this study is entirely voluntary. If you choose not to join the study, or you wish to withdraw from it at any time, your medical care will not be affected. In particular, your refusal to participate in this study does not impact upon your ability to participate in cardiac rehabilitation at the present time or any time in the future.

Complaints

If you have any concerns about the conduct of the study, or your rights as a study participant, you may contact: Westmead Hospital Patient Representative, Ms Jillian Gwynne Lewis, telephone No 9845 7014 or email jillian_lewis@wsahs.nsw.gov.au

Contact details: If you have any problems while on the study, please contact

John Rolley, Working Hrs Ph 02 8399 7838,

After Hrs Ph 0404 716 175 Facsimile 02 8399 7834 Email john.rolley@postgrad.curtin.edu.au

CONSENT TO PARTICIPATE IN RESEARCH

Study Title: Phase Two of Improving care for people undergoing percutaneous coronary interventions: elements of effective interventions - APRICA2 – Phase Two

Name of Researcher:

1. I understand that the researcher will conduct this study in a manner conforming with ethical and scientific principles set out by the National Health and Medical Research Council of Australia and the Good Clinical Research Practice Guidelines of the Therapeutic Goods Administration.
2. I acknowledge that I have read, or have had read to me the Participant Information Sheet relating to this study. I acknowledge that I understand the Participant Information Sheet. I acknowledge that the general purposes, methods, demands and possible risks and inconveniences which may occur to me during the study have been explained to me by _____ ("the researcher") and I, being over the age of 16 years acknowledge that I understand the general purposes, methods, demands and possible risks and inconveniences which may occur during the study.
3. I acknowledge that I have been given time to consider the information and to seek other advice.
4. I acknowledge that refusal to take part in this study will not affect the usual treatment of my condition.
5. I acknowledge that I am volunteering to take part in this study and I may withdraw at any time.
6. I acknowledge that this research has been approved by the Sydney West Area Health Service Human Research Ethics Committee.
7. I acknowledge that I have received a copy of this form and the Participant Information Sheet, which I have signed.

Before signing, please read 'IMPORTANT NOTE' following.

Name of participant _____ Date of Birth _____

Address of participant _____

Name of parent or person responsible (where applicable) _____

Address of parent or person responsible (where applicable) _____

Signature of participant _____ Date: _____

Signature of parent or person responsible (where applicable) _____ Date: _____

Signature of researcher _____ Date: _____

Signature of witness _____ Date: _____

IMPORTANT NOTE

This consent should only be signed as follows:

1. *Where a participant is over the age of 16 years, then by the participant personally.*
2. *Where a participant is between the age of 14 and 16 years, it should be signed by the participant and by a parent or person responsible.*
3. *Where a participant is under the age of 14 years, then the parent or person responsible only should sign the consent form.*
4. *Where a participant has impaired capacity, intellectual disability or is unconscious, then specific approval for the process for obtaining consent must be sought from the Human Research Ethics Committee.*

WITNESS:

I, _____ (name of witness)

of _____ hereby certify as follows:

1. I was present when _____ ("the participant") appeared to read or had read to him / her a document entitled Participant Information Sheet; or I was told by _____ ("the participant") that he/she had read a document entitled Participant Information Sheet (*Delete as applicable)
2. I was present when _____ ("the researcher") explained the general purposes, methods, demands and the possible risks and inconveniences of participating in the study to the participant. I asked the participant whether he/she had understood the Participant Information Sheet and understood what he/she had been told and he/she told me that he/she did understand.
3. I observed the participant sign the consent to participate in research and he/she appeared to me to be signing the document freely and without duress.
4. The participant showed me a form of identification which satisfied me as to his/her identity.
5. I am not involved in any way as a researcher in this project.
6. (Delete this clause if not applicable) I was present when _____ ("the interpreter") read the Participant Information sheet to the participant in the _____ (here insert appropriate language) language. I certify that when the researcher explained the general purposes, methods, demands and possible risks and inconveniences of participating in the study that what was said by both the researcher and the participant was translated by the interpreter from the English language into the above language and vice versa. When I spoke to the participant what I said and what the participant said was translated by the interpreter from the English language into the above language and vice versa.

Name of witness _____

Address _____

Signature of witness _____ Date: _____

Relationship to participant _____

CONSENT TO PARTICIPATE IN RESEARCH

INTERPRETER:

If an interpreter is used, the following addition is necessary –

I _____ (name of interpreter)

of _____ certify as follows:

1. I am qualified to translate speech and writing from the English language into the _____ language and vice versa.
2. I read the Participant Information Sheet to the participant in the above language and he/she appeared to understand it.
3. I was present when the researcher explained the general purposes, methods, demands and possible risks and inconveniences of participating in the study to the participant and I translated all that was said by the researcher and by the participant from the English language into the above language and vice versa.
4. I was present when the independent witness spoke to the participant and I translated all that was said by the witness and by the participant from the English language into the above language and vice versa.

Signature of Interpreter _____ Date _____

2.2 Participant Information Sheet & Consent Form – Healthcare

Providers



SYDNEY WEST
Area Health Service

PARTICIPANT INFORMATION – Clinician (Phase Two)

Study Title: *Phase Two of Improving care for people undergoing percutaneous coronary interventions: elements of effective interventions - APRICA2*

Chief Investigator:

Associate Professor Patricia Davidson, SWAHS, Nursing Research Unit

Co-Investigators:

Mr John Xavier Rolley, *PhD Candidate*, UWS, School of Nursing

Dr Yenna Salamonson, UWS, School of Nursing

Dr Andrew Ong, Westmead Hospital, Cardiology Services

Dr Cheryl Dennison, Johns Hopkins University, Baltimore, USA

Mr Robert Zecchin, Westmead Hospital, Cardiac Education Assessment Program

What is the purpose of the study?

This study seeks to obtain an understanding of the patients experience of hospitalisation for a percutaneous coronary intervention. The information obtained from you will be used to develop strategies for reducing the risk of heart disease and improving the health of other patients undergoing similar procedures.

**This study forms part of John Rolley's Doctoral research program contributing to a PhD from Curtin University of Technology.*

Who will be invited to enter the study?

All clinicians working within cardiology services caring for patients undergoing PCIs will be invited to participate in this study.

What will happen on the study?

If you agree to participate in this study, you will be asked by a nurse researcher to consent to an interview lasting between 45 minutes to no more than 90 minutes. This interview will consist of asking you to discuss your experience caring for people who undergo PCIs within this acute care setting. The interview will be **audio-recorded using a digital recording device** and the nurse researcher will also take brief notes during the course of the interview. Once all the interviews have been completed and a report has been written, you may be invited to review the report and provide feedback to the researcher regarding its accuracy. This report would be posted to your postal address and include a reply-paid envelope for you to return the report with any comments to the research team.

Are there any risks?

It is not anticipated that there will be any risks involved if you participate in this research. However, if the research should cause any distress you will have access to counselling offered by the SWAHS.

Confidentiality / Privacy

All information related to the study will be stored securely in the Nursing Research Unit. All aspects of this study, including results, will be strictly confidential and only the researchers will have access to your personal information. You will be identified by a code number on study documentation and the master list of identifying names will be kept securely by the research team. Any publication of the results from this study will only use unidentified information.

Do you have a choice?

Your participation in this study is entirely voluntary. If you choose not to join the study, or you wish to withdraw from it at any time, your employment will not be effected in any way.

Complaints

If you have any concerns about the conduct of the study, or your rights as a study participant, you may contact: The Secretary, SWAHS Human Research Ethics Committee, Telephone No 9845 8183 or email researchoffice@westgate.wh.usyd.edu.au.

Contact details: If you have any problems while on the study, please contact

John Rolley, Working hrs Ph 02 8399 7838,

After hrs Ph 0404 716 175 Facsimilie: 02 8399 7834 Email: john.rolley@postgrad.curtin.edu.au

CONSENT TO PARTICIPATE IN RESEARCH

Study Title: Phase Two of Improving care for people undergoing percutaneous coronary interventions: elements of effective interventions - APRICA2 – Phase Two

Name of Researcher:

1. I understand that the researcher will conduct this study in a manner conforming with ethical and scientific principles set out by the National Health and Medical Research Council of Australia and the Good Clinical Research Practice Guidelines of the Therapeutic Goods Administration.
2. I acknowledge that I have read, or have had read to me the Participant Information Sheet relating to this study. I acknowledge that I understand the Participant Information Sheet. I acknowledge that the general purposes, methods, demands and possible risks and inconveniences which may occur to me during the study have been explained to me by _____ ("the researcher") and I, being over the age of 16 years acknowledge that I understand the general purposes, methods, demands and possible risks and inconveniences which may occur during the study.
3. I acknowledge that I have been given time to consider the information and to seek other advice.
4. I acknowledge that refusal to take part in this study will not affect the usual treatment of my condition.
5. I acknowledge that I am volunteering to take part in this study and I may withdraw at any time.
6. I acknowledge that this research has been approved by the Sydney West Area Health Service Human Research Ethics Committee.
7. I acknowledge that I have received a copy of this form and the Participant Information Sheet, which I have signed.

Before signing, please read 'IMPORTANT NOTE' following.

Name of participant _____ Date of Birth _____

Address of participant _____

Name of parent or person responsible(where applicable) _____

Address of parent or person responsible (where applicable) _____

Signature of participant _____ Date: _____

Signature of parent or person responsible (where applicable) _____ Date: _____

Signature of researcher _____ Date: _____

Signature of witness _____ Date: _____

IMPORTANT NOTE

This consent should only be signed as follows:

1. *Where a participant is over the age of 16 years, then by the participant personally.*
2. *Where a participant is between the age of 14 and 16 years, it should be signed by the participant and by a parent or person responsible.*
3. *Where a participant is under the age of 14 years, then the parent or person responsible only should sign the consent form.*
4. *Where a participant has impaired capacity, intellectual disability or is unconscious, then specific approval for the process for obtaining consent must be sought from the Human Research Ethics Committee.*

WITNESS:

I, _____ (name of witness)

of _____ hereby certify as follows:

1. I was present when _____ ("the participant") appeared to read or had read to him / her a document entitled Participant Information Sheet; or I was told by _____ ("the participant") that he/she had read a document entitled Participant Information Sheet (*Delete as applicable)
2. I was present when _____ ("the researcher") explained the general purposes, methods, demands and the possible risks and inconveniences of participating in the study to the participant. I asked the participant whether he/she had understood the Participant Information Sheet and understood what he/she had been told and he/she told me that he/she did understand.
3. I observed the participant sign the consent to participate in research and he/she appeared to me to be signing the document freely and without duress.
4. The participant showed me a form of identification which satisfied me as to his/her identity.
5. I am not involved in any way as a researcher in this project.
6. (Delete this clause if not applicable) I was present when _____ ("the interpreter") read the Participant Information sheet to the participant in the _____ (here insert appropriate language) language. I certify that when the researcher explained the general purposes, methods, demands and possible risks and inconveniences of participating in the study that what was said by both the researcher and the participant was translated by the interpreter from the English language into the above language and vice versa. When I spoke to the participant what I said and what the participant said was translated by the interpreter from the English language into the above language and vice versa.

Name of witness _____

Address _____

Signature of witness _____ Date: _____

Relationship to participant _____

CONSENT TO PARTICIPATE IN RESEARCH

INTERPRETER:

If an interpreter is used, the following addition is necessary –

I _____ (name of interpreter)

of _____ certify as follows:

1. I am qualified to translate speech and writing from the English language into the _____ language and vice versa.
2. I read the Participant Information Sheet to the participant in the above language and he/she appeared to understand it.
3. I was present when the researcher explained the general purposes, methods, demands and possible risks and inconveniences of participating in the study to the participant and I translated all that was said by the researcher and by the participant from the English language into the above language and vice versa.
4. I was present when the independent witness spoke to the participant and I translated all that was said by the witness and by the participant from the English language into the above language and vice versa.

Signature of Interpreter _____ Date _____

2.3 Participant Information Sheet & Consent Form - Cares



SYDNEY WEST
Area Health Service

PARTICIPANT INFORMATION – PCI Patient Carer (Phase Two)

Study Title: Phase Two of Improving care for people undergoing percutaneous coronary interventions: elements of effective interventions - APRICA2 – Phase Two

Chief Investigator:

Professor Patricia Davidson, Centre for Cardiovascular and Chronic Care, Curtin University of Technology

Co-Investigators:

*Mr John Xavier Rolley, *PhD Candidate*, School of Nursing and Midwifery, Curtin University of Technology

What is the purpose of the study?

This study seeks to understand the PCI patient carers' experience and perspectives of the admission process of percutaneous coronary interventions (PCI). This is a procedure where a blocked artery is opened by placing a tube into the heart and inflating a balloon. Often a 'stent' which is a form of metal scaffolding is placed to keep the artery open. The information obtained from this study will be used to develop strategies for reducing the risk of heart disease and improving the health of other patients undergoing similar procedures. **This study forms part of John Rolley's Doctoral research program contributing to a PhD from Curtin University of Technology.*

Who will be invited to enter the study?

All carers of a PCI patient admitted for PCI procedure/s will be invited to participate in this study.

What will happen on the study?

If you agree to participate in this study, you will be asked by a nurse researcher to consent to participating in a focus group lasting between 60 minutes to no more than 90 minutes. This focus group process will consist of asking you to discuss your perspective of the PCI patient's experience through their admission during the hospital. You will join between 6 and 8 other carers of PCI patients in a group discussion. The focus group will be **audio-recorded using a digital recording device**. A researcher will facilitate the group and a non-participating observer will also take brief notes during the course of the focus group. Once all the focus groups have been completed and a report has been written, you may be invited to review the report and provide feedback to the researcher regarding its accuracy. This report would be posted to your postal address and include a reply-paid envelope for you to return the report with any comments to the research team.

Are there any risks?

It is not anticipated that there will be any risks involved if you participate in this research. However, if the research should cause any distress you will have access to counselling offered by the SWAHS.

Confidentiality / Privacy

All information related to the study will be stored securely in the Nursing Research Unit in the Sydney West Area Health Service. All aspects of this study, including results, will be strictly confidential and only the researchers will have access to your personal information. You will be identified by a code number on study documentation and the master list of identifying names will be kept securely by the research team. Any publication of the results from this study will only use unidentified information.

Do you have a choice?

Your participation in this study is entirely voluntary. If you choose not to join the study, or you wish to withdraw from it at any time, the medical care of the patient you care for will not be affected. In particular, your refusal to participate in this study does not impact upon their ability to participate in cardiac rehabilitation at the present time or any time in the future.

Complaints

If you have any concerns about the conduct of the study, or your rights as a study participant, you may contact: Westmead Hospital Patient Representative, Ms Jillian Gwynne Lewis, telephone No 9845 7014 or email jillian_lewis@wsahs.nsw.gov.au

Contact details: If you have any problems while on the study, please contact

John Rolley, Working hrs Telephone No – 02 8399 7838,
After hrs Telephone No.: 0404 716 175 Facsimile: 02 8399 7834, Email: j.rolley@curtin.edu.au

CONSENT TO PARTICIPATE IN RESEARCH

Study Title: Phase Two of Improving care for people undergoing percutaneous coronary interventions: elements of effective interventions - APRICA2 – Phase Two

Name of Researcher:

1. I understand that the researcher will conduct this study in a manner conforming with ethical and scientific principles set out by the National Health and Medical Research Council of Australia and the Good Clinical Research Practice Guidelines of the Therapeutic Goods Administration.
2. I acknowledge that I have read, or have had read to me the Participant Information Sheet relating to this study. I acknowledge that I understand the Participant Information Sheet. I acknowledge that the general purposes, methods, demands and possible risks and inconveniences which may occur to me during the study have been explained to me by _____ ("the researcher") and I, being over the age of 16 years acknowledge that I understand the general purposes, methods, demands and possible risks and inconveniences which may occur during the study.
3. I acknowledge that I have been given time to consider the information and to seek other advice.
4. I acknowledge that refusal to take part in this study will not affect the usual treatment of my condition.
5. I acknowledge that I am volunteering to take part in this study and I may withdraw at any time.
6. I acknowledge that this research has been approved by the Sydney West Area Health Service Human Research Ethics Committee.
7. I acknowledge that I have received a copy of this form and the Participant Information Sheet, which I have signed.

Before signing, please read 'IMPORTANT NOTE' following.

Name of participant _____ Date of Birth _____

Address of participant _____

Name of parent or person responsible(where applicable) _____

Address of parent or person responsible (where applicable) _____

Signature of participant _____ Date: _____

Signature of parent or person responsible (where applicable) _____ Date: _____

Signature of researcher _____ Date: _____

Signature of witness _____ Date: _____

IMPORTANT NOTE

This consent should only be signed as follows:

1. *Where a participant is over the age of 16 years, then by the participant personally.*
2. *Where a participant is between the age of 14 and 16 years, it should be signed by the participant and by a parent or person responsible.*
3. *Where a participant is under the age of 14 years, then the parent or person responsible only should sign the consent form.*
4. *Where a participant has impaired capacity, intellectual disability or is unconscious, then specific approval for the process for obtaining consent must be sought from the Human Research Ethics Committee.*

WITNESS:

I, _____ (name of witness)

of _____ hereby certify as follows:

1. I was present when _____ ("the participant") appeared to read or had read to him / her a document entitled Participant Information Sheet; or I was told by _____ ("the participant") that he/she had read a document entitled Participant Information Sheet (*Delete as applicable)
2. I was present when _____ ("the researcher") explained the general purposes, methods, demands and the possible risks and inconveniences of participating in the study to the participant. I asked the participant whether he/she had understood the Participant Information Sheet and understood what he/she had been told and he/she told me that he/she did understand.
3. I observed the participant sign the consent to participate in research and he/she appeared to me to be signing the document freely and without duress.
4. The participant showed me a form of identification which satisfied me as to his/her identity.
5. I am not involved in any way as a researcher in this project.
6. (Delete this clause if not applicable) I was present when _____ ("the interpreter") read the Participant Information sheet to the participant in the _____ (here insert appropriate language) language. I certify that when the researcher explained the general purposes, methods, demands and possible risks and inconveniences of participating in the study that what was said by both the researcher and the participant was translated by the interpreter from the English language into the above language and vice versa. When I spoke to the participant what I said and what the participant said was translated by the interpreter from the English language into the above language and vice versa.

Name of witness _____

Address _____

Signature of witness _____ Date: _____

Relationship to participant _____

CONSENT TO PARTICIPATE IN RESEARCH

INTERPRETER:

If an interpreter is used, the following addition is necessary –

I _____ (name of interpreter)

of _____ certify as follows:

1. I am qualified to translate speech and writing from the English language into the _____ language and vice versa.
2. I read the Participant Information Sheet to the participant in the above language and he/she appeared to understand it.
3. I was present when the researcher explained the general purposes, methods, demands and possible risks and inconveniences of participating in the study to the participant and I translated all that was said by the researcher and by the participant from the English language into the above language and vice versa.
4. I was present when the independent witness spoke to the participant and I translated all that was said by the witness and by the participant from the English language into the above language and vice versa.

Signature of Interpreter _____ Date _____

2.4 Participant Information Sheet – Cardiovascular Nurses Survey



Interventional Cardiology – Nursing Practice Survey (IC-NPS)

This study has ethics approval from Curtin University, HREC Approval No.: HR07/2008

Dear Colleagues

Thankyou for agreeing to participate in this survey!

- **What is the purpose of this study**

As you are aware the number of people undergoing PCI is increasing rapidly. This technological innovation means that we have to examine the way we deliver nursing care. This survey seeks to obtain your opinions on the care provided to patients and their family undergoing PCI and your views regarding areas for future research and policy and protocol development.

- **Why have I been asked to participate?**

You have been identified as a cardiovascular nurse either by reading an advertisement in a professional magazine or professional affiliation.

- **What am I being asked to do?**

If you agree to participate, you will be asked to complete the attached questionnaire. It has 58 questions about various aspects of cardiology nursing including your perceived values, knowledge and capacity to practice as well as seeking to explore your attitudes and beliefs to specific comprehensive practice issues. These practice issues include pre and post PCI procedure care, secondary prevention education, recovery and adjustment to illness. It is estimated to take approximately 15-20 minutes of your time.

- **Is this a voluntary study?**

This study is strictly voluntary. You can choose to withdraw at any time and it will not have any effect on you in any way.

- **What happens to the information collected from this survey?**

The information you give in this survey will be kept strictly confidential and stored securely in the Centre for Cardiovascular and Chronic Care, Curtin University of Technology. Only research staff involved with this study will have access to the collected information. Only anonymous data will be used in any and all publications that may arise from this study. Furthermore, no individual will ever be identified in any published form. Participants have a right to view the results once the final report is completed.

- **What benefit will I gain from participating in this study?**

While this survey will increase nursing's understanding of the beliefs and attitudes of cardiac nurses related to the care of PCI patients, you may not receive a direct benefit yourself. However, as this is intended to impact on practice standard development, you may be indirectly involved in driving an improvement of patient care.

- **If I have any complaints or concerns?**

If you feel you need to make a complaint or raise concerns about the conduct of the study, please contact: Human Research Ethics Committee (Secretary) phone: 08 9266 2784 or hrec@curtin.edu.au or in writing C/- Office of Research and Development, Curtin University of Technology, GPO Box U1987, Perth WA 6845.

- **Who can I contact in case I need further assistance?**

If you have further questions, please do not hesitate to call either:
Prof Patricia Davidson 02 8399 7831 or p.davidson@curtin.edu.au

2.5 Invitation to join the Consensus Conference



Centre for Cardiovascular and Chronic Care
Curtin University of Technology
Level 5
39 Regent Street
CHIPPENDALE NSW 2008

1st May 2008

Invitation to participate in the APRICA2 Consensus Workshop

Dear Colleagues

I am writing to invite you to participate in a conference where participants will assist in developing elements of an intervention to address cardiovascular risk reduction in people who have undergone a percutaneous coronary intervention. In addition, participants will be facilitated in discussing potential issues related to practice standards for the care of people who have these procedures.

This conference is the result of research conducted to help understand what it is like to be a heart patient undergoing percutaneous coronary interventions. If you choose to participate, information will be provided to you to help you prepare for the conference. If you need clarification of any of the information please contact the researchers for further assistance.

Potential participants invited to attend the Conference include:

1. People who have experienced a percutaneous coronary intervention (stent or balloon angioplasty)
2. People supporting a person who has had such a procedure; or
3. Cardiovascular clinicians (nurses, medical officers, or allied health staff).

The Consensus Conference details are as follows:

Date: 23rd June 2008
Time: 9.00 am – 4.30 pm
Venue: Centre for Cardiovascular and Chronic Care
Level 5
39 Regent Street
CHIPPENDALE NSW 2008

Travelling to the Conference:

Attendance at the conference will entail one day lasting approximately eight (7-8) hours. The day will be spent working through the case study, small group discussions with other patients and clinicians and compiling potential strategies for an effective intervention. Lunch, morning and afternoon tea will be provided. Monetary assistance for transport to the conference is not possible as the study is not currently funded.

Attendance at the conference is **free of charge** to participants and there is no obligation, once you agree to attend, to attend.

For patients and support people

If you are a patient, relative, friend or supporter, you are not expected to have 'expert' knowledge rather, it is your life experience with cardiac disease, in general, and angioplasty and/or stenting specifically that is of value to the process.

For clinicians

If you are a clinician, as long as you are working within cardiovascular services and are willing to take part in the process, you will be invited to attend.

Privacy and Confidentiality

Your privacy is important to us. Therefore, your participation in the conference will not be divulged to any other party outside the research team. Furthermore, all study documentation including any reports, publications or conference presentations will use de-identified information only. Your name will be substituted with a code to help protect your identity. As this is a voluntary research activity, you are free to withdraw from attendance at the conference at any time without effect to any medical treatment now or in the future.

If you ever have a concern about how the study is conducted, please contact either the Patient Representative, Jillian Gwynne Lewis on 9845 7014 or via email at jillian_lewis@wsahs.nsw.gov.au (for PCI In-Patients) or the Secretary, Human Research Ethics Committee, on 9845 8183 (for clinicians).

If you are willing to participate, please complete the attached Expression of Interest form and return it via post or fax. The fax number is 02 8399 7834.

For further information, please contact the Chief Investigator, Associate Professor Patricia Davidson on 02 8399 7831 or 0414 674 134 or via email, p.davidson@curtin.edu.au.

Kind regards

Professor Patricia M Davidson
Professor of Cardiovascular and Chronic Care
Centre for Cardiovascular and Chronic Care
Curtin University of Technology

Expression of Interest to Attend the APRICA2 Consensus Development Conference

Please complete the following:

- Yes, I would like to attend the Conference. *Please complete the rest of this form.*
- No, I am unable to attend at this time. *Please don't complete any further details.*

Name			
Date of Birth (dd mm yyyy)	dd	mm	yyyy
Address			
	Suburb	State	Postcode
Telephone Number			
Email Address			

Please select the most appropriate category of attendee (please select **one** category only):

- I have had an angioplasty and/or stent; **or**
- I am living with or support someone who has had an angioplasty and/or stent; **or**
- I am a clinician currently working in a cardiology acute care setting

Please indicate if you have any special needs:

- I need transport assistance to attend the conference.
- I have a dietary restriction (please select):
- | | |
|---------------------------------------|------------------------------------|
| <input type="checkbox"/> Vegetarian | <input type="checkbox"/> Vegan |
| <input type="checkbox"/> No dairy | <input type="checkbox"/> No gluten |
| <input type="checkbox"/> Diabetic | <input type="checkbox"/> No eggs |
| <input type="checkbox"/> Other: _____ | |

Please complete the form by signing below:

Print Name	Date
Signature	

Thank you for considering participation in this important research event.

To RSVP, please fax back to: Anne Wheeler 02 8399 7834

Appendix Three

Chapter Four Data Collection Instrument

<i>Participant code</i>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
-------------------------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------



Participant Survey (Baseline)

Actual and Perceived Risk in Percutaneous Coronary Angio (APRICA) Patients Project

Please answer all questions. Most questions require you to tick a box(es) to indicate your answer. Choose the box(es) that best matches your answer.

Section A: General information about yourself	
1. Gender	Female <input type="checkbox"/> ₁ Male <input type="checkbox"/> ₀
2. Date of birth:	
3. Country of birth:	
4. Aboriginal or Torres Strait Islander origin:	No <input type="checkbox"/> ₀ Yes, Aboriginal <input type="checkbox"/> ₁ Yes, Torres Strait Islander <input type="checkbox"/> ₂
5. Language spoken at home:	English <input type="checkbox"/> ₁ Other (please specify) <input type="checkbox"/> ₀ _____ Both English & other <input type="checkbox"/> ₂ _____
6. Address:	
7. Home telephone number:	
8. Mobile (if available):	
9. Next of kin telephone number:	
10. Email address (if available)	

11. Marital status (Please tick one box only)

- ₁ Single
- ₂ Married
- ₃ Defacto
- ₄ Separated
- ₅ Divorced
- ₆ Widowed

12. Current occupation: _____

13. Highest level of education (Please tick one box only)

- ₁ Did not complete primary school
- ₂ Completed primary school only
- ₃ Left high school before intermediate or school certificate
- ₄ Intermediate or School Certificate (Year 10)
- ₅ Leaving or Higher School Certificate (Year 11/12)
- ₆ Apprenticeship / Trade Qualification
- ₇ Diploma
- ₈ University Degree
- ₉ Other (Please specify) _____

14. Health history (Please tick all that apply)

- | | |
|--|---|
| <input type="checkbox"/> Diabetes | <input type="checkbox"/> Heart (coronary) problems |
| <input type="checkbox"/> High blood pressure | <input type="checkbox"/> Family history of coronary heart disease |
| <input type="checkbox"/> High blood cholesterol | <input type="checkbox"/> Stroke / Cerebro-vascular accident |
| <input type="checkbox"/> Smoker | <input type="checkbox"/> Depression |
| <input type="checkbox"/> Others (Please specify) _____ | <input type="checkbox"/> Anxiety |

15. Body weight:	Height:
-------------------------	----------------

Section B: *This section relates to your beliefs about your physical activity and taking medications for your heart condition*

16. Do you think you will reduce the likelihood of your heart problem returning if you exercise for at least 30 minutes most days of the week?

Very unlikely Very likely

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

17. Do you think you will reduce the likelihood of your heart problem returning if you take your medications for your heart condition strictly as ordered by your doctor?

Very unlikely Very likely

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

Section C: *This section is about your views about your heart condition.*

18. How serious do you think your current heart condition is?

Not serious at all Extremely serious

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

19. How do you rate your chance of having the same or developing the same heart problem again in your lifetime?

No chance at all Guaranteed to happen

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

20. In your opinion, how likely do you think it is that your current heart condition will be corrected by this procedure?

Very unlikely Very likely

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

21. Compared to other people of your same age and gender, how would you rate your chance of having the same heart condition again?

A lot less A lot more

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

22. How bad would it be for you, if you were to have the same heart problem again?

Not bad at all Worst possible scenario

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

Section D: We would like to know how you feel. Please read each item and place a firm tick in the box opposite the reply which comes closest to how you have been feeling in the past week. Don't take too long over your replies: your immediate reaction to each item will probably be more accurate than a long thought-out response.

I feel tense or wound up:

- Most of the time.....
- A lot of the time.....
- Time to time, occasionally.....
- Not at all

I still enjoy the things I used to enjoy:

- Definitely as much
- Not quite so much
- Only a little
- Hardly at all

I get a sort of frightened feeling as if something awful is about to happen:

- Very definitely and quite badly
- Yes, but not too badly
- A little, but it doesn't worry me
- Not at all

I can laugh and see the funny side of things:

- As much as I always could.....
- Not quite so much now
- Definitely not so much now
- Not at all

Worrying thoughts go through my mind:

- A great deal of the time
- A lot of the time
- From time to time but not too often
- Only occasionally

I feel cheerful:

- Not at all
- Not often
- Sometimes
- Most of the time

I can sit at ease and feel relaxed:

- Definitely
- Usually
- Not often
- Not at all

I feel as if I am slowed down:

- Nearly all the time.....
- Very often
- Sometimes
- Not at all

I get a sort of frightened feeling like "butterflies" in the stomach:

- Not at all
- Occasionally
- Quite often
- Very often

I have lost interest in my appearance:

- Definitely.....
- I don't take so much care as I should
- I may not take quite as much care
- I take just as much care as ever

I feel restless as if I have to be on the move:

- Very much indeed
- Quite a lot
- Not very much
- Not at all

I look forward with enjoyment to things:

- As much as ever I did
- Rather less than I used to
- Definitely less than I used to
- Hardly at all

I get sudden feelings of panic:

- Very often indeed
- Quite often
- Not very often
- Not at all










I can enjoy a good book or radio or TV program:

- Often
- Sometimes
- Not often
- Very seldom

Section E:					
<i>The questions in this scale ask you about your feelings and thoughts during <u>the last month</u>. In each case, please indicate <u>how often</u> you felt or thought a certain way.</i>					
	Never	Almost never	Sometimes	Fairly often	Very often
1. In the last month, how often have you been upset because of something that happened unexpectedly?	0	1	2	3	4
2. In the last month, how often have you felt that you were unable to control the important things in your life?	0	1	2	3	4
3. In the last month, how often have you felt nervous and "stressed"?	0	1	2	3	4
4. In the last month, how often have you felt confident about your ability to handle your personal problems?	0	1	2	3	4
5. In the last month, how often have you felt that things were going your way?	0	1	2	3	4
6. In the last month, how often have you found that you could not cope with all the things that you had to do?	0	1	2	3	4
7. In the last month, how often have you been able to control irritations in your life?	0	1	2	3	4
8. In the last month, how often have you felt that you were on top of things?	0	1	2	3	4
9. In the last month, how often have you been angered because of things that were outside of your control?	0	1	2	3	4
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	0	1	2	3	4

Section I: Physical Activity

How physically active are you on an average weekday? In the physical activity scale you see some examples of different levels of physical activity. Try to assess how much time you spend on each level on an average weekday. Start from the top and continue downward. If you normally sleep 7 h, you should mark the 7-h box on the first row. If you watch TV for an hour and a half, you should mark the 30-min box and the 1-h box on the second row. If you are not active on all activity levels, you should leave rows unmarked. Please note that the total number of minutes and hours **should amount to 24 hours** on an average weekday and night.

Examples	Minutes	Hours	Time
 Sleep, rest	<input type="checkbox"/> 15 <input type="checkbox"/> 30 <input type="checkbox"/> 45	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10
 Sitting quietly, watching TV, listening to music or reading	<input type="checkbox"/> 15 <input type="checkbox"/> 30 <input type="checkbox"/> 45	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10
 Working at a computer or desk, sitting in a meeting, eating	<input type="checkbox"/> 15 <input type="checkbox"/> 30 <input type="checkbox"/> 45	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10
 Standing, washing dishes or cooking, driving a car or truck	<input type="checkbox"/> 15 <input type="checkbox"/> 30 <input type="checkbox"/> 45	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10
 Light cleaning, sweeping floors, food shopping with grocery cart, slow dancing or walking downstairs	<input type="checkbox"/> 15 <input type="checkbox"/> 30 <input type="checkbox"/> 45	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10
 Bicycling to work or for pleasure, brisk walking, painting or plastering	<input type="checkbox"/> 15 <input type="checkbox"/> 30 <input type="checkbox"/> 45	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10
 Gardening, carrying, loading or stacking wood, carrying light object upstairs	<input type="checkbox"/> 15 <input type="checkbox"/> 30 <input type="checkbox"/> 45	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10
 Aerobics, health club exercise, chopping wood or shoveling	<input type="checkbox"/> 15 <input type="checkbox"/> 30 <input type="checkbox"/> 45	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10
 More effort than any of the above: running, racing on bicycle, playing soccer, handball or tennis	<input type="checkbox"/> 15 <input type="checkbox"/> 30 <input type="checkbox"/> 45	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10
Total (adds up to 24 hours)			

Section J: PCI procedure (to be completed by researcher)

1. How was this PCI procedure organised? (Please tick one box only)

- ₁ Planned in advance (Elective)
₂ Performed following a heart attack (Rescue)
₃ Performed after being admitted to hospital
₄ Others (Please specify) _____

Section K: Medical history (to be completed by researcher)

2. History of acute myocardial infarction	Yes <input type="checkbox"/> ₁	No <input type="checkbox"/> ₀
3. Known coronary artery disease (stenosis \geq 50%)	Yes <input type="checkbox"/> ₁	No <input type="checkbox"/> ₀
4. History of congestive heart failure	Yes <input type="checkbox"/> ₁	No <input type="checkbox"/> ₀
5. Aspirin use in past 7 days	Yes <input type="checkbox"/> ₁	No <input type="checkbox"/> ₀

Appendix Four

Chapter Five Interview Schedules

3.1 Interview Schedule - Patients



APRICA2 Phase Two – Interview Schedule – PCI In-Patients

Participant Code	
------------------	--

Preliminary Demographic Questions

1. What is your gender?

Male ¹ Female ²

2. Age (at 1st July 2007): _____ Years

3. Where were you born?

¹ Australia

⁰ Overseas (Please Specify) _____

4. What is your usual language spoken at your home?

¹ English

² Other (Please Specify) _____

³ Both English & Other (Please Specify) _____

5. What procedure have you had?

¹ Balloon angioplasty only

² Balloon angioplasty and stent/s

6. Is this the first time you have been diagnosed with a heart condition?

Yes ¹

No ² If No, what year were you diagnosed?

_____ (eg. 2004)

7. Marital Status

¹ Single

² Married

³ De facto

⁴ Separated

⁵ Divorced

⁶ Widowed

8. What is your current occupation?

9. What is the highest level of education you have achieved?

- ¹ Did not complete primary school
- ² Completed primary school only
- ³ Left high school before intermediate or school certificate
- ⁴ Intermediate or School Certificate (Year 10)
- ⁵ Leaving or Higher School Certificate (Year 11/12)
- ⁶ Apprenticeship / Trade Qualification
- ⁷ Diploma
- ⁸ University Degree
- ⁹ Other (Please Specify): _____

10. Health History (Please tick all that apply)

- ¹ Diabetes
- ² High blood pressure
- ³ High blood cholesterol
- ⁴ Smoker
- ⁵ Other (Please Specify): _____
- ⁶ Heart (coronary) problems
- ⁷ Family history of coronary heart disease (Parents, siblings, etc)
- ⁸ Stroke / Cerebro-vascular accident
- ⁹ Depression
- ¹⁰ Anxiety

11. What is your current weight: _____ Kgs

12. What is your height: _____ cm

Interview Questions

1. Was your admission to hospital planned or an emergency procedure?
2. What has been your experience while you have been in hospital during this admission?
3. What expectations, if any, did you have about coming to hospital for this procedure?
4. Based upon what clinicians have discussed with you, what do you understand about your heart condition?
5. What do you understand the risk factors of heart disease to be?
 - a. How, if at all, are these similar for other people you know?
6. What, if any, questions would you like to have answered about your heart condition?
7. If you had the ability to change any part of the process of being a patient admitted here, what would that be?
 - a. Why do you think those things are important?
8. What effect, do you think, do hospital regulations or policy have on the patient's experience while in hospital ?
 - a. If you could make changes regarding the hospital regulations or policy, what would it be?

3.2 Interview Schedule – Healthcare Providers



APRICA2 Phase Two – Interview Schedule - *Clinicians*

Participant Code	
------------------	--

Preliminary Demographic Questions

1. What is your gender?

Male ¹ Female ²

2. Age (at 1st July 2007): _____ Years

3. Where were you born?

¹ Australia

⁰ Overseas (Please Specify) _____

4. What is your usual language spoken at your home?

¹ English

² Other (Please Specify) _____

³ Both English & Other (Please Specify) _____

5. Clinical Title

¹ CNS – Clinical Nurse Specialist

² RN – Registered Nurse

³ EN – Enrolled Nurse

⁴ TEN – Trainee Enrolled Nurse

⁵ Allied Health (Please Specify): _____

⁶ Medical Intern

⁷ Medical Resident

⁸ Medical Registrar

⁹ Medical Consultant

6. What year did you receive your qualifications to practice?

_____ (eg: 1995)

7. Since receiving your qualifications, how long have you actively engaged in clinical practice?

_____ Years _____ Months

8. What is your employment status?

- ¹ Permanent Full Time
- ² Permanent Part Time
- ³ Casual
- ⁴ Agency

9. How long have you worked in cardiology/cardiovascular unit/s?

_____ Years _____ Months

10. Have you undertaken a 'specialty' qualification in cardiology/cardiovascular practice?

Nursing:

- ¹ Graduate Certificate
- ² Graduate Diploma
- ³ Master's Degree
- ⁴ Other (Please Specify): _____

Allied Health:

- ⁵ Please Specify: _____

Medicine:

- ⁶ Fellowship (Please Specify College): _____
- ⁷ Other (Please Specify): _____

Interview Questions

1. What has been your experience working in cardiology services as a clinician?
2. What has been your experience caring for people who have had a PCI here at this hospital?
3. What, do you think, it is like for PCI patients?
4. What, do you suppose, are the expectations, if any, a PCI patient has when admitted to hospital?
5. Please describe in your own words, what it is like to care for a PCI patient newly diagnosed with a heart problem?
6. If you had the ability to change any part of the process PCI patients experience while admitted here, what would that be?
 - a. Why do you think those things are important?
7. What effect, do you think, does hospital policy have on the care and experiences of people undergoing PCI patients in the acute care setting?
 - a. If you could make changes regarding institutional policy, what would these be?

3.3 Interview Schedule - Carers



APRICA2 Phase Two – Focus Group Questions – Cares of *PCI Patients*

Focus Group Questions

1. What were your experiences having a relative or friend undergo a PCI?
2. What are the barriers to coping and adjusting to life following this experience?
3. What or who has helped (facilitated) with coping and adjustment to life following this experience?
4. What have been your experiences supporting someone making life-style changes?
5. What do you think are the specific needs of people such as yourselves supporting someone through this experience?

3.4 Interview Schedule – Cardiac Rehabilitation Team



APRICA 2 – Phase Two – Cardiac Rehabilitation Team Group Interview Schedule

Group Interview Questions

1. What has been everyone's experience of caring for people who have had PCI?
2. What do you think it is like for them?
3. What barriers do you feel exist in preventing improved outcomes for patients?
4. What strategies do you feel works in overcoming these barriers?
5. If you could change any aspect of their experience, what would that be?
6. If you could change any aspect of hospital/health service policy to improve your ability to deliver care, what would it be and why?

Appendix Five

Chapter Six Cardiovascular Nurses Survey

Interventional Cardiology - Nursing Practice Survey IC-NPS

Welcome!

Welcome to this survey!

We appreciate you taking the time to undertake this research and we trust your contribution will assist in improving the care of patients, their carers and families.

Some important things to remember when completing this survey:

1. Even if you are not currently working in a cardiac clinical area, if you have done so in the past, please answer from your past experience.
2. The survey software will prompt you to complete a question if you have missed it as your responses are a valuable source of information.
3. This is a totally voluntary and anonymous process so none of your personal details other than the demographic questions asked will be kept.
4. This survey is protected with secure encryption software to protect the integrity of your responses and the collective data.
5. If you have any questions, please feel free to contact us via the home page and we will get back to you as soon as possible.

Kind regards

The APRCA2 Research Team

Interventional Cardiology - Nursing Practice Survey IC-NPS

Default Section

*** 1. Have you read the Participant Information Sheet related to this survey?**

- Yes
- No - If no, you can view this at <http://www.cardiacsurveys.net/page4.php> and click on 'Patient Information Sheet'

*** 2. How did you hear about this survey?**

- Another Colleague
- Australasian Cardiovascular Nurses College
- Professional publication

*** 3. Are you currently, or have in the past been, working clinically, studying or researching within a cardiovascular nursing specialty?**

- Yes
- No

Interventional Cardiology - Nursing Practice Survey IC-NPS

*** 4. What is your date of birth?**

DoB DD MM YYYY
 / /

*** 5. What is your gender?**

- Male
 Female

*** 6. What is the postcode of your place of employment?**

Postcode:

*** 7. Does your workplace provide interventional cardiology services, i.e. PCIs (angioplasty / stenting)?**

- Yes
 No

*** 8. What is your nursing designation? (Select all of the relevant categories)**

- | | |
|---|---|
| <input type="checkbox"/> Enrolled Nurse | <input type="checkbox"/> Nurse Unit Manager |
| <input type="checkbox"/> Registered Nurse | <input type="checkbox"/> Senior Nurse Executive |
| <input type="checkbox"/> Clinical Nurse Specialist | <input type="checkbox"/> Academic |
| <input type="checkbox"/> Clinical Nurse Consultant | <input type="checkbox"/> Researcher (includes research student) |
| <input type="checkbox"/> Clinical Nurse Educator/Nurse Educator | |

*** 9. How many years have you worked within a cardiovascular related sub specialty?**

Examples: CCU, Cardiac HDU/Step-down, Cardiac Catheterisation, Cardiology Medical, Cardiovascular Surgical, Cardiac ICU, Cardiac Rehabilitation, Cardiac Research

Years

Interventional Cardiology - Nursing Practice Survey IC-NPS

*** 10. Which cardiac nursing sub specialty are you currently employed in?
(Select all of the relevant categories)**

- | | |
|---|--|
| <input type="checkbox"/> Coronary Care Unit (CCU) | <input type="checkbox"/> Cardiac ICU |
| <input type="checkbox"/> Cardiac HDU/CCU Step-Down | <input type="checkbox"/> Cardiac Rehabilitation |
| <input type="checkbox"/> Cardiac Catheterisation Laboratory | <input type="checkbox"/> Cardiac Research |
| <input type="checkbox"/> Cardiology/Cardiac Medical | <input type="checkbox"/> Cardiology Outpatient Clinic/Community services |
| <input type="checkbox"/> Cardiovascular Surgical | |

*** 11. What is your pattern of employment?**

- Full Time
- Part Time
- Casual

*** 12. How many hours do you work in an average week in a cardiac clinical setting?**

Hours per week

*** 13. Indicate the post-registration tertiary qualification/s you have completed related to a cardiovascular sub specialty? (Select all of the relevant categories)**

- None
- Hospital Certificate
- Graduate Certificate
- Graduate Diploma/Masters (Coursework)
- Masters Degree by Research
- Doctorate (PhD/DNSc/EdD)

Interventional Cardiology - Nursing Practice Survey IC-NPS

*** 14. In this section, please rate your level of agreement with a series of statements related to comprehensive nursing care and your practice environment, with 1 Strongly Disagree (SD) to 10 Strongly Agree (SA).**

	SD	1	2	3	4	5	6	7	8	9	10 SA
I rely strongly on accessing research evidence for my nursing practice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Evidence-based interventions are the platform for my nursing practice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cooperation between nursing, medical and allied health disciplines is essential to providing quality care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication between members of the healthcare team is vital in providing quality care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe patients receive adequate information and resources to make an informed decision regarding treatment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I receive support from nursing colleagues in providing patient care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nursing staff engage appropriate strategies in dealing with conflict.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The clinical setting has appropriate levels of experienced cardiovascular nursing staff.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My workplace values assisting patients to adapt to cardiac disease as a chronic illness.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe patients receive an appropriate level of pre-procedure orientation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patient education can be achieved by giving patients accurate health literature, such as National Heart Foundation material, to read at their leisure.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assessing health literacy is an important consideration when engaging in patient education.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patient education is best conducted during the patient's acute care admission.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Counseling based interventions are effective tools in assisting nurses with patient education.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assessing culturally specific needs of the patient is an important consideration when engaging in patient education.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Understanding the experience of living with a chronic illness should be a high priority for cardiovascular nurses.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
On the whole, patients understand that they have a chronic condition requiring lifestyle adjustment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patient education strategies using reading materials and nurse-to-patient discussion are highly effective.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nurses are encouraged to partner with patients in developing long-term disease management strategies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nurses and doctors foster working relationships to provide quality care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel supported in making clinical decisions regarding patient care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am actively engaged in the professional development of other colleagues with whom I work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe that prior to femoral arterial sheath removal, anti-coagulation studies should be taken.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe it is important for PCI patients to attend a cardiac rehabilitation program following discharge.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe delivering comprehensive care to PCI patients involves assisting patients to adjust to a chronic illness.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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*** 15. Please rate the following from 1 to 10, with 1 Low to 10 High, based on the level of evidence base to support this practice.**

What level of evidence do you believe exists to support each of the practices listed below?

	Low	1	2	3	4	5	6	7	8	9	10 High
Pre-PCI procedure orientation/education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Arterial sheath removal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Methods for achieving haemostasis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Post-PCI discharge planning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Post-PCI education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Time to ambulation post PCI sheath removal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cardiac specific risk factor modification	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Psycho-social assessment of the PCI patient	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Post-PCI procedure complication monitoring	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cardiac rehabilitation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 16. Please rate the following form 1 to 10, with 1 Low (no policy) to 10 High, based on the adequacy of the policy covering the practice.**

How adequate is the policy in your clinical setting covering each of the practices listed below?

	Low	1	2	3	4	5	6	7	8	9	10 High
Pre-PCI procedure orientation/education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Arterial sheath removal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Methods for achieving haemostasis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Post-PCI discharge planning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Post-PCI education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Time to ambulation post PCI sheath removal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cardiac specific risk factor modification	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Psycho-social assessment of the PCI patient	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Post-PCI procedure complication monitoring	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cardiac rehabilitation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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*** 17. Please rate your need for further education regarding the following practices form 1 to 10, with 1 Low and 10 High.**

What is your level of need for further education in order to carry out this practice?

	Low	1	2	3	4	5	6	7	8	9	10 High
Pre-PCI procedure orientation/education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Arterial sheath removal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Methods for achieving haemostasis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Post-PCI discharge planning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Post-PCI education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Time to ambulation post PCI sheath removal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cardiac specific risk factor modification	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Psycho-social assessment of the PCI patient	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Post-PCI procedure complication monitoring	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cardiac rehabilitation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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*** 18. The following require a rating out of 10, with 1 Low to 10 High.**

If you are currently working within a clinical area or have worked in the past in such an area, please answer these questions.

Please rate your:

	Low 1	2	3	4	5	6	7	8	9	High 10
Level of knowledge to meet the comprehensive care needs of heart disease patients in your care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to meet the comprehensive care needs of people who have undergone a PCI procedure in your care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knowledge of the community based services for people with heart disease in your care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Awareness of theoretical issues in promoting self-management e.g. Transtheoretical Model.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quality of discharge planning in your workplace.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quality of communication with patients' general practitioners in your workplace.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Evidence of a chronic illness approach to cardiac care in your workplace.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 19. Rate each of the following content areas involved in post-PCI patient education according to level of priority, with 1 Low priority and 10 High priority.**

	Low 1	2	3	4	5	6	7	8	9	High 10
Smoking cessation and avoidance of second-hand smoke.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nutrition with saturated and trans fats =/ $<$ 8% of total energy intake.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alcohol intake per day: no more than 2 standard drinks for men or 1 standard drink for women.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physical activity: the goal of 30min most, if not all, days of the week with a minimum of 150 mins per week.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Health weight maintenance with waist measurements of =/ $<$ 94 cm for men or =/ $<$ 80 cm for women.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Referral to a comprehensive cardiac prevention / rehabilitation service.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Development of a written chest pain action plan.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Understanding the chronic illness nature of cardiac disease.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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*** 20. Rate the following settings according to your level of appropriateness for delivering patient education, with 1 Not at all appropriate to 10 Extremely appropriate.**

	1	2	3	4	5	6	7	8	9	10
Preadmission clinic.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
During admission to acute care cardiology unit.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Outpatient cardiology clinic at acute care setting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
General Practice (GP).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Outpatient Nurse-Practitioner clinic.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Practice Nurse clinic attached to a GP.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community nursing service.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Outpatient Cardiac Rehabilitation Program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Private health, lifestyle or fitness centre.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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*** 21. Rate your priority, with 1 Low priority to 10 High priority, for each of the following cardiac nursing activities.**

	Low 1	2	3	4	5	6	7	8	9	10 High
Post-procedural sheath, groin and circulatory care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Monitoring for post-procedural coronary occlusions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Providing cardiac specific patient education.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Documenting care in patient medical records.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assisting with personal hygiene and comfort needs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Addressing the needs of the patient's carer and family.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assessing the patient's psychological risk factors (i.e. depression/anxiety).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assessing the patient's biomedical cardiovascular risk factors.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assessing the patient for social issues such as need for employment support.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patient discharge planning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 22. Rate the following cardiac nursing activities based on how well they are implemented in your clinical setting, with 1 Very Poorly to 10 Extremely Well.**

1 Very Poor to 10 Extremely Well.

	1	2	3	4	5	6	7	8	9	10
Post-procedural sheath, groin and circulatory care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Monitoring for post-procedural coronary occlusions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Providing cardiac specific patient education.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Documenting care in patient medical records.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assisting with personal hygiene and comfort needs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Addressing the needs of the patient's carer and family.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assessing the patient's psychological risk factors (i.e. depression/anxiety).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assessing the patient's biomedical cardiovascular risk factors.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assessing the patient for social issues such as need for employment support.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Patient discharge planning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Interventional Cardiology - Nursing Practice Survey IC-NPS

*** 23. The optimal post-procedure ambulation time is:**

- < 1 hr 3 hrs 6 hrs
 1 hr 4 hrs 8 hrs
 2 hrs 5 hrs > 8 hrs

*** 24. The most appropriate intervention to achieve haemostasis at the femoral arterial puncture site is:**

- Sandbag 1L Normal Saline Manual Compression Mechanical Compression Device Arterial Suture Device

*** 25. The optimal angle of the head of the patient's bed post-PCI and prior to sheath removal is:**

- Flat 10-19 deg 20-29 deg 30-39 deg 40-49 deg >50 deg

*** 26. Which of the following is the drug/s of choice for controlling pain/discomfort during sheath removal:**

- Non-opioid Mild opioid Strong Opioid
 Non-opioid + sedative Mild opioid + sedative Strong opioid + sedative

Interventional Cardiology - Nursing Practice Survey IC-NPS

This is the end of the survey!

Thank you for taking your valuable time to undertake this survey.

Kind regards

The Research Team

27. Please feel free to add any comments you believe will help the research team.

Appendix Six

Australasian Cardiovascular Nurses College – *Support Letter*



10 April 2008

Mr John Rolley
PhD Candidate
Centre for Cardiovascular and Chronic Care
School of Nursing and Midwifery
Curtin University of Technology
39 Regent Street
CHIPPENDALE NSW 2008

Dear John

Re: Support for Research by Mr John Rolley – title Interventional Cardiology – Nursing Practice Survey (Part of the APRICA2 Study)

This letter is in support of your research project - Interventional Cardiology – Nursing Practice Survey (IC-NPS) for your PhD. An essential aim of the college is the development and improvement of practice standards in all aspects of cardiovascular healthcare. Therefore we are seek to engage efforts to investigate these important issues.

On this basis, we are happy to assist with the dissemination of the above survey, provided the appropriate ethical approvals have been given.

We wish you and your research team every success.

Kind regards

Professor Simon Stewart

President, ACNC

Appendix Seven

PCI Nursing Clinical Practice Guidelines: *Brief Document*

Improving Care in Percutaneous Coronary Interventions

Guidelines to support nursing clinical practice

2009



Endorsed by

This is an **UN-ENDORSED** copy of the guidelines.

Please **do not distribute without written permission** from the ACNC.

Pre-PCI Nursing Clinical Practice		GoR*
Pre-procedure Orientation	A	In the case of emergency, strategies should be implemented to decrease 'door to balloon time'. ¹
	D	All patients should receive informed consent according to institutional policy. ^{2,3}
	D	Family members should be involved in care planning and informed of: <ul style="list-style-type: none"> PCI procedures & pathway key contact details for the hospital & units visiting policies potential discharge date
	D	Patients scheduled for elective PCI procedures should be strongly encouraged to attend a pre-admission assessment clinic where available.
Assessment	D	A full assessment should be conducted upon admission including baseline observations, height, weight, FBE, urinalysis/biochemistry, electrocardiogram (ECG), health history, allergies, blood sugar level (BSL), history of IV contrast use/allergy, history of PCI procedures and vascular observations (baseline). ^{1,4}
Screening	B	All patients should be screened for factors placing them at increased risk of complications including: <ul style="list-style-type: none"> diabetes ACE inhibitor use renal insufficiency vascular disease untreated infection haematological disorders obesity electrolyte imbalance uncontrolled hypertension.⁶
	B	All patients should be screened for major bleeding associated risk including: <ul style="list-style-type: none"> age ≥ 75 female renal insufficiency (CrCl ≤ 60ml/min) diabetes anaemia ST segment deviation > 1mm elevated troponin hypertension no previous PCI.⁷
	B	The interventional cardiologist should be informed if the patient has an allergy to iodine or iodine-containing foods. If appropriate, the patient may be commenced on a desensitising regime. ⁸
Fasting & Fluids	N	Based upon available evidence, the practice of routine fasting of PCI patients is not justifiable, fasting should be based on clinical judgement on a case-by-case basis. Some clinicians still strongly recommend fasting.
	D	Intravenous fluids should be administered prior to commencing the procedure and continue until the patient is able to freely consume fluids. Administration of IV fluids should take into account co-morbid conditions. ⁴
Managing Risk for Renal Impairment	B	Patients undergoing PCI can be at varying levels of risk for contrast-induced renal impairment. The following should be considered: <ul style="list-style-type: none"> IV fluids should be provided to aid contrast clearance where increased hydration is clinically warranted for patients already at risk (renal impairment, primary PCI).^{11,6} Diabetic patients on metformin should discontinue their medication on the morning of the procedure and not recommence medication for 48 hours following the procedure.⁶ Where considered appropriate, an N-acetylcysteine (NAC) regime may be considered prior to and following the procedure.¹¹ however, there is evidence to say NAC may not be effective.⁴³
Medication Considerations	D	Patients with diabetes who have been ordered to fast prior to the procedure should have: <ul style="list-style-type: none"> appropriate reduction of short-acting insulin^{5,6} be listed first on each case list no changes to long-acting insulin 4th hourly BSL
	B	Aspirin should not be discontinued prior to PCI and commenced for those not already taking daily aspirin ^{9,10} if not contraindicated.
	A	Clopidogrel should be loaded at least 6 hours prior to PCI. ⁴⁴ <i>Daily dose should not be withheld.</i>
	A	Enoxaparin (low molecular weight heparin) should be withheld on the day of the PCI.
Biological Risk Factors	A	Patients should have a comprehensive risk factor assessment conducted during their acute care admission, including screening for: <ul style="list-style-type: none"> hypertension hypercholesterolaemia BMI and/or waist circumference smoking diabetes physical activity nutrition/dietary behaviour depression alcohol intake.¹²
Psychological Risk Factors	B	Patients should be screened for depression using a validated measure for depression such as the Patient Health Questionnaire - PHQ-2 at an appropriate time during their admission. ¹³
	B	Where patients score positively for depression on the PHQ-2, the PHQ-9 ¹³ or other valid and reliable measure should be administered, results documented and appropriate referral made during admission.
Social Risk Factors	C	Patients' socioeconomic status should be noted for impact on their ability to afford medication, transport barriers and other ongoing treatment costs. ¹⁴
	C	Social isolation is a barrier to effective disease management. Where potential risks are noted, referral to a social worker should be prioritised. ¹⁴
Critical Pathway	C	All patients should have a critical pathway to increase staff adherence to guidelines. High risk patients should be referred to community providers. ^{16,17}
Planning for Discharge	D	Comprehensive discharge planning should commence upon admission for all PCI patients in accordance with local institutional policy. ¹⁵
	D	Prior to discharge, patients, and where relevant, carers, should be assessed to determine their understanding of the treatment recommendations including: <ul style="list-style-type: none"> taking medications CV risk reduction strategies post-PCI groin care attendance at cardiac rehabilitation or secondary prevention program. follow-up education, either written or verbal, should be provided to individuals prior to discharge.^{1,12}
	D	During the 3-7 days following discharge, patients should be contacted for the purpose of checking groin recovery, advocating involvement in CR, and referral to services where needed.
Discharge Medications	A	Prior to discharge, patient's medication should be assessed and where needed, action taken to promote adherence to current guidelines including: <ul style="list-style-type: none"> anti-platelet therapy (aspirin & clopidogrel) ACE Inhibitors / ARBs beta-blocker statin short-acting nitrates aldosterone antagonists other anticoagulants.^{1,12}

*Grade of Recommendation: A - C=Empirical evidence; D=Consensus; N=No Consensus or controversial

Peri-PCI Nursing Clinical Practice	Assessment & Monitoring	<p>D - Patients should be monitored throughout the procedure and recovery period. Observation should include:</p> <ul style="list-style-type: none"> -continuous ECG -respiratory rate -SaO₂ monitoring -blood pressure (BP). <p>Nurses should frequently assess the patient and document the observations in a regular and timely manner in the patient's medical record.¹⁸</p> <p>C - The most appropriate leads to use for detection of ischaemia during a PCI procedure are: V2-V4, III and aVF depending on the artery being treated.¹⁹</p>
	Comfort & Pain Management	<p>B - All patients should be offered mild sedatives prior to the procedure with patients at higher risk of discomfort or anxiety given further sedation during the procedure.²⁰</p> <p>C - Patients should be regularly assessed for pain levels during the PCI procedure including potential myocardial ischaemia and musculoskeletal pain. A pain scale appropriate to the patient's comprehension and language skills should be used, for example:</p> <ul style="list-style-type: none"> -Visual Analogue Scale -Numerical Rating Scale -Verbal Rating Scale²¹ -Faces Pain Scale.^{27,28}
Post-PCI Nursing Clinical Practice	Vital Signs Observation	<p>B - All patients should be managed on continuous ECG monitoring in order to detect signs of ischaemia and arrhythmias.¹⁸</p> <p>Regular assessment of respiratory rate, pulmonary ventilation (where sedation has been used), BP and SaO₂ measures is necessary. Where sedation or a high risk for respiratory compromise is suspected, regular auscultation or alternatively, ET/CO₂ monitoring may be necessary.³⁹ All observations should be regularly documented at the time of assessment.</p> <p>D - Automated monitoring alarm settings should be checked by each attending nurse upon receiving a patient from the cath lab and where necessary, settings altered in accordance with individual patient requirements.</p> <p>D - In addition to routine cardiac assessment, where ischaemic changes are noted following the PCI procedure an ECG and cardiac biomarkers should be undertaken.¹⁹</p> <p>C - The ECG monitoring leads most appropriate for detecting ischaemic changes are leads III, aVL & V₂.¹⁹</p>
	Arterial Access Site Monitoring	<p>D - All post-procedural patients should be monitored at regular intervals for signs of localised puncture site complications (regardless of chosen method of haemostasis) including:</p> <ul style="list-style-type: none"> -bleeding -haematoma -swelling -ecchymosis -pseudo-aneurysm. <p>D - Assessment of the puncture site should be documented accurately at the time the assessment.</p> <p>D - Where both right and left femoral arteries have been accessed, assessment of the puncture sites on both limbs is required.</p>
	Limb Circulation Observation	<p>D - Limb circulation observations should be conducted each time the puncture site is assessed and include:</p> <ul style="list-style-type: none"> -Peripheral pulses (compared against a baseline measurement at anatomical sites marked prior to the procedure) -warmth -capillary return -sensation -colour. <p>Limb circulation observations should be documented accurately at the time the assessment is made.</p> <p>D - The puncture site should be easily visible to the nurse with minimal obstruction whilst maintaining the patient's privacy. <i>The use of sandbags is not recommended.</i></p>
	Monitoring Coagulation	<p>N - In settings where activated clotting time (ACT) is routinely measured prior to sheath removal, ACT should be <160 sec. If GP IIb/IIIa infused, ACT to be <150 sec. It is important to note that the evidence for the efficacy of ACT prior to sheath removal is lacking and requires further evidence to strengthen the recommendation. Institutions may have values that vary from this recommendation.</p>
	Assessing Renal Function	<p>D - Due to the risk of renal impairment following contrast use, patients should be observed for signs of renal impairment. Pre-procedural baseline eGFR, UA and/or biochemistry should be collected. The day following the PCI, UEC should be checked and again 2-7 days following. Where patients are noted to be at higher risk of renal impairment, closer monitoring may be required.</p>
	Sheath Removal Discomfort Management	<p>D - While sheath-removal pain is generally considered mild, clinical judgement on a patient-specific basis is still necessary as some patients experience moderate levels of sheath-removal related pain. Assessment of the patient for risk of increased pain should be undertaken prior to sheath removal.³¹</p> <p>B - Intravenous opioids and levobupivocaine (local infiltration) have been found to reduce sheath-removal related pain.³¹</p> <p>B - There is evidence to suggest pre-sheath removal pain relief administration is more effective than administering break-through pain relief.³¹</p> <p>B - There is not sufficient evidence to suggest use of lignocaine (local infiltration) is effective in controlling sheath-removal related pain.³¹</p>
	Achieving Haemostasis	<p>D - When a femoral sheath is <i>in situ</i> the femoral artery should be anatomically located correctly. The puncture site location is likely to be affected by body size.</p> <p>B - Where manual compression is chosen, constant pressure should be applied digitally approximately 1 cm superior to puncture site for 15-20 mins or until haemostasis is achieved.</p> <p>B - Where a mechanical device is used to achieve haemostasis, it is important for clinicians to consider the limitations of each device including:</p> <ul style="list-style-type: none"> -potential structural failure -patient complication rates associated with its use -regular assessment of the patient and documentation of their observations should occur when mechanical devices are used to achieve haemostasis.²³ <p>B - As there is no evidence for the efficacy of the use of sandbags for maintaining haemostasis and evidence that their use may be detrimental, their use is not recommended.^{24,25}</p> <p>D - Where arterial closure devices are used (e.g. AngioSeal™, PerClose™, StarClose™), the post-PCI observations are identical to any other method as each device has a failure rate and therefore includes risks for vascular complications. Retroperitoneal haematomas have also been reported with arterial closure devices, therefore the same vigilance in assessment and monitoring is required.²⁷</p> <p>D - Bleeding should be treated immediately with manual (digital) compression applied to the puncture site. Compression should be maintained until haemostasis is achieved. If bleeding continues, urgent consultation with the treating cardiology team is required. Where the nurse is certified to apply mechanical compression devices, this can be deployed until medical advice is obtained.</p>

Post-PCI Nursing Clinical Practice	Patient Positioning	<p>D</p> <ul style="list-style-type: none"> Patients should be advised against lifting their head forward or increasing intra-abdominal pressure by straining to reduce the risk of bleeding following sheath removal. Patients should be taught how to apply appropriate pressure to splint the puncture site in the event of coughing, vomiting or defaecation. The patient's position and comfort should be assessed to reduce risk of bleeding from excessive movement.³⁴ <p>B</p> <ul style="list-style-type: none"> Dependant on the type of sheath used, the head of the patient's bed should be positioned from 15-30° progressively prior to sheath removal. During sheath removal, patients should be managed supine (flat).³⁴ <p>B</p> <ul style="list-style-type: none"> Every effort should be made to support patients with back conditions likely to result in increased pain by appropriately documenting their condition prior to the procedure. Where possible, patients should not be managed lying flat unless the deployed sheath does not permit elevation of the head of the bed.³⁴ <p>B</p> <ul style="list-style-type: none"> Following sheath removal, patients with increased risk of musculoskeletal discomfort should be regularly repositioned with adequate support to limbs and back to promote comfort and minimise femoral puncture site complications.³⁴ <p>D</p> <ul style="list-style-type: none"> Patients should be managed for at least 2 hours, but not exceeding 4 hours on bed rest unless clinical conditions indicate otherwise. Increased bed rest has not been associated with any significant decrease in complications.
	Sheath Removal Ambulation Times	<ul style="list-style-type: none"> Post-sheath removal ambulation times will need to vary depending upon the treatment and patient assessment. The following should be taken into consideration: <p>B</p> <ul style="list-style-type: none"> Glycoprotein IIb/IIIa (GP IIb/IIIa) inhibitors used - ambulation to be avoided if infusion is ongoing. <p>B</p> <ul style="list-style-type: none"> Bivalirudin used - post-sheath ambulation time can be reduced to 2 hours unless contraindicated by other clinical circumstances.^{32,33} <p>D</p> <ul style="list-style-type: none"> Patients who have been sedated should be managed in bed until considered capable of ensuring their own safety. Bed side rails should be used judiciously.^{40,42}
	Potential Puncture Site Complications	<p>D</p> <ul style="list-style-type: none"> Regular observations of the access site, surrounding tissue and limb are necessary to detect potential complications including: haematoma retroperitoneal bleeding compromised limb circulation. Initial observations should be conducted no less than every 15 min. for the first hour and then every 30 min. until sheath removal or, in case of an operator inserted closure device, ambulation.²⁷ Factors increasing risk for complications include: adverse coagulation profile older age sheath size (≥7Fr) female sex.²³ <p>C</p> <ul style="list-style-type: none"> Suspected pseudo-aneurysms should be reported to the treating cardiology team immediately. Symptoms may (<i>but not always</i>) include: pulsatile mass audible bruit pain circulatory compromise. Confirmation is usually made using duplex ultra-sonography.²⁸ <p>B</p> <ul style="list-style-type: none"> Retroperitoneal haematomas are rare yet serious complications should be reported to the treating cardiology team immediately. Symptoms may include: hypovolaemia diaphoresis lower abdominal/back pain.²⁹ The diagnosis is usually confirmed by computed-tomography.¹⁰ Those at higher risk include: females high femoral artery puncture small femoral artery multiple punctures of the artery during the procedure.²⁹
	Patient/Carer Groin Care Education	<p>D</p> <ul style="list-style-type: none"> Patients, their families / carers should receive written instructions advising how to manage the puncture site/s post-discharge including: <ul style="list-style-type: none"> avoidance of strenuous activities for 48 hours following the procedure following elective PCI, driving should be avoided for 2 days while primary/rescue PCI patients should not drive for 2 weeks.⁴¹ avoidance of lifting heavy object or straining for 48 hours post discharge assessment of puncture site for signs of bleeding, haematoma or localised swelling, excessive pain, decreased limb sensation, changes in temperature or colour assessment of the patient for diaphoresis, lower abdominal pain or swelling (as potential signs of retroperitoneal haematoma).^{9,30} <p>D</p> <ul style="list-style-type: none"> Patients with operator-inserted closure devices should be advised verbally and via a written information sheet to refrain from swimming, bathing or use of a spa for 4 days post-procedure.³⁰
Post-Discharge Planning	Patient Education	<p>C</p> <ul style="list-style-type: none"> Resources used in patient education should consider health and English literacy, be flexible and be in a format of their choosing.³³ <p>D</p> <ul style="list-style-type: none"> The acute care setting should be considered the start of the patient's secondary prevention process with emphasis on enrolment and involvement in a comprehensive CV risk reduction program and communication with primary care providers.³⁵
	Chest Pain Action Plan	<p>C</p> <ul style="list-style-type: none"> Prior to discharge, patients should have a written chest pain action plan as per existing guidelines.^{1,12}
	Family / Carer Involvement	<p>C</p> <ul style="list-style-type: none"> Nurses should engage carers or key significant others when providing education to patients.³⁶
	Cardiac Rehabilitation	<p>A</p> <ul style="list-style-type: none"> Nurses providing acute care should regularly advocate enrolment and completion of a comprehensive CR/CV risk reduction program following discharge.¹⁵ <p>D</p> <ul style="list-style-type: none"> Ideally, patients should be recruited to CR by members of the CR team while the patient is still admitted to the acute care setting. <p>D</p> <ul style="list-style-type: none"> Patients should receive follow-up contact from CR team members to reinforce the need for enrolment and completion of a comprehensive cardiac rehabilitation program.

For detailed discussion of the evidence underlying each recommendation, please see the full guidelines document.

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Notes

These guidelines were developed to supplement and enhance existing clinical practice guidelines. Clinicians are directed to those guidelines in conjunction with this document.

No advanced nursing procedure should be undertaken unless appropriate training and accreditation is obtained. All clinicians are referred to their institution's policies for guidance.

Appropriate training in screening for depression should be made available to clinicians including how and when to refer patients for further assessment and treatment.

People from Indigenous, ethnically or culturally diverse backgrounds may need to have access to language interpreters and translation of patient information and secondary prevention materials in a format they can access and comprehend.

Accurate and objective documentation is at the centre of good nursing practice. All assessments, procedures and interventions recommended in these guidelines should be well documented by the clinician attending the patient, family or carers.

Any recommendations referring to medication require the clinician to observe established protocols for the prescription and administration of that medication. If in doubt, clinicians should consult the prescribing officer or hospital pharmacist.

Where these guidelines rely on 'expert opinion' or other lower levels of evidence, further research needs to be carried out to upgrade the evidence supporting practice.

Glossary

ACEI	Angiotensin converting enzyme inhibitors
ACRA	Australian Cardiovascular Health and Rehabilitation Association
ACNC	Australasian Cardiovascular Nurses' College
ACT	Activated clotting time
AHA	American Heart Association
ARB	Angiotensin II receptor blocker
BSL	Blood sugar level
CR	Cardiac rehabilitation
CV	Cardiovascular
CrCl	Creatinine clearance
CSANZ	Cardiac Society of Australia and New Zealand
ECG	Electrocardiogram
ECG Leads	I II III aVF and chest leads - V1-V6
eGFR	Estimated glomerular filtration rate - estimated measure of renal function
ETCO2	End tidal carbon dioxide - a measure of pulmonary ventilation
FBE	Full blood examination - synonymous with full blood count (FBC)
GoR	Grade of recommendation - a rating from A (high) to D (consensus only)
IV	Intravenous
PCI	Percutaneous coronary intervention
PHQ-2	Patient health questionnaire 2 - depression scale
PHQ-9	Patient health questionnaire 9 - depression scale
Primary PCI	Emergency PCI procedure performed within 12 hrs of symptom onset
Rescue PCI	PCI procedure performed following failed thrombolysis
SaO2	Saturation of oxygen - a measure of bound O2 to red blood cells
sec	Seconds
ST seg	'ST' segment
TM	Trade mark
UA	Urinalysis



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DISCLAIMER

These recommendations have been produced by a collaborative team of cardiovascular nursing profession in Australia and New Zealand for the purpose of guiding the clinical practice of expert clinicians. The statements and recommendations contained in this document are based upon available evidence unless indicated as expert opinion. This document is not intended for use by people without adequate nursing, medical or clinical training, other than at the request of, or in consultation with, relevant health professionals.

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Appendix Eight

Guidelines Development Panel & Guidelines Review Panel

8.1 Guidelines Development Panel

Name	Position	Affiliation
Ann Kirkness	CNC	Royal North Shore Hospital, Cardiac Rehabilitation
Barbara James	CNC	Sydney South East & Illawarra Health Service
Bridie Carr	Manager	Cardiology Services & Orthopaedic Network - GMCT
Bronia Kendal	CNS	Sydney South East & Illawarra Health Service
Bronwyn Everett	PhD Candidate	University of Western Sydney
Carolyn Astley	DrPHIth Cand.	Flinders Medical Centre
Cynthia Wensley	Clinical Lecturer	NZ
Darrel Warrington	CNC	North Sydney & Central Coast A. H. S.
Dawn McIvor	CNC	Cardiac Services, Hunter & New England Area Health Service
Debra Gasgard	CNC	
Elizabeth Goode	CNE	Cardiac Catheter Lab, Westmead Hospital
Emma Boston	CNS	St John of God, Melbourne
Fiona Beattie	Cardiac Assessment Nurse	St George & Sutherland Hospitals, Sydney
Glenn Paul	CNC	Sydney South East & Illawarra Health Service
HuiYun Du	PhD Cand.	Curtin Health Innovation Research Institute, Curtin University
Jacqueline Colgan	CNC	Gosford Hospital
Jan Sayers	Lecturer/PhD cand.	University of Western Sydney
Jennifer Young	CNC	Prince of Wales Hospital, Sydney
Jill-Marie Stewart	CNS	Cardiac Rehabilitation, Nepean Hospital
Jim McVeigh	NP	Sydney South East & Illawarra Health Service
John McKeon	Consumer Rep	
Karen Daws	RN	St Vincents Hospital, Melbourne
Karen Lintern	CNC	Cardiology, Liverpool Health Service & Co-Chair, Cardiology GMCT
Karen Page	Post-Doc Fellow	St Vincents Hospital, Melbourne / ACU
Khoo Lan Tang	CNC	
Linda Wollard	CNC	Royal North Shore Hospital, Sydney, NSW
Lorraine Cunningham		
Lynn Susan Health	RN	Nepean Hospital
Marc Aquillina	CNC	Sydney South East & Illawarra Health Service
Maria Pal	NUM	Cardiac Catheter Lab, Liverpool Health Service
Michelle DiGiacomo	Post-Doctoral Fellow	Curtin Health Innovation Research Institute, Curtin University
Mike McAlteer	CNS	Manukau Health, Auckland, NZ
Phil Newton	Project Director	Curtin Health Innovation Research Institute, Curtin University

Robert Zecchin	NM	Cardiac Education & Assessment Program, Westmead Hospital
Robin Speerin	Past President, ACRA	NSW Health
Ross Proctor	CNC	Prince of Wales Hospital, Sydney
Sharon Verhoeven	RN	Nepean Hospital
Sheila Rimmer	Consumer rep	
Sue Price	CNS	New Zealand
Sue Samuels	NM	Nepean Hospital
Susan Harvey		Sydney South East & Illawarra Health Service

ACRA=Australian Cardiovascular and Health Rehabilitation Association; CNC=Clinical Nurse Consultant; CNS=Clinical Nurse Specialist; DrPHth=Doctor of Public Health; GMCT=Greater Metropolitan Clinical Taskforce; NM=Nurse Manager; NP=Nurse PractitionerRN=Registered Nurse

8.2 Guidelines Review Panel

Name	Position	Affiliation
Abina Birmingham	Nurse Educator	Wellington Hospital, New Zealand
Andrew Ong	Cardiologist	Westmead Hospital, Sydney West Area Health Service
Bernadette Hoffman	Clinical Nurse Consultant	Lyell McKewin Hospital, South Australia
Craig Juergens	Assoc. Professor / Cardiologist	Liverpool Health Service, Sydney South West Area Health Service / University of Sydney
Emily Walsh	Clinical Nurse Educator	Wellington Hospital, New Zealand
Karen Daws	Nurse Unit Manager	Cardiac Catheterisation Labs, St Vincents Hospital, Melbourne
Leanne Barclay	Registered Nurse – Cardiac Rehabilitation	Dunedin Hospital, New Zealand
Linda Worrall-Carter	Professor / Registered Nurse	National Centre for Clinical Outcomes Research (NaCCOR), Australian Catholic University
Ritin Fernandez	Senior Lecturer / Registered Nurse	FaCH, School of Nursing & Midwifery, University of Western Sydney

Appendix Nine

Chapter Seven Modified Delphi Round One Survey

PCI Nursing Care Consensus Guidelines Delphi 1

1. Welcome to Delphi Round One!

Welcome to the first Delphi round of the consensus guideline development process. Data to date has been synthesised from an integrated literature review, consensus development workshop and cardiovascular nurses survey to form key guideline recommendations.

These recommendations now need to be scrutinised by cardiovascular clinicians, such as yourself.

To prepare for this exercise, please read the document which was sent to you, prior to completing this Delphi survey.

There are 58 recommendations covered in this Delphi round and each recommendation you will be asked to give:

1. Your level of agreement with the recommendation statement
2. Your level of agreement with the strength of the evidence
3. Your level of agreement with the grade of recommendation
4. Your perception of the level of importance this recommendation has to PCI care
5. Your perception of the level of implementation in your workplace.
6. Your belief concerning how the recommendation will impact positively on patient outcomes.
7. Where you disagree with the recommendation statement, there is opportunity for you to give an alternative.
8. Your suggested outcome indicator to measure performance of the recommendation.

Following many of the recommendation statements you will find a number within square brackets, i.e. [2]. This is a reference to a journal article. These numbers correspond with the reference list in the back of the large PDF document of the guidelines emailed to you.

Thank you for taking the time to engage in this vital professional development project. If you have any questions, please do not hesitate to contact the team: John Rolley 0404 716 175 j.rolley@curtin.edu.au or Trish Davidson p.davidson@curtin.edu.au.

Kind regards

APRICA 2 Team

2. Levels of Evidence and Grades of Recommendation

Levels of Evidence are used to 'rate' the strength of research evidence published in peer review journals. For this study, we are using the NH&MRC categories for Levels of Evidence.

Grade of Recommendation similarly compares what evidence is available and then rates the degree to which the recommendation should be relied upon for practice. 'A' means highly reliable and based on high-level evidence. While 'D' would indicate little robust evidence exists and therefore caution should be taken when basing practice upon the recommendation.

Please refer to the full guidelines draft document for a table outlining this in greater detail - Page 12.

If you have any questions, please contact John, j.rolley@curtin.edu.au or 0404 716 175.

Kind regards

APRICA2 Team

PCI Nursing Care Consensus Guidelines Delphi 1

3. Pre-Procedural Orientation and Assessment- Recommendation 1

Consider the following recommendation and answer the questions:

In the case of emergency, strategies should be implemented to decrease 'door to balloon time'

Level of Evidence: II

Grade of Recommendation: B

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

4. Pre-Procedural Orientation and Assessment- Recommendation 2

Consider the following recommendation and answer the questions:

All patients should receive informed consent. [2,3]

Level of Evidence: -

Grade of Recommendation: D

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

5. Pre-Procedural Orientation and Assessment- Recommendation 3

Consider the following recommendation and answer the questions:

Family members should be involved in care planning and informed of:

- PCI procedures and pathway
- Key contact numbers (Ward, patient's bedside)
- Visiting policies

Level of Evidence: -

Grade of Recommendation: D

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10 SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

6. Pre-Procedural Orientation and Assessment- Recommendation 4

Consider the following recommendation and answer the questions:

A full assessment should be conducted upon admission including baseline observations, height, weight, urine analysis, electrocardiogram (ECG); health history (previous procedures, co-morbid conditions; drug & alcohol usage; falls risk; medication usage (including non-prescription and traditional medicines) Blood Glucose Level (BSL) (all patients), biochemistry, history of intravenous contrast and PCI procedures.[4]

Level of Evidence: -

Grade of Recommendation: D

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

7. Pre-Procedural Orientation and Assessment- Recommendation 5

Consider the following recommendation and answer the questions:

Rescue PCI patients should be fasted from admission with a food and fluid intake history completed and documented at time of admission.[5]

Level of Evidence: -

Grade of Recommendation: D

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

8. Pre-Procedural Orientation and Assessment- Recommendation 6

Consider the following recommendation and answer the questions:

Emergent and elective PCI patients should be fasted for a minimum of 6 hours prior to procedure.[5]

Level of Evidence: -

Grade of Recommendation: D

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

9. Pre-Procedural Orientation and Assessment- Recommendation 7

Consider the following recommendation and answer the questions:

Intravenous fluids should be administered upon commencement of fasting and continue until the patient is able to consume fluids freely following sheath removal, unless fluid administration is contraindicated due to a co-morbid condition.[4]

Level of Evidence: -

Grade of Recommendation: D

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

10. Pre-Procedural Orientation and Assessment- Recommendation 8

Consider the following recommendation and answer the questions:

Patients with diabetes should have:

- Appropriate reduction of subcutaneous insulin should be made according to attending physician orders. Insulin should not be discontinued entirely unless directed by responsible clinician .[6]
- Four hourly BSL monitoring while fasting and post procedure.

Level of Evidence: -

Grade of Recommendation: D

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

11. Pre-Procedural Orientation and Assessment- Recommendation 9

Consider the following recommendation and answer the questions:

All PCI patients should be screened for factors placing them at increased risk of complications including:

- Diabetes,
- ACE inhibitor usage,
- Renal insufficiency,
- Vascular disease (stroke),
- Untreated infection,
- Haematological disorders (anaemia, severe bleeding or coagulopathies),
- Electrolyte imbalance and
- Uncontrolled hypertension.[7]

Level of Evidence: II

Grade of Recommendation: B

*** 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)**

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

*** 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?**

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

12. Pre-Procedural Orientation and Assessment- Recommendation 10

Consider the following recommendation and answer the questions:

All PCI patients should be screened for major bleeding associated risk including:

- Age \geq 75
- Female
- Renal insufficiency (CrCl $<$ 60ml/min)
- Diabetes
- Anaemia
- ST-segment deviation \geq 1mm
- Elevated cardiac biomarkers
- Hypertension
- No previous PCI.[8]

Level of Evidence: II

Grade of Recommendation: B

*** 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)**

	SD	1	2	3	4	5	6	7	8	9	10 SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

*** 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?**

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

13. Pre-Procedural Orientation and Assessment- Recommendation 11

Consider the following recommendation and answer the questions:

Diabetic patients on metformin should discontinue their medication on the morning of the procedure and not recommence for 48hr following the procedure.[7]

Level of Evidence: -

Grade of Recommendation: D

*** 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)**

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

*** 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?**

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

14. Pre-Procedural Orientation and Assessment- Recommendation 12

Consider the following recommendation and answer the questions:

Aspirin should not be discontinued prior to the PCI procedure.[9]

Level of Evidence: II

Grade of Recommendation: B

*** 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)**

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

*** 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?**

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

15. Pre-Procedural Orientation and Assessment- Recommendation 13

Consider the following recommendation and answer the questions:

Carers and/or patient support people should be informed regarding the procedure and post-discharge needs.

Level of Evidence: -

Grade of Recommendation: D

*** 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)**

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

*** 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?**

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

16. Assessment and Management of Biological Risk Factors - Recommendation 1

Consider the following recommendation and answer the questions:

Current guidelines recommend all cardiac patients be screened for risk factors for CHD including:

- Hypertension
- Hypercholesterolaemia
- Body weight*
- Smoking
- Diabetes
- Physical activity levels
- Nutrition
- Depression
- Alcohol intake[10]

*Guidelines refer to waist circumference and BMI rather than weight.[10]

Level of Evidence: I

Grade of Recommendation: A

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

17. Assessment and Management of Psychosocial Risk Factors - Recommendation 1

Consider the following recommendation and answer the questions:

Patients should be screened for psychological risk factors such as depression and anxiety.

Level of Evidence: -

Grade of Recommendation: D

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

18. Assessment and Management of Psychosocial Risk Factors - Recommendation 2

Consider the following recommendation and answer the questions:

The PHQ-2 should be routinely administered to all PCI patients upon admission.[11]

Level of Evidence: II

Grade of Recommendation: B

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

19. Assessment and Management of Psychosocial Risk Factors - Recommendation 3

Consider the following recommendation and answer the questions:

Where patients score 'yes' on either or both PHQ-2 items, the PHQ-9 should be administered, results documented and appropriate referral made during admission.[11]

Level of Evidence: II

Grade of Recommendation: B

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

20. Assessment and Management of Psychosocial Risk Factors - Recommendation 4

Consider the following recommendation and answer the questions:

Patient's social support should be assessed through a comprehensive patient social history upon admission to the unit as social support has been found to impact on risk for CVD and recovery.[12]

Level of Evidence: II

Grade of Recommendation: C

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

21. Assessment and Management of Psychosocial Risk Factors - Recommendation 5

Consider the following recommendation and answer the questions:

Patient's socioeconomic status should be noted for impact on ability to afford medication, transport barriers and other ongoing treatment costs.[12] Where potential risks are noted, referral to a social worker should be prioritised.

Level of Evidence: II

Grade of Recommendation: C

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

22. Assessment and Management of Psychosocial Risk Factors - Recommendation 6

Consider the following recommendation and answer the questions:

Key support people/carers should be involved in the planning and execution of care.

Level of Evidence: IV

Grade of Recommendation: C

*** 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)**

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

*** 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?**

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

23. Discharge Planning and Critical Pathways - Recommendation 1

Consider the following recommendation and answer the questions:

Comprehensive discharge planning should commence upon admission for all PCI patients in accordance with institution policy.[13]

Level of Evidence: -

Grade of Recommendation: D

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

24. Discharge Planning and Critical Pathways - Recommendation 2

Consider the following recommendation and answer the questions:

Prior to discharge, patient's medications should be assessed to promote adherence with current guidelines:

- Anti-platelet (asprin/clopidogrel)
- ACEI or ARB,
- Beta-blocker
- Statin
- Aldosterone agonists
- Other anticoagulant for patients with a high risk of thromboembolism post MI.[10, 14]

Level of Evidence: I

Grade of Recommendation: A

*** 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)**

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

*** 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?**

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

25. Discharge Planning and Critical Pathways - Recommendation 3

Consider the following recommendation and answer the questions:

Prior to discharge, patient's and, where relevant, carers, should be assessed to determine their comprehension of their treatment recommendations including:

- Taking medication
- Secondary prevention strategies
- Post-PCI groin care
- Attendance at cardiac rehabilitation or secondary prevention program. Where gaps in understanding are detected, patients should receive follow-up education.

Level of Evidence: -

Grade of Recommendation: D

*** 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)**

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

*** 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?**

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

26. Discharge Planning and Critical Pathways - Recommendation 4

Consider the following recommendation and answer the questions:

All PCI patients should have a standard pathway to increase guideline adherence with high risk patients being referred to community providers as a matter of priority.[15, 16]

Level of Evidence: IV

Grade of Recommendation: C

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

27. Peri-Procedural Assessment and Monitoring - Recommendation 1

Consider the following recommendation and answer the questions:

Patients should be monitored with continuous ECG, SaO2 monitoring and regular blood pressure monitoring throughout the procedure and recovery period and assessed frequently by all nurses attending the patient (procedural nurse and scout/s).[17]

Level of Evidence: IV

Grade of Recommendation: D

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10 SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

28. Peri-Procedural Assessment and Monitoring - Recommendation 2

Consider the following recommendation and answer the questions:

The most appropriate leads to use for detection of ischaemia during a PCI procedure are: V2- V4, III and aVF. [18]

Level of Evidence: IV

Grade of Recommendation: D

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

29. Peri-Procedural Comfort and Pain Management - Recommendation 1

Consider the following recommendation and answer the questions:

Patients with higher risk of discomfort during the procedure should be offered a mild sedative prior to the procedure.[9, 19]

Level of Evidence: II

Grade of Recommendation: B

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

30. Peri-Procedural Comfort and Pain Management - Recommendation 2

Consider the following recommendation and answer the questions:

Patients should be regularly assessed for pain levels during the PCI procedure in terms of cardiac-related chest pain resulting from the procedure and musculo-skeletal related discomfort. A pain scale appropriate to the patient's comprehension and language skills should be used (for example):

- Visual Analogue Scale
- Numerical Rating Scale (0 = Minimal 10 = Extreme)
- Verbal Rating Scale[20]

Note: Each of these approaches has inherent strengths and weakness depending on its application and setting of use.

Level of Evidence: -

Grade of Recommendation: D

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

31. Post-Procedural Assessment and Monitoring - Recommendation 1

Consider the following recommendation and answer the questions:

Regular observations of the arterial access site, surrounding tissue and limb are necessary to detect potential complications including haematoma, retro-peritoneal bleeding, and compromised limb circulation. Initial observations should be conducted no less than every 15 minutes for the first 30 min and then every 30 minutes until sheath removal or, in the case of a closure device, ambulation.

Factors increasing the risk for complications include:

- Heparisation status
- Femoral sheath size (>7 Fr)
- Older age
- Female sex[21]

Level of Evidence: -

Grade of Recommendation: D

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

32. Post-Procedural Assessment and Monitoring - Recommendation 2

Consider the following recommendation and answer the questions:

Limb circulation observations should be conducted each time the puncture site is assessed and include: peripheral pulses (compared against a baseline measurement at anatomical sites previously marked on the skin), warmth, capillary return, sensation and colour.

Limb circulation observations should be documented accurately on an institution approved form at the time the assessment is made.

Level of Evidence: -

Grade of Recommendation: D

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

33. Post-Procedural Assessment and Monitoring - Recommendation 3

Consider the following recommendation and answer the questions:

While protecting a patient’s privacy, the puncture site should be easily visible by the nurse with minimal obstruction. The use of non-transparent devices (e.g. sandbags) which obscure the puncture site should be avoided.

Level of Evidence: -

Grade of Recommendation: D

*** 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)**

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

*** 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?**

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

34. Post-Procedural Assessment and Monitoring - Recommendation 4

Consider the following recommendation and answer the questions:

All PCI patients should be managed on continuous ECG monitoring in order to detect signs of re-stenosis (i.e. ST wave changes) together with BP and SaO2 measures.

Level of Evidence: -

Grade of Recommendation: D

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

35. Post-Procedural Assessment and Monitoring - Recommendation 5

Consider the following recommendation and answer the questions:

ECG monitoring leads most appropriate for detecting ischaemic changes are leads III, aVL and V2.[18]

Level of Evidence: IV

Grade of Recommendation: C

*** 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)**

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

*** 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?**

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

36. Post-Procedural Assessment and Monitoring - Recommendation 6

Consider the following recommendation and answer the questions:

Automated monitoring alarm settings (ECG: ST, HR etc) should be checked by each attending nurse upon receiving a patient from the catheter laboratory.

Level of Evidence: -

Grade of Recommendation: D

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

37. Post-Procedural Assessment and Monitoring - Recommendation 7

Consider the following recommendation and answer the questions:

Where ischaemic changes are noted following PCI procedure, an ECG and cardiac enzyme studies should be conducted (eg. CK-MB or Troponin)

Level of Evidence: -

Grade of Recommendation: D

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

38. Post-Procedural Assessment and Monitoring - Recommendation 8

Consider the following recommendation and answer the questions:

Renal function should be assessed by monitoring and documenting fluid intake and urine output as well as monitoring biochemistry for 24 hours or until discharge.

Level of Evidence: -

Grade of Recommendation: D

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

39. Post-Procedural Assessment and Monitoring - Recommendation 9

Consider the following recommendation and answer the questions:

In facilities where activated clotting time (ACT) is measured as part of sheath removal practice, appropriate coagulation studies, ACT, should be performed prior to sheath removal to ascertain risk for bleeding or haematoma following sheath removal. ACT <180 secs* should be achieved prior to sheath removal being attempted.[22]

*Some institutions prefer to wait until the ACT is <160 secs prior to removing the sheath.

Level of Evidence: -

Grade of Recommendation: D

** Please note: this recommendation has an additional question.

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 2. Additional question: Which standard ACT measure do you believe should be recommended as a standard prior to sheath removal?

- <180 seconds
- <160 seconds
- Other (please specify)

3. If you disagree with the wording of the recommendations, please provide an alternative.

* 4. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

5. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

40. Methods of Achieving and Maintaining Haemostasis - Recommendation 1

Consider the following recommendation and answer the questions:

Where manual compression is chosen, constant pressure should be applied digitally approximately 1 cm superior to puncture site for 15-20 minutes.

Level of Evidence: II

Grade of Recommendation: B

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

41. Methods of Achieving and Maintaining Haemostasis - Recommendation 2

Consider the following recommendation and answer the questions:

Where a mechanical device (Femo-Stop™) is used to achieve haemostasis the following protocol is recommended:

- Following assembly of the apparatus, the centre of the transparent compression bubble is placed 1cm superior to the puncture site
- Inflate the compression bubble to a maximum pressure (Systolic BP + 30 mmHg) which is held for 25 minutes.
- Haemostasis is to be checked gradually by incremental deflation of the compression bubble
- Once haemostasis has been established, the apparatus can be removed and the wound dressed according to institution protocol.[23]

Please note: Haematoma rates of approximately 7% have been reported with FemoStop™ use.

Level of Evidence: II

Grade of Recommendation: B

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

42. Methods of Achieving and Maintaining Haemostasis - Recommendation 3

Consider the following recommendation and answer the questions:

As there is no evidence for the efficacy of the use of sandbags for maintaining haemostasis and evidence that they may be detrimental, their use is not recommended.[24, 25]

Level of Evidence: II

Grade of Recommendation: B

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

43. Methods of Achieving and Maintaining Haemostasis - Recommendation 4

Consider the following recommendation and answer the questions:

Patients should be advised against lifting their head forward or increasing intra-abdominal pressure through straining to reduce the risk of bleeding.

Level of Evidence: -

Grade of Recommendation: D

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
 No
 Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

44. Assessment and Monitoring of the Arterial Access Site - Recommendation 1

Consider the following recommendation and answer the questions:

All post-procedural patients should be monitored at regular intervals for signs of localised puncture site complications (regardless of the chosen method of achieving haemostasis*) including:

- Bleeding
- Haematoma
- Swelling
- Ecchymosis
- Pseudo-aneurysm

Assessment of the puncture site should be documented accurately on an institution approved form at the time the assessment is made.

*No method is risk free. Various forms of closure device may have predisposing risk factors at varying levels to other forms of closure devices. Nurses should be aware of the inherent issues of each device employed in their institution.[21]

Level of Evidence: III

Grade of Recommendation: C

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

45. Assessment and Monitoring of the Arterial Access Site - Recommendation 2

Consider the following recommendation and answer the questions:

Where operator inserted devices are used (AngioSeal™, PerClose™, Star-Close™ etc), the post-PCI observations are identical to any other method as each device has a failure rate and therefore includes risks for vascular complications. Retroperitoneal haematomas have also been reported in people with operator inserted vascular closure devices therefore the same vigilance in assessment and monitoring is required.

Level of Evidence: -

Grade of Recommendation: D

*** 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)**

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

*** 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?**

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

46. Assessment and Monitoring of the Arterial Access Site - Recommendation 3

Consider the following recommendation and answer the questions:

Bleeding should be treated immediately with manual (digital) compression being applied 1cm superior to the insertion site for a minimum of 15 minutes. Compression should be maintained until haemostasis is achieved.

Level of Evidence: -

Grade of Recommendation: D

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

47. Assessment and Monitoring of the Arterial Access Site - Recommendation 4

Consider the following recommendation and answer the questions:

Pseudo-aneurysms detected should be reported to the interventional cardiologist immediately. Symptoms may, but not always, include:

- Pulsatile mass
- Audible bruit
- Pain
- Circulatory compromise

Confirmation is usually made using duplex ultra-sonography.[26]

Level of Evidence: IV

Grade of Recommendation: C

*** 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)**

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

*** 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?**

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

48. Assessment and Monitoring of the Arterial Access Site - Recommendation 5

Consider the following recommendation and answer the questions:

Although rare (0.74% [27]) retroperitoneal haematoma following PCI can be fatal. Patients showing signs of:

- Hypovolaemia
- Diaphoresis
- Lower abdominal pain[27]

should be followed up immediately.

Those at higher risk may include:

- Females
- High femoral artery puncture site
- Small femoral artery size[27]

Identification of risk and close monitoring is recommended.

Level of Evidence: II

Grade of Recommendation: B

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

49. Assessment and Monitoring of the Arterial Access Site - Recommendation 6

Consider the following recommendation and answer the questions:

Patients, their families / carers should be advised how to manage the puncture site post-discharge including:

- Avoiding strenuous activities for 48 hours following the procedure
- Assessment of puncture site for signs of bleeding, haematoma or localised swelling, excessive pain, decreased limb sensation, temperature or colour.
- Assessment of the patient for diaphoresis, lower abdominal pain or swelling (as potential signs of retroperitoneal haematoma) [9]

Level of Evidence: -

Grade of Recommendation: D

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

50. Use of Pain-Relief and/or Sedation for Sheath Removal - Recommendation 1

Consider the following recommendation and answer the questions:

Due to reported risks of increased vaso-vagal local anaesthetic infiltration should be avoided prior to sheath removal.[28, 29]

Level of Evidence: II

Grade of Recommendation: B

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

51. Use of Pain-Relief and/or Sedation for Sheath Removal - Recommendation 2

Consider the following recommendation and answer the questions:

Sedation administered with strong opiates should be available for patients PRN to ease sheath removal pain.[30]

Level of Evidence: II

Grade of Recommendation: C

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

52. Ambulation Time Following Sheath Removal - Recommendation 1

Consider the following recommendation and answer the questions:

Patients should be managed for at least 2 hrs but not exceeding 3 hrs on bed rest prior to ambulation.[31]

Level of Evidence: II

Grade of Recommendation: B

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

53. Patient Positioning Following PCI Procedures - Recommendation 1

Consider the following recommendation and answer the questions:

Patient's head-of-bed should be positioned from 15 - 30 degrees progressively prior to sheath removal.[31]

Level of Evidence: II

Grade of Recommendation: B

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

54. Patient Positioning Following PCI Procedures - Recommendation 2

Consider the following recommendation and answer the questions:

Patients with back conditions likely to result in increased pain should not be managed lying flat.[31]

Level of Evidence: II

Grade of Recommendation: B

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

55. Patient Positioning Following PCI Procedures - Recommendation 3

Consider the following recommendation and answer the questions:

Following sheath removal, patients should be regularly repositioned laterally with adequate support to limbs and back to promote comfort and minimise femoral puncture site complications.[31]

Level of Evidence: II

Grade of Recommendation: B

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

56. Post-PCI Patient Education and Promotion of Secondary Prevention - Recommen...

Consider the following recommendation and answer the questions:

Resources used in patient education should be flexible and consider health literacy, level of comprehension and in a format of their choosing.

Level of Evidence: II

Grade of Recommendation: C

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

57. Post-PCI Patient Education and Promotion of Secondary Prevention - Recommen...

Consider the following recommendation and answer the questions:

Nurses should engage key significant others or patient's carers when providing education to patients.[32]

Level of Evidence: III

Grade of Recommendation: C

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

58. Referral to Cardiac Rehabilitation - Recommendation 1

Consider the following recommendation and answer the questions:

Nurses providing acute care should regularly advocate attendance at CR following discharge.[10]

Level of Evidence: II

Grade of Recommendation: A

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

59. Referral to Cardiac Rehabilitation - Recommendation 2

Consider the following recommendation and answer the questions:

Patients should be recruited to cardiac rehabilitation by members of the CR team while the patient is still admitted to the acute care setting.

Level of Evidence: -

Grade of Recommendation: D

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

60. Referral to Cardiac Rehabilitation - Recommendation 3

Consider the following recommendation and answer the questions:

PCI patients should receive follow-up contact from CR team to reinforce need for attending CR.

Level of Evidence: -

Grade of Recommendation: D

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

61. Post-PCI Patient Education and Promotion of Secondary Prevention - Recommen...

Consider the following recommendation and answer the questions:

The acute care setting should be considered the start of the patient's secondary prevention process with emphasis on attending comprehensive cardiac rehabilitation and communication with primary care providers, particularly general practitioners.

Level of Evidence: -

Grade of Recommendation: D

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

PCI Nursing Care Consensus Guidelines Delphi 1

62. Post-PCI Patient Education and Promotion of Secondary Prevention - Recommen...

Consider the following recommendation and answer the questions:

Prior to discharge, patient's should have a written chest pain action plan as per existing guidelines.[10, 14]

Level of Evidence: III

Grade of Recommendation: C

* 1. Rate your level of agreement below (0=Strongly Disagree to 10 Strongly Agree)

	SD	1	2	3	4	5	6	7	8	9	10	SA	Not relevant
I agree with this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the level of evidence for this recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I agree with the grade of recommendation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider this recommendation to be an important aspect of PCI care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This recommendation is already being implemented in my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe this recommendation will impact positively on patient outcomes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. If you disagree with the wording of the recommendations, please provide an alternative.

* 3. Regarding this recommendation, do you believe further evidence (research) is required to provide stronger evidence to support your practice?

- Yes
- No
- Not relevant to my practice

4. Regarding this recommendation, what performance indicator would you suggest that would best measure performance of this recommendation?

63. This concludes your participation in this Round.

Thank you for your considerable contribution of time and expertise in answering this survey. If you would like to leave any other suggestions or comments, we would love to hear from you.

Thank you again for your valuable contribution.

The APRICA2 Team

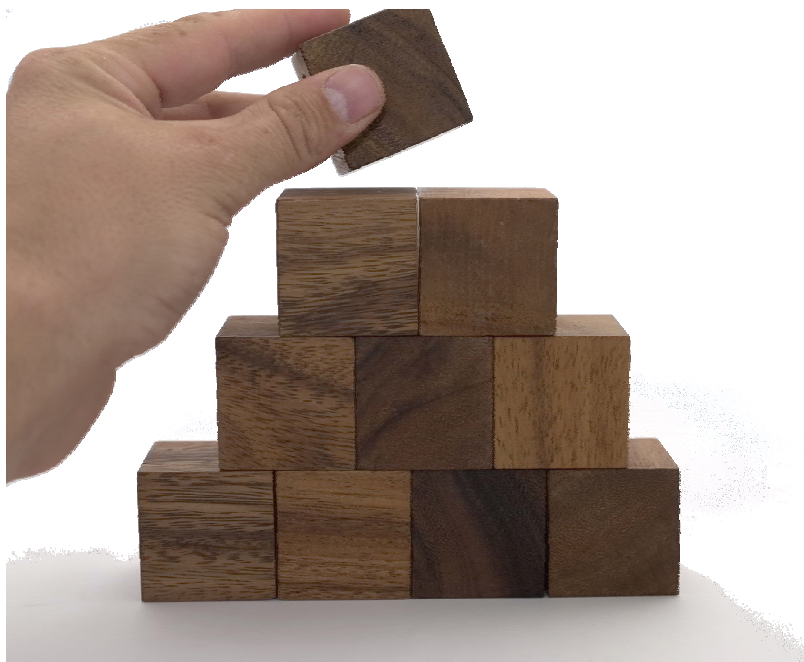
1. Please feel free to leave any comments you feel would further improve the guidelines or the process of developing them.

Appendix Ten

PCI Nursing Clinical Practice Guidelines Interim Reports

Consensus Workshop

*Nursing care for patients undergoing
percutaneous coronary intervention:
Report from Stages 1 & 2
of the consensus process*



Centre for Cardiovascular
& *Chronic Care*

Curtin 
University of Technology

Consensus Workshop Stage 1 & 2 Report

Developed by

Mr John Rolley RN BN(Hons)

Professor Patricia Davidson RN PhD

Dr Yenna Salamonsen RN PhD

Dr Ritin Fernandez RN PhD

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On behalf of the Consensus Workshop Delegates

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School of Nursing and Midwifery

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CHIPPENDALE NSW 2008

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Consensus Workshop for the preparation of PCI nursing practice guidelines.
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Consensus Workshop Stage 1 & 2 Report

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Executive Summary

Coronary heart disease (CHD) is the leading cause of death in Australia. While technology has had a significant impact on the health outcomes during the acute phase of the illness, CHD is a chronic condition which has implications for management plan.

Percutaneous coronary intervention [PCI]. This technology has reduced the treatment time required for revascularisation and reduced the potential mortality of ACS.

While there are several evidence based medical management guidelines available to clinicians, there are minimal guidelines to inform nursing-specific care, dependent, independent and collaborative care. An example of this is managing the time from sheath-removal to ambulation, optimal methods of achieving haemostasis and appropriate patient/family information sharing approaches. Although it is not our intention to initiate a trend in developing discrete guidelines, systematically and empirically developing nurse interventions is critical in informing integrated, interdisciplinary clinical practice guidelines.

This report summarises at the first phase of consultation for developing nursing care guidelines for individuals undergoing PCIs.

Key foci for guideline development

These are parallel with the published literature. Of note, participants affirmed the need for an integrated approach to chronic care, including increased inclusion of family and other carers into decision making.

Consensus Workshop Stage 1 & 2 Report

Structure of this report

The report is set out in three sections:

1. Scope of the problem, conceptual framework and the Chronic Care Model
2. Stage One – Review of the Literature
3. Stage Two – The Consensus Workshop

Consensus Workshop Stage 1 & 2 Report

Abbreviations

ACRA	Australian Cardiovascular and Health Rehabilitation Association
ACS	Acute Coronary Syndrome
AMI	Acute Myocardial Infarction
CCM	Chronic Care Model
CHD	Coronary Heart Disease
CINAHL	Cumulative Index of Nursing & Allied Health Literature
CK-MB	Creatinine Kinase – MB
CNC	Clinical Nurse Consultant
CNE	Clinical Nurse Educator
CR	Cardiac Rehabilitation
ECG	Electro-Cardiogram
ED	Emergency Department
GP	General Practitioner
KPI	Key Performance Indicator
MeSh	Medical Subject Headings
NGT	Nominal Group Technique
NSTEMI	Non-ST Elevation Myocardial Infarction
PCI	Percutaneous Coronary Intervention
RAND	A non-profit multi-disciplinary policy research and development group
STEMI	ST Elevation Myocardial Infarction
SX	Symptom
Troponin	A specific enzyme released during cardiac ischaemia

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Scoping the Problem

The term 'percutaneous coronary intervention' [PCI] encompasses a variety of procedures used to treat patients with coronary heart disease [CHD], and can be performed in emergent, planned or rescue settings.¹ Over recent decades, technological advances, adjuvant therapies and new indications for stenting have increased the use of this revascularisation modality.² Procedural rates of 1:1000 are reported in the USA and Europe and PCI continues to be an important strategy for managing CHD.³ In contrast to the management of acute myocardial infarction (AMI) decades ago, where hospital stays ranged over several weeks, PCI, particularly primary angioplasty has resulted in shorter periods of hospitalisation.⁴ There is some suggestion that the decreased procedural burden associated with PCI, as compared with coronary artery bypass grafting, may lead some individuals to consider that their condition is not serious and as a consequence may be less likely to engage in secondary prevention strategies.⁵

The risks associated with PCI procedures are not inconsequential and require expert care in negotiating the peri-procedural period. Older age^{6, 7}, being female^{6, 7}, use of anti-coagulation therapy^{6, 7}, repeated interventional cardiology procedures⁶ and strategies for achieving vascular site haemostasis⁸ can all impact on procedural outcomes.⁹ Whilst recent discussion on PCI has focussed on the drug eluting stent debate¹⁰, there are many factors related to nursing practice that can also influence health related outcomes. In order to minimise adverse events and improve optimal outcomes, cardiovascular nurses need to engage in evidence base care and strategies to monitor clinical outcomes.¹¹

Numerous evidence-based guidelines for the medical management of PCI and secondary prevention strategies are available.¹²⁻¹⁴ However, within these there is minimal description of the nurse's role and impact on health related outcomes. This is likely explained by the limited evidence supporting nursing practice interventions in this setting. The minimal information on the standards for practice makes monitoring and developing nursing outcomes problematic.⁹ Further, PCI is often at the intersection of acute and chronic

Consensus Workshop Stage 1 & 2 Report

care and implementing effective secondary prevention strategies is important in improving health outcomes.^{12, 15}

The Patient Journey: A Chronic Care Model Approach

A potential strategy for linking acute and chronic care is to consider the 'patient journey' as a means for achieving person and family-centred care.¹⁶⁻¹⁸

The individual's experience of the health care system is unique to and is dependent on several factors including gender¹⁹, psycho-social support²⁰, and racial/cultural factors.²¹ Although there is increasing discourse on person-centred care, this is often difficult to achieve due to a range of system and provider issues.²² We have developed a framework, based upon the key elements of the Chronic Care Model²³, to assist in guideline development for nursing care of the individual undergoing PCI. The key considerations of the Wagner model are as follows:

- The needs of the patient and their families should be the focus of care;
- Executive support and enabling, positive policies should inform care delivery;
- Collaborative interventions between informed, motivated patients and clinicians who have access to evidence based information and appropriate skills;
- Self-management support that empowers patients to take greater responsibility for their own health;
- Decision-support tools that assist clinicians in providing evidence based care;
- Clinical information systems that facilitate the care of individual patients as well as populations.²³

Consensus Workshop Stage 1 & 2 Report

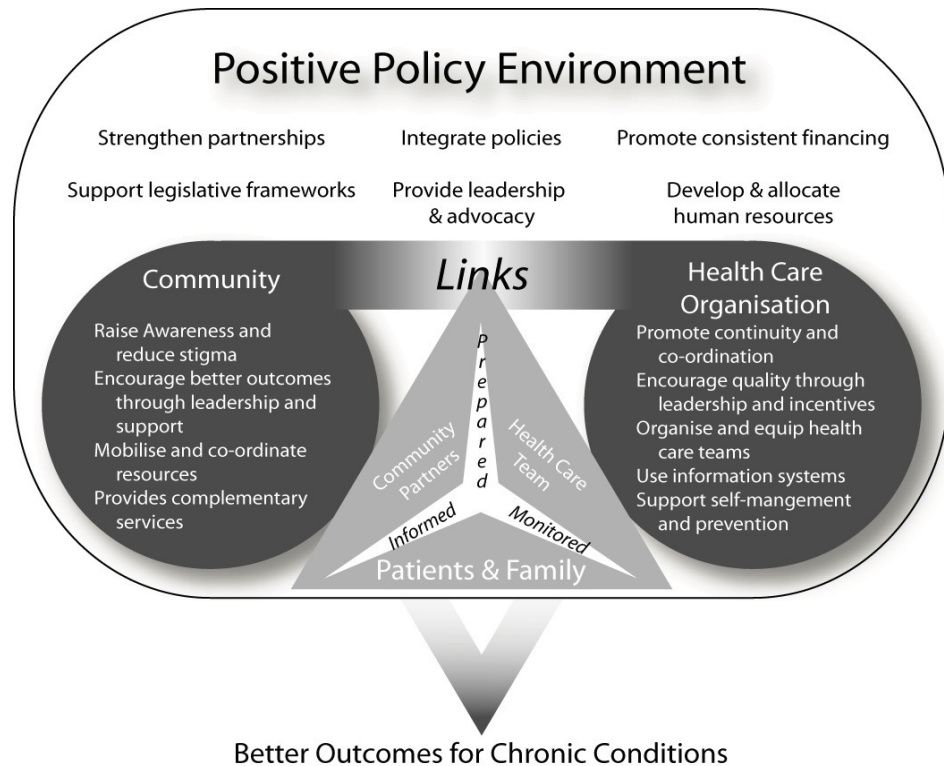


Figure One – Better Outcomes for Chronic Conditions Model, Wagner

Figure 1 outlines the CCM model and demonstrates that the period of hospitalisation for PCI is minimal in the life experience which shapes their risk for CHD as well as their capacity to engage in their secondary prevention to improve long term outcomes. The perspective of the patient journey is increasingly used to reform health services.^{24, 25} Figure 2 provides a conceptual model of the PCI experience, depicting four phases from the development of CHD and recognition of symptoms to the peri-procedural period. The fourth phase represents the emergence of heart disease as a chronic condition, where care shifts from specialist services to a community based focus.²⁵ The earlier phases of this model focus primarily on primary prevention and population based strategies and are beyond the scope of this manuscript-although nurses have many occasions to provide opportunistic health messages to patients and communities.²⁶ Items for the model shown in Figure 2 have been generated from a comprehensive literature review and key informant consultation.

Consensus Workshop Stage 1 & 2 Report

Report Overview

This report seeks to outline the results of the guideline consensus process to-date as well as the structure and process of the remaining stages of the consensus program.

Design

This study uses a modified consensus development method bringing together two techniques: Nominal Group Technique [NGT] and Delphi. The Consensus Workshop, stage two, used a Delbecq technique where at least one Co-Chair was a clinical or academic expert in the area under consideration by the small group.⁴⁷ The study flows as follows (see figure 1 for a flow diagram of the stages):

Stage One – Review of the Literature (Completed)

- A review of the literature was conducted divided into four phases of the patient journey. A team of researchers conducted the review.
- The review was then submitted to a peer review journal prior to being made available to participants who had agreed to attend the Consensus Workshop

Stage Two – Consensus Development Workshop (Completed)

- A Consensus workshop was held using a modified NGT. It is considered modified as it is not usual to provide a literature review with this technique, however, there have been exceptions noted in the literature.⁴⁷
- The main group was divided into four smaller groups consisting of a heterogeneous group of clinicians and consumers. This enabled the group sizes to be between 6 – 12 participants.⁴⁷
- A report was then to be circulated to all participants to comment on prior to the remaining stages
- Further face-to-face sessions will be conducted if it is felt further clarification is required.

Consensus Workshop Stage 1 & 2 Report

Stage Three – Delphi rounds (To be commenced)

- An online Delphi method will then be employed to canvass a consensus of cardiovascular clinicians across Australia and New Zealand.
- At least two rounds will be employed in this process

Stage Four (In progress)

- A final report will be written from which various forms of the guidelines will be constructed
- Various peak bodies will be petitioned to evaluate the guidelines. These include but are not limited to:
 - Cardiac Society of Australia and New Zealand - CSANZ
 - Australasian Cardiovascular Nurses College - ACNC
 - Australian Cardiovascular Health and Rehabilitation Association - ACRA
 - College of Emergency Nursing Australasia - CENA
 - Carers Australia
 - Royal College of Nursing, Australia - RNCA

Consensus Workshop Stage 1 & 2 Report

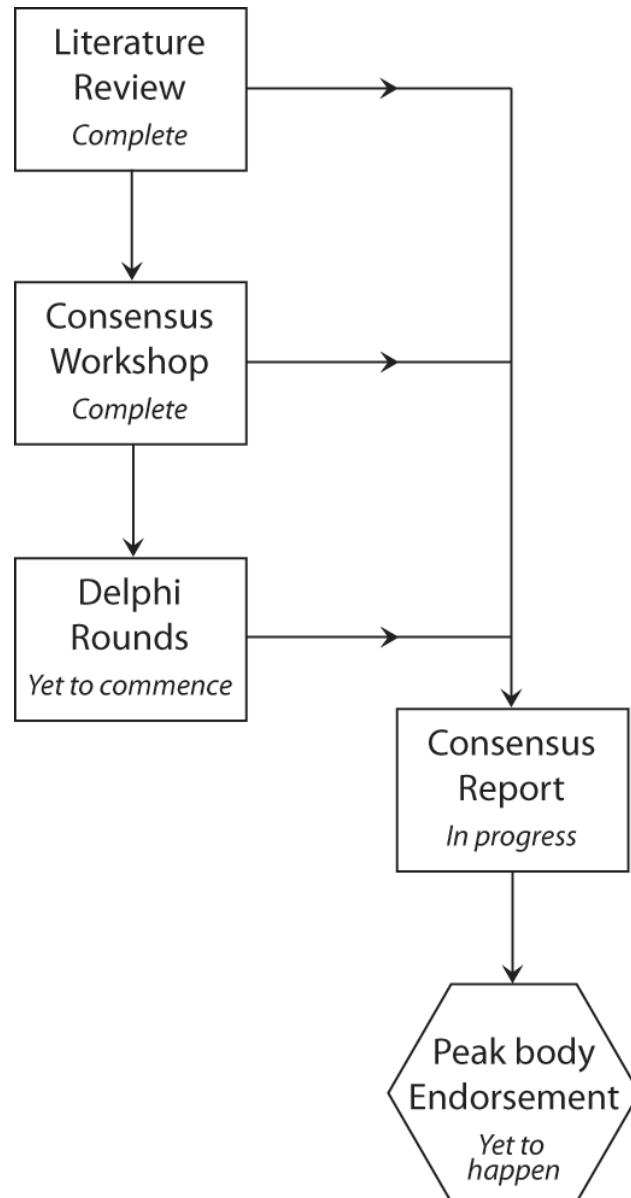


Figure One – Consensus Development Process Flow

Consensus Workshop Stage 1 & 2 Report

Stage One – Review of the Literature

Purpose of the review

The purpose to the review was to synthesise existing information and generate implications for nursing practice using an integrative literature review method.

An integrative literature review is an appraisal of published literature based on a question or hypothesis that guides the interrogation and synthesis of extant literature related to the question.²⁷ This process gathers and integrates evidence to present the state-of-the-science and suggest further areas for research and implications for practice. This approach contrasts with the systematic review which seeks to create high level synthesis of evidence to support specific clinical decision making often using meta-analysis as a tool to combine data.²⁸

Method

Firstly in the review process, guidelines related to acute coronary syndromes [ACS], PCI and secondary prevention were retrieved. The electronic data bases were searched via the Cumulative Index of Nursing and Allied Health Literature [CINAHL], Medline, Cochrane and the Joanna Briggs data bases. Key terms used in this search include: (angioplasty, transluminal, percutaneous coronary), nursing care, post-procedure complications (hemorrhage, ecchymosis, and hematoma), rehabilitation, emergency medical services (transportation of patients, triage. In addition, terms such as 'patient outcomes', 'patient journey', 'secondary prevention', patient positioning, bed rest were also used as they are not included in current MeSH [Medical Subject Headings] libraries.

In order to reflect the contemporaneous management of PCI¹² a focus was on literature since 2000, empirically based, papers published in English language, peer-reviewed publications was included. Articles were considered for suitable for the review if they were: (1) descriptive and/or intervention studies

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describing nursing care; (2) systematic reviews of related studies; or (3) Patient care guidelines derived using empirical methods. Reference lists of articles falling within these categories, and popular search engines such as Google Scholar, were also explored as a potential source of articles. All abstracts were reviewed and then retrieved if they met the search criteria. Reference lists of retrieved articles were also appraised for potential information. This review does not cite every reference identified, rather those that contribute specifically to nursing practice and the framework for the review.

Results

The results of the literature review are presented according to the Patient Journal model discussed above. Each stage of the journey, as delineated in the model will be discussed discretely. This will serve as the background to Stage Two – the Consensus Workshop method and results report.

Symptom Recognition [SR]

Despite the therapeutic advancements in CHD, obtaining definitive treatment is dependent on the appropriate recognition of symptoms and accessing care. While much improvement has occurred, due to the advancements in PCI technology, little progress has been made in reducing the time from first recognition of cardiac symptoms to seeking help and hospital admission.²⁹ Reported times to seeking assistance vary significantly.³⁰ Many studies have been undertaken to identify the clinical and socio-demographic factors impacting on symptom recognition and the decision to access treatment.³¹ Factors associated with delay are numerous and complex including gender, socioeconomic disadvantage, diabetes, the quality of social support networks and previous cardiac history.³¹ The findings of strategies to increase awareness of potential CHD and heart attack are inconsistent and generally reflect the complexity of cognitive decision making and risk appraisal. A number of interventions to address pre-hospital delay have been undertaken with limited success and underscores the importance of developing long term multifaceted strategies, that address the social and psychological barriers that impact on decisions not to seek treatment as well as system related factors, such as access to emergency response teams.^{32 33} Interventions targeting

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those at highest risk such as those with diabetes³⁴ and tailored to specific racial or cultural groups may be advantageous given greater incidence and prevalence of CHD in these populations.³⁵

Nurses can play a critical role in this process through increasing community awareness, engaging in opportunistic screening and educational initiatives. The success of the *Go Red for Women* campaign is an example of how a coordinated, targeted approach using social marketing principles and advocacy can increase community awareness of the implications of treatments.³⁶

Treatment Decision and Allocation

Treatment decision is dependent on the context of the PCI; that is whether it is an emergent, planned or rescue procedure. The decision to treat requires a complex negotiation of personal, ethical and legal issues. Many clinical guidelines adequately describe the medical diagnosis and management in acute coronary syndrome and treatment, such as PCI.^{2, 13} However, absent from such guidelines are the nursing specific issues.³⁷ The nursing role in each of these dimensions varies. In the context of AMI and primary angioplasty the nurse plays a critical role from diagnosis in the Emergency Room through facilitating adequate triaging, assessment of hemodynamic stability, access to electrocardiography and undertaking venipuncture. It is not uncommon for many nurses to have the added pressure of facilitating transfer of the patient to a facility for PCI.³⁸⁻⁴⁰ The American College of Cardiology (ACC)/American Heart Association (AHA) 2005 guidelines recommend a door-to-balloon time of less than 90 minutes for patients presenting with ST elevation myocardial infarction (STEMI).² The inverse relationship between time to accessing revascularisation and patient outcomes has been well described.^{41, 42} Berger and colleagues have reported that that when the door-to-balloon time is less than 60 minutes, patients have improved 30-day mortality rates compared to those with a door-to-balloon time greater than 90 minutes (1% vs. 6.4%).⁴³

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As in all unexpected and potentially life limiting events, there is considerable stress and anxiety for the patient and their family. Clinical pathways and protocols that focus on patient and family information and services can alleviate stress and facilitate the recovery process.⁴⁴ Similarly in the rescue setting this is a real clinical emergency that requires access to appropriate family support services.

In the elective context, the issues are different and yet no less complex. Assisting patients to appraise the risk of procedures and to prepare adequately for the procedure is no less important. Bernstein et al. studied 217 patients referred for PCI procedures.⁴⁵ Randomised into two arms, the patients received either an audio-visual presentation regarding treatment options (treatment arm) or usual care (control). The results demonstrated a significant increase in knowledge for the treatment arm but also decrease in satisfaction.⁴⁵ The process of patient consent is also a complex process and in people from culturally and linguistically diverse groups- knowledge, attitudes and beliefs may vary. In the elective context the nurse has more time to assess for potential risks. Patients should have a complex cardiovascular assessment, including weight, co-morbid conditions and medication history. Musculoskeletal disorders can be distressing to many patients who are restricted in movement for long periods. Also people with a history of anxiety and/or claustrophobia can find the sterile confines of the cardiac catheter laboratory distressing. Nurses should be attuned to the higher risks of particular patients including those with renal dysfunction.⁴⁶

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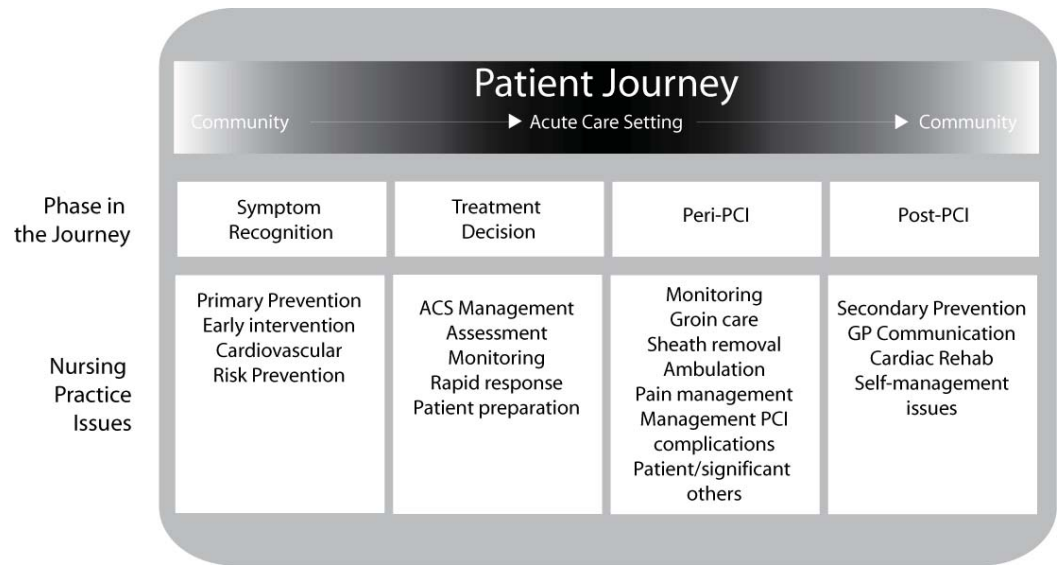


Figure Two - Patient Journey Framework for PCI

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Peri-PCI Care

Nurses within the cardiac catheter laboratory play an integral role in assisting with the procedure and the peri-PCI management of the patient. Following PCI, the major objectives that guide nursing care for patients include: (1) assessing for and reducing the risk of sub optimal outcomes (Table 1) such as recurrent myocardial ischemia, vascular access site complications, and contrast agent nephropathy (2) Promoting patient comfort; (3) Intervening in emergency situations; and (4) patient education. A number of trials⁵⁰⁻⁵² and evidence based guidelines^{12, 13, 53} have been published on the medical aspect of PCI, with limited definitive data relating to the nursing management following PCI. Reducing the risk of complications involves monitoring, methods of sheath removal^{54, 55}, haemostasis strategies^{54, 56, 57} and time to ambulation.

The need to consistently recognize the clinical signs of life-threatening complications underscores the need for nursing specific practice guidelines. After PCI, symptoms of myocardial ischemia can identify those at risk for acute vessel restenosis, yet there is limited literature on monitoring regimes post PCI.⁵⁸ In spite of this, there is increasing support for continuous ST segment elevation with the lead demonstrating the most ST elevation during the procedure the lead of choice.⁵⁸ All patients who have signs or symptoms suggestive of myocardial ischemia during or after PCI and those with complicated procedures should have CK-MB and troponin I or T measured. However, there is a paucity of research relating to monitoring regimes and therefore in the clinical setting this practice is generally based on institutional guidelines.

Removal of the introducer sheath is a procedure commonly undertaken by registered nurses⁵⁹, yet there is limited literature on the skills and training required to undertake this procedure. In addition, there is limited evidence to guide policies for the removal procedure in order to reduce suboptimal outcomes. Making best practice recommendations is also made difficult due to methodological heterogeneity and small sample sizes of the trials.

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There is also no consensus relating to the use of analgesia and/or sedation administration prior to sheath removal and decisions on this practice is generally made by the individual⁶⁰ and not necessarily based on evidence-based guidelines.

Several studies have investigated techniques for achieving haemostasis and the prevalence of post-PCI vascular complications.⁵⁴ One systematic review was identified that investigated strategies to maintain homeostasis.⁶¹ Findings from this review involving 12 studies were included: 8 RCTs (n=2,998), 2 non-randomised controlled trials (n=3,975) and 2 descriptive studies (n=299).⁶¹ Four comparisons vascular site management strategies were assessed in the review: mechanical versus manual compression; two different forms of mechanical compression; mechanical compression versus other compression techniques and mechanical compression versus no compression.⁶¹ The incidence of bleeding after femoral sheath removal did not demonstrate a statistically-significant difference between any study interventions. The authors of this review argue for prospective randomised controlled trials to address this question. The findings from this review may also not be applicable to current practice given the advancement in technology that now has alternate more effective arterial closure devices. In addition, the rapidly moving target of anticoagulation strategies makes it difficult to generalise previously conducted studies to current practice.^{62, 63}

A systematic review of 30 trials involving 4000 patients investigated the effect of any arterial closure devices with standard compression.⁶⁴ The findings demonstrated marginal evidence that the arterial closure devices were effective. However there was an increased risk of hematoma formation and pseudoaneurysm.⁶⁴ These findings should be viewed with caution as they were reported to be of low methodological quality.⁶⁴ It is, therefore, important to note that the risk for complications remain, regardless of the chosen hemostatic method.¹¹ There are also factors such as sheath size, anticoagulation and body weight that impact on the risk of vascular access complications.

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These alternate methods of achieving hemostasis not only reduces vascular complications but also promotes patient comfort by reducing the length of bed rest that has been reported in numerous trials to cause back pain. Factors associated with vascular site complications include age and gender⁶⁵, sheath size and duration in-situ^{12, 66}, anti-coagulation therapy¹¹, and having a PCI procedure⁶⁵, as opposed to diagnostic angiography alone, and should be considered during the management of the patient.

As with other aspects of peri-PCI care, there is little consensus or consistently applied standards for issues such as time in bed [TIB] and positioning together with its effects on patient comfort such as back pain.⁶⁷ Studies investigating TIB and resultant access site complications have found little evidence for increased risks for vascular issues when the TIB is shortened to as little as 2 hours.⁶⁷

Positioning has also been subject to several studies looking to determine the deleterious and beneficial effects of patient positioning. One study, seeking to understand the effects of patient-controlled positioning, that is, patients were given control of the degree of elevation of the head of the bed.⁶⁷ There was no significant increase in the number of complications experienced.⁶⁷ Furthermore, there is little consensus as to what should the maximum level of head-of-bed elevation be. The literature reports ranges from 0 to 50 degrees.^{60, 67, 68}

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Category	Complication
Vascular Access Site	Hematoma – local Pseudoaneurysm Aterio-venous fistula Arterial occlusion Neuropathy - femoral
Coagulation	Retro-peritoneal hematoma
Contrast Specific	Nephropathy
Cardiovascular	Re-stenosis Myocardial infarction Arterial dissection Stroke
Patient Discomfort	Back pain Vascular access site pain
Psychological issues	Patient and family distress

Table One – Sub-optimal outcomes

Integral to patient positioning, patient comfort is a significant factor in overall patient experience.⁶⁰ Restriction of patient positioning, particularly confinement to bed for long periods of time, has been associated increased distress. Yet, little evidence exists for the overall efficacy of maintaining bed-rest beyond 4-6 hours post sheath removal.⁹

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Post PCI management

Using the search strategy for this article, patient education was the most commonly identified topic related to nursing activities. The majority relied on descriptive self-report^{69,70} or retrospective studies.⁷¹

Coronary heart disease still lacks sufficient recognition as a chronic disease process needing a chronic disease management approach.⁷² Reduced length of stay typical of a majority of PCI admissions provides a challenge to effective delivery of secondary prevention strategies. Optimally, the patient and their significant others should be supported to achieve greater levels of insight into the nature of the disease, education regarding the prevention of further disease progression and referral to post-discharge rehabilitation services.⁷³ In spite of the need for effective pre-discharge information and education^{74, 75}, the ability to provide quality patient education during the acute care admission remains controversial; with referral and participation in comprehensive cardiac rehabilitation programs continue to be poor.⁷⁶

The ACC/AHA guidelines for PCI care state that essential to post-procedural PCI care is risk modification counselling and education.¹² Furthermore, the National Heart Foundation of Australia and the Cardiac Society of Australia and New Zealand recommend everyone treated for cardiovascular disease attend a comprehensive cardiac rehabilitation (CR) program.^{13, 77} Guidelines recommend that CR programs consist of more than just exercise programs but also include educational and psycho-social support elements.

Considerable research exists regarding secondary prevention programs, such as CR. Critique of this research has lead some to comment on the quality of studies.^{73, 78} This includes study design issues such as participant selection⁷⁸, adequate implementation of control groups⁷⁸, heterogeneity of program designs⁷³, fiscal impact⁷³ and lack of data on long-term effectiveness⁷⁹, specifically the inclusion of long-term follow-up interventions in programs.⁸⁰

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Integral to follow-up, the issue of lasting adherence to lifestyle modification remains a concern for cardiovascular clinicians.⁸¹

In spite of these limitations, there remains significant evidence that secondary prevention programs aid in improving health outcomes for people following acute cardiac events and procedures.^{13, 78-80} Benefits include reduced mortality^{82, 83}, improved quality of life and functional capacity^{83, 84}, and cost-effectiveness.⁸⁵ However, referral and up-take into these programs remains low globally with two Australian studies, one a prospective audit into cardiac care finding referral rates less than 11%⁸⁶, while Scott and colleagues⁸⁷ reported a 29% referral rate. Similar figures are cited for the United Kingdom and the United States. In the UK, 13-20% of all discharged with a diagnosis of ischemic heart disease participated in cardiac rehabilitation in 2000.⁷³ The United States has reported comparable participation with rates between 10-20%.⁸⁸

The low referral, uptake and completion rates also underscore the issue of cost of providing optimum service. By way of example, based on 2001 UK data, to provide services to 85% of people discharged with a diagnosis of acute myocardial infarction would require a further 200-750% investment.⁷³ However, the diversity of program structure and length make estimating cost difficult.⁷³ Developing evidence-based innovative approaches to secondary prevention measures are essential.

The diversity of CR programs structure and design has made synthesising data in meta-analysis difficult.^{73, 79} In addition to the program heterogeneity, demographic complexity has also added to issues related to referral, uptake and adherence to secondary prevention strategies, particularly as much of the extant research focuses predominantly on white male populations.^{73, 83} Whereas there are issues leading to variations in referral patterns and attendance. Johnson et al.⁸⁹ found younger patients, those with a diagnosis of AMI on discharge, previous experience at a CR program, admission to a

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hospital offering a CR program and having coronary artery bypass grafting were more likely to be referred to secondary prevention programs.

Barriers to CR participation are equally complex. Clark and colleagues⁷⁶, in a focus-group design study, found among the comprehensive belief structures that surrounded notions of self, their disease process, interactions with other patients and cardiac rehabilitation, embarrassment regarding exercise was persistent. Level of education, socio-economic indicator for increased risk for adverse cardiac events has also been demonstrated.⁹⁰ Huisman and colleagues⁹⁰ used an established longitudinal MI data set to estimate risk for MI based on job characteristics including level of education related to 'hard' end-points, such as death and hospitalisation. While no association was found between job characteristics and AMI, education levels were found to be significantly associated with increased risk of cardiovascular disease.⁹⁰ This suggests a need for clinicians to actively assess and accurately document literacy/education levels prior to engaging in secondary prevention strategies. Bergh and colleagues⁹¹, found patient the frequency and quality of patient education documentation inadequate during a retrospective patient medical record audit of CR nurses' documentation..⁹¹

Female gender is also associated with reduced referral and participation rates.⁷³ Norris, Hegadoren, & Pilote⁹² found that the women participating in their study were more likely to experience major depression at one year post AMI. Given the sustained effects seen in their study, it encourages cardiovascular clinicians to re-think the need for investment in longer-term studies, and develop programs to assist in meeting the complex challenges associated in achieving higher female participation rates.

Evidence of the long-term effects of secondary prevention programs are beginning to emerge from the literature. Lear and colleagues⁸⁰ studied the effect of a long-term, 4 year follow-up intervention post-cardiac rehabilitation using a randomised control design. While risk profiles for both control and intervention groups were not significant after the first 12 months, there was

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significant reduction in risk after four years of follow-up.⁸⁰ Follow-up included lifestyle and risk factor assessment, telephone interventions and counselling.⁸⁰ However, the warning against programs developing participant-dependence on long-term programs or increased non-completion rates is an important one.⁷³

Further research is required in developing and evaluating interventions that seek to assist PCI patients modify their risks for further CHD. Not only do clinicians need to consider improving referral, uptake and completion rates, but also the need to develop effective interventions that will aid sustained health behaviour modification incorporating innovative, culturally sensitive and person-centred approaches.^{93, 94} Furthermore, while funding and reimbursement models limit length of programs, physical resources and staffing, the need to invest in long-term follow-up is equally important. Integral to this discussion is the diverse nature of the potential participants where greater understanding of differences in age, gender, cultural and psycho-social barriers and facilitators is needed to provide flexible programs that support the sustainability agenda being presented in the literature. The short length of hospitalization, the rapid return to work and lesser perception of risk are important considerations in developing programs for people undergoing PCI.⁵

Discussion

Nurses play an important role in ensuring optimal outcomes following PCI, both in their independent and collaborative practice roles. Monitoring outcomes and ensuring best practice is dependent on evidenced based guidelines for sheath removal, time to ambulation and monitoring of cardiovascular and hemodynamic status. This review has generated priority areas for research and practice development. Consensus on guidelines for the use of manual pressure, sandbag or assist devices (Femostop® or C-clamp®), dressings to puncture site, bed elevation, analgesia for sheath removal time to ambulation are important considerations.

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In spite of the important role nurses play at each of the patient journey phases, gaps exist in the literature available to inform clinical practice guidelines, specifically targeting nursing practice, and drive consensus on what constitutes optimal nursing outcomes for people undergoing PCIs. Effective nursing care impacts on the health and well-being of patients⁹⁹ and it is likely that this influence is amplified in the critical peri-procedural period of the PCI. Nursing sensitive outcome indicators demonstrate the relationships between the nursing interventions patients have received and their subsequent health outcomes.⁹ Existing nursing sensitive outcome indicators include patient complications, such as urinary tract infections, pressure ulcers, hospital acquired pneumonia and deep vein thrombosis¹⁰⁰⁻¹⁰² Leeper⁹ suggests nursing sensitive outcomes relating to PCI include: cost of care, mortality and morbidity, symptom management, functional status (including health related quality of life), patient or family knowledge, patient responses and behaviour, and home/occupational functioning post PCI. Dumont⁷, identifies that bed rest and blood-pressure control are the most significant factors influencing clinical outcomes. The rationale for this view is that the presence of the nurse during the critical time following the procedure where the nurse can assess and intervene in a timely manner.⁷

Clinical pathways or care maps can be used to ensure continuity of care and generally proceed in a linear fashion from the individual's contact with the health care system.¹⁰³ Perhaps a more inclusive perspective for achieving care that is truly person-centred and meets the needs of the individual is to conceptualise the individual's illness experience in terms of their journey as outlined in Figure 1. This allows considering factors that will potentially influence the individual's clinical course and capacity to engage in secondary prevention strategies.

Nurses have the capacity to bridge the chasm between the acute and chronic care paradigm. However, in order to move cardiovascular care from an acute care paradigm to a more comprehensive chronic care approach, an increased emphasis on an evidence base guidelines and practice standards is a necessary

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component.¹⁰⁴ This review has identified implications for policy, practice and research that are summarised in Figure 3.

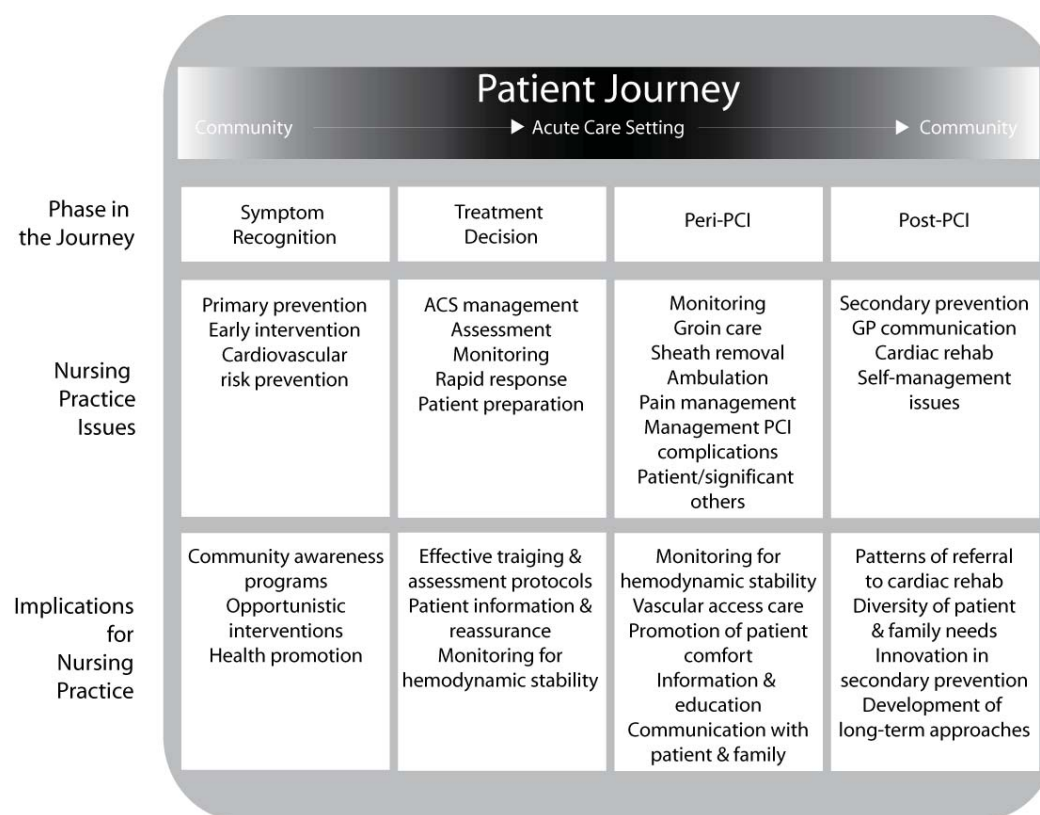


Figure Three - Patient Journey and Implications for Nursing Practice

Summary

The literature presents various and inconsistent evidence for underpinning cardiovascular nursing practice following PCIs. Given the integral nature of PCI in managing and treating CHD, the challenge for cardiovascular nursing is to engage in developing high-level research evidence to support the development of patient-focused practice standards. Where evidence is lacking, there needs to be consensus among health care professionals as to the most appropriate approaches to care. Furthermore, there is a need to view the PCI experience beyond the confines of an acute care model, and consider factors within a chronic care model to achieve optimal health related outcomes.

As this review has presented a paucity of high level empirically based evidence, the need to engage in a consensus method has been established.

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Therefore, this review forms the basis for the consensus process discussed in the second stage of this document.

Outcome⁹ Nursing actions

Mortality

Patients and families aware of risk⁴⁶
Monitoring for adverse outcomes⁹

Morbidity

Effective base-line risk assessment
Vascular access site monitoring and haemostasis^{6, 9, 11}
Monitoring coagulation status^{6, 9, 11}
Monitoring hemodynamic status^{7, 95}
Coronary vascular closure/re-stenosis monitoring⁹
Monitoring for psychological distress⁹⁶
Management of co-morbid conditions, including diabetes
Strategies to maximise patient comfort and minimise distress^{60, 67, 97}
Ensure standardized communication skills to ensure effective communication across care sectors.⁹⁸

Cost of Care

Improving care quality to reduce length of stay⁹
Provide evidence based care, such as reducing 'time to ambulation'^{9, 60}
Prevention of adverse outcomes

Symptom Management

Monitor for myocardial ischemia⁴⁶
Assess for back-pain associated with bed rest^{9, 67}
Utilise evidence in choosing optimal time-to-ambulation^{9, 60}
Utilise evidence in choosing optimal bed elevation^{9, 95}
Monitor for vascular access site pain⁹

Functional Status

Provide reassurance and strategies to engage in early ambulation and activities of daily living
Screening for actual and potential complications including depression, anxiety & social status⁹
Monitoring for adverse psychological reactions⁹

Patient & Significant Other Knowledge

Ensure nursing care is delivered within a culturally competent and appropriate framework
Providing access to appropriate healthcare information in a format understood by the patient and their family⁹
Providing carers/support people with appropriate information for post-discharge care⁹
Ensuring communication across the continuum of care, particularly with family care providers.
Negotiate plans for effective secondary prevention and treatment adherence

Patient Responses & Behaviour

Maximise support people through referring to cardiac rehabilitation services⁹

Table 2 Nursing Interventions to address an outcome focused approach

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Stage Two – The Consensus Development Workshop

Consensus method as a research design

Empirically derived evidence forms a vital foundation to effective and safe practice. Given the evolutionary nature of health and medical knowledge, the evidence is incomplete, poorly derived or altogether lacking.⁴⁷ The inconsistencies in evidence create dilemmas for healthcare professions attempting to base clinical decision making on appropriate knowledge. When such an information climate exists, consensus methods can be effective ways of correcting gaps and engaging in further evidence building.⁴⁸ It is important to note that randomised control trials remain the most appropriate source of evidence for which consensus methods are no long-term substitute.⁴⁷ Until such evidence is available and of appropriate rigour, guidelines can be constructed that are dynamic and grow with the evolution of the profession's evidence base.

Consensus methods are varied and depend upon the researcher(s)' intended outcomes, with two approaches dominating: the RAND and Delphi methods.⁴⁷ A third approach, nominal group technique [NGT], pioneered by Delbecq and Van de Ven, is seen as an idea generating method rather than a consensus method.⁴⁷ However, Campbell and Cantrill argue for its place within a broader consensus development approach.⁴⁷

Where groups are used in consensus processes, pressure to conform to group norms limits free expression.⁴⁹ As this method is only used for one element of the consensus development process, the effect of group coercion is minimised. The process leading on from the Consensus Workshop will entail individuals responding, not as a group, but anonymously and as such, each response is given equal weighting: contrasting with the group process where the group's overall response is given the greatest weight. This is considered an important aspect of arriving at valid consensus outcomes.^{47, 48}

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Aim

The aims of the first phase of the consensus process were to identify

- The extant evidence upon which practice can be based;
- Potential recommendations and/or interventions to address evidence gaps;
- Relevant barriers and facilitators to developing consensus where evidence is lacking;
- Key performance indicators for nursing sensitive outcomes related to patient and family care.
- Opportunities to collaboratively develop nursing practice guidelines that integrate with existing medical and allied health guidelines for improving the care of PCI patients, their carers, family and community.

Consensus questions

- What should the key recommendations be for nursing practice to interface with existing guidelines?
- What are the nursing strategies that can be implemented to ensure an integrated approach to chronic care management?
- What are the critical elements to ensure person and family-centred care?

Consensus Workshop participants

Healthcare professional participants were recruited using a snow-balling technique. Invitations were sent out through the Australasian Cardiovascular Nurses College, Australian Cardiovascular Health and Rehabilitation Association, Australian College of Critical Care Nurses, Cardiovascular Nursing Council of the Cardiac Society of Australia and New Zealand, nursing networks in New Zealand, Greater Metropolitan Taskforce-Cardiology (Sydney) as well

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as personal clinical contacts in various hospitals and area health services inviting cardiovascular health professionals and consumer representatives to participate. The intention was to achieve an inter-disciplinary mix of participants with the majority of attendees being cardiovascular nurses.

Key nursing leaders from clinical and academic settings were invited in writing with the request to disseminate the invitation widely. Consumer participants were also recruited to participate through their representation on recognised consumer groups.

Consensus Process

On the day, participants were given an overview of the guideline development process and structure of the workshop. Following the opening session of the workshop, participants were asked to choose a sub-group. These were based on the patient journey model, shown in Figure 2, and is the basis by which the consensus workshop findings will be summarised. The key headings were: Symptom Recognition, Treatment Decision, Peri-PCI Care, describing the acute management and Post-PCI Management representing discharge planning and secondary prevention initiatives. Consumer representatives were allocated to two of the groups.

Each small group had two co-chairs that facilitated the group process including summarising the discussion while an appointed scribe from the Centre recorded the deliberations. Participants in each group were asked to identify key recommendations relating to their topics and then choose at least five of the recommendations by placing a gold star next to their chosen points. They were also asked to then discuss the key barriers and facilitators for each of the recommendations and to determine two measurable outcome indicators for the recommendations.

The recommendations with the highest number of votes, the key barriers and facilitators and the outcome indicators were reported back to the main group. Following each group's report back, discussion was encouraged from all members of the group. These were noted for analysis following the workshop.

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The workshop was divided into large group and small group time. Following the presentation of aim of the workshop and a brief overview of the literature, small groups were asked to deliberate for approximately 90 minutes. Some groups chose to extend their discussion into lunch.

Data were collated from the notes taken by the scribes and the report-back session. These were then categorised into the following, based on the tasks set for each small group:

1. Key recommendations for guideline development
2. Barriers and facilitators to guideline development
3. Key outcome indicators to measure effectiveness of the recommendations

Ethics approval was obtained from Sydney West Area Health Service and Curtin University of Technology prior to the conduct of the workshop.

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Results

Characteristics of participants and Numbers in each group

In addition to the research staff (3) who attended, thirty-two (32) people took part in the consensus workshop. The following table demonstrates the breadth of expertise (some participants could be placed into more than one category):

Category	<i>n</i>	%
Consumer Representative	2	6.3
CNC	9	28.1
CNS	1	3.1
CNE	1	3.1
Healthcare / Research / Academic	7	21.9
Nurse Manager	4	12.5
Nurse Practitioner	1	3.1
Professional Associations / Policy	1	3.1
RN	4	12.5

There were unequal numbers of participants in each group. With only two consumer representatives, only two groups had consumer input (Peri and Post PCI). Table X shows a breakdown of the number of participants in each sub-group.

Sub-Group	<i>n</i>	%
Symptom Recognition	6	18.8
Treatment Decision and Allocation	5	15.6
Peri-PCI	10	31.3
Post-PCI	11	34.4

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Symptom Recognition [SR]

Issues identified by the group	Recommendations	Barriers and facilitators to implementing recommendations	Recommended outcome indicators
<ul style="list-style-type: none"> ● Risk perception ● Standardisation of practice ● Preventative health ● Special groups with higher risk ● Need for patient, family & community focus 	<ol style="list-style-type: none"> 1. Prevention strategies in the community to incorporate sustainable funding models of screening 2. Increased public awareness through targeted initiatives including peer support strategies and identifying high risk groups and social marketing techniques 3. All patients admitted with PCI/CHD should have a standardised angina/chest discomfort action plan that is culturally (sub-culturally) appropriate 4. Clearly identified pathways, contacts, transfer policies with patient and carer involvement 5. Increased awareness among health professionals of SR and importance of nursing role across care settings. 	Not identified	<ol style="list-style-type: none"> 1. Deliver message of importance of early recognition of symptoms and access treatment incorporated in screening and prevention programs. <ol style="list-style-type: none"> a. occasions of service b. Individual and community indicators 2. Action plans post-acute hospitalisation <ol style="list-style-type: none"> a. Percentage discharged with a Symptom Management Plan

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Treatment Decision and Allocation

Issues identified by the group	Recommendations	Barriers and facilitators to implementing recommendations	Recommended outcome indicators
<ul style="list-style-type: none"> ● Emergent NSTEMI/ACS/High Risk ● Elective ● Rescue <p>The protocols of treatment change based on the level of potential risk posed to myocardium.</p>	<ol style="list-style-type: none"> 1. Clinical information system requiring data similar to the following: <ol style="list-style-type: none"> a. STEMI <ol style="list-style-type: none"> i. Time to balloon ii. Door to skin iii. Door to needle iv. SX to ED v. ED to triage vi. Triage to 1st ECG vii. ECG review to 1st Medical Officer viii. Medical Officer to Registrar ix. Registrar to Cardiac Catheter Lab team b. NSTEMI – ACS <ol style="list-style-type: none"> i. Time to angiography c. Sheath removal <ol style="list-style-type: none"> i. Staff time ii. Occupational health and safety issues 2. Chest discomfort / cardiac pain assessment <ol style="list-style-type: none"> a. Nurse standardised protocols 	<p>Not identified.</p> <p>However, here are some points for discussion (researcher added):</p> <ol style="list-style-type: none"> 1. Diversity of data collected is hampering assessment of care provided by nurses to PCI patients 2. Diversity of admission patterns for PCI patients 3. Speciality ‘Silo’ culture as barrier to continuity of care 4. Inter-professional conflict regarding role expansion or change 	<ol style="list-style-type: none"> 1. Consistent widespread (national/state) capture of data to base KPIs upon including door to needle times, sheath removal issues (haemostasis method, equipment costs, OH&S issues), and nurse sensitive vascular complication rates. 2. Implementation levels of standardised nursing protocols 3. Implementation of expanded nursing roles for chest discomfort/angina/cardiac related pain assessment.

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- b. Cardiac assessment Nurse [CAN]
 - i. Liaise with ED and assess patients
 - ii. Bed management and patient flow
 - iii. Link with chronic care journey – Rehabilitation: Nurse extension role
 - iv. Social assessment and family support issues
 - v. Nurse sensitive indicators
 - 3. Pre-assessment clinics for elective PCI patients
 - a. Medical officer availability
 - b. Diabetes: work with Endocrinology for standard protocol
 - c. Renal dysfunction: standardised protocol
 - d. Elderly
 - e. Social support issues
 - f. Informed consent
 - 4. Risk strategies post-procedural care – elective and emergent
 - a. scoring system for groin care where each of the following issues will be aggregated into a
-

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risk score:

- i. Weight
 - ii. Restlessness
 - iii. Gender
 - iv. Co-morbidities
 - v. Body habitus assessment
(body shape, fat deposition patterns etc)
 - vi. Elderly women
 - vii. Coagulation status
 - viii. Anti-platelet / anti-thrombin medications
 - ix. Anxiety
 - x. *Cognition (added by researcher)*
- b. This system would help access for sheath removal and determine whether a closure device could be used instead of manual or mechanical methods
 - c. Will also aid in determining expertise and time factors regarding provision of nursing care
5. Communication – investing in relationships
 - a. ED: Doctor and nurse cardiac rotations
-

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- b. Nurse representation on hospital/state bodies to can report and communicate across hospitals
 - c. Principle of feedback
 - d. Promotion of existing guidelines and pathways linked to nursing guidelines
-

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Peri-PCI

Issues identified by the group	Recommendations	Barriers and facilitators to implementing recommendations	Recommended outcome indicators
<ul style="list-style-type: none"> ● Patient population diverse and complex ● Patient related issues <ul style="list-style-type: none"> ○ Pain management ○ Patient information / orientation including families ○ Pre-admission assessment ● Nurse related issues <ul style="list-style-type: none"> ○ Minimal core practice skills – Cath lab ○ Documentation skills ○ Handover skills ● Health service related issues <ul style="list-style-type: none"> ○ Clerical administrative ○ Need for practice guidelines 	<ol style="list-style-type: none"> 1. Standardised check list 2. Standardised protocols for post-PCI groin care and monitoring 	<p>Facilitator:</p> <ul style="list-style-type: none"> ● Clerical support is critical in managing patients undergoing PCI and can reduce door to balloon time 	<ol style="list-style-type: none"> 1. Availability of process-support (admin) in the Cath Lab and on the ward <ol style="list-style-type: none"> a. Checklist for admission and discharge completed: yes, no, partially b. Order communication for medication 2. Pain measurement among post-PCI patients <ol style="list-style-type: none"> a. Is there a standardised pain protocol: Yes / no 3. Percentage of standardised pain measurements among PCI patients <ol style="list-style-type: none"> a. Number of patients who underwent systematic pain measurement in the Cath Lab b. Number of patients who underwent systematic pain measurement on the ward c. Percentage of patients whose pain score is below 'x' within the first 24 hours after PCI

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4. Volume of haematoma
 5. Size of haematoma
 6. Patient satisfaction measurements
 - a. Patient and family satisfaction
 - b. Attendance at Cardiac Rehabilitation
 - c. Level of patient knowledge
-

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Post-PCI

Issues identified by the group	Recommendations	Barriers and facilitators to implementing recommendations	Recommended outcome indicators
<ul style="list-style-type: none"> ● Variety of models of care ● Engaging with General Practice ● Certification of professionals and services ● Funding ● Service referral 	<ol style="list-style-type: none"> 1. Certification of services and practitioners <ol style="list-style-type: none"> a. Quality of services and care b. Safety issues 2. Funding improvements 3. Engaging General Practice <ol style="list-style-type: none"> a. Improve continuity of care 4. Variety of models of care <ol style="list-style-type: none"> a. Access issues 5. E-Record <ol style="list-style-type: none"> a. Communication and resources for community bases 	<p>Barriers include:</p> <ol style="list-style-type: none"> 1. Certification of services and practitioners <ol style="list-style-type: none"> a. Multidisciplinary nature 2. Funding improvements <ol style="list-style-type: none"> a. Acute care focus b. Lack of belief in intervention c. Lack of recognition of an appropriate service 3. Engaging General Practice <ol style="list-style-type: none"> a. Time of cardiac rehabilitation staff b. Skill of cardiac rehabilitation staff 4. Variety of models of care <ol style="list-style-type: none"> a. Time b. Lack of flexibility from healthcare professionals c. Entrenched beliefs and practices d. Lack of evidence for 	<p>Not developed</p> <p>However, here are some points for discussion (researcher added):</p> <ol style="list-style-type: none"> 1. Increase in referral, participation and completion of comprehensive cardiac rehabilitation 2. Decrease in referral delay due to improved continuity of health information across primary practice, acute care and cardiac rehabilitation.

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- alternative models
- e. Choosing the right model for the right patient
- 5. E-Record
 - a. State built (?NSW Health)
 - b. Skills
 - c. Access to computers
 - d. Point-of-care systems

Facilitators include:

1. Certification of services and practitioners
 - a. ACRA
 - b. Practitioners (? Nurse Practitioners)
 - c. Health services
 - d. Health insurance funds
 2. Funding improvements
 - a. Demonstrating cost saving to health system and community
 3. Engaging General Practice
 - a. Developing relationship with GP network and practice managers
 - b. Developing relationships with practice nurses
 - c. GP network education
-

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calendar

- d. Including GPs in daily practice of cardiac rehabilitation
 - 4. Variety of models of care
 - a. Marketing
 - b. Collaborating with other sites / networking
 - c. Participant wants / requirements
 - 5. E-Record
 - a. Clinical needs
 - b. State treasury (? Funding for E-Record)
 - c. Commonwealth Government
-

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Conclusion

Percutaneous coronary intervention is an integral strategy in managing and treating CHD. The challenge for cardiovascular nursing is to engage in developing high-level research evidence to support the development of patient-focused practice standards. Health care professionals need to view the PCI experience beyond the confines of an acute care model, and consider factors within a chronic care paradigm to achieve optimal health related outcomes.

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Consensus Workshop Participants

Name	Position	Workplace
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Appendix Eleven

Pre-press versions of accepted or in-
press publications arising from this
thesis

Nursing care for PCI

Nursing care for patients undergoing percutaneous coronary intervention: a patient journey approach

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ABSTRACT

Aim: To evaluate the existing literature to inform nursing management of people undergoing PCI.

Background: Percutaneous coronary intervention (PCI) is an increasingly important revascularisation strategy in coronary heart disease (CHD) management and can be an emergent, planned or rescue procedure. Nurses play a critical role in delivering care in both the independent and collaborative contexts of PCI management.

Design: Systematic review.

Method: The method of an integrative literature review, using the conceptual framework of the patient journey, was used to describe existing evidence and to determine important areas for future research. The electronic data bases Cumulative Index of Nursing and Allied Health Literature [CINAHL], Medline, Cochrane and the Joanna Briggs data bases were searched using terms including: (angioplasty, transluminal, percutaneous coronary), nursing care, post-procedure complications (hemorrhage, ecchymosis, hematoma), rehabilitation, emergency medical services (transportation of patients, triage)

Results: In spite the frequency of the procedure, there are limited data to inform nursing care for people undergoing PCI. Currently, there are no widely accessible nursing practice guidelines focusing on the nursing management in PCI. Findings of the review were summarised under the headings: Symptom Recognition; Treatment Decision; Peri-PCI Care; describing the acute management and Post-PCI Management identifying the discharge planning and secondary prevention phase.

Conclusions: Cardiovascular nurses need to engage in developing evidence to support guideline development. Developing consensus on nurse sensitive patient outcome indicators may enable benchmarking strategies and inform clinical trial design.

Relevance to clinical practice: To improve the care given to individuals undergoing PCI, it is important to base practice on high-level evidence. Where this is lacking, clinicians need to arrive at a consensus as to appropriate standards of practice while also engaging in developing evidence. This must be considered, however, from the central perspective of the patient and their family.

Key words: nurses, nursing, percutaneous coronary intervention, coronary heart disease, chronic illness , patient-centred care

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PERCUTANEOUS CORONARY INTERVENTIONS

The term 'percutaneous coronary intervention' [PCI] encompasses a variety of procedures used to treat patients with coronary heart disease [CHD] and can be performed in emergent, planned or rescue settings (Baim 2007). Over recent decades, technological advances, adjuvant therapies and new indications for stenting have increased the use of this revascularisation modality (Smith *et al.* 2006a). Procedural rates of 1:1000 are reported in the USA and Europe and PCI continues to be an important strategy for managing CHD (Amoroso *et al.* 2007). In contrast to the management of acute myocardial infarction [AMI] decades ago, where hospital stays ranged over several weeks, PCI, particularly primary angioplasty has resulted in shorter periods of hospitalisation (Laskey *et al.* 2005). There is some suggestion that the decreased procedural burden associated with PCI, as compared with coronary artery bypass grafting, may lead some individuals to consider that their condition is not serious and as a consequence may be less likely to engage in secondary prevention strategies (Fernandez *et al.* 2006).

The risks associated with PCI procedures are not inconsequential and require expert care in negotiating the peri-procedural period. Older age (Dumont 2007, Juran *et al.* 1999), being female (Dumont 2007, Juran *et al.* 1999), use of anti-coagulation therapy (Dumont 2007, Juran *et al.* 1999), repeated interventional cardiology procedures (Juran *et al.* 1999) and strategies for achieving vascular site haemostasis (Benson *et al.* 2005) can all impact on procedural outcomes (Leeper 2004). Whilst recent discussion on PCI has focussed on the drug eluting stent debate (De Luca *et al.* 2008), there are many factors related to nursing practice that can also influence health related outcomes. To minimise adverse events and improve optimal outcomes, cardiovascular nurses need to engage in evidence base care and strategies to monitor clinical outcomes (Lins *et al.* 2006).

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Numerous evidence-based guidelines for the medical management of PCI and secondary prevention strategies are available (Aroney *et al.* 2006, Silber *et al.* 2006, Smith *et al.* 2006b). However, within these there is minimal description of the nurse's role and impact on health related outcomes. Unfortunately, this is likely explained by the limited evidence supporting nursing practice interventions in this practice setting. The minimal information on the standards for practice makes monitoring and developing nursing outcomes problematic (Leeper 2004). Further, PCI is often at the intersection of acute and chronic care and implementing effective secondary prevention strategies is important in improving health outcomes (Smith & Liles 2007, Smith *et al.* 2006b).

The patient journey

A potential strategy for linking acute and chronic care is to consider the 'patient journey' as a means for achieving person and family-centred care (Ben-Tovim *et al.* 2008, Curry *et al.* 2007, Richardson *et al.* 2007). The individual's experience of the health care system is unique to and is dependent on several factors including gender (Taylor 2000), psychological and social support (Stewart *et al.* 2001) as well as racial and cultural factors (Saha *et al.* 2003). Although there is increasing discourse on person-centred care, this is often difficult to achieve due to a range of system and provider issues (Schoen *et al.* 2005). Elements of the Chronic Care Model, developed by Wagner (1998), provide a useful guide to assist in guideline development for as they focus on a person-centred, outcome approach. The key considerations of the Wagner model are as follows:

- The needs of the patient and their families should be the focus of care;
- Executive support and enabling, positive policies should inform care delivery;
- Collaborative interventions between informed, motivated patients and clinicians who have access to evidence based information and appropriate skills;
- Self-management support that empowers patients to take greater responsibility for their own health;

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- Decision-support tools that assist clinicians in providing evidence based care;
- Clinical information systems that facilitate the care of individual patients as well as populations (Wagner 1998).

METHODS

The purpose of this article is to synthesise existing information and generate implications for nursing practice using the method of an integrative literature review. An integrative literature review is an appraisal of published literature based on a question or hypothesis that guides the interrogation and synthesis of extant literature related to the question (Ganong 1987). This process gathers and integrates evidence to present the state-of-the-science and suggest further areas for research and implications for practice. This approach contrasts with the systematic review which seeks to create high level synthesis of evidence to support specific clinical decision making often using meta-analysis as a tool to combine data (Crowther & Cook 2007).

Firstly in the review process, guidelines related to acute coronary syndromes [ACS], PCI and secondary prevention were retrieved. The electronic data bases were searched via the Cumulative Index of Nursing and Allied Health Literature [CINAHL], Medline, Cochrane and the Joanna Briggs data bases. Key terms used in this search include: (angioplasty, transluminal, percutaneous coronary), nursing care, post-procedure complications (haemorrhage, ecchymosis and haematoma), rehabilitation, emergency medical services (transportation of patients, triage. In addition, terms such as 'patient outcomes', 'patient journey', 'secondary prevention', patient positioning, bed rest were also used as they are not included in current MeSH [Medical Subject Headings] libraries.

To reflect the contemporaneous management of PCI (Smith *et al.* 2006b) a focus was on literature since 2000, empirically based, papers published in English language, peer-reviewed publications was included. Articles were considered for suitable for the review if they were:

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(1) descriptive and/or intervention studies describing nursing care; (2) systematic reviews of related studies; or (3) patient care guidelines derived using empirical methods. Reference lists of articles falling within these categories and popular search engines such as Google Scholar, were also explored as a potential source of articles. All abstracts were reviewed and then retrieved if they met the search criteria. Reference lists of retrieved articles were also appraised for potential information. This review does not cite every reference identified, rather those that contribute specifically to nursing practice and the framework for the review.

RESULTS

Using the patient journey model, shown in Figure 1, findings will be summarised under the key headings: Symptom Recognition, Treatment Decision, Peri-PCI Care, describing the acute management and Post-PCI Management representing discharge planning and secondary prevention initiatives.

Symptom Recognition

Despite the therapeutic advancements in CHD, obtaining definitive treatment is dependent on the appropriate recognition of symptoms and accessing care. While much improvement has occurred, due to the advancements in PCI technology, little progress has been made in reducing the time from first recognition of cardiac symptoms to seeking help and hospital admission (Dracup *et al.* 2006). Reported times to seeking assistance vary significantly (Grossman *et al.* 2003). Many studies have been undertaken to identify the clinical and socio-demographic factors impacting on symptom recognition and the decision to access treatment (Moser *et al.* 2006). Factors associated with delay are numerous and complex including gender, socioeconomic disadvantage, diabetes, the quality of social support networks and previous cardiac history (Moser *et al.* 2006). Strategies to increase awareness of potential CHD and heart attack provide inconsistent findings and generally reflect the complexity of cognitive decision making and risk appraisal (Dracup *et al.* 2006). Several interventions to address pre-hospital delay have been undertaken with limited success, underscoring the

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importance of developing long term multifaceted strategies to address the social and psychological barriers that impact on decisions not to seek treatment, as well as system related factors, such as access to emergency response teams (Finn *et al.* 2007, Smith *et al.* 2007). Interventions targeting those at highest risk such as those with diabetes (Stirban & Tschoepe 2008) and tailored to specific racial or cultural groups may be advantageous given greater incidence and prevalence of CHD in these populations (Shaw *et al.* 2008).

Treatment decision and allocation

Treatment decision is dependent on the context of the PCI; that is whether it is an emergent, planned or rescue procedure. The decision to treat requires a complex negotiation of professional, ethical and legal issues. Many clinical guidelines adequately describe the medical diagnosis and management in ACS and treatment, such as PCI (Aroney *et al.* 2006, Smith *et al.* 2006a). However, absent from these guidelines are the nursing specific issues which impact significantly on procedural and longer term outcomes (Niederstadt 2004). In the context of AMI and primary angioplasty the nurse plays a critical role from diagnosis in Emergency Room through facilitating adequate triaging, assessment of hemodynamic stability, access to electrocardiography and drawing of bloods. It is not uncommon that many nurses have the added pressure of facilitating transfer to a facility undergoing PCI (Clare & Bullock 2003, McNamara *et al.* 2006, Nallamotheu *et al.* 2007). The inverse relationship between time to accessing revascularisation and patient outcomes has been well described (Brodie *et al.* 2003, Magid *et al.* 2005). Clinical pathways and protocols that focus on patient and family information and services can alleviate stress and facilitate the recovery process (Behar-Horenstein *et al.* 2005). Similarly in the rescue setting this is a real clinical emergency that requires access to appropriate family support services.

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In the elective context, the issues are different and yet no less complex. Assisting patients to appraise the risk of procedures and to prepare adequately for the procedure is no less important. Bernstein *et al.* (1998) studied 217 patients referred for PCI procedures. Randomised into two arms, the patients received either an audio-visual presentation regarding treatment options (treatment arm) or usual care (control). The results demonstrated a significant increase in knowledge for the treatment arm but also decrease in satisfaction (Bernstein *et al.* 1998). The process of patient consent is also a complex process and in people from culturally and linguistically diverse groups- knowledge, attitudes and beliefs may vary including levels of comprehension (Cohn & Larson 2007). In the elective context the nurse has more time to assess for potential risks. Patients should have a complex cardiovascular assessment, including weight, co-morbid conditions and medication history. Musculoskeletal disorders can be distressing to many patients who are restricted in movement for long periods. Also people with a history of anxiety and/or claustrophobia can find the sterile confines of the cardiac catheter laboratory distressing. Nurses should be attuned to the higher risks of particular patients including those with renal dysfunction (Vlasic 2004).

Peri-PCI Care

Nurses within the cardiac catheter laboratory play an integral role in assisting with the procedure and the peri-PCI care of the patient. Following PCI, the major objectives that guide nursing care for patients include: (1) assessing for and reducing the risk of sub optimal outcomes such as recurrent myocardial ischemia, vascular access site complications and contrast agent nephropathy (2) Promoting patient comfort; (3) Intervening in emergency situations; and (4) patient education. Several trials (Bucher *et al.* 2000, Keeley *et al.* 2006, Poole-Wilson *et al.* 2006) and evidence based guidelines (Aroney *et al.* 2006, Dieker *et al.* 2005, Smith *et al.* 2006b) have been published on the medical aspect of PCI, with limited definitive data relating to the nursing management following PCI. Reducing the risk of complications involves monitoring, methods of sheath removal (Hoke *et al.* 2007, Liew *et al.* 2007),

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haemostasis strategies (Bogart *et al.* 1995, Chlan *et al.* 2005, Hoke *et al.* 2007) and time to ambulation.

The need to recognise the clinical signs of life-threatening complications consistently emphasises the need for nursing specific practice guidelines. After PCI, symptoms of myocardial ischemia can identify those at risk for acute vessel restenosis, yet there is limited literature on monitoring regimes post PCI (Drew & Krucoff 1999). In spite of this, there is increasing support for continuous ST segment elevation with the lead demonstrating the most ST elevation during the procedure the lead of choice (Drew & Krucoff 1999). All patients who have signs or symptoms suggestive of myocardial ischemia during or after PCI and those with complicated procedures should have CK-MB and troponin I or T measured. However, there is limited research relating to monitoring regimes and therefore in the clinical setting this practice is generally based on institutional guidelines and individual clinician preferences.

Removal of the introducer sheath is a procedure commonly undertaken by registered nurses (McAlpine-Benson *et al.* 2005), yet there is limited literature on the skills and training required to undertake this procedure. In addition, there is limited evidence to guide policies for the removal procedure to reduce suboptimal outcomes. Making best practice recommendations is also made difficult due to methodological heterogeneity and small sample sizes of the trials. There is also no consensus relating to the use of analgesia and/or sedation administration prior to sheath removal and decisions on this practice is generally made by the individual (Reynolds *et al.* 2001) and not necessarily based on evidence-based guidelines.

Several studies have investigated techniques for achieving haemostasis and the prevalence of post-PCI vascular complications (Hoke *et al.* 2007). One systematic review was identified that

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investigated strategies to maintain homeostasis (Jones 2000). Findings from this review involving 12 studies were included: 8 RCTs (n=2,998), 2 non-randomised controlled trials (n=3,975) and 2 descriptive studies (n=299) (Jones 2000). Four comparisons vascular site management strategies were assessed in the review: mechanical versus manual compression; two different forms of mechanical compression; mechanical compression versus other compression techniques and mechanical compression versus no compression (Jones 2000). The incidence of bleeding after femoral sheath removal did not demonstrate a statistically-significant difference between any study interventions. The authors of this review argue for prospective randomised controlled trials to address this question. The findings from this review may also not be applicable to current practice given the advancement in technology that now has more effective arterial closure devices. In addition, the rapidly moving target of anticoagulation strategies makes it difficult to generalise previously conducted studies to current practice (Gurbel *et al.* 2005, Patti *et al.* 2005).

A systematic review of 30 trials involving 4000 patients investigated the effect of any arterial closure devices with standard compression (Koreny *et al.* 2004). The findings demonstrated marginal evidence that the arterial closure devices were effective. However there was an increased risk of hematoma formation and pseudo-aneurysm (Koreny *et al.* 2004). These findings should be viewed with caution as they were reported to be of low methodological quality (Koreny *et al.* 2004). It is, therefore, important to note that the risk for complications remain, regardless of the chosen haemostatic method (Lins *et al.* 2006). In addition, factors such as sheath size, anticoagulation and body weight also impact on the risk of vascular access complications.

These alternate methods of achieving haemostasis not only reduces vascular complications but also promotes patient comfort by reducing the length of bed rest that has been reported in numerous trials to cause back pain and generalised discomfort. Factors associated with

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vascular site complications include age and gender (Dumont *et al.* 2006), sheath size and duration in-situ (Davis *et al.* 1997, Smith *et al.* 2006b), anti-coagulation therapy (Lins *et al.* 2006) and having a PCI procedure (Dumont *et al.* 2006), as opposed to diagnostic angiography alone and should be considered during the management of the patient.

As with other aspects of peri-PCI care, there is little consensus or consistently applied standards for issues such as time-in-bed [TIB] and positioning together with its effects on patient comfort such as back pain (Chair *et al.* 2003). Studies investigating bed-rest and access site complications have found little evidence for increased risks for vascular issues when the time in bed is shortened to as little as two hours (Chair *et al.* 2003).

Positioning has also been subject to several studies looking to determine the deleterious and beneficial effects of patient positioning. One study, seeking to understand the effects of patient-controlled positioning, that is, patients were given control of the degree of elevation of the head of the bed (Chair *et al.* 2003). There was no significant increase in the number of complications experienced (Chair *et al.* 2003). Furthermore, there is little consensus as to what should the maximum level of head-of-bed elevation be. The literature reports ranges from 0 to 50 degrees (Ahtiok *et al.* 2007, Chair *et al.* 2003, Reynolds *et al.* 2001).

Integral to patient positioning, patient comfort is a significant factor in overall patient experience (Reynolds *et al.* 2001). Restriction of patient positioning, particularly confinement to bed for long periods of time, has been associated increased distress. Yet, little evidence exists for the overall efficacy of maintaining bed-rest beyond 4-6 hours post sheath removal (Leeper 2004).

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Post PCI management

Using the search strategy for this article, patient education was the most commonly identified topic related to nursing activities. The majority relied on descriptive self-report (Brezynskie *et al.* 1998, Fernandez *et al.* 2007) or retrospective studies (Reigle *et al.* 2006).

Coronary heart disease still lacks sufficient recognition as a chronic disease process needing a chronic disease management approach (Astin & Close 2007). Reduced length of stay typical of a majority of PCI admissions provides a challenge to effective delivery of secondary prevention strategies. Optimally, the patient and their significant others should be supported to achieve greater levels of insight into the nature of the disease, education regarding the prevention of further disease progression and referral to post-discharge rehabilitation services (Beswick *et al.* 2004). In spite of the need for effective pre-discharge information and education (Beranova & Sykes 2007, Clark *et al.* 2005), the ability to provide quality patient education during the acute care admission remains controversial; with referral and participation in comprehensive cardiac rehabilitation programs continue to be poor (Clark *et al.* 2004).

Considerable research exists regarding secondary prevention programs, such as cardiac rehabilitation [CR]. Critique of this research has lead some to comment on the quality of studies (Beswick *et al.* 2004, Pasquali *et al.* 2003). This includes study design issues such as participant selection (Pasquali *et al.* 2003), adequate implementation of control groups (Pasquali *et al.* 2003), heterogeneity of program designs (Beswick *et al.* 2004), fiscal impact (Beswick *et al.* 2004) and lack of data on long-term effectiveness (Clark *et al.* 2005), specifically the inclusion of long-term follow-up interventions in programs (Lear *et al.* 2006). Integral to follow-up, the issue of lasting adherence to lifestyle modification remains a concern for cardiovascular clinicians (Smith *et al.* 2004).

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In spite of these limitations, there remains significant evidence that secondary prevention programs aid in improving health outcomes for people following acute cardiac events and procedures (Aroney *et al.* 2006, Clark *et al.* 2005, Lear *et al.* 2006, Pasquali *et al.* 2003). Benefits include reduced mortality (Clark *et al.* 2005, Jolliffe *et al.* 2001), improved quality of life and functional capacity (Benzera *et al.* 2007, Clark *et al.* 2005) and cost-effectiveness (Hambrecht *et al.* 2004). However, referral and up-take into these programs remains low globally with two Australian studies, one a prospective audit into cardiac care finding referral rates less than 11% (Walters *et al.* 2008), while Scott and colleagues (Scott *et al.* 2003) reported a 29% referral rate. Similar figures are cited for the UK and the USA. In the UK, 13-20% of all discharged with a diagnosis of ischemic heart disease participated in cardiac rehabilitation in 2000 (Beswick *et al.* 2004). The USA has reported comparable participation with rates between 10-20% (Leon *et al.* 2005).

The low referral, uptake and completion rates also underscore the issue of cost of providing optimum service. By way of example, based on 2001 UK data, to provide services to 85% of people discharged with a diagnosis of acute myocardial infarction would require a further 200-750% investment (Beswick *et al.* 2004). However, the diversity of program structure and length make estimating cost difficult (Beswick *et al.* 2004). Developing evidence-based innovative approaches to secondary prevention measures are essential.

Further research is required in developing and evaluating interventions that seek to assist PCI patients modify their risks for further CHD. Not only do clinicians need to consider improving referral, uptake and completion rates, but also the need to develop effective interventions that will aid sustained health behaviour modification incorporating innovative, culturally sensitive and person-centred approaches (Finset 2007, Hubley 2006). Furthermore, while funding and reimbursement models limit length of programs, physical resources and staffing, the need to invest in long-term follow-up is equally important. Integral to this discussion is the diverse nature of the potential participants where greater understanding of

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differences in age, gender, cultural and psycho-social barriers and facilitators is needed to provide flexible programs that support the sustainability agenda being presented in the literature. The short length of hospitalisation, the rapid return to work and lesser perception of risk are important considerations in developing programs for people undergoing PCI (Fernandez *et al.* 2006).

DISCUSSION

Nurses play an important role in ensuring optimal outcomes following PCI, both in their independent and collaborative practice roles. Monitoring outcomes and ensuring best practice is dependent on evidence based guidelines for sheath removal, time to ambulation and monitoring of cardiovascular and hemodynamic status. This review has generated priority areas for research and practice development. Consensus on guidelines for the use of manual pressure, sandbag or assist devices [Femostop® or C-clamp®], dressings to puncture site, bed elevation, analgesia for sheath removal time to ambulation are important considerations. Despite the important role nurses play at each of the patient journey phases, gaps exist in the literature available to inform clinical practice guidelines, specifically targeting nursing practice and drive consensus on what constitutes optimal nursing outcomes for people undergoing PCIs.

Effective nursing care impacts on the health and well-being of patients (Aiken *et al.* 2002) and it is likely that this influence is amplified in the critical peri-procedural period of the PCI. Nursing sensitive outcome indicators demonstrate the relationships between the nursing interventions patients have received and their subsequent health outcomes (Leeper 2004). Existing nursing sensitive outcome indicators include patient complications, such as urinary tract infections, pressure ulcers, hospital acquired pneumonia and deep vein thrombosis (Hart *et al.* 2006, Maas *et al.* 1996, Whitman *et al.* 2001). Leeper (2004) suggests nursing sensitive outcomes relating to PCI should include: cost of care, mortality and morbidity,

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symptom management, functional status (including health related quality of life), patient or family knowledge, patient responses and behaviour and home/occupational functioning post PCI. (See Table One). Dumont (2007), identifies that bed rest and blood-pressure control are the most significant factors influencing clinical outcomes. The rationale for this view is that the presence of the nurse during the critical time following the procedure where the nurse can assess and intervene in a timely manner (Dumont 2007).

Clinical pathways or care maps can be used to ensure continuity of care and generally proceed in a linear fashion from the individual's contact with the health care system (De Bleser *et al.* 2006). Perhaps a more inclusive perspective for achieving care that is truly person-centred and meets the needs of the individual is to conceptualise the individual's illness experience in terms of their journey as outlined in Fig. 1. This allows considering factors that will potentially influence the individual's clinical course and capacity to engage in secondary prevention strategies.

Nurses have the capacity to bridge the chasm between the acute and chronic care paradigm. However, to move cardiovascular care from an acute care paradigm to a more comprehensive chronic care approach, an increased emphasis on an evidence base guidelines and practice standards is a necessary component (Hung *et al.* 2007). This review has identified implications for policy, practice and research that are summarised in Fig. 2.

Implications

Policy

Policy strategies that determine staffing ratios and monitoring of procedural outcomes for both medical and nursing clinical indicators are important (Lins *et al.* 2006). This includes the volume of PCI procedures performed at hospitals which has been linked to patient outcomes (Smith *et al.* 2006a). It is vital for organisations to have strong platforms for clinical

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governance and the generation and monitoring of practice standards to deliver improvement in patient outcomes (Peterson *et al.* 2008).

Practice

As outlined above, there are minimal data to generate guidelines for nursing practice in PCI, without the use of a consensus approach. Without clear guidelines, clinical practice has the potential to become individualistic and ad-hoc. It is likely that the development of nurse sensitive patient outcome indicators may facilitate monitoring of practice and quality improvement initiatives (Leeper 2004). Applying clinical research findings to usual care practice is inherently problematic due to factors, such as patient selection criteria. Monitoring patient outcomes, including pain and discomfort are important and iterative processes in ensuring optimal nursing care (Lins *et al.* 2006). In addition, identifying people at higher risk, particularly the elderly is an important factor in planning and monitoring care (Guagliumi *et al.* 2004). Further within the framework of the patient journey nurses need to view care from the perspective not only of the procedure, but also the context of the individual and their family, acknowledging that this procedure is just a blimp on the radar as they prepare to engage in negotiating a chronic condition.

Research

While guidelines for PCI exist in the medical literature, guidelines related to nursing specific practice are more sporadic. The evidence required to established rigorous practice guidelines is limited and the rapidly evolving technological and pharmaceutical strategies mean that guidelines relating to sheath removal and ambulation be consistent with these therapies. Considering capturing data related to nursing issues in large, industry sponsored, randomised controlled trials is a potential solution. In particular gaining consensus on standardised outcome measures is an important strategy in designing clinical trials that will be meaningful and relevant to clinical practice.

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Education

Amidst a rapidly developing discipline, cardiovascular nurses find themselves being challenged by technological advances and rapid changes in health care system design. As a result, continuous practice evaluation, re-design and assessment is important in improving health outcomes in people with CHD. Clinicians must also play their part in generating the evidence required for moving practice toward rigorous science-based practice (Juran *et al.* 1999, Lins *et al.* 2006). Further, in undergraduate, post-graduate and continuing professional development it is important to provide information on latest practice trends as well communicating the significance of the PCI within the chronic illness trajectory.

CONCLUSION

Percutaneous coronary intervention is an integral strategy in CHD management. The challenge for cardiovascular nursing is to engage in developing high-level research evidence to support the development of patient-focused practice standards and monitoring the outcome of their implementation. Health care professionals need to view the PCI experience beyond the confines on an acute care model and consider factors within a chronic care paradigm to achieve optimal health related outcomes.

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CONTRIBUTIONS

Study design: JXR, PMD, YS & CD

Data collection and analysis: JXR, PMD, YS, RF, & CD

Manuscript preparation: JXR, PMD, YS, RF, & CD

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Table 1 Nursing Interventions to address an outcome focussed approach

Outcome	Nursing actions
Mortality	
	Patients and families aware of risk (Vlasic 2004)
	Monitoring for adverse outcomes (Leeper 2004)
Morbidity	
	Effective base-line risk assessment
	Vascular access site monitoring and haemostasis (Juran <i>et al.</i> 1999, Leeper 2004, Lins <i>et al.</i> 2006)
	Monitoring coagulation status (Juran <i>et al.</i> 1999, Leeper 2004, Lins <i>et al.</i> 2006)
	Monitoring hemodynamic status (Dumont 2007, Reynolds <i>et al.</i> 2003)
	Coronary vascular closure/re-stenosis monitoring (Leeper 2004)
	Monitoring for psychological distress (Stewart <i>et al.</i> 2000)
	Management of co-morbid conditions, including diabetes
	Strategies to maximise patient comfort and minimise distress (Chair <i>et al.</i> 2003, Gillen <i>et al.</i> 2008, Reynolds <i>et al.</i> 2001)
	Ensure standardized communication skills to ensure effective communication across care sectors (Dracup & Morris 2008)
Cost of Care	
	Improving care quality to reduce length of stay (Leeper 2004)
	Provide evidence based care, such as reducing 'time to ambulation' (Leeper 2004, Reynolds <i>et al.</i> 2001)
	Prevention of adverse outcomes
Symptom Management	
	Monitor for myocardial ischemia (Vlasic 2004)
	Assess for back-pain associated with bed rest (Chair <i>et al.</i> 2003, Leeper 2004)
	Utilise evidence in choosing optimal time-to-ambulation (Leeper 2004, Reynolds <i>et al.</i> 2001)
	Utilise evidence in choosing optimal bed elevation (Leeper 2004, Reynolds <i>et al.</i> 2003)
	Monitor for vascular access site pain (Leeper 2004)
Functional Status	
	Provide reassurance and strategies to engage in early ambulation and activities of daily living
	Screening for actual and potential complications including depression,

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	anxiety & social status (Leeper 2004)
	Monitoring for adverse psychological reactions (Leeper 2004)
Patient & Significant Other Knowledge	
	Ensure nursing care is delivered within a culturally competent and appropriate framework
	Providing access to appropriate healthcare information in a format understood by the patient and their family (Leeper 2004)
	Providing carers/support people with appropriate information for post-discharge care (Leeper 2004)
	Ensuring communication across the continuum of care, particularly with family care providers.
	Negotiate plans for effective secondary prevention and treatment adherence
Patient Responses & Behaviour	
	Maximise support people through referring to cardiac rehabilitation services (Leeper 2004)

* Outcome structure adapted from Leeper (2004)

Nursing care practices following a percutaneous coronary intervention: Results of a survey of Australian and New Zealand cardiovascular nurses

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CV nursing care following PCI: A & NZ online survey

Abstract

Background

Although there is high level evidence to guide optimal medical care for percutaneous coronary interventions (PCI), there are less explicit guidelines to support nurses in providing care.

Aim

This study described practice standards and priorities of care of cardiovascular nurses in Australia and New Zealand.

Method

Item generation for the survey was informed by an integrative literature review and existing clinical guidelines. A 116-item web-based survey was administered to cardiovascular nurses, via electronic mail lists of professional cardiovascular nursing organizations, using a secure online data collection system.

Results

Data were collected from March 2008 to March 2009. A total of 148 respondents attempted the survey with 110 (74.3%) completing all items. All respondents were registered nurses with an average of 12.3 (SD 7.61) years of clinical experience in the cardiovascular setting. A range of practice patterns was evident in post-PCI ambulation time, methods of sheath removal, pain relief and patient positioning. Respondents consistently rated psychosocial care a lower priority than other tasks and also identified a knowledge deficit in this area.

Conclusion

This survey identified diversity of practice patterns and a range of educational needs. Increasing evidence to support evidence-based practice and guideline development is necessary to promote high quality care and improved patient outcomes.

Keywords: angioplasty, transluminal percutaneous coronary; clinical practice nursing research; questionnaires; standards

Word count: 4192 (Text, figure & tables)

Background

Percutaneous coronary intervention (PCI)¹ describes procedures undertaken for revascularization of coronary arteries.² These procedures can be either planned, emergent or rescue. Along with other developed nations,³ the number of PCIs carried out in Australia has doubled since 1996 while coronary artery by-pass grafting (CABG) has declined by 33%.⁴

Nurses play an important role in optimizing patient outcomes following PCI. Technological innovation resulting in decreased lengths of stay⁵ challenge traditional models of nursing care and requires assessment of care standards.⁶

Diversity of practice

Current data suggests heterogeneity in practice patterns and standards related to nursing care for individuals undergoing coronary angiography and PCI.⁷ Key differences in approaches relate to time to ambulation, patient positioning, and methods of managing femoral sheath removal discomfort.⁸ These issues are briefly summarized below.

Time to ambulation

Time to ambulation following sheath removal has been reported to be from 2^{9,10} to 6 hours⁸. Walker and colleagues demonstrated that ambulation within 3 hours of sheath removal was not associated with adverse outcomes.¹¹ Prolonged periods of bed rest contribute to femoral access site complications.^{7,9} A recent study conducted in Australia used a quasi-experimental design to investigate the optimum post-sheath removal time by comparing three groups of patients (n=338) randomly allocated to either 3 (n=108), 4 (n=100) or 6 hour (n=98) ambulation protocols.¹¹ No significant differences related to femoral artery complications were found between the treatment groups following sheath removal.¹¹

Patient positioning

Chair and colleagues¹² conducted a randomized controlled trial evaluating positioning (supine vs. lateral positioning and elevation of head of bed) among 419 patients from two Hong Kong hospitals following coronary angiography. Participants were randomized to either control (managed supine and no more

than 15 degrees elevation for duration) or experimental group (participant's position changed regularly and head of bed slowly elevated to 30 degrees). Not only was the report of back discomfort significantly lower ($p < 0.001$), vascular complications were also lower in the experimental group.¹² Although this study was not done in the PCI population it is likely that these observations are relevant to this patient group. A more recent study of 105 diagnostic catheterization patients found participants assigned to one of three groups: a control group (usual care) or one of two experimental groups (received modified positioning only and modified positioning together with additional support for their back).¹³ In this study, the control group had statistically significantly more back discomfort following three hours as opposed to the two experimental groups. The experimental group receiving extra back support experienced the least pain after 3 hours.¹³

Methods of managing femoral sheath removal

No differences in pain were identified in an experimental study of local analgesia sample size ($n=148$).¹⁴ A later study conducted by Fulton and colleagues randomized 130 participants to receive either morphine, intravenous (IV) fentanyl, local anesthetic administered to the femoral puncture site, or an IV placebo.¹⁵ No differences were found between groups related to overall sheath removal pain.¹⁵ In contrast, a larger study conducted in Australia ($n=611$) found patients reported decrease pain when administered IV fentanyl and/or sedation as opposed to the use of local anesthetic alone.¹⁶ Furthermore, the authors concluded that use of local anesthetic increased the risk of vasovagal events and therefore should be avoided,¹⁶ in keeping with findings from an earlier study.¹⁴ A systematic review undertaken by Wensley and colleagues concluded that data were insufficient to identify the influence of pain management on patient outcomes. These authors identified the challenges in interpreting data because of inadequate blinding.¹⁷

Evidence-based practice and practice guidelines

There is increasing attention and emphasis on evidence-based practice. In spite of this the barriers to accessing and implementing evidence persist.¹⁸⁻²² These barriers can be related to patient, provider and system issues. Barriers experienced by clinicians include knowledge on how to access, critique and

assimilate research findings;²⁰ a reliance on historical practice patterns by many health professionals;^{20,}
²³ limitations in resources and time to access material;^{23, 24} and contention as to what constitutes
evidence. According to Sackett and colleagues,²⁴ evidence-based practice concerns the
“...conscientious, explicit and judicious use of the best evidence...” in planning and implementing care.
Local culture and policy can also impact on implementing evidence. To bridge the gap between the
evidence and practice, the development of practice guidelines to guide clinical practice has increased in
the past 10 years.²⁵⁻²⁷ Although controversy surrounds clinical practice guidelines there is evidence to show the
effectiveness of clinical practice guidelines in improving patient outcomes.^{28, 29}

In spite of the high level evidence to guide optimal medical care constituted into several clinical practice
guidelines for management of PCI,^{25, 27, 30, 31} there are less explicit clinical practice guidelines to support
quality nursing care.

Clinical guideline development follows a systematic and prospective method.³² In the absence of high
level evidence derived from adequately powered randomized controlled clinical trials, the use of
consensus methods is required.³³ We sought to undertake a systematic approach to guideline
development using the sequential steps: (1) an integrative literature review;³⁴ (2) a consensus
conference;³⁵ (3) a national survey (this current report); and (4) consensus recommendation for
guideline development using a modified Delphi technique.³⁶ Following an integrative literature review,³⁷
we identified existing evidence and developed strategic recommendations for practice during an initial
consensus development workshop consisting of 41 senior cardiovascular nurses, representatives of
professional organizations, researchers and consumer representatives. Key findings of the literature
review included the limitations of existing studies and need for nursing practice guidelines for PCI care.³⁴
This review also identified an emphasis on the acute aspects of PCI care and limited attention to disease
management strategies.³⁴ This paper reports the process and findings of a national survey undertaken
with the support of the Australasian Cardiovascular Nurses College (ACNC) and the Cardiac Nursing
Council of the Cardiac Society of Australia and New Zealand (CNC/CSANZ) to map adherence with
existing evidence and document current practices.

CV nursing care following PCI: A & NZ online survey

Aim

This study sought to describe the nursing practice standards, work place values and educational needs for PCI care of cardiovascular nurses in Australia and New Zealand.

Method

Item generation

Survey items were generated from an integrative literature review,³⁴ a consensus conference with 41 participants who identified priorities³⁵ and current clinical guideline documents.^{25, 26, 38} An initial bank of 128 items was identified. A panel was convened consisting of expert cardiovascular clinicians and researchers (n=12) who evaluated the survey for face and content validity. Following this process the survey was reduced to 116 items.

Survey design

The survey has six sections in addition to demographic items: Post-PCI nursing practice (4 items), healthcare delivery values (16 items), clinical practice standards (6 items), knowledge and capacity (14 items), adjustment and recovery (46 items), and clinical practice environment (30 items). The Post-PCI nursing practice section included categorical response options while all other sections used a ten-point Likert item (1=strongly disagree or low priority/perception, while 10=strongly agree, high priority/perception).³⁹ The rationale for the choice of items emerged from the consensus conference and the identification of six key issues of concern.³⁵ This meeting concluded that existing guidelines addressed many aspects of PCI care.^{25-27, 38, 40} Therefore items included in the survey related to nursing care specific items, hence the lower number of items in the post-PCI nursing practice, healthcare delivery values and clinical practice standards sections. At the conference, many of the clinicians identified that current practice patterns, including primary angioplasty and inter-hospital transfers,

challenged providing care, particularly relating to secondary prevention. Further, they identified that many organizational aspects impacted on their potential to provide care. Therefore these items were explored in the survey to inform guideline implementation strategies of the ACNC and CNC/CSANZ. A decision to use a 10 item Likert item was based on the fact that lower numbers of items may increase mean scores compared with 10 item questions.⁴¹

Both Australia and New Zealand support a system of universal health care coverage. A cross-sectional on-line survey design was used to administer the survey. As Australia or New Zealand do not have a national register of cardiovascular nurses, respondents were targeted through two cardiovascular nursing organizations, Australasian Cardiovascular Nurses College (ACNC) and the Cardiac Society of Australia and New Zealand Cardiovascular Nurses Council (CSANZ CNC). It is estimated that these two organizations have a membership of 145 and many members belong to both organizations. An email was sent to the Executive of each organization who arranged for each member with a valid email address to receive the invitation. The survey was not restricted to members of professional organizations and in order to give other cardiovascular nurses an opportunity to participate, we used a strategy for gradual or snowball sampling by inviting the respondents to pass on the invitation to other colleagues with whom they worked.⁴²

When the respondents completed the online survey, no identifying information was collected which enabled anonymity for the respondents. Ethical approval was obtained from a University Ethics Committee.

Pilot phase

Following establishing content validity a pilot was undertaken to determine clarity and estimate completion times. The average time taken to complete the survey was 22 minutes. A short evaluation questionnaire was administered with the items to obtain feedback from pilot respondents. Only minor changes to wording and item grouping were made following the pilot. In particular attention was applied to issues relating to the clarity and meaning of the items.

Data Collection

The survey was administered via a commercial online survey platform. The use of online survey data collection methods has been shown to compare favorably with more traditional mail-based collection methods decreasing cost and time for completion (for both researcher and respondent) and enhancing completion rates and data quality.⁴³ In particular, the advantage of accessing a sample over a vast geographical area⁴⁴ meant collecting quality data at a lesser cost of mail-based survey methods. This method also provided greater anonymity for the respondents as no identifying information was collected at any stage.

Data Analysis

Following the end of the data collection period, the data was downloaded into SPSS™ Version 15 for analysis. Descriptive statistics, including frequency, mean and standard deviation, were used to analyze the data. To compare perceived priority of practice and perceived implementation of that practice, the Wilcoxon Sign-Rank test was used as data were not normally distributed. The internal consistency of section items was assessed using Chronbach's alpha.

Results

Data were collected from February 2008 to March 2009. This survey was conducted for an extended period of time to maximize completion around a number of target cardiovascular nursing meetings. A total of 148 respondents (Australia $n=121$, 81.1%; New Zealand $n=11$, 7.4%; country of origin missing data $n=17$, 11.5%) attempted the survey with 110 (74.3%) completing all items. The internal consistency of items in the five of the six sections is provided in Table 1. A correlation co-efficient was not applied to Section 6, (post-PCI nursing practice) due to the nature of the items. For example, this section asked specific and discrete questions, such as time to ambulation, head of bed elevation and sheath removal analgesia.

<<Insert Table 1 here>>

CV nursing care following PCI: A & NZ online survey

All respondents were registered nurses, with an average age of 42 years (SD 9.81) and an average of 12.31 years (SD 7.61) of cardiovascular nursing experience. A total of 118 (86.8%) of the respondents reported having interventional cardiology services on site at their facility. Almost half of the respondents (n=64, 47.4%) were working within cardiac medical settings (coronary care unit, cardiac high dependency unit/step-down, and cardiac medical units). Fifty-four percent (n=74) of respondents had completed a post-graduate qualification in cardiovascular nursing and 8% (n=11) had commenced or completed doctoral education. Demographic data are summarized in Table 2.

<<Insert Table 2 here>>

Post-PCI Nursing Practice

A total of 110 (74.3%) of all respondents completed these items. A wide distribution of responses was noted in three out of four of the items in this section (time to ambulation, sheath removal pain management and patient positioning) as shown in Table 3. This indicated a diverse range of practice among the respondents. The second item, methods for achieving hemostasis, may be explained by variation in local practice due to other factors such as interventional cardiologist choices and hospital policy determining access to devices. The time to ambulation following post-sheath removal showed the most variation with responses ranging from less than one hour to greater than eight hours with the majority of respondents selecting four hours (46.4%). Likewise, pain management choices also varied with respondents 56 (50.9%) clustering around the mild opioid analgesia (\pm sedation) option.

<<Insert Table 3 here>>

Clinical Practice Standards

These items were intended to measure practice standards from two perspectives: what the respondents considered optimal practice, and what actually happened in their workplace. This was considered to be important in measuring an evidence- practice gap. The lowest rated item, 'quality of

communication with patients' general practitioners', ($n=112$, mean 5.94, SD 2.54). There was statistically a significant difference between the perceived level of priority and perceived level of implementation in their workplace of a series of nursing practice issues (such as discharge planning, assessment, documentation and patient education) (See Figure 1).

The highest rated item related to asking respondents to rate their level of agreement with the importance of patient attending CR ($n=129$, mean 9.14, SD 1.81).

<<Insert Figure 1>>

Healthcare Delivery Values

Respondents were asked to rate their perception of the level of evidence to support PCI nursing care activities. These were then ranked highest to lowest in terms of perceived level of evidence (Table 4). Cardiac specific risk factor modification was ranked the highest (mean 8.35, SD 1.9). In contrast, psychosocial assessment of the PCI patient was ranked the lowest (mean 5.77, SD 2.54).

<< Insert Table 4 here >>

Knowledge and capacity

As with previous sections, the highest ranked need for further education for nurses was the psychosocial aspects of care ($n=115$, mean 5.19, SD 2.94). The lowest ranking was the need for cardiac rehabilitation ($n=115$, mean 3.81, SD 2.93). Respondents highly endorsed cardiac rehabilitation in their responses health outcomes (Table 5).

<<Insert table 5>>

Levels of knowledge and capacity to provide comprehensive care were rated highly: Providing care to heart disease patients in general ($n=112$, mean 8.44, SD 1.38) and PCI care specifically ($n=112$, mean 8.43, SD 1.58). Awareness of theoretical issues in promoting self-management was rated the lowest ($n=112$, mean 5.47, SD 2.60).

Adjustment and recovery

Two items measured the appropriateness of the acute care setting for delivering patient education. The first item, listed in Table 6, simply asked respondents to rate their agreement with the statement, 'Patient education is best conducted during the acute care admission' (n=129, mean 5.28, SD 2.43). The second item, listed in Table 7, asked respondents to rank a series of patient settings for their appropriateness for delivering patient education. The acute care setting was ranked second-lowest (n=112, mean 7.0, SD 2.65) marginally in front of private health/lifestyle/fitness centers (n=112, mean 6.84, SD 2.83). CR was ranked the most appropriate setting for patient education (n= 112, mean 9.21, SD 1.62)

<<Insert table 6>>

<<Insert table 7>>

Discussion

The respondents were younger (Australian nursing population as of 2005, 45.1 years; New Zealand Nursing Population as of 2004, 35% between 40-49 years) and had a higher percentage of males (Australian Nursing Population as of 2005, 7.9%; New Zealand Nursing Population as of 2004, 6.4%) than the wider nursing population. Both are in keeping with data from other Australian critical care areas where the average age is 41.5 years, with a male population of 11%. Only 25% of those attempting the survey did not complete.

Variation in post-PCI practice and disparity in consistency of practice implementation and policy

Diversity in practice standards is apparent in this study. A range of perspectives on post-procedural ambulation time, head of the bed elevation, and methods of femoral sheath removal pain relief have also been reported in other studies.^{7, 8, 44} The variability in responses is also underscored by the

discrepancy between their perceived level of priority and level of implementation of a particular practice, as seen in Figure 1. For each aspect of care included in the survey, there was a statistically significant difference between perceived priority and level of implementation indicating a gap between desire for delivering high levels of quality care and actual practice patterns. These were issues flagged in the initial consensus conference and confirmed in the survey findings. Further research into challenges, barriers and, equally importantly, the facilitators in implementing best practice is warranted by these observations.

Time to ambulation

The range of the responses in 'time-to-ambulation' is in keeping with published studies. Heterogeneous populations,¹² a range of anticoagulation strategies^{9, 10} and methods of achieving hemostasis challenge evidence to inform practice guidelines.¹⁰

Patient positioning

Similarly, the results of this survey regarding position of the patient following a PCI procedure were diverse. In this study, responses varied regarding the angle of the head of bed with the majority of respondents (42.7%) choosing to lay patients flat. As found with time to ambulation, recommendations on patient positioning have limited evidence investigating a range of potential strategies to support practice.¹³

Sheath removal discomfort management

A range of preferences for managing femoral sheath removal discomfort was evident.^{16, 17} The findings from our study indicate that nurses have varying practice preferences and that their preferences, for milder forms of analgesia with or without sedation, have not been adequately studied or supported by research evidence. To improve patient outcomes, further investigation into appropriate patterns of sheath removal pain management is required.¹⁷

Need greater emphasis on psychosocial aspects of care

CV nursing care following PCI: A & NZ online survey

There is a greater understanding of the interplay of depression and low socioeconomic status with cardiovascular pathology as well as confounding recovery and behavior modification.^{25, 38, 45, 46} Respondents reported having less knowledge and confidence and therefore diminished capacity and comprehension of the links between psychosocial issues and heart disease. As a consequence guidelines recommend all patients admitted with coronary heart disease be screened for depression.^{38, 47} Survey findings revealed that respondents require more knowledge and competence at assessment, first-line intervention and referral for these issues.

Cardiac rehabilitation seen as a valuable and effective tool

In Australia and New Zealand CR is widely endorsed as a valuable secondary prevention strategy and, when offered by government funded institutions, is free of charge.^{25, 40} Regardless of these factors, participation rates remain low.⁴⁸ Respondents ranked CR highly as an effective tool in improving health outcomes likely reflecting high availability and policy recommendations. In spite of ranking CR highly, issues related to prioritizing discharge planning, patient education and communication with general practitioners were rated lower. These factors impact on hospital readmission, medication adherence, and quality of post-discharge follow-up care and potentially require greater attention.⁴⁹

Strengths and Limitations

There are several limitations in interpreting these data due to the use of self-report survey design. The survey categories may be seen as arbitrary but were developed a priori based on the literature review and consultation.^{34, 35} In spite of this, items in each section demonstrated a high internal consistency. Due to the snowball sampling method it is not possible to accurately confirm response rates. Further there is a potential of responder bias. The online platform may have excluded those who have little or no access to the internet. To maximize participation, steps were taken to ensure anyone who chose to complete the survey via a hard copy were undertaken. Positioning of items in a long survey may have resulted in lower response rates to individual items. In spite of these limitations, our survey data

confirm that variation in PCI nursing practices exist and are not always consistent with recommended practice.

Conclusion

Emerging technologies and practice patterns challenge cardiovascular nurses to deliver appropriate, evidence-based care. This survey highlights the diversity of practice among a sample of Australia and New Zealand nurses and emphasizes the need for standardized, clinical practice guidelines to support practice. To date, in Australia and New Zealand, institutions have formulated their own nursing practice standards, limiting benchmarking and comparison of clinical outcomes. Data from this survey provide an important baseline for developing and implementing evidence-based guidelines in Australia and New Zealand.

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Summary and Implications

- The survey demonstrated a range of standards in post-PCI ambulation time, methods of sheath removal, pain relief and patient positioning.
- Survey respondents identified the need for education in psychological aspects of cardiovascular care.
- The importance of providing effective post discharge care and referral to cardiac rehabilitation was acknowledged by participants.
- The lack of practice guidelines specific to nursing care potentially contributes to wide variations in practice.

Table 1 Internal consistency of survey items

Section	Item <i>n</i>	Chronbach's alpha
Health care delivery values	16	0.88
Adjustment and recovery	46	0.91
Clinical practice standards	6	0.65
Clinical practice environment	29	0.95
Knowledge and capacity	14	0.89

Table 2 – Respondent Characteristics

Variable	<i>n</i>	% or Mean (SD)
Age	136	42.0 (SD 9.81)
Sex (% female)	117	86.0
Country of Origin (% Australian)	131	81.1
Interventional cardiology service in your workplace (% yes)	118	86.8
Years in cardiovascular sub-specialty	136	12.31 (SD 7.61)
Pattern of employment		
• Up to 20 hrs per week%	40	29.4
• 20 to 40 hrs per week %	88	64.7
• Greater than 40 hrs per week %	8	5.9
Employment designation		
• Registered Nurse %	41	30.1
• Clinical Nurse Specialist %	24	17.6
• Clinical Nurse Consultant %	18	13.2
• Nurse Educator / Clinical Nurse Educator %	12	8.8
• Nurse Unit Manager / Nurse Managers %	19	13.9
• Academic / Researcher	21	15.5
Cardiac sub-specialty		
• Cardiac medical units (CCU, 'step-down' & medical) %	64	47.4
• Cardiac Catheterization Laboratory %	25	18.5
• Cardiac surgical units %	4	3.0
• Cardiac outpatient services (rehabilitation etc) %	27	20
Post-graduate cardiac qualifications		
• None %	30	22.1

• Hospital certificate (institution based award) %	21	15.4
• Graduate certificate %	36	26.5
• Graduate diploma/Masters Coursework %	38	27.9
• Higher research degree (PhD, DNSc, Masters) %	11	8.0

Table 3– Post-PCI Nursing Practice Section Results

Variable	n	%
Optimal post-procedure ambulation time		
• < 1 hr	1	0.9
• 1 hr	3	2.7
• 2 hrs	12	10.9
• 3 hrs	12	10.9
• 4 hrs	51	46.4
• 5 hrs	2	1.8
• 6 hrs	17	15.5
• 8 hrs	9	8.2
• > 8 hrs	3	2.7
Most appropriate interventional to achieve hemostasis (ranked)		
• Manual compression	53	48.2
• Mechanical compression	40	36.4
• Arterial closure device	16	14.5
• Sandbag	1	0.9
Optimal elevation of head of bed post PCI		
• Flat	47	42.7
• 10 – 19 Degrees	19	17.3
• 20 – 29 Degrees	24	21.8
• 30 – 39 Degrees	17	15.5
• 40 – 49 Degrees	3	2.7
Drugs of choice for controlling pain during sheath removal		
• Mild opioid	30	27.3
• Mild opioid + sedative	26	23.6
• Non-opioid	20	18.2
• Non-opioid + sedative	12	10.9
• Strong opioid	11	10.0
• Strong opioid + sedative	11	10.0

'Drug of choice for controlling pain during sheath removal' based on WHO's Pain Ladder.

Table 4 – Healthcare Delivery Values – Respondent ranked perception of the extent of existing evidence for PCI-specific nursing care

Rank	Variable	<i>n</i>	Mean (SD)
1	Cardiac specific risk factor modification	115	8.35 (1.90)
2	Cardiac rehabilitation	115	8.21 (2.05)
3	Methods for achieving hemostasis	115	7.19 (2.32)
4	Post-PCI procedure complication monitoring	115	6.90 (2.32)
5	Arterial sheath removal	115	6.90 (2.36)
6	Post-PCI education	115	6.80 (2.32)
7	Post-PCI discharge planning	115	6.42 (2.26)
8	Pre-PCI procedure orientation/education	115	6.37 (2.21)
9	Time to ambulation post PCI sheath removal	115	6.22 (2.52)
10	Psychosocial assessment of the PCI patient	115	5.77 (2.54)

Table 5 - Nurses' perceived need for further education to support their practice

Rank	Variable	n	Mean (SD)
1	Psychosocial assessment of the PCI patient	115	5.19 (2.94)
2	Post-PCI discharge planning	115	4.26 (2.84)
3	Post-PCI procedure complication monitoring	115	4.13 (2.95)
4	Time to ambulation post PCI sheath removal	115	4.12 (2.81)
5	Methods for achieving hemostasis	115	4.10 (2.70)
6	Cardiac specific risk factor modification	115	4.05 (2.89)
7	Post-PCI education	115	4.01 (2.89)
8	Pre-PCI procedure orientation/education	115	3.90 (2.87)
9	Arterial sheath removal	115	3.84 (2.74)
10	Cardiac rehabilitation	115	3.81 (2.93)

Table 6 - Patient education-related perceptions and the chronic nature of CVD

Variable	<i>n</i>	Mean (SD)
Patient education related items		
Patient education is best conducted during the patient's acute care admission	129	5.28 (2.43)
Patient education can be achieved by giving patients accurate health literature	129	6.33 (2.46)
Counseling based interventions are effective tools in assisting nurses with patient education	129	7.41 (1.81)
Patient education strategies using reading materials and nurse-to-patient discussion are highly effective	129	7.41 (1.95)
Assessing health literacy is an important consideration when engaging in patient education	129	8.70 (1.27)
Assessing culturally specific needs of the patient is an important consideration when engaging in patient education	129	8.78 (1.38)
CVD as a chronic illness		
On the whole, patients understand that they have a chronic condition requiring lifestyle adjustment	129	5.64 (2.29)
I believe people undergoing PCI need to adapt to living with a chronic illness	129	8.19 (2.01)
Understanding the experience of living with a chronic illness should be a high priority for cardiovascular nurses	129	8.56 (1.45)

Table 7 - Ranked appropriateness of settings for delivering patient education

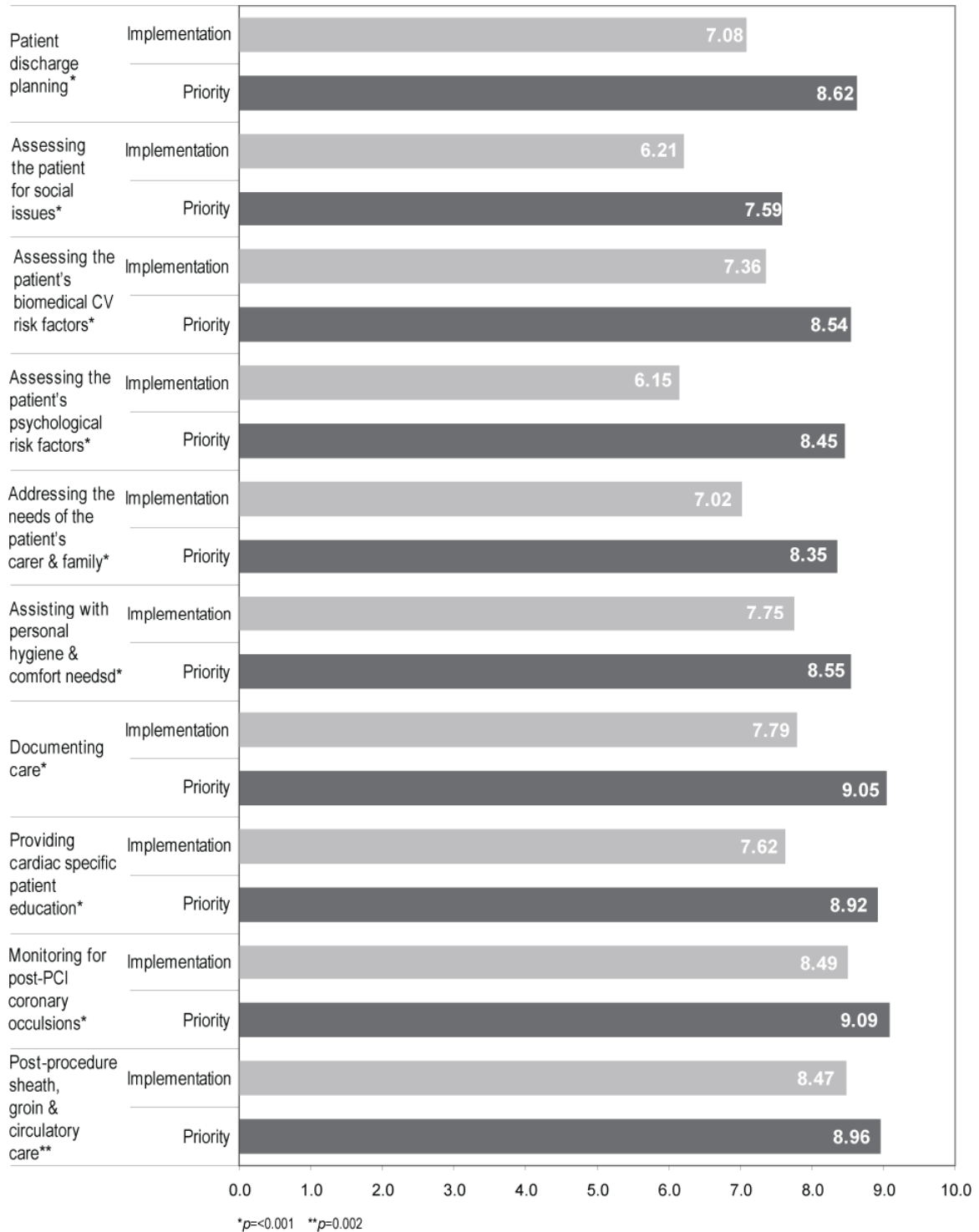
Rank	Variable	<i>n</i>	Mean (SD)
1	Outpatient cardiac rehabilitation program	112	9.21 (1.62)
2	Outpatient Nurse-Practitioner clinic	112	8.54 (2.33)
3	General Practice (GP)	112	8.38 (2.18)
4	Practice Nurse clinic attached to a GP	112	8.24 (2.41)
5	Outpatient cardiology clinic at acute care setting	112	8.11 (2.16)
6	Preadmission clinic	112	7.75 (2.71)
7	Community nursing service	112	7.71 (2.53)
8	During admission to acute care cardiology unit	112	7.0 (2.65)
9	Private health, lifestyle or fitness centre	112	6.84 (2.83)

Figure Legends

Figure One - Wilcoxon Signed Rank test - priority and implementation of nursing practice

(n=110)

Source: Authors



THE CAREGIVING ROLE FOLLOWING PERCUTANEOUS CORONARY INTERVENTION

BRIEF TITLE: CAREGIVING FOLLOWING PCI

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The caregiving role following percutaneous coronary intervention

ABSTRACT

Aim: The aim of this study is to describe the experience of caregivers of individuals who have had a percutaneous coronary intervention [PCI].

Background: Decreased lengths of hospital stay and an increased emphasis on chronic disease self-management increases the importance of carers in assisting in recovery and life-style modification.

Design: Cross-sectional dual-moderated focus group design.

Method: Three focus groups using a dual facilitation approach were held in the cardiac rehabilitation setting of a tertiary referral hospital in metropolitan Sydney. All sessions were audio-recorded, transcribed and thematically analysed.

Results: Four themes emerged from the data: 1) a gendered approach to health, illness and caring; 2) shock, disbelief and the process of adjustment following PCI; 3) challenges and changes of the carer-patient relationship; and 4) the needs of the carer for support and information. Issues emerging from this study parallel other findings describing the experience, yet provide new insights into the issues surrounding PCI.

Conclusion: These findings highlight the need for including carers in care planning and decision making and providing them with support and resources.

Relevance to clinical practice

- Emphasises the importance of preparing carers of the likely experience following a PCI.
- Demonstrates the degree to which vigilance, deferment of carer-health needs and role conflict impact on the carer's personal relationship.
- Demonstrates the need for formal support interventions for carers of PCI patients.

Keywords: carers, spouse, focus group, qualitative methods, percutaneous coronary intervention

INTRODUCTION

Percutaneous coronary intervention [PCI] is an increasingly important strategy in managing coronary heart disease (CHD). This procedure revascularises coronary arteries through less invasive means than coronary artery bypass grafting (Popma *et al.* 2008). This may involve the insertion of a stent to maintain the lumen of the blood vessel (Davidson & Bonow 2008).

Percutaneous coronary intervention is emerging as a valuable tool in rapidly treating people with evolving myocardial infarction as well as in the elective setting. The impact of the precipitating events on the patient and their significant others needs to be considered by nurses. Reduced social support (Scafato *et al.* 2008) and depression following an acute cardiac event (Lukkarinen & Kyngäs 2003) have negative impacts on an individual's capacity to engage in secondary prevention. However, the burden of supporting someone with CHD (Bakas *et al.* 2006) may impact on the physical, mental, financial and emotional health of the carer (Bakas *et al.* 2006, Fleury & Moore 1999, Knoll & Johnson 2000).

DEFINING CARERS

The term 'carer' has been defined as someone who provides assistance to people with a disability or a long-term health condition or to people aged 60 years and over, on an ongoing basis (Australian Bureau of Statistics 2004, Australian Institute of Health and Welfare 2007).

Associating caring simply with the older and disabled person underplays the importance of caring roles in a range of chronic conditions, potentially contributing to the diminishing critical role of the carer. It is important to distinguish the *informal* carer from *formal* carers who are qualified healthcare professionals (Taskforce on Care Costs 2007). The roles of carers range from supporting basic health hygiene needs through to monitoring medication adherence, mobility, liaison with healthcare professionals and health behaviour change. Some controversy regarding the term 'carer' exists with some believing it devalues the mutual reciprocity in a relationship

prior to the precipitating health crisis (Private Mental Health Consumer Carer Network Australia 2007). In this study, we refer to the carer as the person who provides varying levels of unpaid support related to living activities, lifestyle and health behaviour modification, assistance with medication adherence, negotiating healthcare relationships and emotional, physical care and financial support.

In CHD, research into the impact of caring for patients on spouses and other caregivers has been conducted in relation to cardiac surgery (Davies 2000, Ganske 2006, Knoll & Johnson 2000), heart failure (Bakas *et al.* 2006, Pattenden *et al.* 2007) and myocardial infarction (Fleury & Moore 1999). While arguably we can glean findings of previously published studies, some attributes are unique to the PCI experience. These include the short length of hospital stay and minimal time for education and support. Therefore, this study sought to describe the experience of carers of individuals who undergo PCI.

METHOD

Study Design

This study was a cross-sectional qualitative investigation into caring for someone who had undergone a PCI. Dual-moderated focus groups (Fern 2001) were held in the cardiac rehabilitation [CR] setting of a tertiary referral hospital in metropolitan Sydney, Australia. The focus groups were used to gather rich data from participants whose shared experiences would be elicited through the group process (Shank 2006).

Sample

A convenience sample of English-speaking individuals over the age of 18 years who provide regular support to a person previously admitted for a PCI was obtained. The clinical nurse consultant who led the cardiac rehabilitation program approached patients to invite their support

people to the focus groups. This was facilitated using flyers and posters aimed at appealing to the broadest possible audience with no specific mention of relationship or gender. Potential participants were targeted regardless of their relationship to the participant, i.e. spouse, child or friend.

Data Collection

Focus group questions were developed following a literature review and in consultation with CR specialists (Astin *et al.* 2008, Lukkarinen & Kyngäs 2003, Scafato *et al.* 2008). The dual-moderation method of data collection assisted in gathering data as difficulties have been noted in single-facilitator studies where the sole facilitator asks questions as well as keep field notes (McLafferty 2004). The second moderator was a senior cardiac rehabilitation nurse. As a content expert, the second moderator was able to probe responses to further elicit discussion. During the focus group sessions, feedback and paraphrasing was used by the moderators to reflect back to the participants important discussion points. All sessions were digitally audio-recorded and transcribed verbatim to allow independent analysis by the team. Field notes were written and debriefing sessions between the facilitators were held immediately following the data collection sessions. These notes informed the data analysis process.

Data Analysis

Following verbatim transcription of each focus group session, three researchers read the transcripts individually and coded and categorised data according to their perspectives of emergent themes. The involvement of multiple researchers in the analytical process enabled provision of more nuanced understandings of possible interpretations of the data (Kitto *et al.* 2008). Notes were cross-compared and discrepancies discussed by the researchers. Core and sub-themes were decided by consensus of the researchers. Hence, the coding frame was grounded in the data rather than decided *a priori*. Following this consensus, the researchers

returned to the data to search for material related to themes. Evidence for themes was compiled into a document and formed the basis of this paper.

Ethical Considerations

Approval to undertake this study was granted by the relevant health facility human research ethics committee. Informed consent, including permission to audio record proceedings, was obtained from participants prior to each focus group. All transcripts were expunged of personal identifiers to maintain anonymity.

FINDINGS

Three focus groups, each comprising 5-7 participants, were conducted and lasted an average of 90 minutes. Of the 18 participants, 3 (16.6%) were born overseas and spoke a language in addition to English. The remaining participants self-identified as Anglo-Celtic. Time since discharge from the acute care setting ranged from three weeks - 18 months. Despite the efforts of the research team and advertising for the study in gender and relationship neutral terms, no men or other family members were recruited; - therefore the sample was comprised of only female spouses. For many of these participants, the focus groups represented their first opportunity to discuss their experiences with others in similar situations. The groups expressed a diverse range of emotions including humour and conviviality intermingled with deep reflection and occasional tears.

The following themes were evident in the findings: 1) a gendered approach to health, illness and caring; 2) shock, disbelief and the process of adjustment following PCI; 3) challenges and changes of the carer-patient relationship; and 4) the needs of the carer for support and information.

A gendered approach to health, illness and caring

All participants were women married to male patients who had undergone a PCI. The language used by the participants to describe their interactions with their husbands reflected a gendered approach to health, illness and caring. One interaction illustrates this:

I still wasn't happy with his health, but he said he's a macho man and nothing was going to touch him and he said, 'I'm fine! I'm fine!'

The conflict evident in this dialogue is expressed in terms of a gendered lens to health. The partner who is recovering from the index event responds along culturally determined gender approaches to managing his disease. He is rejecting not just perceived interference with his health, but also the incursion on his self-concept of manhood.

Challenges to the ways roles were expressed were evident throughout the women's dialogue.

From a gender perspective, domestic tasks traditionally designated as masculine, underwent re-negotiation which resulted in strained relationships. As one participant recalls:

I wanted to mow the grass but he wouldn't let me do it as he said he would be embarrassed seeing me mow the grass. I'd do the back [garden] but he wouldn't let me do the front.

This excerpt depicts the patient's adherence to traditional gender roles despite the impracticalities of maintaining these physically demanding behaviours following an invasive heart procedure.

This patient felt his masculinity, strength and virility, would be jeopardised if others were to see his wife engage in this activity.

Shock, disbelief and the process of adjustment following PCI

A striking feature of the focus groups was the vivid recall of the cardiac events by carers.

Participants readily recalled exact dates and times, the sequencing of events, clinical details of their partners' coronary artery disease, emotional responses and interactions with health

professionals and family experienced along the way. They also described the shock associated with these experiences, as one participant recounted:

I said, 'I think I'm in shock...it was so quick'. He wouldn't have been in here 15 minutes and they were all working and I was just standing there. When they asked him out of 10 how did he feel when he came in, I remember that he said '9 out of 10 or 11 out of 10' and then he was sick.

The tremendous impact of the PCI on the lives of the carers in conjunction with the short length of stay and seeming brevity of treatment lead to confusion regarding its gravity. The following excerpt depicts an interaction by two participants which underscores this confusion:

One of the things I felt and that made me a bit concerned was the fact that it's such a serious problem and it's almost like falling of a log because you're in, you have your procedure and you're out. I'm confused between the severity of it and how you should actually feel.

I think that's one of the difficult things to deal with. You're caught between these two feelings and you don't know which road to take.

By contrast to the acute care admission, the post-discharge recovery time was lengthy and contributed to the contradictory nature of the experience, as depicted in the following interaction between two participants:

I think he's coming to terms with it, but it's taken a long time. It's over a year now.

It's a bit like a whirlwind, you're in, you're out and you think, what was all that about? Then you have to pick up your life afterwards.

The participants reported the impact of prolonged recovery time, often describing a post-discharge change of mood enduring far beyond. Some participants described this as a wall or barrier between themselves and their partners that adversely impacted on their relationship.

Balancing vigilance of care and patient boundaries

Almost without exception, participants acknowledged being persistently vigilant, watchful and protective of their husbands throughout the PCI experience. Although it was acknowledged that

this was a normal part of their everyday role, the cardiac event intensified this pattern. As these participants expressed:

You just don't want to leave them out of your sight. I was sort of very aware. I'd say, 'Where are you going now?' 'Are you all right?' It's a bit like '20 Questions'.

I was worried about him for so long. I followed him around and said things like, 'I don't think you should be lifting that', or, 'That's too heavy.'

These excerpts depicts the ways the roles of the dyad (patient and spouse) existed. Some participants expressed a sense of frustration regarding the change in roles and relationships and potentially a grieving for past roles. One participant said '...it felt like I was looking after a 5 year old child.'

Being vigilant was not without its cost for both the patients and their spouses. Conflict was often reported as bringing strain to the relationship and role confusion for the spouse-patient. One participant described one such incident:

I'd say, 'Are you alright, love?' and then he would say, 'For god's sake, Judith, shut up!' Such interactions meant participants had to learn to ways of coming to terms with their vigilance by not encroaching on their husbands' challenged independence and sense of self. Given these occasional hostile outbursts, wife-carers recognised the need to 'back off' or detach somewhat from the role of protector or nurse. Two participants described backing off as:

And that's when my husband was depressed because he felt, 'Well, what next.' I've learned to back off a lot but I think you have to, don't you?

Well you do. Someone's got to be strong and it's usually the spouse. If you're a bit feeble or whatever, well, what good is it for them, so you sort of try to remain strong for them.

This dialogue depicts the wife-carers as recognising the need to refrain from becoming too immersed in the psychological decline of the husband, yet remaining supportive. This does not mean that the anxiety elicited by the PCI event had subsided for the wife-carer, rather, it was internalised, as depicted below:

...I keep on worrying, I know it's stupid, but I don't say anything anymore but I think, 'Oh gosh, not all over again!'

This statement reflects the wife-carer's decision to suppress her own worry and anxiety, so as not to abet the husband's concerns or infringe on his personal boundaries.

Deferring to the needs of the patient

Most of the participants expressed, in some way, the need to put their own needs aside to care for their husbands. This often took the form of deferring their own health needs, particularly those who had chronic conditions. This deference to spouse does not appear to end with discharge, as some participants reported the need to provide ongoing support beyond 12 months following the procedure, as depicted below:

I am in a lot of pain all the time but I walk up that hill with him, just behind him, a bit slower...I just can't let my husband go alone, I just can't do it.

One woman, talking about how her husband has adopted a healthier lifestyle, stated she was having the opposite experience for herself. In her words,

He's lost it [weight] and I've gained it. I'm monitoring his food and looking after him but you tend to forget about yourself.

These excerpts illustrate the tendency the participants to focus on their partner's needs at the expense of their own. Several participants had their own chronic health issues they needed assistance with, often from their partners. For them, a dramatic role reversal took place. Two participants recalled this type of experience:

For a couple of years he was looking after me and all of a sudden I had to totally forget all my own problems and be there for him.

The last 18 months I was sick and he was the one who looked after me all the time and then all of a sudden it's the other way around.

In an apparent need to manage the crisis of the sentinel event, participants expressed putting aside their emotions as an important contribution to their partners' coping. One participant relayed her experience of being told her husband had '...a few blockages in the heart':

...When he told me, I just lost the plot. For him, I stayed reasonably calm but I just couldn't believe it ...

Role conflict and change

Participants revealed much about the roles they inhabit from the initial symptom recognition phase through to discharge and into the rehabilitation/secondary prevention phase of ACS.

Advocacy, in several forms, was a predominant role expressed by these women such as encouraging urgent action and participation in secondary prevention. Participants recalled initiating hospital presentation and ongoing access to secondary prevention measures. Three specific examples are:

I said, 'Come on, I'm going to take you to the doctor straight away,' and he said, 'I'm fine! I'm fine!', I said, 'No you're not. Come on, get in the car.' So I took him to the Doctor straight away.

My husband didn't want to come [to CR] and I said, 'You're going'

Every time my husband goes to see a doctor now, I go with him because I know he'll only tell me what he wants to tell me.

The perspectives of the participants and their partners, as patients, seemed divergent in that during the recovery phase, the participants focused on their partner's survival while the partner seemed to focus on quality of life. The following narrative presents an account of an incident between a participant and her partner which illustrates this perspective disconnect:

...he was getting tired and he was getting cross and his sexuality is not as good and that upsets them. I said, 'Look, I don't care, you're alive for goodness sake! Just move on!' but no, it really worries him.

The needs of the carer: support and information

The importance of connecting with supportive others was a critical need which enabled them to overcome isolation and facilitated coping. One participant described the process she undergoes with her daughter-in-law as a way of coping:

...what my daughter-in-law and I do is have a dumping session... When my husband was in hospital she said, 'how are you?' and I said, 'I need a dumping session'. So we dumped. You don't say anything, you don't agree, you just listen.

Although the support of family and friends was discussed by several of the wife-carers, others explained that support resources were variable or that external perspectives were beneficial. One participant expressed the need for further support in the following excerpt:

Possibly you could have a support night occasionally just for carers. If they have problems with their loved ones, they can talk about it in a group. Just once in a while

Sometimes when they're complete strangers I think it's better. I always feel that if it's a friend, they may disagree because it's me and they may want to make me feel good. So if it's complete strangers, I think it would be more honest.

The need for such a strategy was summed up by two participants' retorts' related to the variability of support resources available to some people:

...not everyone wants to listen.

Yes, but a lot of people don't have that [support].

In addition to social support afforded by family and friends, interactions with health professionals also featured as part of discussions during the focus groups. Regarding interaction with nurses, there were mixed experiences described, yet these generally reflected a positive perception of nurses' intentions to engage spouses in the process of care. The emergency department and CR services received the most praise, depicted by the example below:

I've got to admit that the staff down there [emergency] were brilliant...one of the nurses in Emergency...she came up and put a blanket on him and fluffed up his pillows and I thought 'she's doing that TLC'...I felt comfortable in leaving him and going home and getting some rest myself.

I think the staff in the Emergency Department are great. They explained every single thing that they were doing, to me, as well as to my husband. They were great, they were really wonderful.

Many participants commented on the quality of information sharing they experienced during the acute care admission. Integral to this complexity is the short length-of-stay characteristic of PCI procedures. One participant, advocating for quality information and support stated clearly:

I think there is a need for the carers to get a certain amount of very basic information like the sex aspect of it. What are some of the things that my husband can do when he comes home?

Participants described exemplars of interactions with healthcare professionals. While many reflected a positive interaction, not all were characterised as such. When asked about who provided health information during the admission, one participant said:

The doctor has spoken to me in [hospital], yes. I didn't get much information afterwards though. No information was given to him [the patient] at all except for a couple of little booklets we picked up off the table later from [CR nurse] lecture.

One participant struggled to locate her partner after his transfer to another hospital. She states:

...he got sent to [hospital] and that's the only time I really panicked. When I tried to contact him to see how he was going, I couldn't find him...

The role of CR staff in providing reliable information that the carers and their partners were able to assimilate was emphasised throughout the focus groups. This participant stated:

My husband has become so much more aware and conscious of his diet since coming to rehab. It made him aware of a lot of things. No matter how much I had spoken to him about it, he's taken more notice of what he's been told here, so rehab is valuable.

When I talk to [CR nurse] on the phone, you don't know how much relief [this] gives me and how calm it makes me. After talking...about any little quirky things or problems I've had with [partner] at home, I come off the phone feeling relieved so [CR nurse] really has a big impact on me when [CR nurse] talks to me on the phone.

I agree there because I've phone [CR nurses] a few different times too.

It's good to have someone reassuring

DISCUSSION

This study, despite all attempts at recruiting a broader sample, consisted of only female caregivers married to the PCI patient. This is likely to be expected in that women are under-

represented in PCI patient populations due to later disease presentation and increased peri-procedural mortality and are therefore less likely to have a spouse (Jacobs 2006). When viewed from a gendered approach to health, the tendency for women to adopt the caregiving role has been previously demonstrated (Sutherland & Jensen 2000). Of concern, when women are in need of care, they often do not receive the same level of instrumental and social support as men (Davidson *et al.* 2008, Kristofferzon *et al.* 2003). In spite of the over-representation of women in the sample, it is congruent with the disease demographics and differences in how men and women engage the caring role.

The needs of carers of people who have undergone PCI are similar to other cardiovascular cohorts (Pattenden *et al.* 2007). Fundamental differences relate to the nature of the treatment, length of stay and follow-up care. The acuity of the event and the chronic nature of heart disease mean that long-term effects on carers are similar; however, the short length of stay has confounding impacts on how patients and their carers cope post-discharge. This finding is consistent with studies into how the PCI patients engage long-term change following discharge (Fernandez *et al.* 2006). Improved and more accurate information provided to carers during the patient's hospitalisation remains an unmet need in some instances. Potential solutions may include providing a card issued to carers with unit contact details and expected length of procedure and/or information packs designed specifically for carers. Active facilitated PCI-specific support strategies beyond discharge, such as support groups, have been highlighted in the literature for some time (Thompson & Cordle 1988). However, we were unable to find any evidence of implementation in the literature.

Caregiver vigilance is a response to the threat the health crisis brings and has been demonstrated in other studies (Knoll & Johnson 2000). Although participants appeared willing and able to

undertake the caring role, this was not without some sense of burden. As reported in the literature, some of the participants of this study reported deterioration of their own health over the course of caring for their spouses has been previously described (Edwards *et al.* 2008).

Developing health promotion strategies engaging the carer in partnership with the patient is needed in addressing this disparity (Carers Australia Commonwealth of Australia 2008). Policy development is likewise an important aspect to supporting carers with an Australian carers peak body, Carers Australia, calling on government to engage a number of strategies including health promotion, financial assistance, engaging carers as a priority target group in further policy development (Carers Australia Commonwealth of Australia 2008).

Given the severity of the impact of the PCI experience, it was no surprise that the carers of this study experienced something akin to ‘flashbulb’ memory defined as a recollection formed in great detail during a personally significant event (Brown & Kulik 1977). Brown and Kulik documented that these vivid and poignant memories had a photographic characteristic and were often associated vivid recall (Brown & Kulik 1977) which was seen in the participants ability to recall details surrounding the event leading to admission. While, historically, these events have been described based on studies of contemporaries of tragic incidents such as the assassination of key public figures (Talarico & Rubin 2003), the participants of our study demonstrated similar tendencies. The emotion and intensity of their descriptions was as if their partner’s heart attack had occurred only yesterday.

Given the nature of the health crisis leading to admission and PCI, challenges to the relationship between the patient and the carer were evident. Figure 1 depicts the temporal and divergent perspectives in the carer-patient dyads. Prior to the precipitating event, the dyad was characterised by a balanced perspective as represented by the upper circles. Following the event, both the carer and partner experienced perspective shifts. For the carer, their partner (the patient),

became the centre of their attention as the subject of care. In contrast, the patient-focused more on the meaning this had for them and their survival needs. The failing of health professionals to acknowledge their caring role and appreciate its' importance was evident in the data. These divergent perspectives serve as fertile ground for misunderstanding, poor communication and lost opportunities to engage in effective care.

Communication issues between carers and healthcare professionals have been demonstrated consistently over a long period of time (Moser *et al.* 1993, Thompson & Cordle 1988). Yet for this sample of carers, this study demonstrates that little has changed and many needs remain unmet.

LIMITATIONS AND STRENGTHS

This study has several limitations that need to be considered when interpreting these findings. Several groups were not represented in this sample and therefore were not able to contribute their experience: male carers of PCI patients, non-English speaking carers, those who did not attend CR and those unable to attend due to the timing of the focus groups.

In spite of these limitations, this study has several strengths. The focus group method, outlined above, was an effective tool in uncovering mutually held perspectives as well as highlighting the diversity that naturally exists in groups. As a result, the information provided was very useful to the service setting where the study was undertaken. These data have also provided insight into the caring phenomenon in the context of PCI care, which has not previously appeared in the literature.

More research is needed into the efficacy of facilitated, carer-only support groups. Analysis should also include implementation methods, cost effectiveness and the impact on both the health

and well-being of patient and carer. As the voice of male carers was absent from this study, further investigation into the experience of men caring or supporting their partners is important.

CONCLUSION

Carers of those undergoing PCIs experience wide-ranging challenges to personal and family resources. They often report declines in their own health, increased depression and reduced social support underscoring the importance of strategies to provide information, assistance and resources.

IMPLICATIONS FOR NURSING PRACTICE

The findings of this study highlight the following practice implications for nurses in caring for patients undergoing PCIs, their carers and family:

- Inclusion of carers in decision making and education where the carer is seen as a healthcare partner with nurses in post-PCI recovery and secondary prevention.
- Need for active facilitated PCI-specific support strategies beyond discharge.
- The health needs of the carer should be addressed. Developing health promotion strategies engaging the carer in partnership with the patient is needed in addressing this disparity (Carers Australia Commonwealth of Australia 2008).

CONTRIBUTIONS

Study Design: JXR, JMS, YS, PMD

Data Collection and Analysis: JXR, PMD, JMS, MD

Manuscript Preparation: JXR, JMS, MD, YS, PMD

CONFLICT OF INTEREST

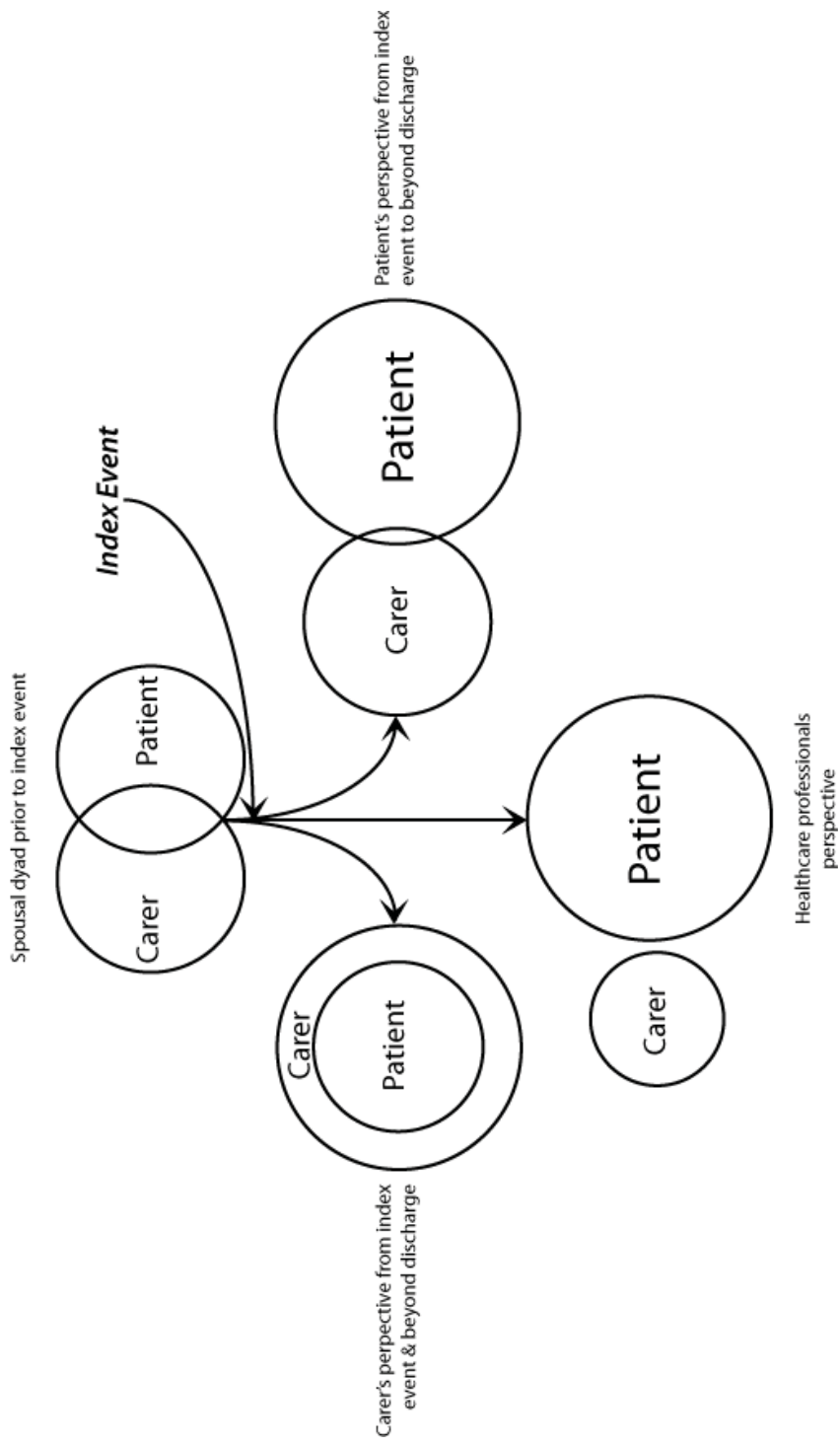
There are not conflicts of interest to report.

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FIGURE 1 COMPETING PERSPECTIVES AND ROLE CHALLENGES
Competing Perspectives



Appendix Twelve

Permission Letters

ACP

AMERICAN COLLEGE OF PHYSICIANS
INTERNAL MEDICINE | *Doctors for Adults*

ROECP0916437

December 3, 2009

Curtin Univ of Tech
PO Box 3181
REGENTS PARK NSW
2143 AUSTRALIA

Dear Mr. Rolley:

Thank you for your request to print and electronic the following from *Effective Clinical Practice*:

Figure 1: Edward H. Wagner, MD, MPH, Chronic Disease Management: What Will It Take To Improve Care for Chronic Illness? *Effective Clinical Practice*, Aug/Sept 1998, Vol 1

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Sincerely,

Gina Brown
Permissions Coordinator

John Rolley

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Page 65 of the report

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1. Rolley, J. X., Davidson, P. M., Salamonson, Y., Fernandez, R. & Dennison, C. R. (2009). Review of nursing care for patients undergoing percutaneous coronary interventions: a patient journey approach. Journal of Clinical Nursing, 18(17), 2394-2405. DOI: 10.1111/j.1365-2702.2008.02768.x
2. Rolley, J.X., Smith, J.M., DiGiacomo, M., Salamonson, Y., & Davidson, P.M. (In press). The caregiving role following percutaneous coronary intervention. Journal of Clinical Nursing, (In press).

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Expected date of submission for examination

December 19th 2009

Please do not hesitate to contact me with any further questions you may have.

Kind regards

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