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Health Service Research
Pay for Performance (P4P)
P4P Design Variables
Pay for Quality (P4Q)
Public Health Care
Rewards

Publications


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Abstract

In 2008, a three-year pilot ‘pay for performance’ (P4P) program, known as ‘Clinical Practice Improvement Payment’ (CPIP) was introduced into Queensland Health (QHealth). QHealth is a large public health sector provider of acute, community, and public health services in Queensland, Australia. The organisation has recently embarked on a significant reform agenda including a review of existing funding arrangements (Duckett et al., 2008). Partly in response to this reform agenda, a casemix funding model has been implemented to reconnect health care funding with outcomes. CPIP was conceptualised as a performance-based scheme that rewarded quality with financial incentives. This is the first time such a scheme has been implemented into the public health sector in Australia with a focus on rewarding quality, and it is unique in that it has a large state-wide focus and includes 15 Districts. CPIP initially targeted five acute and community clinical areas including Mental Health, Discharge Medication, Emergency Department, Chronic Obstructive Pulmonary Disease, and Stroke.

The CPIP scheme was designed around key concepts including the identification of clinical indicators that met the set criteria of: high disease burden, a well defined single diagnostic group or intervention, significant variations in clinical outcomes and/or practices, a good evidence, and clinician control and support (Ward, Daniels, Walker & Duckett, 2007).

This evaluative research targeted Phase One of implementation of the CPIP scheme from January 2008 to March 2009. A formative evaluation utilising a mixed methodology and complementarity analysis was undertaken. The research involved three research questions and aimed to determine the knowledge, understanding, and attitudes of clinicians; identify improvements to the design, administration, and monitoring of CPIP; and determine the financial and economic costs of the scheme.
Three key studies were undertaken to ascertain responses to the key research questions. Firstly, a survey of clinicians was undertaken to examine levels of knowledge and understanding and their attitudes to the scheme. Secondly, the study sought to apply Statistical Process Control (SPC) to the process indicators to assess if this enhanced the scheme and a third study examined a simple economic cost analysis. The CPIP Survey of clinicians elicited 192 clinician respondents. Over 70% of these respondents were supportive of the continuation of the CPIP scheme. This finding was also supported by the results of a quantitative attitude survey that identified positive attitudes in 6 of the 7 domains—including impact, awareness and understanding and clinical relevance, all being scored positive across the combined respondent group. SPC as a trending tool may play an important role in the early identification of indicator weakness for the CPIP scheme.

This evaluative research study supports a previously identified need in the literature for a phased introduction of Pay for Performance (P4P) type programs. It further highlights the value of undertaking a formal risk assessment of clinician, management, and systemic levels of literacy and competency with measurement and monitoring of quality prior to a phased implementation. This phasing can then be guided by a P4P Design Variable Matrix which provides a selection of program design options such as indicator target and payment mechanisms. It became evident that a clear process is required to standardise how clinical indicators evolve over time and direct movement towards more rigorous ‘pay for performance’ targets and the development of an optimal funding model. Use of this matrix will enable the scheme to mature and build the literacy and competency of clinicians and the organisation as implementation progresses. Furthermore, the research identified that CPIP created a spotlight on clinical indicators and incentive payments of over five million from a potential ten million was secured across the five clinical areas in the first 15 months of the scheme. This indicates that quality was rewarded in the new QHealth funding model, and despite issues being identified with the payment mechanism, funding was distributed. The economic model used identified a relative low cost of reporting (under $8,000) as opposed to funds secured of over $300,000 for
mental health as an example. Movement to a full cost effectiveness study of CPIP is supported.

Overall the introduction of the CPIP scheme into QHealth has been a positive and effective strategy for engaging clinicians in quality and has been the catalyst for the identification and monitoring of valuable clinical process indicators. This research has highlighted that clinicians are supportive of the scheme in general; however, there are some significant risks that include the functioning of the CPIP payment mechanism. Given clinician support for the use of a pay–for-performance methodology in QHealth, the CPIP scheme has the potential to be a powerful addition to a multi-faceted suite of quality improvement initiatives within QHealth.
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# List of Abbreviations and Terms

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<th>Description</th>
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<tbody>
<tr>
<td>AASW</td>
<td>Australian Association of Social Workers</td>
</tr>
<tr>
<td>CEO</td>
<td>Chief Executive Officer</td>
</tr>
<tr>
<td>CFO</td>
<td>Chief Financial Officer</td>
</tr>
<tr>
<td>Clinician</td>
<td>Medical, nursing, and all allied health professionals</td>
</tr>
<tr>
<td>CN</td>
<td>Clinical Network</td>
</tr>
<tr>
<td>COPD</td>
<td>Chronic Obstructive Pulmonary Disease</td>
</tr>
<tr>
<td>CPIP</td>
<td>Clinical Practice Improvement Payment</td>
</tr>
<tr>
<td>CPIC</td>
<td>Clinical Practice Improvement Centre</td>
</tr>
<tr>
<td>CQ</td>
<td>Continuous Quality Improvement</td>
</tr>
<tr>
<td>DM</td>
<td>Discharge Medication</td>
</tr>
<tr>
<td>ED</td>
<td>Emergency Department</td>
</tr>
<tr>
<td>IOM</td>
<td>Institute of Medicine</td>
</tr>
<tr>
<td>HSR</td>
<td>Health Services Research</td>
</tr>
<tr>
<td>HREC</td>
<td>Human Research Ethics Committee</td>
</tr>
<tr>
<td>MH</td>
<td>Mental Health</td>
</tr>
<tr>
<td>MHCC</td>
<td>Mental Health Clinical Collaborative</td>
</tr>
<tr>
<td>P4P</td>
<td>Pay-for-Performance</td>
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<tr>
<td>PBA</td>
<td>Post-budget adjustment</td>
</tr>
<tr>
<td>QHealth</td>
<td>Queensland Health</td>
</tr>
<tr>
<td>QUT</td>
<td>Queensland University of Technology</td>
</tr>
<tr>
<td>RAM</td>
<td>Resource Allocation Model</td>
</tr>
<tr>
<td>RBWH</td>
<td>Royal Brisbane &amp; Women’s Hospital</td>
</tr>
<tr>
<td>SMPU</td>
<td>Safe Medication Practice Unit</td>
</tr>
<tr>
<td>SPC</td>
<td>Statistical Process Control</td>
</tr>
<tr>
<td>TQM</td>
<td>Total Quality Measurement</td>
</tr>
</tbody>
</table>
Statement of Original Authorship

The work contained in this thesis has not been previously submitted to meet requirements for an award at this or any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

Signature: ____________________________

Date: ________________________________
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1.1 Introduction

Incentive payment schemes have been adopted widely in the private sector as an extrinsic motivator to improve an individual’s or organisation’s performance. More recently, similar financial incentive schemes have been implemented by the health care sector to build skills and commitment towards improving the quality of health care. These pay-for-performance (P4P) initiatives involve the distribution of financial rewards for achievement of clinically orientated performance targets. Knowledge of the most effective design features and attitudes of clinicians towards such schemes in public health care is limited.

In the context of a public scandal about the quality of care and identification of systemic variations in Queensland Health (QHealth) patient outcomes (Forster, 2005), it was hypothesised that a P4P scheme would promote, encourage, and reward good quality health care. This saw the implementation of the Clinical Practice Improvement Payment (CPIP) scheme. The CPIP scheme was implemented in January 2008 as a three year pilot and, most recently, funding was approved for a further three years until the end of 2013.

This study formatively evaluates the CPIP scheme to determine the clinician response to such a scheme in a public hospital context and provides recommendations regarding how this scheme can be further developed and commences a process for evaluating the economic costs this P4P type program. The evaluation creates a valuable opportunity for critical reflection and guidance for maturing and enhancing the scheme over the next three years.

1.2 Research Focus

The CPIP scheme was implemented within the health care setting of QHealth. Given that the program is funded at $8 million per annum, a level of evidence-based
accountability for the administration of the scheme is required. Thus the motivation behind this research is use of an academic framework to review the functioning and administration of the CPIP scheme. A formative evaluation research strategy was engaged with an intention that the research findings strengthen and improve the CPIP scheme. In particular, the strategy provides the opportunity to determine both the intended and the unexpected consequences that need to be either further promoted or addressed.

The life cycle of the CPIP scheme—from 2006 until 2013—comprises four separate phases: Pre-Implementation Phase, Phase One, Phase Two, and the Post-Pilot Phase. Specifically, Phase One is the focus of this evaluation study, although contextual information regarding all phases will be interwoven into the study where relevant. The study’s final recommendations target the Post-Pilot Phase.

1.3 Significance

Internationally, the generic evidence base in relation to quality improvement science requires expansion. Current evidence does not clearly identify one quality improvement methodology over another in terms of effectiveness. New research can contribute to improving the evidence by building on existing knowledge regarding the specificity and precision of various improvement methodologies within specific settings and target clinical groupings (Grol, Baker & Moss, 2004). Through a greater understanding will emerge in terms of recognising what is valid and effective, what is a fad, and what is not sustainable due to lack of proven effectiveness in the quality improvement arena. This research is aiming to achieve improve this knowledge base.

P4P in health care is an emerging phenomenon in the Australian public acute health care setting. This is the first such program in an Australian public health service that has a state-wide focus. It is anticipated that these types of programs may flourish in the future as there is a significant movement towards optimised and efficient funding formulas for hospitals. This evaluation research is exploratory in nature and it will pave the way to a greater understanding of the role of incentive payments within the public health system.

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The empirical knowledge and understanding of the effectiveness of P4P-type schemes is a new area of knowledge within health services research. There is some initial evidence for the effectiveness of this type of incentivisation program, understanding is limited with regards to clinician attitudes to such schemes, and the best way to maximise the effectiveness of such schemes through design. There is relatively little published evidence regarding this. The majority of literature outlines the variable design features of specific programs internationally, or individual perspectives regarding such programs. Cost effectiveness studies regarding P4P internationally are lacking. No standardised approach has been developed to either determine the costs of such programs or benefits received, and to identify any improvements in the quality of care delivered as a consequence.

1.4 Thesis Outline

The thesis is segregated into seven chapters. Chapter Two describes the research context of QHealth and the structural components of the CPIP scheme, including specific design features and endorsed clinical indicators. Understanding the context and the program design is important for the contextualisation of this piece of work. Chapter Three undertakes a review of the literature which encompasses the concept of variation in health care practice and outcomes, the need for health financing reform, and empirical evidence for pay for performance. A framework of P4P design variables for implementing these programs in health care is assessed and adapted for the purpose of this study. Attitudes of clinicians are explored using a validated tool developed for an American context. This leads to the proposal of a conceptual framework for evaluation research and exploration of the specific research questions. Chapter Four provides a succinct overview of the research design and methods for the evaluation. The three specific studies are detailed and information is provided regarding the methodology, ethic approvals, and limitations that have been identified. Chapter Five provides an outline of the evaluation results, followed by a detailed discussion of these results in Chapter Six. Chapter Seven concludes this evaluation research and will leave the reader with a series of recommendations regarding the CPIP scheme for the future.
Chapter 2  Context for the Research

2.1 Introduction

This Clinical Practice Improvement Payment (CPIP) scheme evaluation research is set within QHealth. The following section outlines the significant background features of this unique context including recent reform activities and the specific pay-for-performance design features adopted for the pilot rollout of the CPIP scheme in this organisation.

2.2 Queensland Health: Structure and Functions

Queensland is the second largest state in Australia and the most decentralised jurisdiction with a population of almost 4.5 million. These issues bring their own unique challenges for health care delivery associated with this wide spread geography (Duckett, et al., 2008). QHealth is the public provider of health care services and is predominantly responsible for all hospital admissions in the State (Van Der Weyden, 2005). It is a large, dynamic, and complex public health service delivery organisation that provides a range of integrated services across Queensland. These services include hospital inpatient, outpatient, and emergency services; community and mental health services; aged care services; and public health and health promotion programs. QHealth expends $23.5 million daily on the delivery of clinical care. This includes the birth of ‘116’ babies, providing admitted care to ‘7966’ people, screening of ‘557’ women for breast cancer, and giving qualified and supportive advice on health concerns to ‘743’ callers through the health hotline 13HEALTH (Queensland Health, 2009).

Clinicians employed by QHealth are responsible for the 24-hour, 7-days-a-week delivery of these public health clinical services across the organisation. There are over 60 000 full time equivalent employees (Queensland Health, 2009). Clinicians form the majority of this workforce and work in the medical, nursing, allied health, and health worker streams. The term ‘clinician’, as used within this paper, is all-
encompassing and refers to a range of disciplines within QHealth including doctors, nurses, social workers, physiotherapists, pharmacists, occupational therapists, indigenous health workers, and speech pathologists.

QHealth is governed by a bureaucratic structure that is accountable to parliament, the Minister for Health, and the Director General of Health. A number of corporate divisions exist to support the functioning of health service districts which include Policy, Planning, and Resourcing; Corporate Services; Performance and Accountability; and Centre for Health Care Improvement (CHI): Figure 2.1 “Queensland Health Organisation Chart”.
Figure 2.1: Queensland Health Organisational Chart

Queensland Health Organisation Chart
November 2006

Deputy Premier
Minister for Health

Director-General
Michael Red

Office of the Director-General

CEO Clinical and Statewide Services
Kathy Byrns

Chief Health Officer
Jeannette Young

DDG Policy, Strategy and Resourcing
Andrew Wilson

CEO Centre for Healthcare Improvement
Tony D’Coulomb

Health Service District CEOs

Children’s Health Services
Peter Beer
Darling Downs-West Moreton
Pam Lann
Metro South-David Thiele

Metro North-Keith McNeil
Sunshine Coast-Wade Kay Kevin Hargarty

Central Queensland-Coralie Barker
Gold Coast-Adrian Newbake

Mackay-Kerry McGovern
Townsville-Mary Bannon

Cairns and Hinterland-Julie Harvey-Jones
Cape York-Susan Turner
Central West-Jill Kueneman
Mt Isa-Paul Stephenson
South West-Maria Guarrity
Torres Strait-Northern Peninsula
Christine Gies

DDG Performance & Accountability
Tony Nakan

DDG Corporate Services
Michael Kallianos

DDG Health Planning & Infrastructure
Monaz Walsh

Chief Information Officer
Ray Brown

Direct Report
Performance Reporting / Coordination
DDG Deputy Director-General
CEO Chief Executive Officer
Presently, QHealth is comprised of 15 Health Service Districts (recently reduced from 19 districts). Each district is headed by a Chief Executive Officer (CEO) with an executive management team which includes medical and nursing leadership roles and a Chief Finance Officer (CFO). The Health Service Districts are as follows:

- Cairns and Hinterland
- Cape York
- Central Queensland
- Central West
- Children’s Health Services
- Darling Downs - West Moreton
- Gold Coast
- Mackay
- Metro North
- Metro South
- Mt Isa
- South West
- Sunshine Coast - Wide Bay
- Torres Strait and Northern Peninsula
- Townsville

2.2.1 Clinical Practice Improvement Centre (CPIC)

The Clinical Practice Improvement Centre (CPIC) is located on the Royal Brisbane and Women’s Hospital (RBWH) campus, Herston, Brisbane. CPIC is an entity within the corporate division known as the Centre for Healthcare Improvement (CHI). Organisationaly, it is situated alongside sister centres such as The Patient Safety Centre (PSC), Hospital Access Unit (HAU), and the Skills Development Centre (SDC).

The main objective of CPIC is to provide leadership that improves the quality of health care service delivery in high impact areas where there are gaps between the clinical evidence and practice—specifically, gaps in practice that can be reduced by supporting, teaching, and engaging clinicians. A principal focus of CPIC is measuring
progress towards quality targets and providing systems and tools for this purpose. Additionally, CPIC has a strategic role to monitor clinical performance, governance plans, and patient experience. At the strategic level, it provides the broader community with information on patient safety and quality in QHealth, and it contributes to the science of improving quality through generating innovative approaches to healthcare.

2.3 QHealth Reform Agenda

2.3.1 Reform Background

The Queensland public health system has recently undergone a contemporary reform phase to address systemic quality and safety issues. This reform was facilitated and accelerated as a result of what had occurred in Bundaberg, Queensland, in 2005 regarding concerns over the quality of health care and the surgical ability of a QHealth employed surgeon. The Bundaberg situation led to a number of internal and external reviews and the implementation of a major reform agenda in QHealth followed (Van der Weyden, 2005; Thomas, 2007).

The “Queensland Health Systems Review”, conducted by Peter Forster, known as the Forster Report (Forster, 2005), was preceded by the aborted Morris enquiry. It was followed by the more specific Davies Report, which formed the findings and recommendations of the Queensland Public Hospitals Commission of Inquiry, released in November 2005 (Queensland Public Hospitals Commission of Inquiry, 2005).

The Forster Report independently reviewed the administration, performance management, and workforce matters of the organisation. In essence, major systemic deficiencies and failures were identified as an outcome of the review and recommendations were made to address these findings (Forster, 2005). The culture was seen to be one of control and command, and the organisation was viewed as dysfunctional. The Administration was targeted as being overly focused on cost control and performance indicators, rather than valuing employees or patient
outcomes. This led to a culture of negativity and disenchaunted clinicians working within the system (Forster, 2005; Van Der Weyden, 2005).

The fundamental problem was seen to be a lack of adequate resourcing, both human and financial. QHealth compared poorly to its jurisdictional counterparts in relation to staff-patient ratios, a dependence on overseas trained doctors, low remuneration, and the lowest recurrent health expenditure in Australia by 20%. Criticism of QHealth among other issues called for it to be dragged into the 21st Century, with a transparent and open culture that was connected to the community and where the clinician’s voice is empowered to be heard within the system (Van Der Weyden, 2005). The recommendations from the Forster Report (Forster, 2005) were wide ranging; a strong theme of the report supported the formalisation of Clinical Networks as a vehicle for empowering the clinician’s voice in the organisation.

The subsequent Queensland Public Hospitals Commission of Inquiry (Davies Report) (Queensland Public Hospitals Commission of Inquiry, 2005) findings were similar: an inadequate budget and a culture of concealment, but it drilled down further and queried the process of registration, the absence of credentialing and privileging for medical staff, and a failure to monitor performance or investigate complaints.

### 2.3.2 Post Reform

As a consequence of the formal inquiries led by Forster and Davies, QHealth has been in an acute and now stabilising reform phase. This reform agenda is aligned with the recently formed National Health and Hospitals Reform Commission (NHHRC) which identified the need to promote improved safety and quality of health care as one of its challenges (Bennett, 2008; National Health and Hospitals Reform Commission, 2009). For QHealth, the reform process has introduced a web of clinical governance policies that have emerged to improve the quality and safety of health care delivery partnered by a funding transformation seen through the introduction of case mix (Duckett, 2007).

The clinical governance reform in QHealth aims to change the culture of the organisation to one that values and supports improvements in patient safety and
quality and includes a ‘just and open’ approach to managing adverse events, measuring outcomes and performance, increasing clinician and patient involvement, and ensuring line management responsibility for patient safety and quality (Duckett, Coory & Sketcher-Baker, 2007; Duckett, 2007). The new Clinical Governance Framework in QHealth encompasses a large range of policies relating to management, clinical networks, performance reporting, appraisal and development, credentialing and conduct, complaints, and implementation of audit processes (CPIC, 2008).

2.3.3 Clinical Networks

The role of the clinical networks is governed by the Queensland Health Clinical Networks Policy V2.0 (Queensland Health, 2007). Clinical networks are generically tasked with addressing problems in quality and efficiency in health care within the organisation. In principle, they consist of a clinical Chair and steering group that govern and engage a body of multidisciplinary clinicians from the same clinical orientation with representation from all districts. This is a method to facilitate clinicians’ involvement in decision making, planning, and implementing quality improvement strategies.

Clinical networks are in varying stages of establishment; for example, the addition of the newly established Maternity and Neonatal State-wide clinical network to the existing Stroke State-wide Clinical Network, which evolved from a pre-reform “clinical collaborative” group. Clinical networks exist for a wide range of clinical specialities such as cardiac, diabetes, mental health, intensive care, and renal, to name a few. There are structural and cultural differences across all clinical networks with varying levels of functionality. Presently, the role and structure of clinical networks are subject to a routine review process and it is anticipated that the existing policy will be refreshed by mid-2010.

2.3.4 New Funding Model for QHealth

A factor that enabled the QHealth reform agenda to be progressed was a significant boost to the health budget. The 2009–10 health budget is $9.037 billion, an 8% increase from the budget of the previous year (Queensland Health, 2009). The
funding increase aligned with QHealth’s transition to casemix and Resource Allocation Model (RAM) funding (weights funding for regional and population needs of geographically diverse health services). Casemix and RAM have been incrementally implemented into QHealth, commencing in mid-2007. This new payment methodology was promoted as a method to enable hospitals to make choices regarding the efficiency and effectiveness of their sites and encourages cost-effective treatment of patients (Duckett, 2008).

Casemix funding was recommended to replace what was referred to as an idiosyncratic and historical funding model (Duckett, et al., 2008; Duckett, 2008). Early in the QHealth casemix implementation, the need to embed a quality- or value-based domain into the new funding formula was identified by the organisations executive. Despite casemix funding having equity and efficiency advantages over historical activity-based models, it is not designed to directly promote high quality care (Duckett, 2008).

The casemix adoption plan acknowledged the potential risk of indirectly supporting poor outcomes and providing additional payments to districts for undesirable variations in care. In particular, additional payments for those variations are a consequence of serious and avoidable adverse events (Ward et al., 2007). The goal was to build components into the funding model to create financial penalties for poor outcomes and encourage risk avoidant behaviour. Initially, coding algorithm modifications were perused as an option, but a preference emerged for the use of financial incentives to promote the achievement of evidence-based standards of clinical care.

2.4 Clinical Practice Improvement Payment (CPIP)

This need for a quality domain to be built into the funding formula facilitated the proposal of a ‘pay for performance’ adjunct to the new QHealth casemix model. The ‘P4P’ program, known as the Clinical Practice Improvement Payment (CPIP), was subsequently designed and initially implemented in January 2008 for a three year pilot project. The program has now been extended for a further three years until 2013.
The program is administered by CPIC. Clinical Networks or clinical policy areas such as the Safe Medication Practice Unit (SMPU) or Emergency Department Clinical Network are key stakeholders. As stakeholders, they are responsible for identifying variation in clinical practice across QHealth and defining and endorsing clinical indicators for inclusion in CPIP to enable this gap to be measured and monitored. Payments are targeted at the specialist clinical areas as opposed to the clinical network, which delivers the clinical care encompassed by the clinical indicator; for example, pharmacy clinical units that complete a Discharge Medication Record (DMR) for adult patients who are 65 years and older with four or more medications (See Table 2.1). Each clinical indicator is weighted by a tariff rate, e.g. $125 per indicator. Payments are calculated at the end of each data cycle (e.g. $125 x 200 cases of indicator achievement = $25,000) and lump sum payments are made to districts every six months. Districts are then required to allocate the funds to the correct specialist clinical area within their district in a timely manner. This initial stage of CPIP’s development cycle has not required performance targets to be set, but rather payments are secured per indicator achieved (pay for reporting). The following section of this chapter will provide detail regarding the development and implementation of this scheme.

### 2.4.1 Phases of the CPIP Scheme

The current development and implementation of CPIP is captured in Figure 2.2 and outlines four separate phases of the scheme’s life cycle from 2006–2013. These phases are distinguished as the Pre-Implementation Phase, Phase One, Phase Two, and the Post-Pilot Phase. Both Phase One and Phase Two fall within CPIP’s three-year pilot time period from 2008–2010.
2.4.2 Pre-Implementation Phase

The Pre Implementation Phase of the CPIP scheme spans 2006 and 2007 and entails progress from the scheme’s conceptualisation to implementation. The overall intention of the scheme was to improve quality directly through the demonstrable achievement of clinical indicators. The driver of the scheme’s development was the hypothesis that quality could be improved indirectly through the symbolic message that quality is valued and rewarded in QHealth (Duckett et al., 2008).

The goal of this phase was to design and gain endorsement for a scheme that financially rewarded individual clinical units within QHealth districts for improving the quality of clinical services and therefore patient outcomes. CPIP was the first such type of performance payment scheme implemented into the public health sector within Australia. This phase entailed an international literature review, formal consultation regarding the preferred design, and the selection of specific measurable indicators.

Although preliminary support to progress the CPIP concept was present, the process of moving it from concept to implementation in January 2008 took over 12 months due to consultation and approval requirements. Further detail about this process can be found in Appendix 1 “CPIP Pre-Implementation Phase”.
2.4.3 Phase One

Phase One, which is the specific focus of this evaluation, spans January 2008–March 2009. The CPIP Implementation Plan was the principal document that governed Phase One. It provided information about the endorsed clinical indicators, service improvement goals, potential number of cases eligible across QHealth, and a payment amount per indicator (See Table 2.2). In addition, 12 core business rules (see Box 2.1), were determined by CPIC. These rules provided the main accountability regarding roles and responsibilities, payment methods, and the use of secured funds by districts.

Box 2.1: CPIP Business Rules

1. CPIP is a bonus incentive payment that districts and clinical areas have the ability to earn as a reward for achievement of endorsed clinical indicators.

2. The Pilot Phase of CPIP commenced on 1 January 2008.

3. The Clinical Practice Improvement Centre (CPIC) will have responsibility for communicating generic CPIP information; providing support to develop indicators; analysing data and reporting on indicators where required; administering the CPIP budget and payment schedule; and evaluating CPIP.

4. State-wide clinical networks will have responsibility for developing and endorsing indicators; communicating indicators to the network; data quality, collecting, analysing, and reporting of clinical indicators; and participating in CPIP evaluation.

5. Seven indicators have been chosen for the first phase of CPIP. Indicators and payment amounts will be reviewed annually by CPIC and state-wide clinical networks. Indicators will change over time.

6. Indicator periods for incentive payment will be six-monthly (except in the first instance, where it will be three months).

7. Incentive payments to districts will align with a twice yearly post-budget adjustment (PBA) schedule (January and July).

8. Districts, State-wide clinical networks and Directors of clinical units will be formally notified by the Senior Director of CPIC, in May and November of each year, of incentive payments secured.

9. Incentive payments will be made generically to the district. Districts should allocate 80%, at a minimum, of earned incentive payment directly to the cost code of the clinical unit principally
responsible for the clinical activity which earned the incentive payment. Determination of splits of funds between multiple clinical areas within a district will be left to local resolution.

10. CPIP is to be used only for non-recurrent expenditure items to support further clinical practice improvement and professional development.

11. CPIP will be additional to any other payments under the New Funding Model and is not offset against any Transition Payment.

12. CPIP will be comprehensively evaluated, both quantitatively and qualitatively, from the commencement of the pilot.

2.4.4 Phase One CPIP Clinical Indicators

This first suite of CPIP clinical indicators only enable a ‘pay for reporting’ model (where payment is made per individual indicator achieved) to operate. The future goal is adoption of a rigorous performance-orientated or P4P model. Endorsement of clinical indicators required assessment against the target areas and methodology for data collection as described in Box 2.2 below.

Box 2.2: CPIP Target Areas

1. A high disease burden
2. Known large variation in clinical practice (gaps and geographical difference)
3. A good evidence base
4. Clinician support and control
5. Real time data collection (electronic preferred)

The full list of endorsed clinical indicators and payment amounts for Phase One of CPIP scheme was process indicators except the COPD clinical indicator, which was a structural indicator. The indicators and payments are outlined in Table 2.1
Table 2.1: CPIP Clinical Indicators and Payments

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Proposed Payment per Indicator Achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mental Health</strong> (Mental Health Collaborative, Mental Health Clinical Network)</td>
<td></td>
</tr>
<tr>
<td>1. Patients with the DRG Schizophrenia seen by a community mental health professional within seven days after discharge from the same district mental health service provider.</td>
<td>$125 Electronic Data Increased to $200</td>
</tr>
<tr>
<td>2. Recording antipsychotic injection (depot) medication on iPharmacy for DRG Schizophrenia.</td>
<td>$30 Electronic Data</td>
</tr>
<tr>
<td><strong>Stroke</strong> (Stroke Clinical Network)</td>
<td></td>
</tr>
<tr>
<td>1. Acute stroke: patients with acute ischemic stroke receiving antiplatelet therapy within 48 hours.</td>
<td>$50 Manual Teleform</td>
</tr>
<tr>
<td>2. Acute stroke: patients receiving dysphagia screen (minimum requirement) within 24 hours.</td>
<td>$125 Increased to $300 Manual Teleform</td>
</tr>
<tr>
<td><strong>Emergency Department</strong> (Emergency Department Clinical Network)</td>
<td></td>
</tr>
<tr>
<td>1. All patients aged 65 years and over (or 50 years and over if ATSI) who are discharged from an emergency department to home or nursing home have evidence of communication back to the general practitioner (GP) or Local Medical Officer (LMO).</td>
<td>$60 Electronic Data</td>
</tr>
<tr>
<td><strong>Discharge Medication</strong> (Pharmacy, SMPU)</td>
<td></td>
</tr>
<tr>
<td>1. An eLMS Discharge Medication Record (DMR) is completed for adult patients who are 65 years and older with four or more medications, and paediatric patients who are 18 years and younger with four or more medications. (In the case of adult patients returning to Residential Aged Care Facilities or paediatric patients returning home, a Home Medication Administration chart is completed)</td>
<td>$50 Electronic Data</td>
</tr>
<tr>
<td><strong>COPD</strong> (COPD Clinical Network)</td>
<td></td>
</tr>
<tr>
<td>1. Pulmonary rehabilitation program meets an acceptable recommended evidence based standard.</td>
<td>$20,000 per district (once off payment) Manual Audit</td>
</tr>
<tr>
<td>- minimum eight weeks for exercise training</td>
<td></td>
</tr>
<tr>
<td>- multidisciplinary education</td>
<td></td>
</tr>
<tr>
<td>- minimum two exercise sessions per week</td>
<td></td>
</tr>
<tr>
<td>- evaluation of quality of life pre- and post-program</td>
<td></td>
</tr>
<tr>
<td>- exercise capacity pre- and post-program</td>
<td></td>
</tr>
</tbody>
</table>
2.4.5 **CPIP Payment Mechanism**

Phase One was formally allocated $8 million per annum. CPIC is not the fund holder; rather, funds are retained and allocated by the corporate finance branch and allocated to districts on the advice of CPIC twice yearly. No unsecured funding is able to be rolled over into the next financial year. The Payment Mechanism Flow Chart can be viewed in Appendix 2 “CPIP Payment Mechanism Flow Chart.

To receive payment, the clinical networks or clinical policy areas involved in the scheme bear the responsibility to provide aggregated de-identified data on indicator achievement to the CPIP scheme every six months (April–September and October–March). This involves a request to the participating clinical areas for validated data to be submitted in an aggregated form within one month of the data cycle (May and November) ending. No audit is undertaken by CPIC regarding the accuracy or quality of the data provided; achieving clinical indicators is demonstrated within a trusting environment. CPIP was intended to act as a carrot, as opposed to a stick, to build trust and engagement in the monitoring of quality.

CPIC uses the aggregated data submitted to calculate payment amounts for clinical areas or hospitals within districts. Once payments secured are calculated, a formal submission for approval is made to the Resources Executive Committee identifying payments due to districts. These payments are then transferred by finance as part of the operating budget funding. Payments are transferred as a total lump sum payment to districts in July and January of each cycle as a post-budget adjustment (PBA) under a single line item such as: “New Funding 08/09 Transfer from CC 702120 to ‘District’ being CPIP indicators Oct 08 to Mar 09 CPIP, Non-Reccurrent”.

CPIC is responsible for informing district CEOs, CFOs and Clinical Directors of CPIP payments secured. It also informs State-wide clinical networks. Coordinators of the clinical networks or policy areas then circulate the payments secured information to clinicians within their networks. Memorandums are written in a congratulatory tone. An extract from the template targeting CEOs and CFOs is:

*The Clinical Practice Improvement Centre (CPIC) would like to congratulate
‘example’ Health Service District and Clinicians for securing $x in CPIP. The CPIP is for the period of October 2008 to March 2009 data collection period. We encourage*
this payment to be used to support the ongoing achievement of non recurrent clinical practice improvement activities and professional development of QHealth clinicians.

The template further encourages that funds be correctly allocated to the clinical areas responsible for securing the funding. For example:

The correct allocation of the incentive payment to the appropriate clinical units will encourage the ongoing engagement of clinicians in this quality improvement scheme.

Once payments are transferred to the district budgets, CPIC has limited influence or formal control over the tracking down or following up of these payments. CPIP Business Rule 9 identifies that correct allocation of funding from the district budget to the clinical unit cost code requires local resolution. As such, only basic advice can be provided to clinicians regarding payment dates and the amounts secured and transferred. Essentially, once funds are transferred to the district, the correct allocation of funds is reliant on the CFOs and local finance managers.

2.4.6 Phase Two

Phase Two commenced in April 2009 and will continue until September 2010. This phase of CPIP enhanced, retired, and introduced a new range of clinical indicators which were eligible for payment, plus a small revision was made to the CPIP Business Rules to provide greater clarity. The rules now provide a greater emphasis on the role of the clinical network and the use of the CPIP funds secured, and they encourage systems within districts for the local tracking of CPIP funding. In addition, information was provided regarding the adoption of continuous improvement methods. These Phase Two changes to clinical indicators and the revised business rules can be viewed in greater detail in Appendix 3 CPIP Phase Two.

It is important to note that the original ‘settings’ for the design of CPIP, the process of identifying appropriate clinical indicators, and the actual CPIP payment mechanism have remained unchanged. The changes made to Phase Two prior to the results of this formal evaluation were part of an informal ongoing improvement process that has resulted in incremental tweaking of the program. This is the reality of a constantly changing health service environment.
2.4.7  **Post-Pilot Phase**

The Post-Pilot Phase of CPIP will commence in October 2010 and continue for a further three years following recent endorsement by the QHealth Executive Resources Committee to continue funding at $8 million per annum. The recommendations elicited from this research will target this phase. The recommendations will be made within a professional approach of accountability that aims to ensure that this ongoing investment is maximised for impact and outcome on improving the quality of health care delivery within QHealth.

2.4.8  **Summary**

CPIP was implemented into QHealth and is an incentive scheme that rewards achievement of clinical indicators that have been developed and endorsed by the clinical network of policy group. Clinical indicators are formulated to enable variation in clinical practice to be measured and monitored. Demonstration of the clinical indicator achievement secures a payment being made to the clinical unit responsible for the clinical activity. The CPIP scheme, including payment schedule, are governed by a series of business rules that identify the roles and responsibilities of different stakeholders and clarify that funding is non recurrent and should be used for ongoing clinical improvement activities within the district. Four phases of the scheme have been identified for the purpose of this study.
Chapter 3  Literature Review

3.1  Introduction

The focus of this literature review is a systemic analysis of the emergence of P4P-type programs in the health care setting. The aim is to synthesise and critique the literature to enable a conceptual framework and a series of evaluative questions regarding the QHealth CPIP scheme to emerge. Two major themes are reviewed in this chapter. Initially, the concept of quality and its multifaceted domains are discussed. This is followed by examination of the causes of variation in health care process. The second theme involves a comprehensive examination of the P4P literature in healthcare including the clinician attitude aspect. This literature is then applied to produce a conceptual framework for this research and the identify core research questions.

3.2  Health Care Systems that Cause Harm

Health is a powerful political concept that is synergised by the media and public interest. This politicisation of health has evolved within a complex context of unrelenting costs versus a scarcity of available resources; variation in the quality of available health care and outcomes; and recognition that access, or lack of therein, has a significant negative impact on individuals, families, and society as a whole.

The health status of individuals and populations, based on data such as life expectancy and child mortality rates, are indicators used globally to assess and monitor the social progress of society (Lee, Buse & Fustukian, 2002). Over the past 100 years, there has been a significant increase in life expectancy and a decrease in fertility in western societies as a result of improvements in household income, education, nutrition, contraception, hygiene, housing, water supplies, and sanitation (Preker & Harding, 2000).
In competition with this progress, the evolution of society has given rise to a modern day threat to our health status: health care systems that actually do us harm (Preker & Harding, 2000). Acknowledging this fact has facilitated dialogue and a degree of transparency about health care quality and safety problems (Sheu, Wei, Chen, Yu & Tang, 2009). It can be argued that healthcare is safer than ever for society due to health reform activity over the past 20 years; however, the ability to measure this harm has highlighted safety and quality issues within the system. The highly regarded Institute of Medicine (IOM) landmark report, “To Err is Human”, is credited with breaking the silence around widespread systemic quality and safety problems, such as medication and surgical errors, and their consequences (Kohn, Corrigan & Donaldson, 2000). The report quantified the impact of these fundamental quality and safety flaws by estimating that ‘98,000’ people died annually as a consequence of medication errors in America. Five years after its release, Leape and Berwick (2005) identified that it “…truly changed the conversation” (p. 2384). It highlighted the high level of avoidable error in healthcare that is a consequence of systemic failings, rather than individualised problems. It stimulated a broad array of stakeholders to engage and collaborate on improving patient safety, and motivated hospitals to adopt new safe practices.

The public exposure and quantification of unexpected negative events, or ‘adverse events’, as a direct result of receiving healthcare has continued to be reported since the release of “To Err is Human” (Kohn et al., 2000). For example, an estimated ‘80,000’ catheter-related bloodstream infections that are potentially related to ‘28,000’ deaths per year occur in US Intensive Care Units (Baily, 2008). Generally, the estimated risk of harm from receiving healthcare is over 10% (Brennan et al., 1991; Wilson et al., 2005). This is higher in some studies such as the 1995 “Quality in Australian Health Care Study” (QAHCS), which identified a 16% risk of harm, including permanent disability and death, associated with admission to hospitals (Wilson et al., 1995). A New Zealand admission record audit demonstrated that 12.9% of hospital admissions were associated with an adverse event (Davis et al., 2002). More recently Scott (2009b) estimated that adverse events in the Australian healthcare system affect one in 12 admissions, causing approximately ‘4,500’ deaths and cost $2 billion annually. Interestingly, however, a study in Massachusetts, USA, that interviewed ‘2,582’ patients recently discharged from 16
acute care hospitals found that one in four hospital patients experienced an adverse event. This patient perspective rate is higher than the hospital rates estimated above (Fowler et al., 2008).

The consequences of adverse events and health system dysfunction are significant costs to both the individual and family harmed and to the health system. The New Zealand study, identified above, estimated that although only 15% of the total adverse events caused permanent disability or death, there was a significant impact on hospital workloads with adverse events adding an additional nine days on average to length of planned hospital stay (Davis et al., 2002). This is a slight increase on the seven days of additional length of stay estimated in the Australian study (Wilson et al., 2005).

Efforts to improve the quality of health care remain a challenge and major problems endure (Berwick, 2005; McGlynn et al., 2003). Urgency exists due an aging population which will increase the prevalence of non-communicable chronic conditions such as diabetes, dementia, cancer, and cardiovascular disease. The burden of chronic disease and population growth is expected to double the number of hospitalisations in QHealth over the next 15 years (Department of Health, 2007). Legitimate concerns are being raised that the existing hospital-centric health care system with its known quality and safety concerns will not be able to survive (Hickie, 2009). Care is delivered through systems that are too complex, uncoordinated, fragmented, and slow. There are gaps in coverage; poor information flow and loss of information; and care is often not timely, safe, or appropriate (Institute of Medicine, 2001). The challenge is to address this within the context of significant burden of disease, which will place significant stress and increased cost pressures on the health system.

### 3.2.1 Defining Quality in Health Care

The IOM definition of quality, which has been consistent for over a decade, is:

*The degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge* (Chassin & Galvin, 1998, p. 1001).
An emerging critique of this definition is that, although broadly valuable, the roles, responsibilities, and obligations of each stakeholder and the determination of what is a ‘desired health outcome’ need to be further developed. Adoption of a patient-centric view of ‘quality’, which determines how well the health care obligations to the individual patient by the provider and institution are accomplished, is suggested (Wharam & Sulmasy, 2009). In essence, ‘quality’ is about improving the system and this requires a multifaceted approach along a range of dimensions or domains (Runciman, Merry & Walton, 2007).

Six Domains of Quality (See Box 3.1 below), were defined and highlighted in the IOM report “Crossing the Quality Chasm: a New Health System for the 21st Century” (Institute Of Medicine, 2001). These domains include safety, effectiveness, patient and family centeredness, timeliness, efficiency, and equity. Some have argued that a seventh aim, appropriateness, should be included as it relates to the decision about performing or omitting an intervention based on the evidence (Cooperberg, Birkmeyer & Litwin, 2009). However, this may have a strong overlap with the domain of effectiveness.

Box 3.1: Six Domains of Quality

<table>
<thead>
<tr>
<th>Six Domains of Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>Safety</strong>: minimise errors and avoid injuries.</td>
</tr>
<tr>
<td>2. <strong>Effective</strong>: achieve intended health outcomes.</td>
</tr>
<tr>
<td>3. <strong>Patient centered</strong>: respective, participative, and responsive health care that is patient and family centric and values individual preferences.</td>
</tr>
<tr>
<td>4. <strong>Timely</strong>: reduction of waits for treatment with minimal delay between diagnosis and treatment.</td>
</tr>
<tr>
<td>5. <strong>Efficient</strong>: cost-effective care that reduces waste within the system.</td>
</tr>
<tr>
<td>6. <strong>Equitable</strong>: no variability in quality irrespective of race, gender, socioeconomic, and geographic location.</td>
</tr>
</tbody>
</table>

(Cooperberg et al., 2009; Institute Of Medicine, 2001; Madhok, 2002)

### 3.2.2 Variation in Clinical Practice

Three key factors underlie quality and safety problems in health care and are addressed by the domains of quality. They are: misuse, overuse, and underuse of
health care (Chassin & Galvin 1998). This tripartite categorisation defines ‘underuse’ as the failure to provide health care, such as the failure to immunise; ‘overuse’: where potential for harm exceeds the benefit, such as prescribing antibiotics for a cold; and ‘misuse’ as preventable complications, such as an incorrect dose of medication (Chassin & Galvin, 1998). ‘Misuse’ is viewed as a safety issue whereas ‘overuse’ and ‘underuse’ can be addressed through strategies to improve clinician practice and ensure that it is consistent with evidence-based medical knowledge (Kohn et al., 2000).

Significant effort has been made to understand and reduce levels of variation and hospital-related harm stemming from these the factors of ‘overuse’ and ‘underuse’ (Runciman et al., 2007), which fundamentally underlie the variation in health care practice. Variation in clinical practice is a principal factor related to poor health care outcomes or poor quality health care that causes adverse events. It occurs when there are significant gaps between what is known in the evidence and what occurs in practice and this is a global problem (Ward et al., 2007). The gaps exist because health clinicians have variable latitude when providing care and are able to decide who to treat, for what, and how (World Health Organisation, 2000). Many studies exist that identify a lack of clinical compliance between the evidence and actual practice (McGlynn et al., 2003).

This issue of variation in practice of front line health workers results in significant differences in health care outcomes and costs. Despite a rapid emergence of scientific knowledge about health care, health care delivery is not reliably evidence based. Significant effort is made by the global research community to enhance how society can prevent, promote, treat, and rehabilitate health conditions such as cancer, cardiovascular disease, and mental health. The increasing complexity of science and technology and advances in knowledge in the 21st Century society is unprecedented. The investment is vast and it was estimated in 1998 that there were over ‘10, 000’ random controlled trials annually (Chassin & Galvin, 1998). In the decade since, there has been ongoing growth in research, published peer-reviewed literature, and technological advances. Each year, worldwide, there are thousands of clinical trials undertaken to determine and improve the existing evidence base and find effective treatments to improve patient outcomes. Unfortunately, in this
information age, analysis of this research and implementation of these new ideas into health care is highly variable and unpredictable (Grol, Wensing & Eccles, 2005).

These rapid advances in health knowledge and technology make alignment with evidence-based practice challenging. Consequently, the incorporation of evidence into practice does not occur in a timely or reliable manner (Shojania & Grimshaw, 2005b). Implementing knowledge and technology into the healthcare system is slow and impeded. This is not from lack of effort, intelligence, or unwillingness on the part of clinicians; it is just not possible for individual clinicians to review, process, adapt, and retain the breadth and depth of knowledge required to undertake contemporary evidence-based practice in all situations. As an added complexity, research regarding effective interventions can be difficult to interpret given sophisticated statistical and sampling methodologies (Institute of Medicine, 2001). Individual clinicians are unable to remain abreast of the substantial and ever changing evidence base and medical technology. This is particularly valid in a health care culture that was formulated with the basic assumption of an omnipotent doctor who is ‘all-knowing’ or, in Latin, Praesente medico nihil nocet: in the presence of a doctor, nothing can harm.

3.2.3 Strategies to Address Variation

The need for quality improvement initiatives in health care is now unreservedly accepted at all levels of the system (Grol et al., 2004). Early empirical evidence is that traditional approaches to improving the quality of healthcare, such as certification (accreditation), are failing or are slow to improve standards of care (Scott, 2007). A wide array of new generation quality-improvement programs, differing in size, strategic intent, and financial commitment has been implemented to reduce adverse harm. This willingness to try different things, including the adoption of techniques used to minimise error in other high risk industries, such as aviation, has resulted in a variable range of quality terms. These include continuous quality improvement, total quality management, best practice, benchmarking, stakeholder values, balanced scorecard, risk management, evidence-based decision making, six sigma, lean thinking, leadership enhancement, disease management, and managed care (Grol et al., 2004; Isouard, Messum, Briggs, Mcalpin & Hanson, 2006). New organisational management approaches to improving quality have seen the
application of strategic management or organisational ecology literature to guide new understandings of the health care context (Hannan & Carroll, 1992) This literature views health care organisations as ‘complex adaptive systems’ (Grol et al., 2004) and has theoretical groundings in advanced studies of biological systems such as the flocking of birds and the building of termite nests (Holland, 1992; Institute of Medicine, 2001).

The ability of these quality improvement techniques to gain traction and attention is hindered by competing systemic priorities that are contaminated by the politicisation of health and escalating demands on clinicians. Many quality improvement programs struggle with instigating, maintaining, and sustaining change within health care systems. Even the term ‘evidence-based medicine’, which is highly talked about, has failed to propagate change (Braithwaite, Runciman & Merry, 2009). The difficulty is that although clinicians want to improve patient outcomes they can become overwhelmed by change, see no clear purpose in change, or have serious concerns about how change is implemented (Gollop, Whitby, Buchanan & Ketley, 2004). Moving forward is complicated and will most likely be iterative (Fernandopulle et al., 2003). The enormity and difficulty of addressing the challenges hindering tangible improvements in quality health care should not be underestimated. There are no easy or quick solutions and it is quite likely that required health system reform will be generational and multilayered.

3.3 Pay–for-Performance (P4P) in Health Care

3.3.1 Introduction to P4P

The previous section of this literature review highlighted that even despite significant efforts made to improve health care performance, the ability of these strategies to positively impact and reduce variation is difficult and challenging (Griffith et al., 2006). The urgency to reform health care systems has propagated a search for new methods of improvement. Pay-for-performance in health care is an experiment that aims to reduce variation in clinical practice and achieve policy objectives. Although controversial, it has been adopted in countries such as the United States of America
and the United Kingdom (Boxall, 2009) and has gained significant momentum over the past five years.

Generically, this new methodology it is known by terms such as pay-for-performance: P4P, PfP or pay-for-quality: P4Q. For ease of reference the term P4P or P4Q will be used. Conceptually, P4P in health care is not new; casemix, gain sharing, and managed care are forms of P4P. In these cases, providers of health care have been encouraged to meet productivity and efficiency targets for over 20 years (Conrad & Christianson, 2005). Differentially, linking quality of care indicators to bonus payment was a catalyst for the recent emergence of P4P programs.

P4P is emerging from a background of developing new health care funding methodologies, improving the use of data to measure and monitor quality and performance, and seeking new and innovative methods to improve the quality of health care systems. The IOM “Quality Chasm” report articulated that a perceived barrier to clinicians’ adherence to guidelines was the lack of financial incentive to do so (Institute of Medicine, 2001). As such, it is understandable that P4P is emerging as a new trend. Research is required to determine the most effective design features to maximise the potential of such schemes to change and improve the quality of health care delivery.

The path of this subsequent discussion, which specifically focuses on P4P, intends to navigate through a set of themes. Initially, the overarching systemic realignment of health financing with quality improvement will be examined. This is followed by discussions regarding P4P’s implementation status across the US, UK, and Australia; the empirical evidence; a “P4P Design Variable Matrix” that explores conceptual design features; and a review of clinicians’ attitudes to P4P.

### 3.3.2 Reforms in Health Financing

Health financing arrangements need to influence with the delivery of high quality care. P4P methodology is being incorporated into the design of health funding arrangements as a supply side strategy to reform health funding systems. The aim is to align payment with value (Rosenthal, 2008). These changing payment arrangements have arisen in parallel with international concerns about the quality of
health care and are designed to introduce financial incentives or rewards to promote improved service and reward high quality care provision (Committee on Redesigning Health Insurance Performance Measures, 2007; Ward et al., 2007). Payers who are supporting the implementation of P4P are motivated by reducing health care costs and improving the efficiency of care (Sikka, 2007). An early hypothesis suggests that P4P can increase preventive care (underuse), decrease overuse, and promote adoption of evidence-based practice (Benko, 2003). Theoretically, these improvements in quality as a result of such programs would outweigh the reduced costs through improvements in quality (Fendrick & Chernew, 2006). The research, however, is lacking in determination of the costs of participating in such schemes by the providers of care let alone assessing the cost advantages gained by participation and flow on improvements in quality.

This payment reform is a move from passive purchasing, where there is a simple payment for costs incurred and historical-based budgets, to strategic purchasing, where attempts are made to maximise health system performance through financing arrangements (McNamara, 2006). Historical-based budgets or fee for service can increase the quantity of services provided regardless of quality and per capital payments (McLoughlin & Leatherman, 2003; Milgate & Bee Cheng, 2006; Peterson et al., 2006). The delivery of poor quality of care under these traditional arrangements has no impact on the financial salience of organisations delivering that defective health care. The risk is that payments are made on resource costs as opposed to good quality outcomes that benefit society. There is known extreme variations in treatment patterns by hospitals and providers. The evidence demonstrates that hospital performance under traditional models of fee for service is below acceptable standard (Ferman, 2007b). In essence, in traditional funding arrangements, even defective outcomes are paid for without penalty.

Health financing strategies to improve the quality of health care are now being directed towards demand- and supply-side mechanisms. The demand-side strategies target consumers of health care and aim to encourage consumers to only seek high value and benefit options, provide consumers with health care provider report cards to ensure that they can make informed choices on care, and increase the ability for consumers to self-manage and navigate the health care system.
In contrast, supply-side mechanisms encourage risk sharing and promote pay-for-performance systems where providers adhere to specific standards (Rosenthal, 2009). This supply-side risk ensures that the provider of health care takes on greater responsibility to deliver services of a certain quality at a set price and that the purchaser finances the arrangement and maintains a level of accountability (Hicks & Adams, 2001). Financing systems are beginning to incrementally change in nature and encompass the non-payment of what is termed a ‘never event’. These are defined as rare, preventable errors and complications (Rosenthal, 2008) such as surgery performed on the wrong patient or wrong body part. This pay-for-performance approach to funding or rather ‘no pay for no performance’ is likely to grow in popularity because it increases the risk on the supplier, given that they will lose funding if a never event occurs.

3.4 P4P Implementation Status

P4P has evolved significantly in the past decade; there are now over 170 P4P schemes in the United States alone (Scott, 2007). The adoption has been eager; however, some of the early research which was critical of different design elements ensured that a wide variety of approaches and blueprints for P4P have developed internationally. The concept of financial incentive payment programs is now well established in the United Kingdom primary health care sector. In Australia, the model has been implemented into the primary health care sectors and QHealth is piloting the Clinical Practice Improvement Payment (CPIP) scheme. These international models vary, but in general encompass payment for reporting, participating, following accredited care pathways, achieving outcomes, and performing at an above-average level against set benchmarks. The following provides a broad overview of the implementation status within the United States, the United Kingdom, and Australia.

3.4.1 The United States (US)

The United States is the predominant leader in pay for performance. The IOM “Quality Chasm” report (2001), which analysed the quality concerns with the delivery of health care in the US, made significant recommendations for a fundamental change in payment methodologies to recognise and reward quality (Beauieu &
Horrigan, 2005). Although the US had some experience with paying incentive payments at the individual physician level, this report was the catalyst for accelerating the emergence of incentive payments linked to hospital performance (Ferman, 2007b).

In 2003, United States federal legislation paved the way to implement performance-based Medicare payments. In 2004, the US introduced the Medicare Modernization Act to oversee, administer, and monitor financial incentive payments to hospitals to report on 10 quality indicators (Epstein, 2006; Milgate & Bee Cheng, 2006). Aligned with this legislative support, The Centers for Medicare and Medicaid Services (CMS) and Premier healthcare alliance™ launched the groundbreaking Hospital Quality Incentive Demonstration project (HQID) that used a Composite Quality Score (CQS) to establish financial incentives and penalties as well as public recognition for the best and worst performers. The project commenced with five clinical conditions that included: heart bypass (coronary artery bypass graft), heart attack (acute myocardial infarction), pneumonia, hip and knee replacement, and heart failure. Evaluation findings from the first and second year of this demonstration project were very positive and reflected substantial improvements, including a reduction in variance in the five clinical conditions that the study encompassed (Charlotte, 2006).

A more recent 2006 report, “Rewarding Provider Performance: Aligning Incentives in Medicare” (Committee on Redesigning Health Insurance Performance Measures, 2007), suggested a significant uptake of P4P in the private health sector in the US. Perhaps indicating an even wider uptake, Ferman (2007) outlined that almost every private hospital in the US has incorporated components of P4P.

3.4.2 United Kingdom (UK)

In comparison to the US—a conglomeration of health care systems with a variety of health insurance benefits, which are influenced and regulated at state and federal levels—the UK has a nationalised, centrally driven health care system called the National Health Service (NHS). In 1991, the UK introduced a P4P program at the primary health level to encourage immunisation and pap smears. In 2004, the NHS committed £8.1 billion in additional funding over three years for incentive payments for general practitioners (GPs) for the new General Medical Services Contract:
Quality and Outcomes Framework (QOF). GPs were targeted by this scheme and are able to increase their income by up to 25% when prescribed indicators are met. Initially, there were 147 indicators, which were revised to 128 in 2008, covering 10 long-term conditions. If QOF clinical indicators are met—for example, setting up a disease registry or reducing cholesterol levels—GPs earn ‘quality points’, which are weighted according to the workload required for each indicator. Each quality point is worth a dollar value, which, in 2008, was equivalent to A$260.

The program continues today and is well embedded into the culture of primary care (Ashworth & Jones, 2008; Doran et al., 2006). Evaluations of the program have been positive with substantial increases in some of the rewarded activity. The UK is currently considering the introduction of pay-for-performance into its acute hospital settings.

### 3.4.3 Australia

The main Australian literature about P4P is related to the CPIP scheme run by QHealth, which was outlined in Chapter Two. The Australian Government uses incentive payments, administered by Medicare, to improve the health of Australians through the General Practice Immunisation Incentive (GPII), and the Practice Incentives Program (PIP) (Australian Government, 2007). In 2008, the Council of Australian Governments (COAG) implemented bonus payment scheme for achieving performance benchmarks in prevention and promotion (Boxall, 2009). There has been recent public debate about using performance pay for teachers in public schools, and a recent report by the Australian Council for Educational Research (ACER) has supported a national pilot on standards, performance assessment, and certification in view of the potential of such a scheme to enhance performance. The initial obstacle the education system has to overcome is how to implement and what to recognise as highly accomplished teaching (Ingvarson, Kleinhenz & Wilkinson, 2007). Similar debate has not occurred in regards to implementing such an incentive model into the Australian health care system, possibly because the payment has not been targeted at individual clinician performance yet.

P4P is definitely on the agenda in Australia with a number of recent recommendations to adopt the methodology. The New South Wales Independent
Pricing and Regulation Authority (IPART) supported a trial similar to Queensland’s CPIP scheme (NSW Independent Pricing and Regulation Authority, 2008). Also, the concept of including an incentive component in funding arrangements to improve the outcomes and efficiency of hospitals has recently been endorsed by the National Health and Hospitals Reform Commission (NHHRC) final report, “A Healthier future for all Australians”, as part of ‘Recommendation 95’(National Health and Hospitals Reform Commission, 2009). In addition to supporting the adoption of casemix budgets, or fee-for-service, as the primary mode of funding, the recommendation is expanded to include a role for incentive payments to reward good performance in outcomes and timeliness of care across all health care settings. These incentive payments are conceptualised to target all health care settings including clinical education, and it is suggested that payments should take into account the cost of capital to achieve this good performance.

3.5 Evidence for Pay–for-Performance (P4P)

There is limited research to determine if P4P programs improve quality (Frolich, Talavera, Broadhead & Dudley, 2007) and a degree of uncertainty exists regarding the ability of this method to improve hospital efficiency (Scott, 2007; Scott, 2009). The literature predominantly provides an overview of the design features of individual program structures from early adopter sites. These papers include discussions regarding the political, philosophical, and academic drivers of P4P as opposed to robust research about the effectiveness of the strategy to change clinical practice or reduce variation. It is anticipated that over the next five years the evidence base regarding effectiveness from well regarded trials will expand. There are fewer than 20 robust studies around the world on the effectiveness of P4P in general and these are demonstrating random positive, negative, and inconclusive findings (Committee on Redesigning Health Insurance Performance Measures, 2007). No studies on the effectiveness of P4P programs within the Australian public health care setting were found. Peer reviewed publications and reports that focus on determining the effectiveness of P4P in the health care setting is described below.
In 2001, the early stage of P4P implementation, a report was developed for a round-table discussion of the Global Health Workforce Strategy. It noted the following key points: that the response of physicians to economic incentives follows directions expected in theory—incentives improve performance, incentive structures are becoming more complex, insufficient evidence exists on the effects of incentives on health workers other than physicians, and incentives need to be viewed in a broad context in order to understand their constraint and success factors (Hicks & Adams, 2001). The evidence used for this report was gathered in the 1990s when the programs were relatively simple and research focused on single indicators.

The significant uptake of P4P in the US was related to early positive research findings such as one study that reviewed 86 Blue Cross Shield of Michigan hospitals that had implemented a P4P strategy. The study concluded that there was a positive response to incentives, and 75% of hospitals made structural and process changes as a result of payments. No literature identifies any change in clinical outcomes. Analysis of this finding determined factors of success were related to a high level of involvement from the management board, strong engagement with medical staff, and competitive motivation to increase financial benefits and increase market share (Reiter & Et al, 2006).

Over the past few years the trials and research have become more sophisticated in line with the nature of emerging P4P programs growing in complexity. Not all of these later studies have been as positive. A comparative 2007 study reviewed quality of care and outcomes in acute myocardial infarction (AMI) in 54 hospitals that were participating in pay-for-performance-type programs in comparison to 446 control hospitals who were participating in a voluntary quality improvement initiative. The finding was that the P4P program was not associated with any significant incremental improvement in quality of care for AMI, but that there were no adverse effects either (Glickman et al., 2007). Analysis again reflected that further detailed research is required to understand the exact impact of features of incentive programs before definitive conclusions can be made regarding the effectiveness of pay-for-performance programs.

A number of notable papers have meta-reviewed the status of the evidence by comparing and analysing a number of independent studies. Peterson (2006) led the
way and examined 13 of 17 pay-for-performance studies (of both physician and provider-group levels) and found that incentive programs required further monitoring, as a critical task, to determine the effectiveness of financial incentives, their possible unintended effects on the quality of care, and their cost effectiveness.

In a paper by Scott (2007), 17 P4P studies—of which 12 were controlled trials—were reviewed. The findings in the controlled trials identified that quality gains were modest, such as a 3.6% increase in cervical cancer screening rates and a 7.9% increase in rates of smoking status determination. The five uncontrolled trials indicated that the effects of the P4P experiment were promising; however, as no baseline research had been undertaken, pre- and post-comparisons were unable to be made. The scarcity of valid P4P cost effectiveness studies was noted (Scott, 2007).

Schatz (2008) reviewed 7 randomised trials and 15 non-randomised trials. Only half of the randomised trials and all but one of the non-randomised trials showed positive results. Research integrity problems identified small sample sizes, selection bias, and lack of control of confounders. The outcome summary of the review identified that P4P can improve quality markers; however, this is very dependent on the design of the program, incentive size, providers, patients, and concurrent interventions. The features of success that need further exploration are that incentives were sufficiently large, measures were open to change, and the populations targeted were receptive. Interestingly, the success of a program was enhanced when partnered with additional strategies such as feedback and public reporting mechanisms, guidelines, and information system enhancements (Schatz, 2008). Again, more research was encouraged, particularly with robust research design methodologies.

A 2009 comprehensive review of the recently published literature had stricter inclusion criteria and elicited only eight studies worth reviewing. Disappointingly, all eight were seen as having methodological flaws such as no clear control group. This review of the evidence raised more questions than answers: what is the difference in costs versus the level of improvement, given a risk of unintended consequences; would greater rewards lead to greater effect; is it worth the investment; and what is the opportunity cost of investing in these schemes as opposed to other quality improvement interventions? Consequently, further evaluation is needed to identify

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the benefits, risks, and costs of such programs (Mehrotra, Damberg, Sorbero & Teleki, 2009).

As noted at the start of this section, the evidence in relation to P4P programs is limited but growing. In summary, the more recent evidence demonstrates some, but inconclusive and mixed findings. The strength of P4P’s approach is its potential to rapidly produce improvements in quality at the frontline of clinical practice (Peterson et al., 2006) and P4P has the ability to change medical practice (Garber, 2005). The risk is that without good design or lack of clinician engagement, the concept will flounder (Scott, 2007). Cautiously, research advises that P4P as a quality improvement strategy is relatively untested and needs to be treated with some watchfulness by governments and health clinicians. The mixed evidence has not dissuaded the P4P champions.

3.6 P4P Design Variables

The limited P4P evidence has been used to adapt and change existing programs to account for unintended and unexpected outcomes. The design and development of P4P programs differ greatly in structure and size, and there is no clear support for one design over another. Some authors suggest that successful design and implementation is dependent on local context and the organisation’s history, culture, trust, experience, leadership and motivations, and levels of consumer engagement (Young, Conrad & Fallat, 2007). As such, these factors need to be considered in the design and evaluation phases of P4P schemes.

The major lessons for P4P design features were consistent among the literature referenced at the end of this paragraph. They included the following:

- Implementation should start with a phased or pilot approach.
- Clear identification of variation in performance and the availability of systems to measure and monitor this performance are required.
  - If systems for measuring quality are imperfect technically, miscalculations can occur in incentive reward amount.
• Good communication is vital and there is a need engage clinicians and leaders in the organisation as key stakeholders—engagement with stakeholders can be difficult.

• Limited understanding of how incentive payments work can reduce effectiveness.

• It is preferable that the incentives are aligned with clinical values.
  o This is assisted if the indicator is salient, clinically sound.

• Payments that perversely affect performance should be avoided (this is a gap in the literature).

• Concerns over data accuracy and validity were escalated

• Unintended aspects of P4P such as data gaming that have an adverse effect on the validity of hospital administrative data sets (for example, just ticking the box) should be avoided.

• Gaming can also influence the inequitable patient selection where certain patients are prioritised due to an increased chance of payment (avoiding sickest patients).

• Audit and checking processes need to be in place to counteract adverse gaming consequences.

• Greater than expected changes in clinical practice can be achieved, meaning that the program can be more costly to implement than conservative estimates of uptake; hence, cap payments should be in place.

• Additional value is gained through public reporting of quality scores and incentive payments.

(American College of Physicians, 2005; Audit Commission for Local Authorities and the National Health Service in England, 2005; Conrad & Perry, 2009; Doran et al, 2006; Endsely et al, 2004; Felt-Lisk, Gimm & Peterson, 2007; Ferman, 2007a; Harris, Georgiou & Powell Davies, 2004; Integrated Healthcare Association, 2006; Kuhn, 2005; Milgate & Bee Cheng, 2006; Peterson et al., 2006; Reiter et al, 2006; Rosenthal & Frank, 2006; Sage & Kalyan, 2006; Schatz, 2008; Scott, 2007; Strunk & Hurley, 2004; (Young, Burgess Jr & White, 2007).
The empirical evidence has guided the development of conceptual decision-making framework with a range of options for P4P program design. The ‘P4P Design Variable Matrix’ outlined in Table 3.1, can guide P4P design development and review. The concept was originally sourced from an internal UK Audit Commission report, but has been further adapted to incorporate lessons identified in the P4P literature. The matrix choices are not mutually exclusive, in particular for the type of indicator chosen (Audit Commission for Local Authorities and the National Health Service in England, 2009). The details of each level are discussed below.

Table 3.1: P4P Design Variables Matrix

<table>
<thead>
<tr>
<th>Source of funding</th>
<th>Sliced</th>
<th>New Budget</th>
<th>Penalty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target of payment</td>
<td>Clinician/Physician</td>
<td>Clinical Unit</td>
<td>Organisation</td>
</tr>
<tr>
<td>Performance target</td>
<td>Structure</td>
<td>Process</td>
<td>Outcomes</td>
</tr>
<tr>
<td>Maturity of indicators</td>
<td>Quantity/count</td>
<td>Quality: Composite</td>
<td>Quality: All or none</td>
</tr>
<tr>
<td>Reporting analysis</td>
<td>Absolute (suits pay-for-reporting)</td>
<td>Proportion (suits pay-for performance)</td>
<td>Statistical Process Control (advanced monitoring)</td>
</tr>
<tr>
<td>Assessment</td>
<td>Competitive</td>
<td>Non-competitive</td>
<td>Improvement</td>
</tr>
<tr>
<td>Payment method</td>
<td>Bonus</td>
<td>Penalty</td>
<td>Continuous</td>
</tr>
<tr>
<td>Use of payment</td>
<td>Private individual use</td>
<td>Invest in further Quality Improvement</td>
<td>Professional and workforce development</td>
</tr>
</tbody>
</table>

### 3.6.1 Source of Funding

The specific source and size of the funding should be determined at the start of the process. The options are to slice from the overall health budget, find a new source of revenue or separate budget, or establish a penalty system (Conrad & Perry, 2009). This will determine the size and complexity of the program, number of indicators to
be included, and the size of the incentive payments. Incentives need to be right size to invoke response (can be small; for example, 1% of episode of care payment). If incentive payments are too small it may not be worth pursuing. Health care organisations may be more inclined to implement quality and safety initiatives if compensation or better payment is received as a result of successfully implementing the required changes (Leatherman et al., 2003). Alternately there is a behavioural economic argument related to ‘loss aversion’ where penalties are more likely to induce a response (Conrad & Perry, 2009; Kahneman & Tversky, 1979; Town, Wholey, Kralewski & Dowd, 2004; Tversky & Kahneman, 1986).

3.6.2 Target of Payment?

In some cases, P4P models pay just the clinicians whereas others pay the team, clinical unit, or the organisation. Ideally, the payment should reach the person, clinical unit, or the organisation responsible for the achievement. This is a determination of the unit of accountability (Young, Conrad et al., 2007). A supporting mechanism should exist to ensure that the payments are received by the target.

3.6.3 Performance Target

Deciding on what clinical indicators to measure is a significant element within the design. P4P programs have the capacity to ‘cut the implementation corner’ and reduce the delay between the production of robust evidence and the actual change to clinical practice (Ashworth & Jones, 2008). Preferably, indicators should capitalise on this and target known areas of variation from the evidence and clinical practice. Preferably, indicator measures need to be well developed and incentives need to be linked to established infrastructure of measures, data collection tools, and feedback that already exist. Desirable patient outcomes and knowing what processes need to occur to achieve these outcomes will assist in determining indicators (Himmelfarb, Pereira, Wesson, Smedberg & Henrich, 2004).

As a measure of quality, the indicators need to be evidence based, scientifically sound, clinically relevant and endorsed by clinical leaders, high volume, improvable, feasible to collect, cost effective to collect, sensitive to change, reliable, and statistically stable (Campbell, Brasperenn, Hutchinson & Marshall, 2004). The broad
options for indicators include paying for structural, process, or outcomes indicators. Some outcomes will be more variable than others (e.g. rare outcomes), could contain more statistical noise, and hence be viewed as more unfair. Additionally, some valuable areas of clinical practice are unable to be captured, such as the doctor-patient interactions (Ashworth & Jones, 2008).

### Maturity of Indicators

Indicators need to mature and change over time and, consequently, there is a need for a robust and transparent system for managing this change. As these indicators evolve, the definition of quality should expand. Measurement needs to advance from identifying the ‘easy fruit’, which can be demonstrated by a count measure alone (Ashworth & Jones, 2008), towards payment for monitoring more complex aspects of the care process. Information technology availability is imperative to these decisions.

When simple counts or single indicators are used, the risk is that payments can be made on the quantity rather than the quality of intervention (Strong, South & Carlisle, 2009). To reduce this risk, a suite of clinical indicators can be endorsed and monitored to capture a number of elements of the care process. When numerous process clinical indicators are selected within the one care process that is being monitored, different approaches can be applied to determine how they correlate and what the meaning is. This can include reporting ‘item by item’ or ‘composite or all-or-none measurement’ (Nolan, 2006). ‘Item by item’ is the lowest benchmark of achievement, whereas ‘all or none’ requires a series of processes to occur to be eligible for a mark of achievement. These types of approaches to the analysis of clinical indicator data can determine how the indicators are reported to reflect the quality of the health care delivered. The data generated can be used to compare care, reward, penalise, monitor, or benchmark through methods such as league tables or public reports (Campbell et al., 2004).

### Reporting Analysis and Payment Formula

Reporting of indicator performance can occur at the basic absolute level; for example, 10 cases. There are significant limitations of this method. This can be used as a starting point if implementation is phased and suits a ‘pay-for-reporting model’.
Over time, as a scheme matures, it is preferable for the program to move towards true pay for performance. For true P4P, the indicator performance needs to be reported as a proportion of achievement, which enables comparison across months for individual units or benchmarking. This is also known as the ‘pay out’ formula (Young, Conrad et al., 2007).

Statistical Process Control (SPC) enables timely monitoring and identification of variation in process indicators. It is a statistical tool that permits visual feedback, tracking, and reporting of process indicators through robust statistical techniques. Dr Shewart pioneered SPC methods in the 1920s within the industrial and manufacturing settings. The value of SPC is being able to identify common cause variation and special cause variation and investigate the causes in real time (Chetter, 2009).

Common causes are related to elements such as time of day or patient complexity. When a process is visually demonstrated to be stable following statistical analysis and only exhibits common cause variation, the process is said to be in ‘statistical control’. However, if ‘special cause’ variation is present, then the process is said to have deviated from the expected scope of variation in the process. This means a major change in the process exists, or a non random event has occurred and this requires an investigation. It highlights that something unusual is occurring in the process. In context, not all ‘in control’ processes are desirable or reflective of a good process. It means it is stable, has minimal variation, and is not changing over time (Fasting & Gisvold, 2003).

SPC is simple to use and enables learning and understanding about the process being evaluated through use of control charts. Control charts are a line graph that generally involves a centreline and upper and lower control limits often set at three standard deviations from the centreline. There are a variety of control charts that can be used such as P Chart, X-Chart, Q Chart, CUSUM chart, or S Chart (Hart, Robertson, Hart & Lee, 2004). SPC can help to:

- determine if the process is stable and sustainable
- determine if an implemented improvement has changed a process
- understand the variation in any process
• identify opportunities for improvement
• detect trends in complex (time-series) data
• use data to make predictions (when process is in control).
  (Chetter, 2009; Fasting & Gisvold, 2003).

SPC enables monitoring of improvements in efficiency and reducing waste, and
supports the revision of unnecessary complexity in work systems (Cruickshank,
Isouard, Irwin, Madison & Chandler, 2006). The purpose is to demonstrate the
quality of health care processes and outcomes by enabling performance and
progress to be assessed, trends to be identified and tracked, variation and
opportunities for improvement to be identified, and quality of care to be monitored.
Furthermore, SPC enables the effect of changes implemented to be assessed and
allows similar health service organisations to benchmark (Mainz, 2003).

3.6.6 Assessment of Performance

Decisions are required to determine whether you pay only the top deciles of
performers, pay for marked improvement or performance above an identified target,
or just pay for the reporting of the indicator. This aspect defines the complexity of the
incentive payment scheme: simple pay for reporting is easier to achieve than
attaining a performance target that requires statistical and comparative computing.
(Committee on Redesigning Health Insurance Performance Measures, 2007;
Himmelfarb et al., 2004; Scott, 2007; Young, Conrad et al., 2007).

3.6.7 Payment Method

Once the budget and size of incentives are determined, a system for payment should
be developed and the payment recipient identified. The choices are bonus, penalty,
or continuous payment. Cap payments should be used to reduce the risk of going
over budget if greater than conservative estimates of uptake are achieved.

Incentives need to be paid on a timely basis as the reward needs to be closely
aligned with behaviour (Ferman, 2007a). The rules for payoff need to be known in
advance: how does the money get paid; does it trickle in continuously; is it paid as a
lump-sum bonus annually or quarterly? Or, contentiously, are cost-of-case payments
not paid if indicators are not achieved and funds then reallocated to sites that are performing well? This latter option is more aligned with the use of penalties in addition to incentive. Rewarding and reinforcing positive behaviours is valuable, but both rewards and penalties have an important role in quality incentive design. It has been suggested that the use of penalties can enhance financial sustainability (Ferman, 2007a).

The payments system should be flexible and responsive to which value can be added by comparing the funds secured to the economic cost analysis of administering and reporting the program. No literature was found demonstrating the cost of collecting clinical indicators. Programs may be strengthened by demonstrating that the investment in recording quality indicators yields an acceptable return.

### 3.6.8 Use of Payment

The one area lacking in the literature is information available about how to use the payments, such as for ongoing investment in quality improvement initiatives, once secured by a clinical unit. The reason for this absence may be that a large number of P4P programs pay incentives to the individual clinician; for example, payment to the physician in the US and the general practitioner in the UK. As such, this is seen as crossing into the private domain of personal incomes and is not examinable. However, in situations where the incentives are secured by a public clinical unit or organisation, it is likely that this aspect will be of great interest; strategies need to be developed to ensure that guidance is available regarding the use of this funding.

### 3.7 Clinician Attitudes to P4P

#### 3.7.1 Introduction

P4P is contentious (Boxall, 2009). Evidence has shown that engaging clinicians in the design and implementation phases of the program and the development of clinical indicators is an important to the success of P4P programs (Meterko et al., 2006). The literature regarding the problems and concerns about the quality of care internationally indicates that appealing to a clinician’s rationality or altruism, or
relying on their own knowledge base, is not a reliable means of ensuring that clinicians follow evidence-based practice and standardised paths of clinical care. Out of disillusionment or lack of success with this approach, the concept of creating extrinsic motivational strategies, such as incentives for achievement of performance targets in the health care sector, has emerged. This strategy has been borrowed from the private sector where paying financial incentives, in return for, or as a motivator of, high performance is common.

3.7.2 Extrinsic Motivation

The aim is to create a link between performance and funding in health care (Boxall, 2009). Generally, the concept of P4P in health involves paying financial incentives for delivering higher quality care. The quality of care is ‘assessed’ via the measurement of pre-agreed and endorsed clinical and/or performance indicators. This financial payment is made to individual clinicians (predominantly medical physicians), clinical groups, or hospitals. The goals of such programs according to the Committee on Redesigning Health Insurance Performance Measures (2007) are to encourage rapid and feasible performance improvement, support innovation and constructive change, and promote better care outcomes. This is possible because such a program relies on the theory that incentives can be an effective motivator for certain predictable responses or behaviours, and increased reward for a good service will stimulate further production of that element (Committee on Redesigning Health Insurance Performance Measures, 2007).

The theories and conceptual framework underlying the role of financial incentives in health care are from several academic disciplines. There is significant literature related to contingent reward and pay for performance program in the general management literature. The scope of this doctorate however is the role of P4P in the contemporary health care setting. However, to ensure this rich theoretical background is acknowledged a brief overview of the literature is provided below.

The relationship between financial incentive and employee motivation and performance has a long history (Jenkins, Mitra, Gupta & Shaw, 1998). This lays the foundational context for understanding P4P and its exact mechanisms for creating change in clinician and organisational behaviour (Conrad & Perry, 2009; Frolich et
al., 2007). Expectancy theory research demonstrated a positive association between financial incentives and task performance in 1976 (Campbell & Pritchard, 1976). In 1986 Jenkins (1986) demonstrated a positive relationship between financial incentives and performance quantity. More than a decade ago the general management literature was asking questions such as – are organisations wasting their money through use of financial incentives and are such schemes eroding motivation. To answer these questions a meta-analysis of the financial incentive literature was performed. It concluded that there was a positive relationship between financial incentives and performance, a need for incentive systems to be carefully designed and that they should be an integral component for managing organisational behaviour and human resources (Jenkins et al., 1998). While the role of incentives on individuals has been comprehensively examined, the impact of group rewards is less understood (Zenger & Marshall, 2000). The strength of group based rewards is that non financial measures of team performance such as consumer satisfaction and quality can be rewarded at the smaller unit level of organisations (Eccles, 1991). Group payment plans enable the implementation of P4P in settings where paying individuals, such as public health care settings, is a challenge (Cooper, Dyck & Frohlich, 1992; Petersen, 1992).

In summary the literature has identified that psychological and management theories both predict a strong correlation between an individual’s extrinsic motivation and financial rewards, but further research on the impact of financial rewards in group settings is required. While intrinsic motivation relates to an individual being motivated to undertake an activity for no reward other than internal drivers such as personal satisfaction, extrinsic motivation is related to being provoked to achieve by an external influence such as money or public exposure (Frey & Osterloh, 2005; Osterloh, Frey & Frost, 2001).

P4P in health aims to model this experience and has begun to explore how financial incentives can play a role as an extrinsic motivator to enhance performance and improve desirable outcomes (Rosenthal, Fernandopulle, HyunSook & Landon, 2004). While there is a significant empirical evidence base regarding the relationship between incentives and performance, there has been limited study on the relationship in the public health care setting (Benabou & Tirole, 2003; Fehr & Falk,
2002; Van Herpen, Van Praag & Coops, 2005). What is being tested is the relationship between quality health care and incentives, and whether paying incentives stimulates the production of high quality health care products and services.

### 3.7.3 Contentious Attitudes

Perspectives and views on P4P are variable and at times dramatically emotive. As noted earlier by Boxall, P4P is contentious (2009). Critiques of the P4P concept and underlying philosophy extend across a spectrum from high promise and excitement to distrustfulness and uncertainty. The distrust is related to a correlation between the payment and potential corruption, or a pessimistic belief about the motivations of clinicians. An example of an emotive response is displayed by a letter to the editor of the Journal of the American Osteopathic Association (JAOA) which includes statements that P4P may work well in “...clinics that are operated as ‘cattle calls’ (i.e. fast food medicine) ” and "...the P4P initiatives are not going to make ‘non-hand washers’, suddenly start washing their hands, and I see the P4P initiatives taking away a good physician’s ability to practise medicine because the initiatives may have the effect of turning practitioners into administrators—administrators who follow the rules, regulations, and by-laws to the detriment of a patients unique medical issues, or who use a one-medicine-fits-all approach" (Porcelli, 2008).

A major theme regarding negativity to P4P, or “the dark side of P4P”, as coined by Weber (2005), is the perceived threat to the clinician’s autonomy, which is about the discretion of clinicians to apply their own best judgement. Other concerns include gaming of the system by over or under recording events to create a false advantage, and internal value conflicts with a view that it is unethical to receive money for what you should be doing (Larriviere, 2008; Weber, 2005). Another example of this attitude is “…I found myself dumfounded that we had to be paying people for doing what they should be doing…” (Weber, 2005, p. 24), and in a recent Australian newspaper article, Stephen Lewis outlines that the premise of P4P is that we can’t rely on organisational culture, professionalism, devotion to public service, or commitment to excellence to improve our health care system and furthermore “[H]ealthcare that takes its cues from Chicago School economics and the MBA culture imperils its values, practitioners and patients” (Lewis, 2009, p. 11).
3.7.4 Engaging Clinicians

Clinicians are key stakeholders in the delivery of pay-for-performance programs. This is a major finding of the US based Rewarding Results (RR) National Evaluation Team which evaluated 7 different types of P4Q programs for their effectiveness at incentivising providers to improve quality of care (Young et al., 2005). Engaging clinicians is essential at all stages of the design and implementation of P4P to catalyse successful results. The clinician needs to trust the program, have knowledge of the clinical indicators, and know how payments can be secured (Folsom, Demchak & Arnold, 2007). As such, it is important to be aware of the potential for perceived negativity so that communication strategies are able to be developed to assist in the trust building stages.

Assessment of attitudes allows problems and issues with the P4P to be identified early in the scheme of implementation. Illustrating this point, the assessment of clinician attitudes was theorised by Meterko et al. (2006) as advanced “intelligence” to identify problem areas and could enable incremental adjustments to newly implemented P4P-type programs. Waiting the lag time for determination of actual impact to emerge is not desirable. Given this hypothesis, a tool to assess attitudes was required as a gold-standard valid, reliable, or responsive tool to measure such a concept did not exist (Meterko et al., 2006).

3.7.5 US Validated Attitude Survey Tool

The evaluators of the Rewarding Results demonstration embraced the opportunity to develop such an instrument to assess physicians’ attitudes towards financial incentive programs. The study team included a physician, an economist, a psychologist, a former health plan administrator, and health services researchers. The development and validation testing of this tool, including the detailed literature review, is described in a detailed article by Meterko, Young et al. (2006). The correlation between successful, positive stakeholder engagements with clinicians and the attitude held by the clinician towards the scheme was the starting point for the identification of an early conceptual framework. This framework included hypothesising the components of a clinician’s attitude required for effective uptake of
P4P programs (Meterko et al., 2006). The following outlines the process of developing this tool and applying it in a research study in the US.

A pilot instrument was developed to appraise the attitudes of physicians. An initial draft survey was formulated after an extensive review of the literature and in consultation with leading experts. The literature review examined work regarding the motivation and capability of physicians to change their practice behaviour to adopt innovation and adhere to clinical guidelines and best-evidence practice. Initially, seven key attributes were hypothesised to correlate with the concept of ‘attitude’:

1. awareness and understanding of the incentive program
2. salience of the financial incentives
3. clinical relevance of the quality targets
4. control over the resources needed to achieve the quality targets
5. fairness in the administration of the incentive program
6. frequency and nature of performance feedback provided
7. possible unintended consequences associated with the quality targets (Meterko et al., 2006).

The themes underlying these attributes are now described. First, motivation to participate is linked to awareness of the clinical indicators being used and an understanding of how the program works and how payments are made. Second, assuming this awareness and understanding exists, the financial salience—or the payment amount versus cost, time, and effort to achieve the indicator—is a key factor in participation. Third, the clinical indicators should reverberate with clinicians and be judged as clinically relevant, based on contemporary evidence, and have demonstrated positive impact on patients. In addition, unintended consequences, such as detractions from other important elements of patient care, need to be negated. Finally, the locus of control in regards to achieving the clinical indicator should sit with the clinician; the quality target should be achievable; and feedback regarding an achieved indicator should be transparent, regular, and frequent to enable independent monitoring. Yearly feedback was viewed as inadequate (Meterko et al., 2006).
The initial draft pilot questionnaire contained 50 items, with a minimum of five questions per each domain outlined above. The study team methodologically reviewed and modified the questions and primary-pilot tested it with physicians from three sites, who completed the survey then provided a verbal debrief to the study team. This feedback facilitated rewording or depletion of questions and reduced the tool to a 26-item questionnaire for initial-pilot psychometric testing. From the sample of physicians, 798 pilot questionnaires were returned: a 32% response rate. Basic descriptive statistics were used and items were scored as ‘strongly agree’ (5), ‘agree’ (4), ‘neutral’ (3), ‘disagree’ (2) and ‘strongly disagree’ (1) with unintended consequences questions being reverse coded so that a higher scored correlated to a favourable attitude.

The experimental results from the broad pilot resulted in the psychometric properties being supported following factor analysis, multi-trait analysis, and construct validity testing to determine the validity and reliability of the multi-item scales. Items were correlated within their own domain and then between other scales (convergent and discriminate validity). Three questions were deleted from the core survey, reducing it to a 23-item tool, for reasons such as failing the discriminate validity criterion. Sample sizes for reliability of domain were determined with a minimum of n=22.3 for awareness and understanding and n=148.4 for financial salience (Meterko et al., 2006). In discussion of the results, a positive relationship was reflected between the hypothesised domains and the proposed conceptual model of ‘attitude’.

The findings were consistent with literature relating to physician adherence to clinical guidelines. The scales were shown to support the hypothesis that the attitudinal measures were statistically significant in their ability to predict the physician’s perceived impact of financial incentives. The study was limited by representativeness given a small sample size and 32% response rate. Future research opportunities were identified; in particular, the correlation of actual validity of measures against the success of program. For example, direct assessment of individual attitude versus individual achievement of clinical indicators. Additionally, the internal consistency reliability of the financial salience and control indicators could be improved through the addition of more items. In conclusion, the tool was proven to be robust and
replicable and able to measure physician attitudes towards P4P programs in a valid and reliable manner (Meterko et al., 2006).

3.7.6 Massachusetts and California Attitude Survey

The above–described, now-validated psychometric survey tool, which was developed to assess attitudes towards P4Q programs, was subsequently used in a large and systemically conducted survey of physicians from Massachusetts and California, US. The aim of the research was to determine the concerns of physicians currently participating in the scheme and to assist in the future development of such schemes. The two US states noted above were chosen because they both had significant experience with P4Q programs, with California having had significant experience with financial risk arrangements, and this was hypothesised to either enhance or diminish their support for P4Q programs (Young, Meterko et al., 2007).

The 23-item attitudinal assessment tool consisted of 7 revised scales following pilot testing. These were:

1. awareness and understanding;
2. financial salience;
3. clinical relevance;
4. control;
5. cooperation;
6. unintended consequences; and
7. impact on quality.

The survey tool was enhanced and tailored to each specific physician audience with customised lists of quality targets as a reference point for the survey. In addition, demographic and generalised attitude questions were added. A same five-point reference table was used for all attitude questions as in the pilot study (Young, Meterko et al., 2007).

The physician’s final score was the computed average of their scores ‘strongly agree’ (5), ‘agree’ (4), ‘neutral’ (3), ‘disagree’ (2), and ‘strongly disagree’ (1); unintended consequences questions were reverse coded. The individual questions were grouped into their domains. For each of the seven scales, a mean score and
confidence intervals for all physicians in each state was calculated. Application of t-tests followed to assess variation between the two states (Young, Meterko et al., 2007).

Overall for this study there were ‘1,243’ respondents, which was a response rate of 32% for Massachusetts (n=554) and 38% for California (n=689). In relation to the general attitude questions that were separate from the validated 23 items, physicians reported positive attitudes toward P4Q, and more than three quarters agreed that high-quality care provision should be financially rewarded. In addition, there was support that P4Q had the potential to improve quality of health care.

On the seven domains, physicians from both states were most positive, on average, towards the clinical relevance of the quality targets and lack of unintended consequences. The lowest scores were for awareness and understanding, impact on care, and financial salience of the incentive. There was a statistically significant difference in scores between the states for the scales of clinical relevance, financial salience, and control. The physicians from California had more favourable scores in all three cases. No specific demographic or practice variables were related to results. There were some differences dependent of specific quality targets, but for each quality target the pattern of scores was almost identical. Further detail of the descriptive statistics is outlined in Table 3.2 “Experience-based attitudes towards P4Q: Descriptive statistics”, below. (Young, Meterko et al., 2007).
Table 3.2: Experience-based Attitudes Towards P4Q: Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>California M</th>
<th>California SD</th>
<th>Massachusetts M</th>
<th>Massachusetts SD</th>
<th>Difference M</th>
<th>Difference SD</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness</td>
<td>2.88</td>
<td>0.79</td>
<td>2.79</td>
<td>0.75</td>
<td>0.852</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salience</td>
<td>2.55</td>
<td>0.79</td>
<td>2.24</td>
<td>0.7</td>
<td>0.002</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relevance</td>
<td>3.99</td>
<td>0.73</td>
<td>3.78</td>
<td>0.82</td>
<td>0.014</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>3.17</td>
<td>0.85</td>
<td>2.97</td>
<td>0.87</td>
<td>0.059</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooperation</td>
<td>3.08</td>
<td>0.86</td>
<td>2.98</td>
<td>0.78</td>
<td>0.229</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No unintended consequences</td>
<td>3.83</td>
<td>0.86</td>
<td>3.85</td>
<td>0.83</td>
<td>0.88</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impact</td>
<td>2.45</td>
<td>0.68</td>
<td>2.34</td>
<td>0.66</td>
<td>0.199</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.7.7 Future Application of Attitude Tool

In discussion, Young and Meterko et al. (2007) outline that those physicians surveyed were neither affected or disaffected nor fully engaged in the programs. The general attitude towards the programs was high and there was a belief that the programs could improve the quality of health care. A disaffected or negative attitude was not dominant in the responses. This supports policy makers pursuing this strategy without expecting strong resistance. There was strong support for the quality targets. Nevertheless, the findings did show that there was a level of ambivalence that could potentially affect engagement, and there was some concern over the potential for unintended consequences. Also there was negativity in regards to their awareness of the programs, the impact of the programs, and the financial incentive payment specifics. The respondents also experienced a lack of control over the targets and their ability to achieve the cooperation of support staff and peers.

The caveats of the research were an inability to generalise findings nationally as the survey was undertaken with physicians who had significant exposure to P4Q programs and response bias. Overall attitudes were seen to be positive towards P4Q but some concerns existed with design and implementation elements (Young, Meterko et al., 2007). These findings support the future use of the validated tool in other contexts that have implemented P4P programs. This tool has the ability to illicit rich information regarding the likely effectiveness of such schemes given the correlation towards clinician support and uptake.
3.8 Implications of Literature Review

3.8.1 Introduction

P4P schemes have been developed as a method to reduce the variation in health care outcomes in a climate of rising costs associated with poor quality care being delivered. The commencement of this review identified that health systems cause adverse harm that can be reduced or avoided with improvements in the quality of health care. The consequences of these adverse events and health system dysfunction are significant costs such as increases in length of stay and burden of disease. The causes of quality and safety problems in health care are multifaceted. Specific causes include variation in clinical practice and failure to adopt evidence-based medicine by frontline health workers. This delivers significant differences in health care outcomes and costs.

Quality improvement research is an emerging science. There is a lack of knowledge about interventions that are effective, specific, and valid. This has translated to a large scale failure to improve health care quality. Health care systems must be reformed urgently due to an increased demand for health care and this has generated a search for new methods of improvement. P4P in health care is a new experiment that aims to reduce variation in clinical practice and bring payment in line with value (Rosenthal, 2008). This was the motivation behind the introduction of the CPIP scheme as outlined in Chapter 2. CPIP was aligned with the introduction of casemix into QHealth and a need to ensure the new funding model valued safety and quality.

P4P programs continue to be implemented internationally as a driver for improved quality of care. The effectiveness of such programs is inconsistent. The quality of the limited research available is questionable; hence, there is a need for further research with robust and well designed methodologies (Christianson, 2007). The justification is that these programs involve significant financial costs and there is a reasonable risk of unintended consequences (Schatz, Blaiss, Green & Aaronson, 2007). P4P research over the next decade should deliver a greater scientific understanding of key aspects of these programs: the ideal size of incentive payments required and what quality measures should be rewarded, cost effectiveness and cost benefits of
such schemes, length of time that incentives are required to be in place, unintended consequences, and the impact when financial incentives are withdrawn.

There is a vastness of research opportunity in relation to the CPIP scheme. Given the focus of this research is on Phase One, which is the first and second year of implementation, health services evaluation research is ideal. This will ensure that the program is being delivered as planned within the context of QHealth and will assist to identify areas of risk and the potential impact of the program on improving the quality of health care (Scott, 2007). The focus of the evaluation will narrow to review the CPIP scheme against the P4P Variable Matrix and assess the attitudes and understanding of clinicians in relation to the CPIP scheme. A theme in the literature review was the lack of economic studies to determine the cost benefits of implementing quality. Specifically, there is a large research gap regarding the cost effectiveness of P4P-type schemes (Nahra, Reiter, Hirth, Shermer & Wheeler, 2006). This study will additionally aim to determine basic financial and economic costs of CPIP.

3.8.2 Conceptual Framework

A conceptual framework for the evaluation of the Clinical Practice Improvement Payment scheme in QHealth has emerged. Determining if clinical outcomes had improved due to CPIP was considered, but was deemed unfeasible given the program was in an early stage of implementation. Figure 3.1 below visually outlines this framework. The research will be conducted as an evaluation study within a Health Services Research frame of reference. The three broad areas of focus are:

1. attitudes of clinicians towards the CPIP scheme
2. assessment of CPIP against the P4P Design Variable Matrix
3. financial and economic costs of CPIP.

The following will provide an overview of each of these elements of the conceptual framework.
3.8.3 Health Services Research (HSR)

Health Services Research (HSR) is a broad term or framework used to encompass a range of scientific methodologies and approaches undertaken within the confines of health care settings. HSR is pursued as a form of enquiry to produce knowledge about the structure, delivery, and processes involved in the administration of health care services. It aims to create knowledge and evidence about health care systems that will lead to improvements in health service delivery (Dieppe, 2005). HSR is a new field of research in comparison to its medical science counterpart.

Increasingly, justification for the allocation of scarce health care resources has encouraged rational evidence-based decision-making approaches. HSR is the check and balance tool to ensure that this medical science knowledge and technology is implemented in a manner whereby health services are delivered in an effective, efficient, equitable, and acceptable manner. HSR is required in order to determine the differential features of quality improvement success and what factors are behind both the success and failure of strategies to promote evidence-based care (Shojania & Grimshaw, 2005a). In time, HSR will expand due to a need to contain costs in an environment of limited resources, address the growing concern of variation of care and explore why this variation occurs, and the need to exchange inappropriate practices with evidence-based care (Dieppe, 2005).
The scope of HSR is wide and variable. It is very appropriate for evaluation research in ‘real world’ environments such as QHealth. The influences are multidisciplinary and include medical, social science, economic, and business schools of thought. It encompasses organisation and services management research ranging from needs analysis, risk management, and workforce and services integration, to policy formulation and decision-making research, such as comparative health systems, technology assessment, and the effects of payment mechanisms on service use (North & Perkins, 2006).

### 3.8.4 Evaluation

The CPIP evaluation is informed by conceptualisations of quality in health care and, in particular, the research on P4P outlined in the literature review in this chapter. In designing the evaluation framework, a number of encompassing factors are considered. CPIP is essentially a large continuous quality improvement program with initial involvement of five clinical areas. Additionally, its development took place within a time period of intensive reform following an inquiry triggered by concerns over the quality and safety of health care delivery within QHealth. These reviews generated significant change and reform within the system which included a changing landscape of leadership, removing a layer of the bureaucracy, promoting clinical networks, improving governance frameworks, and developing service capability frameworks.

The broad goal of CPIP is to improve the quality of health care in QHealth; however, at this stage of implementation, it would be difficult to attribute any changes in health care quality to this initiative. Confounding would be a significant risk given that Queensland’s health care context is rapidly changing with multiple quality improvement strategies such as the formalisation of clinical networks, public performance reporting, and standardisation of care pathways being formalised and implemented.

### 3.8.5 Evaluation Theory

Evaluation is a scientific method of assessment that requires skill (Schweigert, 2007). It is an emerging profession and is conducted to improve program
effectiveness and efficiency. Quite broadly, it is about what gets done, how it gets done, and what makes the difference. Two main models of evaluation were reviewed to inform the development of an evaluation framework for this research: Stufflebeam (2003) and Hawe and Degeling et al. (1990).

Stufflebeam (2003), is a leader in the field of educational evaluation research and is responsible for the well regarded CIPP evaluation model. CIPP stands for four types of evaluation: context, input, process, and product evaluation, and while it was initially developed in the late 1960s, it remains relevant today following further development and adaptation for the contemporary circumstance. Context assesses needs, problems, and opportunities; input reviews work plans, budgets, and competing interests; process monitors, documents, and assesses activities; and product evaluation assesses short- and long-term outcomes and intended and unintended consequences of the program (Stufflebeam, 2003).

This research design engages a model of evaluation outlined by Hawe and Degeling et al. (1990) with some enhancements drawn from the Stufflebeam’s (2003) CIPP model process evaluation component. The focus of this chosen model is the health promotion context although it can easily be applied to health services research. Three types of evaluation—process, impact, and outcome—are described as part of an evaluation trajectory. This spectrum of evaluation sits within the well recognised planning and evaluation cyclic heuristic, which involves a revolving series of steps for program design and implementation. The cycle of steps includes needs assessment, planning, implementation, process evaluation–program redesign and reimplementation if required, assessment, impact evaluation, outcome evaluation, returning then to needs assessment. See Figure 3.2 below:
The process evaluation component is described as a stage in the planning cycle that enables a tweaking of program design and potential reimplementation. It is the first level of evaluation; it measures the strategies and activities of the project and whom it is reaching. The CIPP model shares this view; however, it is stronger in articulating a schema whereby process evaluation is an improvement activity that asks questions, provides judgments, and provides feedback or recommendations for strengthening the program. The foci of the process evaluation—which is also known as quality assurance evaluation, monitoring of program implementation, or a type of formative evaluation—is a review of the inputs to the program and a precursor to impact and outcome evaluation (Hawe et al., 1990). Basically, process evaluation is a necessary first step in evaluation. Ideally, it should occur before an impact or outcome evaluation because doing otherwise can lead to an early evaluation, where long-term effects are being assessed prior to it being determined that the program is running as it was designed to run (Fitz-Gibbon & Morris, 1987; Hawe et al., 1990).

Formative approaches are defined as gathering information to modify and improve the program. The assumption is that the program is ongoing and it is about assessing progress at different stages of a program’s implementation cycle. By and large, formative evaluation is not about ending or terminating a program (unless...
significant adverse findings are made); rather, it is undertaken with the intention to adjust and strengthen the given intervention. This is distinct to summative research, which is rather suited to impact or outcome phases of evaluation. Summative evaluation seeks to determine clear immediate outcomes at the end of a project or to assess the effect of a program (Kayrooz & Trevitt, 2006).

### 3.8.6 Target of Evaluation Recommendations

This evaluation research on the CPIP scheme is valuable as there is the potential for P4P programs to improve the quality of care (Scott, 2007). This is an interim evaluation being conducted in the second year of a three-year pilot. The timing is appropriate for this type of review of the program as the goal is to undertake an interim assessment at the pilot’s midpoint and provide a range of recommendations to QHealth to improve and strengthen the program as it moves into the post-pilot implementation journey. Valuable information can be provided by a formative evaluation, such as the financial reach of the program; early economic costs, participant satisfaction, response, or attitudes; and identification of barriers and road blocks to implementing the program as planned. Fundamentally, process evaluation asks if the program is reaching the right target and being implemented as planned. The target of the evaluation recommendations is the Post-Pilot Phase, which will commence in October 2010 as shown in Figure 3.3 below.

Figure 3.3: Target of Evaluation
3.8.7 Clinician Knowledge and Attitudes towards CPIP

The literature provided an overview of a tool developed to assess clinician attitudes towards P4P in the US. Understanding the attitudes of clinicians is an important element to help predict the impact of P4P programs. For a clinician to endorse CPIP clinical indicators the indicators needed to be in the control of the clinician and have clinician support. Hence, the attitudes of these clinicians towards CPIP would provide valuable advanced intelligence about the likely future impact of the scheme on reducing variation in QHealth.

This research is also interested in determining clinician attitudes towards the incentive scheme given the potential for it to be a contentious and ethically challenging concept. Especially given the scheme was implemented during a period of acute reform, there is a particular sensitivity to ensure that any new quality interventions are palliative and acceptable to clinicians. The US tool will be adopted for this research and enhanced with a set of questions that broadly enquire about the clinician’s knowledge of the CPIP scheme and the specific CPIP indicator.

3.8.8 Assessment of P4P Variable Design Matrix

CPIP has been implemented to motivate and encourage clinical areas to demonstrate their performance against clinical indicators. Despite the potential benefits of similar schemes to reduce variation in practice, the literature demonstrates a need for more empirical evidence regarding the most effective design of such programs. Prior to determining the effectiveness of CPIP, there is value in using the P4P Design Variable Matrix proposed in the literature review to assess the current status of the CPIP design and identify a potential trajectory for future program development. Table 3.3 below provides an overview of the current design features of the CPIP scheme highlighted in blue.
Table 3.3: *P4P Design Variables Matrix*

<table>
<thead>
<tr>
<th>P4P Variable Options: not mutually exclusive</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Source of funding</strong></td>
</tr>
<tr>
<td>Sliced</td>
</tr>
<tr>
<td>New budget</td>
</tr>
<tr>
<td>Penalty</td>
</tr>
<tr>
<td><strong>Target of payment</strong></td>
</tr>
<tr>
<td>Clinician/physician</td>
</tr>
<tr>
<td>Clinical unit</td>
</tr>
<tr>
<td>Organisation</td>
</tr>
<tr>
<td><strong>Performance target</strong></td>
</tr>
<tr>
<td>Structure</td>
</tr>
<tr>
<td>Process</td>
</tr>
<tr>
<td>Outcomes</td>
</tr>
<tr>
<td><strong>Maturity of indicators</strong></td>
</tr>
<tr>
<td>Quantity/count</td>
</tr>
<tr>
<td>Quality: Composite</td>
</tr>
<tr>
<td>Quality: All or none</td>
</tr>
<tr>
<td><strong>Reporting analysis</strong></td>
</tr>
<tr>
<td>Absolute</td>
</tr>
<tr>
<td>(suits pay for reporting)</td>
</tr>
<tr>
<td>Proportion</td>
</tr>
<tr>
<td>(Suits pay for performance)</td>
</tr>
<tr>
<td>Statistical Process Control</td>
</tr>
<tr>
<td>(advanced monitoring)</td>
</tr>
<tr>
<td><strong>Assessment</strong></td>
</tr>
<tr>
<td>Competitive</td>
</tr>
<tr>
<td>Non-competitive</td>
</tr>
<tr>
<td>Improvement</td>
</tr>
<tr>
<td>Attainment</td>
</tr>
<tr>
<td>Top tier</td>
</tr>
<tr>
<td>Most improved</td>
</tr>
<tr>
<td><strong>Payment method</strong></td>
</tr>
<tr>
<td>Bonus</td>
</tr>
<tr>
<td>Penalty</td>
</tr>
<tr>
<td>Continuous</td>
</tr>
<tr>
<td><strong>Use of payment</strong></td>
</tr>
<tr>
<td>Private individual use</td>
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<tr>
<td>Invest in further Quality improvement</td>
</tr>
<tr>
<td>Professional and workforce development</td>
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To enhance this assessment against the design matrix, further information regarding clinician knowledge of indicator achievement, receipt of funds, operational changes made and barriers to participation is required. Furthermore, the level of clinician support for the continuation of the scheme and recommendations for enhancing the scheme in the future will be sought.

There is value in reviewing the potential for SPC to be used routinely to monitor clinical process indicators, “Statistical Process Control (SPC) is a philosophy, a strategy, and a set of methods for ongoing improvements of systems, processes, and outcomes” (Carey, 2003, p. xviii). It is a tool that is increasingly being used in health care settings to monitor and improve the processes of health care. Essentially, SPC is a method of bringing order to data and enabling the measurement of improvements short term and long term. The collection and measurement of data is the
fundamental basis of SPC (Carey, 2003). To date, the use of this SPC analysis for CPIP has been limited and is not routinely used.

3.8.9 Financial and Economic Costs of CPIP

The literature identified that both economic and psychological theories predict a strong correlation between an individual’s extrinsic motivation and financial rewards (Frey & Osterloh, 2005; Osterloh et al., 2001). The role of economic modelling is rapidly growing within the health care sector. A small theme in the literature review was the lack of economic studies to determine the cost benefits of implementing quality. Broad reference has been made to P4P being a supply-side health financing reform strategy. To further understand and guide ongoing payment reform in health there needs to be a greater unravelling of the cost benefits of P4P methods. This is a much undeveloped field. One cost effectiveness study was found relating to P4P and heart related care indicators. This study used a principal agent model and improvements in care processes were converted into quality-adjusted life years (QALYs) (Nahra et al., 2006). This study was able to demonstrate that P4P was cost effective; however, to date, this study has not been cited elsewhere.

CPIP would benefit from a cost effectiveness study to enable a rational argument about continuation of the scheme. This evaluation study will provide the foundational work to support such a detailed CPIP economic cost effectiveness study in the future. This will include a review of costs to QHealth in terms of CPIP rewards secured and the use of a model to estimate economic costs of reporting the clinical indicator across Phase One of the CPIP scheme. This latter aspect will occur with only one clinical area (Mental Health) as a form of early pilot testing.

3.9 CPIP Evaluation Research Questions

Forming a research goal is essential to a well conduced process evaluation (Hawe et al., 1990). The goal for this study is to undertake a formative evaluation that makes recommendations to improve and strengthen the CPIP design and implementation strategy. This will be achieved through response to three broad questions and a series of sub-questions. The questions are as follows:
1. What is the knowledge, understanding, and attitudes of clinicians involved in Phase One (January 2008–March 2009) regarding the Clinical Practice Improvement Payment (CPIP) scheme?
   i. What are clinician attitudes towards CPIP (seven domains)?
   ii. What is the level of clinician overall understanding of how the CPIP scheme works?
   iii. What is the level of clinician knowledge regarding their CPIP clinical indicator?

2. What improvements can be made to the design, administration, and monitoring of the Clinical Practice Improvement Payment (CPIP) for the Post-Pilot Phase’ (October 2010–2013)?
   i. Does using SPC as a routine monitoring tool enhance the CPIP scheme?
   ii. Do clinicians perceive that they were able to achieve the clinical indicator?
   iii. Do clinicians perceive that they received the incentive payments secured?
   iv. In the case where a clinician perceives that they did not receive incentive payment, what was the reason why?
   v. If CPIP payment was secured, what is the clinician’s knowledge of this amount?
   vi. What did clinical areas use the CPIP funds for once secured?
   vii. Do clinicians perceive that operational changes were made in response to the CPIP scheme?
   viii. What were the barriers to participation in the CPIP scheme?
   ix. Do clinicians support continuation of the CPIP scheme?
   x. What enhancements do clinicians recommend for enhancing the scheme?

3. What were the financial and economic costs of Clinical Practice Improvement Payment (CPIP) scheme in Phase One (January 2008–March 2009)?
   i. What was the cost of incentive payments to the five QHealth clinical areas (Mental Health, Stroke, ED, COPD, Discharge
Medication) and Queensland health districts involved with Phase One?

ii. What were the economic costs of reporting the clinical indicator for the Mental Health clinical area for Phase One?

### 3.9.1 Summary

The overarching goal is to undertake research that is rigorous and robust (within the limitations of methodologies chosen) and to create new knowledge (North & Perkins, 2006). The three research questions outlined for this study aim to commence a theoretical discussion about the current design of the CPIP scheme and to provide recommendations on how this quality improvement intervention can be enhanced and strengthened in the future. The three planned studies, the research design, and methods formulated in response to the research questions will be detailed in Chapter 4 that follows. Chapter 5 will identify findings which will be discussed and concluded in Chapter 6 and 7.
Chapter 4  Research Design and Method

4.1 Introduction

This chapter describes the research design and provides detail of the methods used to collect and analyse data. A retrospective mixed methodology process was used to evaluate the pilot QHealth CPIP scheme. Evaluation research on this scheme has the potential to contribute, influence, and shape the adoption of a ‘payment-for-quality’ element into the QHealth funding formula. The research is formative as this is the first such research of a pay-for-performance-type program within the Australian acute and community public health setting.

4.2 Overview of Three Planned Studies

Three major research questions and a series of sub-questions for this study were posed at the end of Chapter 3. In response, three separate studies have been undertaken to provide data and information to address the research questions.

1. **Study One**: Administering of a self completed “Clinician Perceptions” survey with QHealth clinicians to capture the attitudinal and experiential complexities of implementing the Clinical Practice Improvement Payment (CPIP) scheme.

2. **Study Two**: Applying Statistical Process Control techniques to a selection of participating CPIP hospitals to identify trends and evidence of variation in demonstrable clinical indicator achievement.

3. **Study Three**: Undertaking a descriptive and economic analysis of financial payments and wage costs made to QHealth districts to assess costs of CPIP scheme.
4.3 Research Design

The research design is based on a Health Service Research (HSR) framework and uses a mixed methodological approach that is retrospective in nature. In general, research design describes how the research is organised and provides a systematic approach to achieving the research aims and objectives and outcomes (Kayrooz & Trevitt, 2006). The research design described in Table 4.1 provides an overview of the scope of the study, identifies the data collection, and identifies analysis methods and the data sources used to draw conclusions and make recommendations. It provides a heuristic road map to navigate the study.

<table>
<thead>
<tr>
<th>Theoretical Framework</th>
<th>Health Services Research</th>
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<tr>
<td>Research Purpose</td>
<td>Process Evaluation (formative)</td>
</tr>
<tr>
<td>Research Approach</td>
<td>Quantitative</td>
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<td></td>
<td>Qualitative</td>
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<td></td>
<td>(mixed-method complementarity)</td>
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<tr>
<td>Data Methods</td>
<td>• CPIP survey</td>
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<td></td>
<td>• Statistical Process Control Analysis</td>
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<td></td>
<td>• Financial and Economic Analysis</td>
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<tr>
<td>Data Source</td>
<td>• Survey of QHealth clinicians</td>
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<tr>
<td></td>
<td>• QHealth administrative data (de-identified clinical indicator data and CPIP financial records)</td>
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</table>

4.4 Method: Mixed Methodology

A mixed-method approach was adopted. Complementarity analysis of the results from each separate study will be used to determine whether the findings of each study are complementary or conflicted (Adamson, 2005). Quantitative and qualitative methodologies are used, hence the mixed methodology term. Although there are
significant differences between quantitative and qualitative research, neither one is better than the other, and both have strengths and weaknesses (Burns, 1997). A mixed-method approach was chosen with a confidence that it could bring strength and depth to the research findings and recommendations.

Data used to inform this research is both purposefully collected data and secondary data. In brief, Research Question One uses purposefully collected data through use of a survey tool and uses descriptive statistics to simply describe and explain the data as it is presented with the limitation that this analysis does not attribute the direction of associations (cause and effect) (Bowling, 2005). In addition comparison data from the attitude survey component uses a statistical test (ANOVA) to assess levels of variance in the data. The qualitative data from open-ended question responses collected in the survey is translated into a form of understanding through thematic analysis. Statistical process control (SPC), and simple economic cost techniques will be used in response to Research Questions Two and Three respectively. This data is sourced from existing data that is available. The specific tools for data collection and the methods of analysis used for this study will be discussed in further detail as this chapter progresses.

### 4.4.1 Complementarity

A complementarity, or ‘third way’, approach has been endorsed for discussing the findings of the mixed-method research. Each research question posed will be accompanied by an appropriate data collection and analysis methodology. No form of data will be preferred or dominant over another. In contrast, the findings will be seen as complementary and will be intermingled and contrasted in the discussion phase to create the evaluation discussion and elicit the recommendations for QHealth. As Adamson (2005) highlights the linking of mixed methodologies or combined designs is an emerging discipline that is receiving growing appreciation for the value it can offer to evaluation studies within a HSR setting.

The focus of complementarity analysis is different from triangulation; it supports the collection of information from a variety of perspectives. It identifies that benefits can be gained by viewing each data source as able to present a unique and different perspective. This technique can ideally enable a comprehensive snapshot of the
CPIP scheme to be gleaned for the purpose of the evaluation. Each method is seen to bring alternate information into view. When results are combined, this will present a more extensive and comprehensive understanding of the situation being researched (Adamson, 2005; Erzberger & Kelle, 2003).

4.5 Study One: CPIP Survey

The QHealth CPIP Survey is a self administered survey used to capture clinician attitudinal and experiential views of the complexities of implementation of the Clinical Practice Improvement Payment (CPIP) scheme.

Assessing the attitudes of clinicians towards CPIP is a valuable source of information regarding the impact such a scheme may have within the QHealth clinical environment. As noted in the literature review, perceptions of P4P methodologies are known to be variable and at times dramatically emotive. Hence, research regarding QHealth clinicians’ attitudes towards P4P-type programs will provide a context for determining what design features of the incentive program are most likely to be correlated with positive and negative outcomes. This is valuable information to know during the early QHealth CPIP implementation (Meterko et al., 2006).

The Clinician Practice Improvement Payment (CPIP) Survey, a self-administered survey tool to assess clinicians perceptions (see Appendix 4), was formulated to elicit the ‘voice of the clinician’ from the original five clinical areas participating in the CPIP scheme. Each survey was customised to a clinical area with a specific clinical indicator outlined at the front of survey. The survey contains 2 elements:

1. Understanding, Knowledge, and Support
2. US Validated P4P Attitude Tool

4.5.1 Understanding, Knowledge, and Support

The survey aimed to capture localisation and operationalisation of the scheme with the inclusion of single-item questions in order to respond to both Research Questions 1 and 2. These questions aimed to gather basic demographic data about
the base health district, occupation; determine how the clinician became aware of the scheme; to establish clinician knowledge of how the scheme was implemented, including who endorsed the indicator; and to determine knowledge of the clinician indicator specific to their area of speciality.

The qualitative aspect was added to enable respondents to explain their reactions and experiences. This enabled a richer contextualisation of the clinician’s perspective to be established in regards to the specifics of the CPIP research design. These open-ended questions included themes on why CPIP money was not received; use of funds received; operational changes made to achieve the clinical indicator; barriers to participating in the scheme; why the CPIP scheme should, or should not, be continued and expanded; and suggestions about how to improve the program in the future.

4.5.2 US Validated P4P Attitude Tool

The second element of the CPIP Survey included the tool developed in the US to assess physician attitudes- this consisted of 7 core scales that are correlated to 23 questions. Permission was sought in the first instance to use and adapt the survey developed and validated by the Rewarding Results National Evaluation Team. Email communication was initiated in November 2008 to Professor Young [Gary Young, Professor and Chair, Department of Health Policy and Management, Boston University School of Public Health, and Associate Director, Center for Organization, Leadership and Management Research, Department of Veterans Affairs]. The Professor was advised that the researcher was undertaking a Doctorate of Health Science through the Queensland University of Technology (QUT) in Australia. The focus of the doctoral study was an evaluation of a P4P-type program, in a public health service, known as the Clinical Practice Improvement Payment (CPIP). Information was provided that this scheme pays clinical areas rather than physicians or individual directly. A request was made to use the survey developed and adapt it to our context. An example of this adaptation is:

Q 28. I know the amount of financial incentive my clinical unit (l/my practice) will receive if I achieve the clinical indicator (quality target).
Professor Young was advised that the work would be correctly attributed and acknowledged in all documentation and any publication that is developed. Professor Young responded promptly that this was acceptable with no caveats on its use (see Appendix 6). Changes to the questions, to adapt the questionnaire to the QHealth context, are detailed below. In brackets are the original terms used in the US survey that have been interchanged for more suitable terms—which are noted in italic—to accommodate the focus of payment to the clinical unit, as opposed to the individual physician or practice, and the clinical indicator, as opposed to quality target.

1. **Perceived impact (6 items)**

   - I invest extra time and effort in the care of those patients who are the focus of this incentive payment.

   - I have changed my clinical practice (practice behaviour) to obtain this financial incentive (.) for our clinical unit.

   - Overall, my patients who are the focus of this incentive are getting better care.

   - I would be just as focused on this clinical indicator without the financial incentive.

   - Obtaining the financial incentive brings me favourable recognition from my peers (colleagues).

   - Achieving the clinical indicator (the quality target) helps me focus my time and effort constructively.

2. **Clinical relevance (3 items)**

   - The financial incentive aside, achieving the clinical indicator is good for our (my) patients.

   - The financial incentive is tied to an indicator (a quality target) based on best evidence (sound medical science).

   - The financial incentive is tied to an indicator (a quality target) that is clinically meaningful.
3. Awareness and understanding (5 items)
   - I have adequate information about how to earn the incentive payment (the scoring system used to compute the incentive amount).
   - I know the amount my clinical unit (I/my practice) will receive for achieving the clinical indicator (if I achieve the quality target).
   - I receive useful assistance in response to my questions regarding this clinical indicator (the quality target).
   - I get useful feedback regarding our (my) progress towards achieving the clinical indicator (quality target).
   - I have adequate information about the definition of the clinical indicator (quality target).

4. Cooperation (2 items)
   - I am able to get the cooperation of my clinical colleagues (other physicians) as needed in relation to achieving this financial incentive.
   - I am able to get the cooperation of administrative officer support staff as needed to obtain this financial incentive.

5. Unintended consequences (2 items)
   - The effort required to obtain this financial incentive has an adverse impact on other types of patients in my clinical unit (practice).
   - Efforts to obtain this financial incentive hinder me from providing other essential medical services to this group of patients.

6. Control (3 items)
   - Clinical areas (The physicians) are on a level playing field for obtaining this incentive.
   - The actions necessary to obtain this financial incentive are largely within my control.
• The data used to assess achievement of the clinical indicator (quality target) are accurate.

7. Financial salience (2 items)

• This financial incentive represents an opportunity to increase the funding available in our clinical unit (for me to appreciably increase my income).
• This financial incentive is sufficiently large to compensate for expenditures that might be necessary in order to meet the clinical indicator (quality target).

4.5.3 Survey Design

SurveyMonkey was selected for creating, administering, and storing the CPIP “Clinician Perceptions” survey. This management tool was selected following a review of a range of survey options which involved an analysis of software available through QUT and review of an existing QHealth Central Library subscription. The main reason that this survey tool was chosen was its ability to customise the survey and the ability to print a survey template which maintained online formatting and a professional look.

The survey was specifically designed and customised for this study. The goal was to create a clean and professional survey for the user. Individualised surveys for the specific clinical areas were printed off in colour for face-to-face offering. The electronic survey was enabled by the creation of collection links which were sent by email to potential survey respondents. The respondent only needed to click on the link and were then taken to the CPIP Survey. Where survey data was collected face to face, data was manually entered into the personal SurveyMonkey account and provided a secure password protected repository for this raw data.

4.5.4 Pilot Test of survey

The combined survey tool was formulated with a goal to ensure that the questionnaire was well constructed, easy to follow, and minimised problems during the analysis. In January 2009, the DRAFT CPIP survey was sent electronically to a selected group of 10 clinicians for their feedback regarding accessibility, ambiguity,
look, flow, and functionality. Revisions were made to fonts used, layout of questions, and wording and then returned for second review and finalisation. Significant consideration was given to the fact that clinician time is limited and time for completion would need to be less than 15 minutes.

Chronic Obstructive Pulmonary Disease (COPD) clinicians were the first large clinical group to be offered the finalised “Clinician Perceptions” survey within a face-to-face clinical forum setting. Following this inaugural data collection episode, the formatting and spacing were again revised, but all questions remained unchanged.

4.5.5 Information Provided to Informants

For both the face-to-face and electronic completion of the survey, the participants were provided with a ‘Participant Information for Research Project Information Sheet’ on a QUT letterhead. This information sheet (see Attachment 7) identified to the participant that the research was being undertaken as part of an internal evaluation of the CPIP scheme being conducted by the CPIC. Additionally, they were informed that the findings would contribute to a Doctorate of Health Science at QUT.

Participation was voluntary and a decision to participate, or not, would not impact upon their current or future relationship with QUT or QHealth. The decision of an individual not participating would not be commented upon. The once-off questionnaire completion was anonymous with the voluntary completion of basic demographic details such as professional background and district of employment. Name, experience, or direct role information was not collected for purposes of ensuring the anonymous and confidential nature of the survey. Participants were advised that they would not be able to withdraw their survey once submitted due to the anonymous nature of the tool. Participation in the survey had no direct benefits to the informant; rather, it was promoted as an opportunity to contribute to advancing the science of quality improvement. No risks beyond normal day-to-day living were identified. The return of the completed questionnaire was viewed as an indication of consent to participate in the project. Finally, contact details were provided for any questions that the participant may have either about the research, or, if they had any concerns or complaints regarding the research, the contact details for the QHealth and QUT Research Ethics Officers were provided.
4.5.6 Sampling Framework

The unit of analysis for the survey is the clinician. QHealth clinicians from the five inaugural CPIP clinical areas of Mental Health, Stroke, Discharge Medication, Chronic Obstructive Pulmonary Disease, and Emergency Department who were involved with Phase One of the CPIP pilot were targeted for the completion of the “Clinician Perceptions” survey. Data collection spanned December 2009 to June 2009. In general, the accessing of clinicians for data collection required the researcher to be flexible, but persistent and assertive.

Rather than sampling the entire QHealth clinical population, a subset of clinicians who attend the chosen forums or meetings were targeted for their likely knowledge of the CPIP scheme. This subset was the clinician membership of the Clinical Networks or Clinical Leader committees who attend the forums or meetings.

Use of a specific subset enabled purposeful sampling to be employed to recruit research participants for the face-to-face “Clinician Perceptions” survey. This non-probability sample method is suitable when seeking respondents who have specific knowledge of the subject (Kayrooz & Trevitt, 2006). Purposeful sampling enables the selection of cases based on a predetermined set of criteria (Carter & Henderson, 2005; Silverman, 2006). This is in contrast to a random sample, where members of the population have equal chance of being selected for the study, or convenience sampling, where the sample is gathered together and limited criteria are set regarding inclusion. Clinicians participating in clinical forums or meetings were an attractive option as they had specific attributes, which included clinician credentials and experience with CPIP (Silverman, 2006).

Participants were offered the self administered survey either by a paper version—face-to-face at clinical network forums and formal meeting opportunities, or by email to clinicians in Mental Health and Discharge Medication clinical areas. The opportunity for face-to-face completion of the survey was prioritised as a preferred option when recruiting for participants. The audience was viewed as being captive, and time and space was built into the meeting agenda to complete the survey. Specific time was given to the completion of the survey, except for the Mental Health forum due to a misunderstanding about time required.
Primary recruitment by electronic offering was risky given the environmental competition a clinician faces in the clinical environment. Clinical roles are demanding and busy, and time and access to computers may have been limited. Clinicians from only Mental Health and Discharge Medication clinical areas were chosen for this option due to low completion rates at the Mental Health forum and the low number of clinicians present at the Discharge Medication meeting. The approach to accessing informants was reliant on snowball sampling, whereby leaders or clinical network coordinators from the clinical areas forwarded the survey onto their clinical contacts. Snowball sampling is when members of a chosen population are difficult to locate, as was the case in this situation. Once the first point of contact is determined, referral is made by the point of contact to potential respondents. In this case, an email containing the link to the electronic survey was sent to the initial contact, who forwarded it out to broad contact lists.

4.5.7 Data Security

For security, the paper-based surveys collected for this study were stored at all times in a locked cabinet within the CPIC offices or at the researcher’s home office. The researcher was the only person with a key. Following manual collection, the paper-based data was entered into the password-protected SurveyMonkey software system.

Given a risk of human error during data entry, each entry was double-checked for correctness. A maximum of 30 minutes at a time was spent data entering. The software system did not allow for missing values and re-prompted these to be entered when the screen was closed. This ensured a completeness of data. Additionally, a random audit of 30 surveys was conducted to check for incorrect data entry. In only one case were values observed to be incorrectly entered and this was corrected.

Following the completion of the data entry stage of this study, the data was initially extracted from SurveyMonkey into Microsoft Excel and then into Mintab 15 for statistical analysis on elements of the data. Data sets remained segregated by clinical area. Each set of data was allocated a number for future reference and cross checking.
4.6 Study Three: Statistical Process Control

Does using SPC as a routine-monitoring tool that identifies trends and evidence of variation in demonstrable clinical indicator achievement enhance the CPIP scheme?

The following section will provide an overview of how SPC will be applied in this study as a channel to determine the value of routinely incorporating SPC analysis of clinical indicators to improve how the CPIP scheme is administered and monitored.

The analysis of the clinical indicator data using SPC methodology for this study does not set out to prove or disprove that CPIP made a difference to clinical indicator achievement or participation rates. Rather, the purpose of this approach to using SPC is to assess the value and worth of using this form of analysis to strengthen and improve the administration and monitoring of CPIP as it moves towards the review of indicators in 2010 and the implementation of the Post-Pilot Phase’ in 2010.

4.6.1 Clinical Indicator Data Analysed with SPC

Four of the five CPIP clinical indicators have been chosen for this SPC analysis. This represents a clinical indicator from the Mental Health, Stroke, Discharge Medication, and Emergency Department clinical areas. The CPIP indicator for the COPD clinical area was not chosen as it is not an assessment of a clinical process but rather it is a structural indicator. The clinical indicators for assessment are:

- Patients with the DRG Schizophrenia who are seen by a community mental health professional within seven days of discharge from the same district mental health service provider.
- Acute stroke patients who receive a dysphagia screen (minimum requirement) within 24 hours.
- All patients aged 65 years (or 50 years if ATSI) and over who are discharged from an emergency department to home or nursing home have evidence of communication back to the general practitioner or local medical officer.
• Electronic discharge medication record is completed where patient is over 65 years and has a complex medication regime.

4.6.2 Hospital Selection

The aim of site selection was to provide a snapshot of the state and clinical indicators rather than a comprehensive analysis of site-by-site performance. Initially, 10 hospitals were chosen for SPC analysis for each clinical indicator. The 10 sites included four large, four medium, and two small hospitals across QHealth. The exception was the Mental Health clinical area, where only six hospitals were used given that their indicator targeted inpatient locations. The sites were chosen based on the presence of data for all clinical indicators to enable a comparison between clinical areas, if possible; to ensure the completeness of data available; and to provide a general geographic spread of sites across Queensland. The selection was not random but reasonably deliberate to ensure the cross spread of site to enable the snapshot perspective to be achieved.

The goal of this analysis is to address the research question about the usefulness of SPC as a routine analysis to support the administration and monitoring of the CPIP scheme. As such, a limited selection of SPC analysis graphs has been chosen for inclusion in the results to enable a detailed discussion on the strengths and weaknesses of the use of this tool.

Sites chosen for the results have been de-identified by hospital name. Reference will be given as to whether the site is large, medium, or small, which will be represented by a code of L, M, and S, respectively. Each site, for the use of the researcher only, was given an individual alphabet code between A and J to differentiate them from each other. The clinical areas will be identified. For example, the site may be AL Mental Health or HS Discharge Medication.

4.6.3 Data Extraction

Clinical areas were approached regarding the undertaking of SPC analysis pre- and post-CPIP scheme introduction, covering the period from 2007 to 2008. This data is classed as administrative data and in all cases this data was sought in a de-identified aggregated format for each clinical indicator. The only identification was the specific
clinical indicator and the source to which the data related. No further information was requested or provided such as names or unique identifiers of patients or individual clinical providers.

Each of the four clinical areas was asked to forward data relating to the proportion of achievement of the clinical indicator over this time period. This required the denominator per month (total number of cases meeting case definition criteria, e.g. total admissions for stroke for each month) and numerator (total number of cases that met pre defined criteria that received intervention, e.g. dysphagia assessment within 24 hours of admission) to be supplied. Data was transported into Minitab 15 at this point for analysis.

### 4.6.4 Time-Based Analysis

A time-based analysis was chosen to determine performance and variation in the 12 months prior to the indicator being included in CPIP and the first 12 months after implementation. Hence, the analysis will cover the Pre-Implementation Phase and the first 12 months of Phase One. The exception is the Mental Health clinical area, where data was only available for the first seven months of 2009 due to a transition to a new mental health-specific clinical information system in October 2008. Consumer Integrated Mental Health Application (CIMHA), the new mental health information system, experienced data extraction issues for a period of time following implementation. Effectively, this commences a process of pre- and post-comparison of performance and variation.

### 4.6.5 SPC Analysis

The purpose of using Statistical Process Control (SPC) was to determine the presence of any statistical difference in the achieving clinical indicators for the four chosen clinical indicators pre- and post-CPIP implementation in QHealth. Rather than relying on summary statistics alone, the decision was made to apply SPC to determine if a clinical process has changed over time beyond the normal random variation. SPC chart analysis was performed with Minitab 15.

There are numerous types of control charts used within a SPC approach. Following an assessment of the clinical indicator data, a ‘P-chart’ was chosen as most
appropriate. ‘P’ relates to ‘proportion’ or ‘percentage’. It is best used when data is non-conforming (count of clinical indicator for stroke: patients receiving dysphagia screen (minimum requirement) within 24 hours); the subgroup is the unit of time along horizontal axis (month); the proportion of times the clinical indicator was achieved is represented on the vertical axis.

To enable pre- and post-intervention to be mapped, an intervention graph, in opposition to a single SPC, was selected for use. This graph calculates two means: one before and one after intervention. The mean will be presented as a percentage; although, strictly speaking, the P-chart is a proportion chart and the Minitab 15 software produces proportions. The local mean is therefore used for testing for special cases pre- and post-intervention. This approach was chosen with a non-formalised hypothesis that the introduction of CPIP made some difference. Using the intervention SPC, a higher mean post-intervention and the process in control (i.e. no special cases) would confirm this hypothesis to be true.

To add sensitivity and power to the control charts, upper and lower control limits were applied. These control limits identify the variability of a process. Three sigma levels—similar to the standard deviation measure, but not computed as a distribution—were used to set the control limits. In general, the process is considered to be changed if there is a deviation of three sigma levels. This is equivalent to a 99% probability of being different from the baseline (Carey, 2003).

4.6.6 Interpretation of SPC P Graph

The presence of variation is neither good nor bad uniformly. The visible process can be assessed for the presence of a ‘run’, ‘common cause variation’ or ‘special cause variation’. The data will present a story about the process that will enable further questions and analysis to occur in an attempt to understand the picture that the chart is presenting. SPC is not an end in itself. A management strategy should be implemented in partnership with this analysis. This will enable more information to be gleaned about the underlying causes of the variation (Carey, 2003).

The presence of a change of mean will not be interpreted as a change directly related to the implementation of CPIP. There are too many confounding variables...
present for this direct relationship to be interpreted. The aim, first, is to examine the SPC graph and identify a change in mean from pre- and post-intervention. Second is to review the graphs for the presence of special-cause variations. Tests of special cause include examining for single points that fall outside of the upper or lower control limits, and identifying eight values that fall above or below the mean, or six or more values in a row that steadily increase or decrease. The latter test will indicate the presence of a ‘trend’. Once these special causes are identified and the movement of the mean is assessed, a standardised investigation can be instigated. This form of investigation is formally out of the scope of this study; however, suggestions may be made to aid this process in the future.

Furthermore, this study is more interested in initially identifying whether the process is in control and locating episodes of special cause variation. Generally speaking for SPC, if a process is in control, the recommendation is to keep tracking the process. However, once a process is viewed as not being in control, there is a need to determine the cause, remove the assignable cause, and continue to track process variation. The case in point is that this SPC analysis will provide a picture of the dynamic process; it is a starting point for learning. Control charting provided very useful information—more than summary statistics or cross sectional analysis alone (Coory, Duckett & Sketcher-Baker, 2008).

4.7 Study Two: Financial Payment and Economic Cost Analysis

A descriptive and economic analysis of financial payments and wage costs made to QHealth Districts to assess costs of CPIP scheme.

The central tenant of the CPIP scheme is the payment of financial incentives to clinical areas within QHealth. This involves a step process whereby achievement of the clinical indicator is demonstrated, payment is calculated, and payment is made to the clinical unit. The primary goal of this study is to determine the costs of financial payments made to clinical areas and districts during Phase One in comparison with the potential $8 million dollars that was available annually. The second aspect is to commence a process of determining the economic cost of collecting, reporting, and analysing the
data for CPIP in comparison with rewards that were secured. These are the basic building blocks for further detailed economic effectiveness modelling that may be performed in future.

A principal agent economic model for determining costs of the program and cost of reporting the clinical indicator is used. This assumes that the QHealth Finance Branch (CPIP fund holder) is the principal, and clinical areas within hospitals are the agents (Nahra et al., 2006).

### 4.7.1 CPIP Financial Costs

This analysis of financial payment consists of a basic descriptive account of funds secured by clinical areas and hospitals across QHealth. These funds were allocated to the agents for the achievement of a demonstrated minimum standard as defined by the clinical indicator. The costs were incurred by the principal. This analysis occurs on both clinical area and district aspects. The study will enable a clear picture to emerge about payments actually secured in comparison with total funds available. Although simple this will provide rich contextual information to this overall study.

### 4.7.2 CPIP Economic Cost Analysis

The evaluation of quality improvement interventions are enhanced by the presence of cost-effectiveness methodologies that have been incorporated into the research agenda. This minor economic cost analysis will determine and test an initial model for future larger scale CPIP economic effectiveness analysis where both the costs and consequences of health programs are measured (Drummond, Sculpher, Torrance, O’Brien & Stoddart, 2005). This focus of cost is on the reporting and analysis of the Mental Health clinical indicator: Patients with the DRG Schizophrenia who are seen by a community mental health professional within seven days of discharge from the same district mental health service provider.

The study developed a model to compare the costs of reporting the clinical indicator over the funding secured. The first step was to identify the range of activities that contribute to the cost of reporting and analysing the clinical indicator. Information to gather this detail was sought from the QHealth’s Mental Health Clinical Collaborative (MHCC). The manager of this collaborative consulted with a range of stakeholders to
clarify the specifics of this process and determined the time, occupation, and experience level of staff involved in this process.

The administrative aspect of the analysis of the CPIP indicator for Mental Health entailed a review of the data elements required to extract the clinical indicator, to the actual extraction, data cleaning and analysis, and the staff level.

The reporting aspect involved the time and professional level of clinician responsible for recording the clinical indicator into the electronic mental health information system. Data was not sought on the time to undertake the clinical intervention itself.

The reporting and analysis process was then measured and valued. This enables the measurement of a quantity and an assignment of costs (Drummond et al., 2005). Further data was sourced regarding the wage rates for each occupation group identified. QHealth uniformly reports wage costs to include a 25% ‘on costs’ element. Both this and the data forwarded to the researcher by the MHCC were collated to perform a basic economic cost analysis using Microsoft Excel. This analysis determined the approximate costs of reporting and analysis in comparison with the CPIP funds secured in the clinical area of mental health.

4.8 Research Ethics

A strong ethical framework was devised for the conduct of this research as evaluations need to be conducted in a proper, feasible, accurate, and usable manner. Care and sensitivity is required with the evaluation data and findings. Decisions need to be made about what results to present, the sensitivity and impact of these results on third parties, and what the requirement is of the program to react to evaluation findings (Schweigert, 2007).

At the commencement of the research, a data assessment and review process occurred to scope the ethical approvals required prior to data collection or access to secondary administrative data. This included seeking clarification from the Principal Advisor in the Office of Health and Medical Research (OHMR) within QHealth. A series of email and phone discussions prevailed to clarify the nature and scope of
ethics approval required. In particular, it was necessary to clarify the legal framework for access to clinicians’ personal and contact information. Additionally, advice was required to clarify whether ethics approval was needed for access to non-patient related secondary administrative data.

The advice confirmed that ethics approval was required for Study One, which involved surveying humans with a self completed interview tool. Studies Two and Three involved the use of de-identified and aggregated administrative data and ethics approval was not required; however, approval for the release of data was required from the data custodian. The details of this process for all three studies are detailed below.

### 4.8.1 Study One: Survey Tool

Prior to commencement of research, dual formal ethics approval was successfully sought from QHealth and QUT. No restrictions or alterations to ethics approval were required. Further, during the course of this research, no complaints were registered.

QHealth ethics approval was sought in the first instance. The research was conducted in accordance with the “National Statement on Ethical Conduct in Human Research” (2007). An Ethics application (HREC/08/QRBW/2) was developed, lodged, and subsequently approved on the 5th November 2008 by the Chair of the Royal Brisbane & Women’s Hospital (RBWH) Human Research Ethics Committee (HREC) (see Appendix 7).

The predominant research was anticipated to be conducted at the RBWH, or by email sent from the RBWH site; hence, the QHealth OHMR identified RBWH HREC as the body to provide the ethical approval. Additionally, the need to undertake multi-site approval was considered given that clinicians would be drawn from districts across QHealth; however, this was not deemed to be necessary as clinicians would be offered the survey while on the RBWH site. If the researcher was travelling and accessing clinicians in their individual clinical settings, this would have been required.

The research was approved as meeting the criteria of a negligible risk study in accordance with the National Statement. As such, a full committee review was not
required. The National Health and Medical Research Council (NHMRC) (2007) identify negligible risk as situations where there is no foreseeable risk of harm or discomfort.

Although it was anticipated that the research was of negligible risk, a full NEAF V1.1 application was completed and submitted with the application. This was recommended by the Chair of the RBWH HREC and was a valuable process to follow as it enabled full ethical consideration of the research and provided confidence that correct ethical process was to be followed. During this process, the QHealth legal area (LALU) formally clarified the Queensland Privacy Act, which covers issues of use or disclosure of personal information in relation to QHealth employees. In particular, information was sought regarding the correct procedure for recruitment of QHealth staff as participants in this research.

The NEAF V1.1 submission for ethics approval outlined that the research sought to survey QHealth clinicians using a quantitative and qualitative questionnaire tool that has been developed from the P4P peer-reviewed literature. Clinicians from five clinical areas (Mental Health, COPD, Discharge Medication, Emergency Department and Stroke), who have been involved in a three-year pilot CPIP scheme would be invited to participate in the survey. Participation in the survey would be anonymous and voluntary. The survey would be offered only once and there would be no follow-up survey.

The application identified that clinicians would be recruited with the permission of the appropriate clinical network group or policy area. The Chairs or Directors of the clinical areas would be the primary communication portal advising clinicians that the research was being conducted, had HREC approval, and, if interested, they could participate in this research. The researcher would not be provided with any personal details regarding the clinician, which was compliant with the Queensland Privacy Act. Access to clinicians was reliant on the Chairs and Directors initiating this contact. The survey was to be offered while clinicians were attending formal clinical meetings. As an alternative to the face-to-face offering of the survey, an email could be sent to clinicians from the Chair or Policy Unit Director, or their delegate (for example, the program manager or Clinical Network Coordinator) directing them to a website where they can complete the survey anonymously. There was no need to gain the
approval of QHealth’s Director General for this method of third-party recruitment. Completion of survey was viewed as consent to participate.

A potential conflict of interest, given the researchers employment within the CPIC and the undertaking of the ‘internal evaluation’, was identified by the researcher. The advice was that this conflict could be managed by declaring, in contact with research participants, that this is both research and evaluation. This was outlined in the Participant Information Sheet. This conflict was considered an acceptable conflict of interest as it does not involve any financial dealings or a vested interest or reward to the evaluator in the outcome of the program, such as dependence on future employment. The evaluator is a permanent employee with no risks to this status based on the outcome of evaluation findings. Finally the program has already received approval for a three-year extension and the findings and recommendations of this study will be provided within this context.

Following the QHealth approval low risk approval was sought from QUT HREC for Study One. The QUT HREC “Low Risk Ethics Application”, which included the NEAF V 1.1 completed paperwork and the HREC approval letter from QHealth, was submitted to the committee for review. The ethics application was granted on November 12th 2008 (Approval – 0800000882) (see Appendix 8). This low risk ethical review approval was subject to ratification at the following HREC meeting. No additional questions or concerns were raised by the committee and approval stood. This project was awarded ethical clearance until 12th November 2011.

4.8.2 Study Two and Study Three: Administrative Data

Study Two and Study Three data was non-invasive and non-identifiable administrative data and ethical approval was not required by either QHealth or QUT. Data release was contingent only on the approval of the data custodian. Data release under legislative requirements such as the Freedom of Information Act was not required.

The Senior Director of CPIC, Associate Professor Maarten Kamp, was identified as the delegated data custodian. Permission was granted for the release of this data associated with the CPIP scheme for the purpose of this study (See Appendix 9).
The release was limited to:

- electronic- and paper-file administration documents regarding the CPIP scheme and financial payment data
- indicator collection rate performance data and indicator collection and analysis procedure data.

### 4.9 Data Confidentiality

For the purpose of this research, no individual patient- or clinician-identifying data was sought. The survey data did not collect personal information such as name of informant, contact details, direct position title, or number of years’ experience. However, it was optional for the informant to provide information regarding district of employment and occupation. Analysis of this data will continually assess and remain sensitive to ensure that third-party identification is not possible at any stage. For example, open-ended question responses from the “Clinician Perceptions” survey are not attributed to a particular clinical area given that sample sizes are relatively small in some cases, such as the Emergency Department clinical area.

Permission was successfully sought by the five clinical areas to participate in this evaluation. The Mental Health clinical area provided the only proviso: that if material was published in peer-reviewed journal articles identifying its clinical area they requested shared authorship. Additionally, the Safe Medication Practice Unit (SMPU) has submitted conference abstracts regarding their participation in the scheme.

The clinical indicator data was provided by the Clinical Networks and SMPU as aggregated and de-identified format at the hospital level. Given that only 10 sites have been chosen for the SPC analysis, and the potential sensitivity of this data, these hospital sites have been de-identified; however, they will retain identification of their specific clinical area such as Stroke.

Financial data relating to funds secured by CPIP clinical areas and QHealth districts have been identified. This information is already available in the public domain, including the public CPIC website. Furthermore, this identification is aligned with a
new cultural aspect of QHealth where transparency is being fostered. Following the Bundaberg scandal, there has been an emphasis on improving transparency of QHealth (Duckett, Collins, Kamp & Walker, 2008).

### 4.10 Limitations of Evaluation

This research is subject to a specific set of limitations, which are related to the imperfect purposeful sampling technique and confounding variables given the dynamic real-life setting of the research. It is normal for researchers to have concerns about the validity and representativeness of the research being undertaken (Daly & Lumley, 2002). The limitations in summary relate to the scope of the research, the retrospective research design, and the sampling framework.

#### 4.10.1 Scope of Research

Within any evaluation research, it is difficult to encompass all aspects and elements of a program. The aim is to present a broad evaluative ‘snapshot’ of the CPIP scheme. This was preferable to undertaking a limited focus on one specific area such as clinician perceptions alone. This was viewed as being too limiting in relation to the need to provide a series of recommendations as an outcome. In contrast, the broad ‘snapshot’ view means that levels of detail and exploration have not occurred. This would have made the study unfeasible and too large for the requirements of a Doctorate of Health Science at QUT.

Identifying a focus is essential as it brings clarity to the situation and can prevent scope creep as the evaluation progresses. It can be a difficult task (Stecher & David, 1987). Determining a focus is usually conducted within an environment of competing values and needs, and political persuasions of key stakeholders with a vested interest in the evaluation. Alternately, there can a lack of interest initially followed by intense interest as the evaluation nears completion. This late buy or engagement of key stakeholders creates a risk of questioning of the original scope and new scope requests being made.

The predominant perspective of the research is to determine the clinician’s response to the specifics of the CPIP scheme’s design, and to assess attitudes regarding the
CPIP model as it is currently designed, not alternate models of P4P such as those where incentive payments target individual clinicians or private practices. The clinician’s voice and response is predominant, and the ‘voice’ of alternate perspectives such as the QHealth Executive Management, Chief Financial Officers, or Finance Branch was not captured. It is anticipated, however, that development of the CPIP scheme is iterative and that a final CPIP evaluation will be undertaken in 2010. It is also anticipated that the recommendations of this study will enable these valuable stakeholders to be engaged in implementing the CPIP evaluation recommendations and future research, and hence assist in the shaping of the scheme as it moves forward past 2010.

4.10.2 Retrospective Research Design

A significant limitation is the non-randomised and retrospective design. Consequently, there is difficulty in establishing direct causal effects because in all social science, there are no general laws that are “…consistent over time and independent of the context in which they are imbedded” (Rein in Janovsky & Cassels, 1996, p.15).

4.10.3 Sampling Strategy

Given the research design was non-randomised and reliant on purposeful sampling it is difficult to pre-determine a formal sample size. Consequently, the researcher is not aware of total size of sample offered, and an official response rate was unable to be calculated.

The external validity is affected by the representativeness of informants, and the unique context of QHealth. This will hinder the ability to generalise this research as it stands alone, is not comparative to any other study, and is set in a unique non-replicable context. No cause-effect outcomes will be achieved. Essentially, the generalisability of the findings of this study to other health care settings is reduced, although the learning and recommendations may be of interest to other health systems in the future for the purpose of comparison.

This method of sampling has potential for selection bias. This is because the sample differs from the wider population of interest, leading to limitations in terms of the
ability to generalise the findings (Bowling, 2002). It could easily be argued that the population selection was biased towards high functioning and engaged clinicians who are willing or seeking to be a part of the clinical leadership body. These informants may be more motivated and informed about quality improvement in comparison to their peers who are not willing or able to engage in these forms of leadership activity.

4.10.4 Summary

The outcomes associated with this research will need to be understood within the context of these limitations. The research is formative with the aim to undertake an initial exploration of the area. Given that research regarding the effectiveness of pay-for-performance is in early stages of development, these limitations to the research are acceptable. Presumptively, it may lead to the development of a firm hypothesis or more controlled and experimental research in the future.
Chapter 5  Results

5.1 Introduction

This chapter presents the analysed results of Study One, Study Two, and Study Three. The analysis followed the research design outlined in the previous chapter. Individual sections are presented for each of the three studies. Study One findings are formatted in alignment with the self-administered survey tool. A detailed discussion of all results in line with the specific research questions proposed will follow in Chapter 6.

5.2 Overview of Three Planned Studies

Three separate studies arising from the research questions are described as follows:

1. **Study One**: Administering of a self completed “Clinician Perceptions” survey with QHealth clinicians to capture the attitudinal and experiential complexities of implementing the Clinical Practice Improvement Payment (CPIP) scheme.

2. **Study Two**: Applying Statistical Process Control techniques to a selection of participating CPIP hospitals to identify trends and evidence of variation in demonstrable clinical indicator achievement.

3. **Study Three**: Undertaking a descriptive and economic analysis of financial payments and wage costs made to QHealth districts to assess costs of CPIP scheme.
5.3 Study One: CPIP Survey

Distributing a self-completed survey, “Clinician Perceptions”: to QHealth clinicians to capture the attitudinal and experiential complexities of implementing the CPIP scheme.

5.3.1 Response to Survey

A total of 218 survey forms were returned for analysis. The survey was offered as a face-to-face option to all five Phase One clinical groups, and as an additional, electronic option for two of the clinical areas surveyed. Predominantly, the surveys were manually collected with 184 surveys returned in a paper-based format. Thirty four (34) surveys were collected electronically to make the total, n=218.

An official response rate cannot be calculated due to an unknown total number of surveys distributed both electronically to two clinical areas and via third-party recruitment. Table 5.1 “Participants Offered Survey Tool”, below, outlines the nominated attendance figures of the clinician sub-group that was targeted at clinical network forums or meetings. Figures are approximate; the nature of clinical meetings is fluid and attendance inconsistent over the course of a day due to other occupation demands and responsibilities. An estimated 299 clinicians were offered the survey by the face-to-face mode and 184 surveys were returned, equating to a response rate of 62%. Table 5.1 provides an overview of potential sample offered survey tool.

Table 5.1: Participants Offered Survey Tool

<table>
<thead>
<tr>
<th>Sample</th>
<th>Forum Attendance</th>
<th>Electronic Survey Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental Health</td>
<td>78</td>
<td>Yes</td>
</tr>
<tr>
<td>Stroke</td>
<td>86</td>
<td>No</td>
</tr>
<tr>
<td>Emergency Department</td>
<td>40</td>
<td>Yes</td>
</tr>
<tr>
<td>Discharge Medication</td>
<td>25</td>
<td>No</td>
</tr>
<tr>
<td>COPD</td>
<td>70</td>
<td>No</td>
</tr>
<tr>
<td>Total</td>
<td>299</td>
<td>Unable to be determined</td>
</tr>
</tbody>
</table>
The quality of the returned surveys was variable, and full analysis was not possible on 26 surveys that were returned: 15 from electronic collection and 11 from the paper-based submission set. Surveys that were incomplete after question five were defined as poor quality and have subsequently been excluded from further analysis. Some incomplete surveys had comments as to why they were not proceeding such as “not applicable to inpatient rehab ward”. A final rate of n=192 was calculated in account of these exclusions.

In the case of the electronic collection, there was a high rate of abandonment as 15 of the 34 participants did not proceed past question five. Comparatively, the paper-based surveys were of a very high standard. It is assumed that those not desiring or not having time to complete the paper-based survey did not return it to the researcher. The rate of paper-based non-completion information was not able to be captured, whereas SurveyMonkey identified each survey that was commenced irrespective of completion. The electronically completed surveys were, however, of a very high standard as the questionnaire was designed with a force function to ensure questions could not be skipped. Table 5.2 “Collection History” provides an overview of this collection history.

Table 5.2: Collection History

<table>
<thead>
<tr>
<th>Mode of Collection</th>
<th>Total Collected</th>
<th>Excluded</th>
<th>Analysed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face-to-face</td>
<td>184</td>
<td>11</td>
<td>173</td>
</tr>
<tr>
<td>Electronic</td>
<td>34</td>
<td>15</td>
<td>19</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>218</strong></td>
<td><strong>26</strong></td>
<td><strong>N=192</strong></td>
</tr>
</tbody>
</table>
The CPIP surveys were collected from all participating CPIP clinical areas. Of the total analysed surveys (n=192), most respondents were from Stroke (53), Mental Health (49), COPD (39), Discharge Medication (28), and Emergency Department (23) clinical areas. Table 5.3 “Respondents by Clinical Area” demonstrates this spread of respondents and also identifies surveys excluded by criteria discussed above. This is also graphically represented by Graph 5.1 “Respondents by Clinical Area”.

Table 5.3: Respondents by Clinical Area

<table>
<thead>
<tr>
<th>Clinical Area</th>
<th>Face-to-face</th>
<th>Excluded</th>
<th>Analysed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental Health*</td>
<td>61</td>
<td>12</td>
<td>49</td>
</tr>
<tr>
<td>Stroke</td>
<td>56</td>
<td>3</td>
<td>53</td>
</tr>
<tr>
<td>Emergency Department</td>
<td>25</td>
<td>2</td>
<td>23</td>
</tr>
<tr>
<td>Discharge Medication*</td>
<td>34</td>
<td>6</td>
<td>28</td>
</tr>
<tr>
<td>COPD</td>
<td>42</td>
<td>3</td>
<td>39</td>
</tr>
<tr>
<td>Total</td>
<td>218</td>
<td>26</td>
<td>N=192</td>
</tr>
</tbody>
</table>

*= face-to-face and electronic collection

Graph 5.1: Respondents by Clinical Area
Surveys were completed by clinicians from most districts, except Torres Strait and the publicly funded Mater Health Services. Figure 5.1 “Total Survey Respondents by District”, below, demonstrates the spread, with most respondents from both Sunshine Coast–Wide Bay and Metro North (38 each) districts, followed by Metro South district (32). Although the face-to-face surveys were offered in Brisbane, the state-wide Clinical Network forums are generally representative of clinicians from across Queensland; for example, surveys were completed by clinicians from Townsville, Mt Isa, and Mackay.

Figure 5.1: Total of Survey Respondents by District (n=192)
There was a balanced spread of clinician occupation groups: 43% identified as nurses and 21% as allied health (respondents had a choice of the generic “allied health” or to specify a qualification). A further 11% of respondents identified as pharmacists and 4% as speech therapists. Doctors accounted for 14%, and 3% of respondents nominated administrative roles. Figure 5.2 “Profession of Respondents”, below, demonstrates this spread of professions amongst respondents (n=192).

Figure 5.2: Profession of Respondents

5.4 Clinician Attitude Survey: US Validated Tool

5.4.1 Data Analysis of ‘Clinician Attitude’

The attitudinal assessment tool, embedded within the larger CPIP Survey, was segregated out to enable a specific analysis to be conducted. The responses from these 23 items were imported into Minitab 15 software and organised in alignment with the 7 core attitudinal domains.

Prior to analysis each individual data set was examined for completeness. Five sets of data were assessed to contain less than 8 total responses of the potential 23. The biostatistician consulted recommended that given the small number of incomplete
sets and potential distortion of the scale item results, these 5 could be eliminated from this section of analysis (n=187).

The goal was to use the same system of analysis and replicate the US study detailed in section 3.7.5 “US Validated Attitude Survey Tool” (Young et al., 2007). A biostatistician from QUT was consulted to provide support, guidance, and a validity check of data analysis and results. The analysis initially used descriptive statistics, which identified the average scores for all items within each domain. The individual responses were scored from 1-5 as reflected by Table 5.4 Below, except the unintended consequences domain which was reverse scored.

Table 5.4: Scale Items and Example Scoring System for Mean

<table>
<thead>
<tr>
<th>Clinical Relevance Domain</th>
<th>Respondent Scores</th>
<th>Individual Q Mean</th>
<th>Domain Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>...achieving the clinical indicator is good for our patients</td>
<td>3 4 3 3</td>
<td>3.3</td>
<td></td>
</tr>
<tr>
<td>...is tied to an indicator based on best evidence</td>
<td>4 3 4 3</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>...is tied to an indicator that is clinically meaningful.</td>
<td>2 2 3 4</td>
<td>2.8 mean/ 3 Q</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>9.5</strong></td>
<td><strong>3.2</strong></td>
<td></td>
</tr>
</tbody>
</table>

Once the means for each of the seven attitude domains were determined an ANOVA analysis was performed to determine 95% confidence intervals and \( p \)-values. The \( p \) value reflects the difference across all responses from the individual clinical areas and overall. This analysis does not specifically indicate which pair of groups exhibits statistical differences. Analysis occurred with the null hypothesis that they are different and the alternate hypothesis that the clinical groups are not different. A low \( p \) value (<0.05) means that the groups are different (null hypothesis) and a high \( p \) value (>0.05) (alternate hypothesis) will mean that there are no differences. In summary, the lower the \( p \) value the more significant the difference between the groups.
The scores, standard deviation, and \( p \) values across the seven attitude domains below by both individual clinical area and combined overall scores are detailed in Table 5.5 “Clinician Scores on Attitude Domains”.

Table 5.5: Clinical Scores on Attitude Domains

<table>
<thead>
<tr>
<th>Clinical Area</th>
<th>Awareness</th>
<th>Financial Salience</th>
<th>Relevance</th>
<th>Control</th>
<th>Cooperation</th>
<th>No Unintended consequences</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVERALL</td>
<td>3.213</td>
<td>3.3958</td>
<td>4.0729</td>
<td>2.9288</td>
<td>3.25</td>
<td>3.5755</td>
<td>3.0356</td>
</tr>
<tr>
<td>StDev</td>
<td>0.8619</td>
<td>0.8726</td>
<td>0.7422</td>
<td>0.7779</td>
<td>0.8847</td>
<td>0.8381</td>
<td>0.6313</td>
</tr>
<tr>
<td>COPD</td>
<td>3.4872</td>
<td>3.5385</td>
<td>4.2991</td>
<td>3.1795</td>
<td>3.4487</td>
<td>3.8077</td>
<td>3.1068</td>
</tr>
<tr>
<td>StDev</td>
<td>0.7997</td>
<td>0.8987</td>
<td>0.5913</td>
<td>0.7564</td>
<td>0.8175</td>
<td>0.7662</td>
<td>0.5547</td>
</tr>
<tr>
<td>DM</td>
<td>3.5429</td>
<td>3.5893</td>
<td>4.2143</td>
<td>3</td>
<td>3.375</td>
<td>3.3571</td>
<td>3.3333</td>
</tr>
<tr>
<td>StDev</td>
<td>0.6871</td>
<td>0.8395</td>
<td>0.668</td>
<td>0.7258</td>
<td>0.8566</td>
<td>0.8262</td>
<td>0.6069</td>
</tr>
<tr>
<td>ED</td>
<td>3.2739</td>
<td>3.7609</td>
<td>3.7101</td>
<td>2.6377</td>
<td>3.4348</td>
<td>3.6304</td>
<td>2.9493</td>
</tr>
<tr>
<td>StDev</td>
<td>0.7098</td>
<td>0.7668</td>
<td>0.6301</td>
<td>0.8928</td>
<td>1.19</td>
<td>0.8557</td>
<td>0.7238</td>
</tr>
<tr>
<td>MH</td>
<td>2.9143</td>
<td>3.0408</td>
<td>3.7823</td>
<td>2.8844</td>
<td>3.1531</td>
<td>3.4694</td>
<td>2.9082</td>
</tr>
<tr>
<td>StDev</td>
<td>0.9522</td>
<td>0.865</td>
<td>0.9343</td>
<td>0.8376</td>
<td>0.9585</td>
<td>1.0021</td>
<td>0.6209</td>
</tr>
<tr>
<td>Stroke</td>
<td>3.0868</td>
<td>3.3585</td>
<td>4.2579</td>
<td>2.8742</td>
<td>3.0472</td>
<td>3.5943</td>
<td>2.9811</td>
</tr>
<tr>
<td>StDev</td>
<td>0.8678</td>
<td>0.8284</td>
<td>0.5834</td>
<td>0.6738</td>
<td>0.6741</td>
<td>0.6938</td>
<td>0.6301</td>
</tr>
<tr>
<td>( p ) value</td>
<td>0.009</td>
<td>0.011</td>
<td>0.001</td>
<td>0.159</td>
<td>0.227</td>
<td>0.325</td>
<td>0.087</td>
</tr>
</tbody>
</table>

Legend: Clinical groups are different

5.4.2 Awareness Scale

Clinicians overall, and across all clinical areas, demonstrated a reasonable degree of awareness and understanding in relation to the CPIP clinical indicators and rules regarding how to achieve the payment. ‘Overall’ and each clinical group, except Mental Health, returned a mean score above 3, meaning that they were more positive than negative. Clinical groups were statistically different: \( p \) value = 0.009 was returned on analysis. Graph 5.2 “Awareness Domain” displays this.
5.4.3  Financial Salience Scale

The literature regarding the survey tool, as discussed in detail in the literature review, indicated that a minimum sample size of 128 is required to validate this domain. While this criterion was met with the overall analysis, the sample number for individual clinical areas was much smaller. This should be accounted for when interpreting the findings for each clinical area.

Overall, clinicians scored 3.4, which reflected that they were positive regarding their belief that the financial incentives were of sufficient size to compensate for the time, effort, and expenditure necessary to achieve the clinical indicator.

Most clinical areas scored over 3; Emergency Department scored the highest: 3.8, followed closely by Discharge Medication: 3.6, and Stroke: 3.4. Mental Health only scored just over 3 at 3.04. Clinical groups were statistically different: $p$ score = 0.011
was returned on analysis. Graph 5.3 “Salience Domain” displays this comparison in scores.

Graph 5.3: *Financial Salience Domain*

![Graph 5.3: Financial Salience Domain]

### 5.4.4 Clinical Relevance

Clinicians overall, and across all clinical areas, demonstrated a strong belief that the clinical indicator targets were evidence based and that achievement of the clinical indicators would be good for their patients. COPD, Discharge Medication, and Stroke all scored above 4, and Emergency Department and Mental Health scored 3.7. Clinical groups were statistically different: $p$ value = 0.01 was returned on analysis. Graph 5.4 “Relevance Domain” displays this.
5.4.5 Control

Clinicians overall, Emergency Department, Stroke, and Mental Health disagreed that they had adequate control over the activities and resources needed to achieve the clinical indicators, all scoring below 3. COPD and Discharge Medication scored 3.2 and 3, respectively, showing that they were generally neutral in their beliefs regarding level of control. Clinical groups were not statistically different: \( p \text{ value} = 0.159 \) was returned on analysis. Graph 5.5 “Control Domain” demonstrates this comparison.
5.4.6 Cooperation

Clinicians overall, and from all clinical areas, believed that they could obtain the cooperation of other clinicians and support staff to achieve the clinical targets. Both COPD and Emergency Department scored 3.4 in this area. Clinical groups were not statistically different: $p$ value = 0.227 was returned on analysis. Graph 5.6 “Cooperation Domain” demonstrates this.


**5.4.7 No Unintended Consequences**

Clinicians overall, and across all clinical areas, were positive in their attitudes regarding a lack of unintended consequences (item was reverse scored). COPD scored highest: 3.8077, followed by Emergency Department: 3.6304. Clinical groups were not statistically different: $p$ value $= 0.325$ was returned on analysis. Graph 5.7 “No Unintended Consequences Domain” demonstrates this.
5.4.8 Impact

Clinicians overall, and from COPD and Discharge Medication clinical areas, had slightly positive beliefs regarding their perception of the extent to which their clinical behaviour has changed as a result of the clinical indicator and the financial incentive payment. Comparatively Emergency Department, Mental Health, and Stroke were more disagreeable regarding this. Clinical groups were not statistically different: $p$ value = 0.087 was returned on analysis. Graph 5.8 “Impact Domain” below demonstrates this.
Graph 5.8: *Impact Domain*

![Graph showing mean and 95% CIs for impact and ability to improve quality.](image)

### 5.4.9 Summary

The aggregated results of seven domains of the attitudinal assessment tool have been presented above in table, graph, and descriptively. In summary, six of the seven domains scored were positive for the ‘overall’ category. Clinicians overall, and across most clinical areas, generally demonstrated a reasonable degree of awareness and understanding of the clinical indicators; agreed with the financial salience of the indicators, supported that the indicators were evidence based; and believed that achieving the clinical indicators would be good for their patients, that they could obtain the cooperation of other clinicians and support staff, and that unintended consequences were not a large problem. Mental Health, however, disagreed with other clinical areas regarding the salience of the indicator and its level of awareness was more negative. All clinical areas, except COPD, indicated that they disagreed with regards to the influence of CPIP on their clinical behaviour as a
consequence of the incentive, or that they had control in relation to achievement of the indicator. The discussion in Chapter 6 will explore this further.

5.5 General Survey: Understanding, Knowledge, and Support

5.5.1 Data Analysis of Understanding, Knowledge, and Support Element

The following section of results summarises the general survey aspect of the CPIP Survey. The nature of these questions was both quantitative and qualitative. The quantitative questions made use of simple scales such as high, medium, and low, or yes, no, or unsure. They aimed to garner simple responses that lead the respondent into the open-ended questions. Descriptive statistics such as basic counts and percentages within Microsoft Excel were undertaken. No statistical tests of significance or comparability between groups were performed.

The open-ended questions were included to illicit further detail from the respondents about their experiences with the CPIP scheme. Qualitative data-analysis techniques were used with this data to transform what has been collected into a form of understanding or explanation regarding the clinician’s experiences. A descriptive content analysis was applied. This is the simplest method of qualitative research and is applicable when analysing free text within questionnaires, as that contained in this investigation (Donovan & Sanders, 2005). Initial themes that emerged from the collection were documented. Microsoft Excel was used to number, filter, and sort coded responses. The individual codes will be related to key words or themes that emerge and become a grouped code such as ‘leadership’ or ‘budget issues’. The categorisation process will entail reading the response and then labelling content with one to two codes as appropriate. From this process of attributing codes, a descriptive summary of responses can then be provided (Donovan & Sanders, 2005).

5.5.2 Knowledge of CPIP and Clinical Indicator

Participants were initially (N=192) asked to rate their understanding of the CPIP scheme followed by their understanding of their specific CPIP clinical indicator. The majority of the respondents identified both a medium understanding of the scheme
(49%) and the clinical indicator for their clinical area (50%). This was compared with 17% who identified having a high knowledge of program and 26% having high level of knowledge of the clinical indicator for their clinical area. In contrast, 30% indicated a low understanding of the scheme and 22% had a low knowledge of their clinical indicator (n=192). Graph 5.9 “Understanding and Knowledge” demonstrates this.

Graph 5.9: Understanding and Knowledge of CPIP and knowledge of clinical indicator

Rate your Understanding of CPIP and Knowledge of Indicator

<table>
<thead>
<tr>
<th>Understanding of CPIP Scheme</th>
<th>Knowledge of Clinical Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>17%</td>
</tr>
<tr>
<td>Medium</td>
<td>26% 49%</td>
</tr>
<tr>
<td>Low</td>
<td>30% 22%</td>
</tr>
<tr>
<td>Not Stated</td>
<td>4% 2%</td>
</tr>
</tbody>
</table>

5.5.3 How did you become aware of the CPIP scheme?

Respondents were asked about how they became aware of the CPIP scheme. Respondents were able to tick multiple responses for this question. Communication regarding the CPIP scheme was predominantly sourced from the clinical leadership groups such as network communication, Clinical Network forums, or Policy Area Management meetings (in the case of the Discharge Medication clinical area, who do not have an official clinical network). In total, 57% of respondents identified these clinical leadership forums as where they heard about CPIP. Seventeen per cent heard about the program through a clinical peer, and 25% from the district CEO or line manager. Other sources, indicated in very minimal numbers, included the CPIC newsletter, the CPIC website, the Director-General's Brief, email, or ‘in-service’ (an internal education strategy undertaken at the clinical unit level)
5.6 Attainment and Receipt of Funding

Informants were asked if their clinical unit had been able to achieve its clinical indicator. This was interesting; over 50% responding that they had been able to achieve their clinical indicator compared to just over 9% who stated that they did not achieve it and over 26% who were unsure. Comparatively across the clinical groups, over 57% of respondents thought that they had achieved the indicator, except for Mental Health, where only 31% thought that the clinical indicator had been achieved and just over 40% were unsure (n=192). Graph 5.10- “Achievement of Clinical Indicator” shows this.

Graph 5.10 Was your clinical unit able to achieve the clinical indicator:

In contrast, only 37% of respondents identified that their clinical unit had received the payment compared with 20% who did not and 41% who were unsure. Sixty-one percent of Emergency Department and 54% of the Discharge Medication clinical areas identified that they had received the funding whereas just over 22% of Mental Health clinicians indicated that they had received the funding. Sixty-five percent of Mental Health and 49% of Stroke clinicians were unsure if they had received the funding. Graph 5.11- “Receipt of Funds” shows this.
5.6.1 Why was Funding not received?

Survey respondents who did not receive the funding or were unsure were asked an open-ended question about why they thought that the funding had not been received. From n=192, 65 individual responses were received. All responses were reviewed and grouped into themes. Two major stories emerged from this data regarding the CPIP payment mechanism.

The first theme was about conflict with hospital management and QHealth’s Finance Branch regarding receiving payments; there was a sense that payments would never transpire or that extracting the money involved significant effort. Examples of this include: “Only after a fight with administration”, “$ have not been passed on by management”, “District took it all”, “Still under dispute”, “Kept at present by finance to cover budget overrun 90K”, and “Some difficulty getting money from the district HR/Finance areas”.

The second strong theme to emerge related to the level of transparency about the payments. Examples of this include: “Business manager does not know where money has gone. “Lost’ in the system”, “Though we can’t see it, business manager is sure it is there”, “Difficulty identifying where payment went and accessing this funding for the unit”, “Difficult to track payment, and when payment was paid; it was transferred to the wrong cost centre and not quarantined for practice improvement.”
Much effort expended to change this; the district has claimed that they have not received and/or cannot find it – I know that other sites in the district have found and been able to use the funds”, “No one is able to locate where the $ went”, “Cannot find where the money went”, and “Money seems to have disappeared into a black hole”.

A third theme was identified in the responses and was related to problems identified with the clinical indicator data collection process such as a further information being required to correctly participate in the scheme; for example, “Not as much as expected; inaccurately submitted data”, and “Paperwork being completed and no AO staff to complete this and send it in. No person coordinating this”.

5.6.2 Knowledge of Funding

Respondents were asked if they knew how much incentive payment they received. Overall, 40% of clinicians stated ‘yes’ to knowing the funding amount, 18% said ‘no’, 28% answered ‘unsure’, and 15% did not respond. At the clinical area level, 74% of Emergency Department, 64% of Discharge Medication, and 16% of Mental Health clinicians stated that they knew the amount. Forty-three per cent of Mental Health clinicians compared to 30% of Stroke clinicians were unsure about the amount. Graph 5.12 “Knowledge of the CPIP Funding Your Clinical Unit Received” demonstrates this response.

Graph 5.12: Do you know the amount of CPIP Funding Your Clinical Unit Received?

<table>
<thead>
<tr>
<th>Clinical Area</th>
<th>Yes</th>
<th>No</th>
<th>Unsure</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stroke</td>
<td>30%</td>
<td>25%</td>
<td>40%</td>
<td>5%</td>
</tr>
<tr>
<td>DM</td>
<td>44%</td>
<td>15%</td>
<td>30%</td>
<td>11%</td>
</tr>
<tr>
<td>MH</td>
<td>74%</td>
<td>12%</td>
<td>14%</td>
<td>0%</td>
</tr>
<tr>
<td>ED</td>
<td>52%</td>
<td>20%</td>
<td>28%</td>
<td>0%</td>
</tr>
<tr>
<td>COPD</td>
<td>50%</td>
<td>25%</td>
<td>25%</td>
<td>0%</td>
</tr>
<tr>
<td>Overall</td>
<td>43%</td>
<td>30%</td>
<td>22%</td>
<td>5%</td>
</tr>
</tbody>
</table>
5.6.3 Use of Funding

Clinicians were asked about how the CPIP funding had been used. From n=192, 61 responses were received. The list was reviewed and summarised into categories of information technology, educational equipment, human resource, professional development, building works, and project works. This expenditure, organised into categories, is listed in Table 5.6 “Use of Funding”.

Table 5.6: Use of Funding

<table>
<thead>
<tr>
<th>Category</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Technology</td>
<td>• Patient outcome database upgrade&lt;br&gt;• Computer and laptop&lt;br&gt;• Extra PC for offline nursing project time and two extra PCs and printer for clinical area&lt;br&gt;• Label printer to allow discharges to be done on the ward&lt;br&gt;• Two laptops and a multifunction printer for copying and scanning documents&lt;br&gt;• An automated multifunction fax / scanner / copier / printer</td>
</tr>
<tr>
<td>Clinical Area Resources</td>
<td>• General equipment&lt;br&gt;• Physiotherapy equipment such as POC, spirometers, pulse oximeters, portable concentrator&lt;br&gt;• Smokerlyser&lt;br&gt;• Educational tools for patients&lt;br&gt;• Ultrasound and other equipment&lt;br&gt;• Educational material for patients&lt;br&gt;• Paediatric play equipment&lt;br&gt;• Library additions and interactive whiteboard&lt;br&gt;• Navman for community cars&lt;br&gt;• Extra resources e.g. dispensing trolley, DECT phones&lt;br&gt;• New trolleys&lt;br&gt;• Support items for reducing seclusion and restraint&lt;br&gt;• Equipment and reference books for department&lt;br&gt;• Capital/equipment resources to improve clinical practice and patient care&lt;br&gt;• Speech therapy equipment&lt;br&gt;• Patient waiting information upgrade e.g. LCD screen in the waiting area, advising patients on their script waiting time&lt;br&gt;• An electrically operated stores trolley to reduce injury and WPHS issues&lt;br&gt;• New furniture to replace upholstered torn and ripped chairs&lt;br&gt;• SP equipment and resources for acute stroke unit i.e. assessments and therapy tools</td>
</tr>
<tr>
<td>Human Resource</td>
<td>Professional Development</td>
</tr>
<tr>
<td>----------------------------------------------------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>• Education equipment.</td>
<td>• Professional development</td>
</tr>
<tr>
<td>• Physiotherapy hours</td>
<td>• Staff education and teamwork training</td>
</tr>
<tr>
<td>• Support physiotherapist in rehabilitation</td>
<td>• Change management workshop for RNs</td>
</tr>
<tr>
<td>• Clinical project officer for Telehealth</td>
<td>• Team building workshops for all levels of staff</td>
</tr>
<tr>
<td>• Easter long weekend cover; currently no weekend cover in the unit</td>
<td>• Training and equipment</td>
</tr>
<tr>
<td>• After-hours provision of allied health</td>
<td>• Library Books</td>
</tr>
<tr>
<td>• Additional temporary staff support to improve systems to meet the clinical indicator</td>
<td>• Education</td>
</tr>
<tr>
<td>• Assist in funding the data collection of stroke-related audits, which are unfunded</td>
<td>• Support for staff training</td>
</tr>
<tr>
<td></td>
<td>• Professional development activities for staff</td>
</tr>
<tr>
<td></td>
<td>• “LEAN” pharmacy workshop</td>
</tr>
<tr>
<td></td>
<td>• Clinical education for clinical staff</td>
</tr>
<tr>
<td></td>
<td>• Professional membership for all staff; uniforms and text books for the department</td>
</tr>
<tr>
<td></td>
<td>• Dysphagia screening training by SP</td>
</tr>
<tr>
<td></td>
<td>• Texts, training, improved workflow design etc</td>
</tr>
<tr>
<td>Building/office Modifications</td>
<td></td>
</tr>
<tr>
<td>• Shelving</td>
<td></td>
</tr>
<tr>
<td>• Minor structural changes</td>
<td></td>
</tr>
<tr>
<td>• Construction of a resuscitation simulation centre</td>
<td></td>
</tr>
<tr>
<td>• Modification to clinical work area</td>
<td></td>
</tr>
<tr>
<td>• Creating more space (e.g. removing walls, providing efficient shelving, moving sinks)</td>
<td></td>
</tr>
<tr>
<td>Projects and Research</td>
<td></td>
</tr>
<tr>
<td>• Partially towards next indicator i.e. conscious sedation</td>
<td></td>
</tr>
<tr>
<td>• Additional projects</td>
<td></td>
</tr>
<tr>
<td>• LEAN project within department</td>
<td></td>
</tr>
<tr>
<td>• Project for policy and procedure work</td>
<td></td>
</tr>
<tr>
<td>• Implementing LEAN processes to improve patient care</td>
<td></td>
</tr>
<tr>
<td>• Offline research time to further report and develop dysphagia screening tools and procedures</td>
<td></td>
</tr>
<tr>
<td>• Research initiating dysphagia screening time offline for staff</td>
<td></td>
</tr>
<tr>
<td>• Offline time to analyse the relevant data, do gap analysis, and validate the tool chosen.</td>
<td></td>
</tr>
</tbody>
</table>
5.7 Operational Changes

Respondents were asked if any operational changes occurred in their clinical unit to ensure that the indicator was achieved; for example, staff allocation, the appointment booking process, the automatic referral to a procedure, the venue location or access to equipment.

Overall, just over 23% of respondents indicated that, ‘yes’, changes had been made. The individual range across the clinical areas was high with Emergency Department at 57%, who indicated ‘yes’. A positive response for the other clinical areas ranged between 13% (COPD) and 29% (Discharge Medication) (n=192). Graph 13 “Did Operational Changes Occur in Response to CPIP?” summarises the responses.

Graph 5.13: Did Operational Changes Occur in Response to CPIP?

This question was followed by an open-ended question asking for elaboration on what changes had been made. The responses in relation to changes implemented to achieve the indicator included:

- introducing a second supervised physiotherapy session
- staff doing a daily review of indicator compliance
- meeting weekly to review clients
- identifying Key Performance Indicator monthly report card
- placing an increased emphasis on booking appointment time within set time frame
- establishing booking procedures and dedicated transitional discharge position
- investing more time into achieving indicator
- revising workloads
- increasing administration support
- making staff aware of indicators and CPIP revenue
- implementing blanket allied health referrals
- allocating more pharmacy assistant time
- employing after-hours staff
- nurse educators training staff in use of dysphagia screening tools
- changing team processes
- increased form availability and starting data collection/project.

5.7.1 Barriers to Participation in the CPIP Scheme

Respondents were asked about their perceptions of barriers to participating in the CPIP scheme. From n=192 responses, 110 were received in relation to this question; 18 of which were a 'nil' or 'none' response to perceived barriers. The qualitative data were extracted and analysed, and strong themes emerged in the areas of data collection and recording of clinical indicator, resources, leadership, communication, values and attitudes, and funding.

Lack of resources was a dominant theme with examples of barriers identified such as “Resources”, “Lack of staff and competing workload demand”, “Lack of staff”, “Time, clinical load”, “Limited number of pharmacy staff”, “Lack of staff to perform the clinical function”, “Allocation of time (nursing) to undertake the auditing”, “Staff, money, vision”, “Data collection time, this always comes last and opportunity for payment lost despite increase in adherence”, and “Not enough resources. I always find it remarkable that there is accepted recognition that some services are better resourced than others. Why don't we level the playing field before we start distributing the carrots?”

A number of respondents commented on themes regarding collecting data and recording the clinical indicator. This included responses such as “Ensuring staff
entered accurate data”, “Relies on clinicians inputting data and they won't do it”, “Lack of computer access”, “Access to medical records to allow collection of indicator data”, “Need someone to collect the data to ensure capture of funding”, “Data collection errors”, “Collecting the data” and “Paperwork being completed. No AO to complete this; no single person/agreement on how this was to be managed and who was to be responsible”.

Leadership was raised as a theme with responses such as “We could not fulfill [sic] criteria; lack of staff and resources. No support from management”, “Needs a driver-project officer”, “Lack of knowledge by managers about best practice for pulmonary rehab”, “Exec [sic] decision to stop duties that had been taken on without funding”, and “Lack of medical leadership”. Issues with communication about the scheme emerged with examples such as “No communication with peers and others who work at my facility”, “Most medical staff unaware or not committed to the process”, “Lack of knowledge about the scheme”, “Low knowledge of CPIP”, and “Not knowing enough about it”.

Attitude and values emerged as a minor theme with four responses that included “Cultural shift of clinicians”, “It feels ethically wrong to give and [sic] incentive for treating one mental illness and not others”, and:

…distorted incentives that reward units with adequate staff and increase work pressure on units without adequate staff. It could be said that it is all a matter of work priorities. CPIP should aim to boost service delivery. Increasing productivity without increasing resources can only go so far before something will snap. (look back to the industrial engineering ideas of the early 1900s - consider the ideas of Frederick Taylor, and the barriers encountered trying to increase productivity by increasing money, and his descriptions of “systematic soldiering”).

The final theme related to funding. These responses included barriers such as funding being “non recurrent”, “too short a time to expend funds”, “getting the funding to put the system in place”, and “accessing the dollars earned”.

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5.8 Do you think CPIP should be continued and expanded into the future?

Respondents were asked if they thought that CPIP should continue and be expanded in the future. Seventy three percent per cent stated ‘yes’. This is compared with 4% who stated ‘no’, 16% who were ‘unsure’ and 7% who provided no response. There was no particular district that dominated the ‘yes’, ‘no’, or ‘unsure’ responses. The ‘no’ responses came from unique districts (n=192).

The high positive response rate from COPD, Discharge Medication, and Stroke clinical areas (92%, 86%, and 85%, respectively) indicated strong support for the scheme’s continuation. Fifty seven percent of the Emergency Department clinical area supported the continuation, and Mental Health clinicians indicated the lowest support for continuation with only 45% indicating that they would like the program to be continued and expanded. Graph 5.14 “Should CPIP be Continued and Expanded?” provides visual detail of the results.

Graph 5.14: Do you think CPIP be Continued and Expanded?

Following this initial question regarding continuation and expansion of the scheme, an open-ended question provided the opportunity to enable further explanation of the ‘yes’, ‘no’ or ‘unsure’ response. In total, 73 respondents left comments. Of those, 59 respondents, who had answered ‘yes’ to the question, took the opportunity to further
explain their position. A number of themes emerged from the qualitative analysis such as CPIP having a spotlight role, the need to ensure the payment mechanism functions, and the suggestion of new clinical indicators that could be endorsed in the future.

CPIP was seen to bring attention and create a focused response to the clinical indicator by both clinicians and managers and executives. This theme of CPIP creating a spotlight was expressed in responses such as, “…focuses attention on evidence based practice and decision making by clinicians”, “It recognises the important work being done in this area”, “…has brought it to the attention of executive”, “Due to CPIP scheme, executive support was forthcoming”, “It assists clinicians to support and provide evidence to managers that meeting [sic] standard of care”, “Provides a means to negotiate with non-clinical managers for clinical improvement”, and “…useful as a means of focus for quality project and overall quality improvement efforts”.

Respondents supportive of the continuation of the scheme were keen to have new clinical indicators added to the program such as “Process indicator, spirometry performed, smoking status, COPD/asthma action plan…”, “For preventing IDC [indwelling catheter] insertion O/A [on admission] for no clinical reason. No IDC = no payment”, “We achieved significant improvements in physio... Would like to work towards new specific evidenced based indicator”, “for all clients requiring follow up care from CMHS [Community Mental Health] after discharge”, and “All patients benefit from DMRs if less than 4 drugs on discharge. Would like to see scheme extend perhaps (from 4 or more) to 3 or more medications...”. A response simply identified that “The indicators should mature with time” and another identified that indigenous patients may be disadvantaged due to age groups used, “…difficult to deliver in indigenous communities due to identified age groups”.

The correct functioning of the payment mechanism was identified as an issue even though the respondents supported the continuation of the scheme. For example, “yes if we eventually get the money”, “So long as payment returns to unit responsible”, “But need further work on ensuring that $ are made available to the units”, “Direct allocation to the cost centre of the work area responsible- may be multiple in one district”, “Expanded to ensure payment is accessible or disseminated...
to all facilities in district”, and “only if the funds are available to the unit immediately and can be used to improve patient care as targeted, rather than being used by exec [sic] to fund other initiatives!” Additionally, in relation to the payment mechanism, there were some concerns regarding equity in allocation, and awareness that there were inequities in performance related to size and location of districts: “…but it needs to be a level playing field. Bigger departments get more, smaller dept disadvantaged”—a simple equity response, and “We should aim at allowing areas who cannot obtain the payment to be brought up to that standard”.

CPIP was viewed as a mechanism to increase funding and resources for clinical areas. The incentive was seen to assist with the delivery of high quality care in areas where access to adequate resources is viewed as a challenge such as rural and regional areas: “…rural areas struggle enough already. An incentive payment will help with resources”. In general, it was seen as a positive opportunity to purchase new resources: “…help progress patient care e.g. buy spirometry equipment to enable best practice”, “…incentive for benefits to department not available through other means”, and “…to improve equipment and education otherwise [sic] limited funding accessibility”. Also, it was seen to enable the valuable role of measuring and monitoring quality of care: “We have been analysing stroke care and improving the service, [sic] without funds and it has been exceedingly difficult”, and “…provides opportunity to assist service expansion and demonstrate outcome initially”. Some respondents identified that without the funds the clinical indicator activity would not occur; for example, “For many hospitals it is an extended clinical service which [sic] should be recognised in monetary terms”, “…help to provide extra care”, “The only incentive the staff have to produce the DMRs (which are still considered by most to be an extra, not a routine job) is the funding. Should the funding be cut, DMR numbers would drop”, “…gives ability for programs to provide and maintain a high standard reflective of quality practices”.

Finally, in response to the question, respondents outlined that there was a need for more resources and training to enable clinical indicators to be achieved at the district- and clinical-unit level: “…with some infrastructure for AO support”, “…some actual time allocation - increase in nursing hours to manage this scheme”, and “Incentives are good, but training re [sic] effective implementation required”.

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Those respondents who were ‘unsure’ used the opportunity to put caveats on the scheme’s continuation: “…should not create work. The funding for basic needs is required first”, “It has really impacted on workloads, it would be good if we could spend the $$ on staffing”, and “…if $ are kept by hospital will cease completely”. The remainder were related to needing more information about the scheme before they would commit: “…need to know more about it”.

Of the ‘no’ respondents five took the opportunity to comment. These responses predominantly reflected strong ethical opposition: “The whole concept is philosophically flawed”, “Money should not be used as an incentive for good practice”, and “I am fundamentally opposed to financial incentives in the public sector”. One of the respondents indicated that the financial incentive was inadequate: “…monies generated are too small”. The other respondent preferred to see up front the funds to be provided for trial projects or initiatives that might produce better patient outcomes.

5.9 Improvements to CPIP

At the end of the questionnaire, a concluding open-ended question was posed: In what way would the CPIP incentive scheme be improved in the future? There were 95 respondents in total to this question, 78 of whom had previously answered ‘yes’ to the question about continuing and expanding the CPIP scheme.

This category of respondents who answered ‘yes’ relayed a dominant message of concerns and problems with the CPIP payment mechanism. They identified a need to ensure that the payment reached the intended recipients. Preference was for money to be placed directly into the clinical unit’s individual cost code rather than a lump sum payment to the district, which is then reliant on local resolution for correct allocation to clinical areas. Respondents made statements such as, “Ensure incentive money actually reaches clinicians”, “Perhaps clearer process for money allocation to allow the clinical unit to use the incentive payments they are supposed to have received”, “Need to have money as direct transfer to cost centre code, not just put in a general payment to district hospitals”, “Money direct transfer to cost centre code”, “Larger dollar amount please. Need to send to correct cost centre”;

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“Distributed to individual teams rather than to district/cluster”; “…maybe direct payment to department rather than to the district”, “Tighter rules to ensure payment comes to required unit, that unit responsible [sic] for improving the clinical indicator outcomes”, “…ensure it gets to the clinicians doing the work”, and “Provision of funds directly to designated unit”.

In some cases, funds were seen to be incorrectly allocated, especially where Discharge Medication clinical areas achieved the mental health depot injection clinical indicator, but funds were allocated then to Mental Health clinical areas: “Ensure that the CPIP revenue comes back to the intended areas eg [sic] pharmacy instead of mental health. If pharmacies see no return for the extra time and effort put into mental health – [sic] they become quickly disillusioned particularly when other areas get this revenue.”

A subcategory of responses coded into this theme of payment mechanism identified respondents’ requests for more regular and timelier payment points, more time to spend funds, and greater transparency of payment: “More regular payments would be more practical. Receiving a large amount of funding late into the finance years [sic] means that it can be difficult to use before the end of June and it does not roll over, it is effectively wasted. Most recent payment included activity from a previous finance year e.g. paid in Jan 09 for the period April to Sept 08. Payments need to be more timely”, “…quicker, more efficient transition of funds to units…”, “…more transparency”, “Really difficult to track audit and money”, “…notification to district team that payment has been forwarded…”, and:

…more clarity on when payments will be received and a longer time to spend [sic]. If we get payments toward end of financial year, difficulty [sic] to ensure spent in that year. Preferable than [sic] we get longer time to spend or can quarantine funds to roll over to next financial year [sic].

There is insufficient time to identify areas where the money can be used. We received a payment in Feb 09 which has to be used by 30/06/09 and cannot be ‘rolled over’. This is not conductive [sic] to sensible use and I have had to try and find something to spend it on before then.
“Allow the CPIP to be kept i.e. not sent back to corporate office. This would allow appropriate and timely expenditure of CPIP revenue to provide long term changes to increase service efficiencies”, and “...difficult to spend large amounts of cash within short time frame of end of financial year”. There was a call for the funding to be recurrent or able to be used for recurrent costs: “…to be used for recurrent expenditure”, “…recurrent payment for each program, not district”, and “…would be good if allowable to be utilised for recurring costs i.e. staff”. One respondent asked for reduced risk for achievement of payment:

...scheme should build in some extra buffer to minimise the risk of not meeting the target i.e. only give recurrent funding to 50% of the last year total, then supplemental funding (non-recurrent expenditure)... That would allow departments to put practitioners on the ground to do the work.

Again, related to the broad theme of payment mechanism, there were comments regarding mistrust between clinicians and district management and the CPIP Business Rule, which enables 20% of funds secured by clinical areas to be absorbed into broader district costs: “...administration costs to be reduced to maximize [sic] payment to clinical care”, “…ongoing review process. Tighten up guidelines as to how the money is spent to prevent admin/CEO's [sic] pilfering it to keep their bottom lined [sic]”, “Send the monies earned directly to the clinical head not managers who dispense monies earned elsewhere, “…refocus money to clinician not into general budget/operations”, “…make sure business manager can’t hide money from us i.e. the clinical unit”. The need to chase and follow-up payment was viewed as time consuming: “…local ownership of where money goes, time consuming for staff to chase up”, and, finally, a simple “…100% of money sent to department who earned [sic]”.

The final sub-category of the theme of payment mechanism related to a need for guidelines and accountability around expenditure of funds once received:

“…evaluate how payments are spend [sic] in other areas, I had close access to audit process which drove my insistence on accessing funds (CPIP) and spending appropriately”, and “…some greater accountability for each district on what and how the money is used in each district, i.e. using it to pay for conference leave for staff is not appropriate when other facilities have none of minimal [sic] of these services”.

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Alexis Stockwell
The need for improved communication was a strong theme in the analysis of this question about how CPIP could be improved in the future. Respondents made suggestions such as, “...more notice of when it will start”, “...broader advertising of the program into nursing circles”, “...more publicity about the program, not sure who gets told about it”, “...guidelines re [sic] accessing funding. Definition of clinical unit”, “Small or remote hospitals who are part of this group did not know about payment”, “…ensure team leaders/clinical leaders practically implement and know how to, have reminders tool eg posters, email templates etc [sic]”, and “email with attached professional flyer for further promotion, add a box for services to inform how the money has been expended”. The need for communication was not only about the CPIP scheme in general but about performance on the clinical indicator; “...more clear reports and feedback on performance...” and how to actually collect the data for the clinical indicator: “...clear details of what the procedure is and what has to be input to computer so the relevant info is recorded”.

A theme to emerge was potential issues of equity and disadvantage related to size and level of pre-existing resources: “…it should be looked at WHY areas are not able to achieve the standards. Reward is paid to Districts who already have the resources to fulfill [sic] the criteria”, “…somehow recognition of establishing services, perhaps not as tough guidelines on meeting the specific indicators...perhaps money in early stages of a program would be fundamental in assisting to meet best practice guidelines”, “equity/justice”, “…need to invest in services that may take longer than 12 months to achieve”, “It can't be linked to quantity. Could it be proportional representation system that takes account of departmental size? It can't be linked to “size” Option 2- weighting of payments”. One respondent was generous in a solution:

…sharing some CPIP funds to [sic] those areas who [sic] currently (due to poor staffing) cannot get any CPIP funding... This would be only seeding revenue to get these areas a project officer to ensure that efficient processes are put in place.

Another theme of potential improvements related to the range and scope of clinical indicators endorsed by the CPIP scheme. A number of respondents would like to see the program embrace more clinical indicators such as, “…expanding eligible criteria”, “…broader scope of patient categories to include every department”, “I understand
schizophrenia is focus of MHCC but all clients requiring follow up should be seen within 7 days”, “…allocated to more indicators”, “…needs to be directed towards outcome measures rather than process measures”, and for the clinical indicators that were age based, e.g. over 65 years of age, there is a need to include complex cases regardless of age”; “…e.g. younger patients who have a heart attack or are diagnosed with diabetes…”, or “…poor English and 2 medications and foster children with one medication…”.

Clinical indicators were seen to be evidence based with clinician endorsement: “…maintain contact with clinicians re [sic] the relevance of these indicators, consider rehab indicators”, “…to promote evidence based clinical indicators and thereby promote/improve quality of care”, “…more money linked to best practice clinical indicators…”, and for indicators to not be based on only QHealth endorsement but national endorsement on what is best practice: “…need to gain national clarity (associate level) around dysphagia screening- risks/benefits and professional agreement around a range of tools/protocols”.

Data collection and analysis was also a theme for improvement. There was discussion regarding the need to outsource data collection from the clinician role, “…AO support…”, “…employ people to implement and input the data. The biggest hospitals with the most infrastructure got the most money!! No equity for small hospitals struggling to provide a service”, and

…exploring ways in which to utilise the money gained for investment into people resources. For example, data entry associated with development of DMR is very time consuming, and does not optimise skill mix of Pharmacy staff. Ideally want non-clinical staff to data entry [sic], so that the Pharmacist can put more time into their pure clinical role.

The method of data collection and analysis was viewed as problematic: “…insensitive for best practice. Focus on collection of data and correct coding”, and “This ED indicator measured clicking a button. It was not able to measure an improvement in discharge letters rates. No pre measurement.” There was a suggestion of the need to start to set benchmarks for clinical indicator performance: “For the existing payment - set a base line [sic] for performance and pay for
exceeding the base line [sic]. For other payments - Look for other clinically significant activities, which are routinely recorded and reward for completion."

The selection of new CPIP indicators included one respondent suggesting consumer involvement: “It would be great to hear from clients and carers about how they feel our practice should improve. Perhaps by asking clients and carers to provide some confidential feedback on set forms and collating this information”, or “...unfunded growth areas including ATODS patients and mental health clients”, and the need to expand and “…keep looking at areas that need encouragement to become part of daily work”. In regards to the longevity of the clinical indicators and assessing the effectiveness of CPIP, there was a request for “…adequate time to see the change, then observe change on cessation”.

Of the 31 respondents who had answered ‘unsure’ to the previous question, 13 took the opportunity to comment. Predominantly, the responses elicited the need for improved communication regarding the scheme: “…advising clinical areas that it exists”, “…regular information sessions on the progress towards achievement”, “…perhaps more open feedback”, “…awareness amongst team and staff- work unit practice guidelines to achieve this”, “…let us know about it in a timely constructive way”, and “…ensure information reaches all allied health discipline [sic]”.

A small number of these ‘unsure’ respondents outlined concerns regarding the risk of problems with the payment mechanism which included: “…running well, ensure payment gets to where it is meant to go. Clinicians will disengage if payment mechanism fails”. Alternately, the specifics of the CPIP Business Rules were critiqued: “…too much spend [sic] on admin costs 20% for what. [sic] Provide all the incentive $” and “…more time required between receiving the incentive and spending it”.

Those who answered ‘no’ in the previous question about continuation and expansion of CPIP still took opportunity to respond by further clarifying their perspective: “…reallocates resources to direct clinical care staff” and “…Don't run it”. 

Alexis Stockwell
5.10 Study Two: Statistical Process Control

Applying Statistical Process Control techniques to a selection of participating CPIP hospitals to identify trends and evidence of variation in demonstrable clinical indicator achievement.

5.10.1 Overview of Analysis

Statistical Process Control analysis was applied to four clinical indicators from the Stroke, Mental Health, Emergency Department, and Discharge Medication clinical areas. The data relied on the determination of a numerator (total number of clinical cases who met the indicator criteria) divided by a denominator (total number of clinical presentations matching clinical indicator criteria) to provide a proportion of achievement of the clinical indicator (See Appendix 10 “Measuring Variation” for further details).

The aim of this analysis was to provide a QHealth ‘snapshot’ of the clinical indicator to determine if the process remained within control and if the level of variation was within control limit bounds across the Pre-Implementation Phase in 2007 and the first 12 months of implementation (Jan 2008–Dec 2008). (This excludes MH, where only partial-year data is available due to a new information system that was implemented). SPC was used as a tool that permits visual feedback, tracking, and reporting of clinical process indicators through robust statistical techniques.

The following analysis scanned the selected SPC P Graphs for ‘common cause’ variation. The charts below were reviewed to visually determine whether the clinical process indicator is stable following statistical analysis and whether it is in ‘statistical control’. The P Graphs were also reviewed for ‘special cause’ variation or where the scope of variation in the clinical process indicator has deviated from the expected. An interpretation may indicate a major change in the process, or a non-random event has occurred and this requires an investigation. The clinical process indicator being ‘in control’ is not necessarily desirable or reflective of a good process. It means the indicator is stable, has minimal variation, and is not changing over time (Fasting & Gisvold, 2003).
The SPC P Graphs have been broken into two-staged processes with the stage line positioned at the commencement of CPIP in January 2008. The control line (average/mean) for each stage is calculated based on data only from that stage. Analysis occurred on a hospital/facility level within QHealth districts. Given the small selection of sites, they have been kept confidential.

Selections of the SPC P Graphs that are of specific interest are displayed below with an interpretation of each selected graph.

Key to interpreting Graphs

SITES: the first alphabet letter refers to a specific hospital/facility and the second alphabet letter refers to the site being large (L), medium (M), or small (S) e.g. AL= Hospital A—large.

CONTROL LIMITS: Upper Control Limit= UCL and Lower Control Limits LCL respectfully.
5.10.2 Mental Health SPC P Graphs

Clinical indicator: Patients with the DRG Schizophrenia seen by a community mental health professional within 7 days following discharge from the same district mental health service provider: Electronic Collection

The SPC analysis undertaken on the performance of the Mental Health clinical indicator at a large hospital is shown in Graph 5.15 “Mental Health Discharges Seen within 7 Days of Discharge: Site AL”. This graph presents a clinical process that has remained within control during this period. The variation is within the statistical control limits and the variation is most likely related to elements such as time of day or patient complexity. There is a small increase in the mean from 55% to 65% from the CPIP Pre-Implementation phase to the first eight months.

Graph 5.15: Mental Health Discharges Seen within 7 Days of Discharge: Site AL
The second graph, 5.16 “Mental Health Discharges Seen within 7 Days of Discharge: Site CL” reflects analysis that was conducted again on this clinical indicator at a large hospital. The process has remained generally within control during this period except for one episode of special-cause variation in June 2008. This is identified as a non-random event and should be investigated further by the hospital or the Mental Health Clinical Collaborative to determine the factors behind this point of analysis. The following month, July 2008, shows a dramatic increase in performance—to over 80%—that then reduces back quickly in August 2008. Overall, there was a small decrease in the mean from 59% to 55% from the pre-implementation to the Phase One period.

Graph 5.16: Mental Health Discharges Seen within 7 Days of Discharge: Site CL

Tests performed with unequal sample sizes
The third graph, 5.17 “Mental Health Discharges Seen within 7 Days of Discharge: Site JM” is performed on a medium-sized hospital. The graph identifies that the process has remained generally within control during this period but that there has been a decrease in the mean from 52% to 44% from the pre-implementation to the post-implementation period. On reflection, this may indicate that the CPIP had no impact on increasing the demonstrated performance of the clinical indicator for this hospital.

Graph 5.17: Mental Health Discharges Seen Within 7 Days of Discharge: Site JM
5.10.3 Emergency Department SPC P Graphs

**Clinical indicator:** All patients aged 65 years (or 50 years if ATSI) and over who are discharged from an emergency department to home or nursing home have evidence of communication back to the GP/LMO: Electronic Collection

In general, the Emergency Department clinical indicator data for 2007 was poor because this was not previously identified as a potential indicator for collection. The field in Emergency Department Information System (EDIS) was used for inconsistent purposes across all sites. In July 2008, a change was made to the original data collection methodology. Initially, in January 2008, the ‘inform GP’ box on the clerical screen was ticked. Problems arose as this box was being used variably across all sites. In July, a formal memorandum was released from the Emergency Department clinical network identifying that, with regards to achieving the clinical indicator, a change would occur in the practice of recording information. The new method involved the procedure pallet of the EDIS system having ‘GP informed of patient visit’ added as an option to be selected against patient records.

The analysis of the following SPC graphs occurs in context that the pre-intervention data was not routinely being collected on this clinical indicator and that there had been a change in recording practice in July 2008. This may influence Phase One SPC results as the control line was not in position when ED started the CPIP pilot.
The first graph, 5.18 “GP Informed of Care: Site AL” was undertaken on a large hospital site. The process is chaotic and is not within control. The pre-intervention data was not routinely being collected on this clinical indicator as described above. There was a slow start to the achievement of this indicator followed by 100% achievement. The changes in recording method then saw performance reduce, but remain within control for four data points. Again in November there was a special-cause variation.

Graph 5.18: GP Informed of Care: Site AL
The second SPC graph, 5.19 “GP Informed of Care: Site CL” is from another large hospital and displays, again, that the clinical process indicator is chaotic and is not within control. The proportion of achievement was high with a drop off in March–May 2008, followed by a significant improvement to above the mean of 86%. The change in reporting process saw some stability in the process; however, in September 2008, the process was again demonstrating special-cause variation.

Graph 5.19: GP Informed Care: Site CL
The third graph 5.20 “GP Informed of Care: Site IM” is from a medium-sized hospital. The process is not in control until September 2008. January–May 2008 achievement was highest within the 12-month time period post-implementation. This was followed by a decline from June–August 2008 once the new data collection methodology was in place. This is starting to demonstrate that the change in recording procedure did impact on completion rates across sites. The mean overall was low at 28% compared with the second graph, 5.20 “GP Informed of Care: Site CL” where the mean for 2008 was 86%.

Graph 5.20: GP Informed of Care: Site IM
### 5.10.4 Stroke SPC P Graphs

**Clinical indicator:** Acute Stroke – Patients receiving dysphagia screen (minimum requirement) within 24 hours: Manual Teleform Data Collection

The first graph, 5.21 “Dysphagia Screen <24 hours: Site BL” is from a large hospital. The process has remained within control during this period with a small increase in the mean from 42% to 49% from the pre-implementation to the post-implementation period. In November 2008, there was a significant drop in achievement. Although not a special cause, this may be of interest to Site BL for further understanding of factors behind this.

Graph 5.21: Dysphagia Screen <24 Hours: Site BL
The second graph, 5.22 “Dysphagia Screen <24 hours: Site FL” shows data that is sporadic during the 2007 pre-implementation of CPIP with intermittent points available. Post-implementation of CPIP data collection commenced and the process was in control. Data collection reduced and basically ceased in June 2008. Although the pre-mean is high at 76%, only five months of data was collected. The post-implementation mean was a much lower 43%. This sporadic data is reflective of an inconsistent manual data collection process. The hypothesis may be that the introduction of CPIP facilitated data submission, but sustaining this may have become difficult.

Graph 5.22: Dysphagia Screen < Hours: Site FL
The third graph, 5.23 “Dysphagia Screen <24 hours: Site DM” is a medium-sized hospital. The clinical process has remained within control during this period but with a large decrease in the mean from 77% to 38% from the pre-implementation to the post-implementation period.

Graph 5.23: Dysphagia Screen <24 Hours: Site DM
The fourth graph, 5.24 “Dysphagia Screen <24 hours: Site IM” process has remained within control but with sporadic data collection. Data is missing for January 2007, June 2007, September 2008, and December 2008. The mean remained relatively stable with 33% pre-implementation and 36% post-implementation.

Graph 5.24: Dysphagia Screen <24 Hours: Site IM
5.10.5 Discharge Medication

Clinical indicator: Electronic Discharge Medication Record completed where patient is over 65 years and has a complex medication regime: Electronic Collection

The first Graph, 5.25 “% of High Risk DMRs: Site IM” is a medium-sized hospital. The clinical process has remained within control from pre- to post-implementation, during which time the mean improved from 50% to 55%.

Graph 5.25: % of High Risk DMRs: Site IM
The third graph, 5.26 “High Risk DMRs: Site JM” is a medium-sized hospital and it reflects a clinical process that is within control across both the pre- and post-implementation phases of CPIP. The mean also remained very similar with 68% pre- and 69% post-implementation indicating that CPIP has not made a significant difference at this site.

Graph 5.26: High Risk DMRs: Site JM
The fourth Graph 5.27 “% of High Risk DMRs: Site HS” is from a hospital that is small in size. At this site, the clinical process has remained within control across both pre- and post- implementation phases, except for March 2009 which it is recommended that the clinical area investigate. There was a slight increase in the mean from 61% pre- and 62% post-implementation.

Graph 5.27: % of High Risk DMRs: Site HS
5.10.6 Summary of SPC P Graphs

The intention of the review of this snapshot of SPC graphs was to inform the research question regarding improvements that can be made to the design, administration, and monitoring of the CPIP for the Post-Pilot Phase: October 2010–2013. One specific sub-question questioned the value of routine SPC monitoring for the clinical process indicators such as those above. As the above graphs demonstrate, the use of SPC can provide a good overview of the clinical process data that is being collected. For example, the impact of manual data collection for the stroke indicator, as opposed to electronic collection, was shown to be sporadic in some sites. The value of SPC is that it enables real-time monitoring and further systematic investigation of the causes behind the variation.

5.11 Study Three: Financial Payment and Economic Cost Analysis

A descriptive and economic analysis of financial payments and wage costs made to QHealth Districts to assess costs of CPIP scheme.

5.11.1 Introduction

The results of Study Three will be outlined below. The goal is to identify the costs of the incentive payments to QHealth and to follow this with a small economic analysis of the costs of recording and reporting the Mental Health CPIP clinical indicator.

5.11.2 Overview of Costs of CPIP

All QHealth districts and the Mater Health Services–Adult Hospital, a non-profit organisation, were in scope for participating in CPIP. Over three data collection and payment cycles, financial incentives were secured by all districts. Payments to districts occurred on a six-monthly basis, in January and July. The financial data extracted reviews the first three CPIP payment periods that occurred during Phase One. With a projected budget of $8 million per annum for CPIP, the potential allocation of funds was $2 million for the initial payment cycle, which was only three months (Jan–Mar 2008), and $4 million thereafter for each of the following two six-

Table 5.7: *Data Collection and Payment Cycle*

<table>
<thead>
<tr>
<th>Payment cycle</th>
<th>Data Collection Period</th>
<th>Payment Transferred</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Payment 1</strong></td>
<td>January 08 to March 08</td>
<td>July 2008</td>
</tr>
<tr>
<td></td>
<td>$2M available</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*3 months</td>
<td></td>
</tr>
<tr>
<td><strong>Payment 2</strong></td>
<td>April 08 to September 08</td>
<td>January 2009</td>
</tr>
<tr>
<td></td>
<td>$4M available</td>
<td></td>
</tr>
<tr>
<td><strong>Payment 3</strong></td>
<td>October 08 to April 09</td>
<td>July 2009</td>
</tr>
<tr>
<td></td>
<td>$4M available</td>
<td></td>
</tr>
</tbody>
</table>

There were no reports to any district or to the Mater Health Service regarding delays in the payment of CPIP funding. The schedule operated without fault. Although not an approved process, at their discretion, individual districts allocated CPIP funds for capital expenditure as opposed to non-recurrent operational funding. Theoretically, the district may have the option to request that the capital funding be swapped from future years’ capital budgets at the request of the district CEO or CFO and through approval by QH CFO. There is no record of this formal approval occurring.

5.11.3 **Caveats to analysis**

The following provides an overview of three factors that were accommodated in the subsequent analysis.

1. The first CPIP payment occurred in July 2008 and applied to three months of data only (Jan–Mar 2008). This payment was $1,067,150. To enable comparison with the following two payment periods it will be assumed that doubling the payment amount will provide a comparative six-month payment amount. Thus, it is assumed that $2,134,300 would have been secured if this payment period was equivalent to six months of data collection.
2. Between payments 1 and 2, a structural reform of QHealth districts occurred, subsequently reducing the total number of QHealth districts from 19 to 15. To ensure consistency and ease of comparison in analysis, the payments for the previously separate health services districts—such as Royal Brisbane and Women’s Hospital and Northside, who merged into the Metro North Health Service District—were combined for the Payment 1–July 2008 figures.

3. The clinical indicators for Mental Health, Stroke, Emergency Department, and Discharge Medication clinical areas remained consistent. However, the COPD clinical area’s payment opportunity ceased after Payment 2–January 2009, and a formative cardiac clinical indicator was eligible for Payment 3–July 2009. The COPD and its cardiac payments will be removed from the analysis to prevent distortion when comparing changes in payments over time.

4. Payment amounts per indicator remained consistent except for Payment 3–July 2009, where the Mental Health community follow-up clinical indicator increased from $125 to $200, and the Stroke antiplatelet and dysphagia screen were increased from $50 and $125 respectively to $200 per each indicator. This is outlined for clarity in Table 5.8 “Indicator Amounts”.

<table>
<thead>
<tr>
<th>Clinical Indicator</th>
<th>Jul 2008 and Jan 2009</th>
<th>Jul 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental Health Community Follow-up</td>
<td>$125</td>
<td>$200</td>
</tr>
<tr>
<td>Mental Health Depot</td>
<td>$30</td>
<td>$30</td>
</tr>
<tr>
<td>Stroke Antiplatelet therapy</td>
<td>$50</td>
<td>$200</td>
</tr>
<tr>
<td>Stroke Dysphagia Screen</td>
<td>$125</td>
<td>$200</td>
</tr>
<tr>
<td>Emergency Department</td>
<td>$60</td>
<td>$60</td>
</tr>
<tr>
<td>Discharge Medication Information</td>
<td>$50</td>
<td>$50</td>
</tr>
<tr>
<td>Cardiac</td>
<td>$0</td>
<td>$5,000</td>
</tr>
<tr>
<td>COPD</td>
<td>$20,000</td>
<td>$0</td>
</tr>
</tbody>
</table>

5.11.4 Phase One Payments to Districts and Clinical Areas

In total, in the 15 months from January 2008 to March 2009, a total of $5,955,130—or just over 50% of a potential $10 million—in CPIP payments were secured by all QHealth districts and the Mater Health Services. Table 5.9 “District Summary” details
these payments, secured from a potential $10 million during this period, over the three payment periods per district, including Mater Health Services.

Table 5.9: District Summary

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Metro South</td>
<td>$192,545</td>
<td>$461,820</td>
<td>$516,790</td>
</tr>
<tr>
<td>Metro North</td>
<td>$239,290</td>
<td>$524,285</td>
<td>$554,460</td>
</tr>
<tr>
<td>Children’s Health Services</td>
<td>$5,750</td>
<td>$12,150</td>
<td>$11,050</td>
</tr>
<tr>
<td>Gold Coast</td>
<td>$98,575</td>
<td>$287,790</td>
<td>$281,810</td>
</tr>
<tr>
<td>Darling Downs – West Moreton</td>
<td>$87,610</td>
<td>$211,825</td>
<td>$276,060</td>
</tr>
<tr>
<td>Sunshine Coast – Wide Bay</td>
<td>$227,720</td>
<td>$319,555</td>
<td>$578,790</td>
</tr>
<tr>
<td>Central Queensland</td>
<td>$45,240</td>
<td>$109,085</td>
<td>$136,220</td>
</tr>
<tr>
<td>Central West</td>
<td>$550</td>
<td>$1,150</td>
<td>$1,750</td>
</tr>
<tr>
<td>South West</td>
<td>$2,350</td>
<td>$8,300</td>
<td>$15,600</td>
</tr>
<tr>
<td>Mackay</td>
<td>$43,180</td>
<td>$42,735</td>
<td>$44,880</td>
</tr>
<tr>
<td>Townsville</td>
<td>$50,100</td>
<td>$107,090</td>
<td>$144,510</td>
</tr>
<tr>
<td>Cairns and Hinterland</td>
<td>$52,240</td>
<td>$71,835</td>
<td>$68,340</td>
</tr>
<tr>
<td>Mt Isa</td>
<td>$1,900</td>
<td>$44,700</td>
<td>$49,750</td>
</tr>
<tr>
<td>Cape York</td>
<td>$0</td>
<td>$50</td>
<td>$50</td>
</tr>
<tr>
<td>Torres Strait – Northern Peninsula</td>
<td>$100</td>
<td>$450</td>
<td>$100</td>
</tr>
<tr>
<td>Mater</td>
<td>$20,000</td>
<td>$0</td>
<td>$5,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$ 1,067,150.00</strong></td>
<td><strong>$ 2,202,820.00</strong></td>
<td><strong>$ 2,685,160.00</strong></td>
</tr>
<tr>
<td><strong>Six-month assumption</strong></td>
<td><strong>$ 2,134,300.00</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Overall</strong></td>
<td></td>
<td></td>
<td><strong>$ 5,955,130.00</strong></td>
</tr>
</tbody>
</table>

* three-month data payment period
($M) potential funds available

Three large districts—Metro North, Metro South, and Sunshine Coast-Wide Bay—secured the lion’s share of CPIP funds with a combined $3,615,255 of the total $5,955,130 distributed. This represents nearly 61% of the total payments made. The top five earning sites, all in the South East Corner, accounted for $4,858,925 or 81% in payments over the three payment cycles. Table 5.10 below demonstrates this spread.
Table 5.10: Total Payments Secured by Sites: Highest to Lowest

<table>
<thead>
<tr>
<th>Districts</th>
<th>Total Payments: Jan 2008–Jul 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metro North</td>
<td>$1,318,035</td>
</tr>
<tr>
<td>Metro South</td>
<td>$1,171,155</td>
</tr>
<tr>
<td>Sunshine Coast – Wide Bay</td>
<td>$1,126,065</td>
</tr>
<tr>
<td>Gold Coast</td>
<td>$668,175</td>
</tr>
<tr>
<td>Darling Downs – West Moreton</td>
<td>$575,495</td>
</tr>
<tr>
<td>Townsville</td>
<td>$301,700</td>
</tr>
<tr>
<td>Central Queensland</td>
<td>$290,545</td>
</tr>
<tr>
<td>Cairns and Hinterland</td>
<td>$192,415</td>
</tr>
<tr>
<td>Mackay</td>
<td>$130,795</td>
</tr>
<tr>
<td>Mt Isa</td>
<td>$96,350</td>
</tr>
<tr>
<td>Children’s Health Services</td>
<td>$28,950</td>
</tr>
<tr>
<td>South West</td>
<td>$26,250</td>
</tr>
<tr>
<td>Mater</td>
<td>$25,000</td>
</tr>
<tr>
<td>Central West</td>
<td>$3,450</td>
</tr>
<tr>
<td>Torres Strait – Northern Peninsula</td>
<td>$650</td>
</tr>
<tr>
<td>Cape York</td>
<td>$100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$5,955,130</strong></td>
</tr>
</tbody>
</table>

Table 5.11 details payments made to clinical areas. The pharmacy-based Discharge Medication indicator was the largest recipient of total CPIP funds over the three payment cycles. The Discharge Medication clinical area secured almost 4.5 times that of Mental Health.

Table 5.11: Total Payments in Order of Earnings: Jan 2008–Jul 2009

<table>
<thead>
<tr>
<th>Clinical Area</th>
<th>Total Payments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discharge Medication Information</td>
<td>$2,418,150</td>
</tr>
<tr>
<td>Emergency Department</td>
<td>$2,327,820</td>
</tr>
<tr>
<td>Mental Health</td>
<td>$527,610</td>
</tr>
<tr>
<td>COPD</td>
<td>$300,000</td>
</tr>
<tr>
<td>Stroke</td>
<td>$221,550</td>
</tr>
<tr>
<td>Cardiac</td>
<td>$160,000</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>$5,955,130</strong></td>
</tr>
</tbody>
</table>
5.11.5 Stroke

Payments for the Stroke antiplatelet and the Stroke dysphagia screen clinical indicators significantly increased; however, this is due to an increase in the original payment amounts from $50 and $125, respectively, to $200 per each indicator. If the payment had been unchanged, the total amount secured for the antiplatelet indicator across all sites would have been $18,850 compared to the $75,400 earned, and $41,875 instead of $67,000 for the dysphagia screen. Payments between Payment 1–July 2008 and Payment 2–January 2009 reduced by 5%, then increased by 17% for Payment 3–July 2009.

Table 5.12: Stroke Payments

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Jul 2008* ($2M)</th>
<th>Jan 2009 ($4M)</th>
<th>Jul 2009 ($4M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stroke Antiplatelet therapy</td>
<td>$17,500</td>
<td>$16,850</td>
<td>$75,400</td>
</tr>
<tr>
<td>Stroke Dysphagia Screen</td>
<td>$9,800</td>
<td>$35,000</td>
<td>$67,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$27,300</strong></td>
<td><strong>$51,850</strong></td>
<td><strong>$142,400</strong></td>
</tr>
<tr>
<td>Six-Month Assumption</td>
<td>$54,600</td>
<td><strong>No change in Tariff $60,725</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$221,550</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Graph 5.28: Stroke CPIP Funds

![Graph showing Stroke CPIP funds $125/$50-$200 over July 2008, Jan 2009, and July 2009 with CPIP funds increasing from $54,000 to $60,000 to $62,000].
### 5.11.6 Mental Health

The Mental Health clinical area secured $527,610 across the three funding cycles. There was a change in tariff for the third payment cycle. The Mental Health community follow-up indicator increased in payment from $125 to $200 and accounted for an additional $82,800 secured. The previous rate would have only secured $138,000 as opposed to the $220,800 that was secured for Payment 3–July 09.

If Payment 1–July 2008 secured was $120,300, using above outlined assumption to account for six months data, and Payment 3–July 2009 secured $199,580 on the original tariff, then payments have increased by 55% between Payment 1–July 2008 and Payment 2–Jan 2009. The increase then to Payment 3–July 2009 is only 7%.

Table 5.13: MH CPIP Funds

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Jul 2008* ($2M)</th>
<th>Jan 2009 ($4M)</th>
<th>Jul 2009 ($4M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental Health Community Follow-up</td>
<td>$45,750</td>
<td>$130,500</td>
<td>$220,800</td>
</tr>
<tr>
<td>Mental Health Depot</td>
<td>$14,400</td>
<td>$55,380</td>
<td>$60,780</td>
</tr>
<tr>
<td>Total</td>
<td>$60,150</td>
<td>$185,880</td>
<td>$281,580</td>
</tr>
<tr>
<td>Six-Month Assumption</td>
<td>$120,300</td>
<td>No change in Tariff</td>
<td>$199,580</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>$527,610</td>
</tr>
</tbody>
</table>

Graph 5.29: MH CPIP Funds
### 5.11.7 Emergency Department

Emergency Department clinical areas secured $2,327,820 funding across the three payment cycles. If Payment 1–July 2008 secured $517,200, using above outlined assumption to account for six months data, then payments increased by 75% to $905,640 in Payment 2–January 2009. There was a subsequent further increase of 28% to secure a total payment of $1,163,580 for Payment 3–July 2009. There was no change in tariff at this time.

Table 5.14: ED CPIP Funds

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Jul 2008* ($2M)</th>
<th>Jan 2009 ($4M)</th>
<th>Jul 2009 ($4M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency Department</td>
<td>$258,600</td>
<td>$905,640</td>
<td>$1,163,580</td>
</tr>
<tr>
<td>Six-Month Assumption</td>
<td>$517,200</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$2,327,820</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Graph 5.30: ED CPIP Funds

5.11.8 Discharge Medication

The Discharge Medication clinical indicator was the top clinical area CPIP earner over the evaluation period. $2,418,150 in indicator payments was tendered in comparison to $527,610 for the two Mental Health clinical indicators combined. Indicator payment amounts have remained relatively consistent with only a 2% increase in payments from Payment 1–July 2008 (six-month assumption) to Payment 3–July 2009. Notably, there

Alexis Stockwell
was a fall in tendered payments for this indicator between Payment 2–January 2009 to Payment 3–July 2009 of 8% or $81,850 less.

The Discharge Medication clinical indicator was the main indicator that ensured CPIP payments were distributed across the state, accounting for the small payments made to the Cape York and Torres Strait – Northern Peninsula districts as well as payments made to the Children’s Hospital. Of the 111 hospitals eligible for inclusion, 64 were non-pharmacist sites usually located in rural and remote areas.

Table 5.15: DM CPIP Funds

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Jul 2008 * ($2M)</th>
<th>Jan 2009 ($4M)</th>
<th>Jul 2009 ($4M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discharge Medication Information</td>
<td>$461,100</td>
<td>$1,019,450</td>
<td>$937,600</td>
</tr>
<tr>
<td>Six-Month Assumption</td>
<td>$922,200</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>$2,418,150</strong></td>
</tr>
</tbody>
</table>

Graph 5.31: DM CPIP Funds

5.11.9 COPD

The COPD clinical indicator payments were made as a lump-sum payment following a survey to districts to determine if the clinical indicator was achieved. There was a follow-up survey with sites not eligible in first instance and a second round of payments were
made in Payment 2–January 2009 for those sites who subsequently achieved the clinical indicator.

Table 5.16: COPD CPIP Funds

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Jul 2008* ($2M)</th>
<th>Jan 2009 ($4M)</th>
<th>Jul 2009 ($4M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>COPD</td>
<td>$260,000</td>
<td>$40,000</td>
<td>$0</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td></td>
<td><strong>$300,000</strong></td>
</tr>
</tbody>
</table>

**5.11.10 Cardiac**

A state-wide survey was undertaken to determine priority areas for the Cardiac clinical network. This was a once-off survey tool. The Mt Isa clinical area’s data was not forwarded correctly and therefore payment was not paid; this payment was subsequently paid in November 2009 as a post-budget adjustment.

Table 5.17: Cardiac CPIP Funds

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Jul 2008* ($2M)</th>
<th>Jan 2009 ($4M)</th>
<th>Jul 2009 ($4M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiac</td>
<td>$0</td>
<td>$0</td>
<td>$160,000</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td></td>
<td><strong>$160,000</strong></td>
</tr>
</tbody>
</table>

**5.11.11 Analysis Adjusted for Change in Tariff and Indicators**

To assess payment comparably, the following adjusted analysis has occurred to account for differences that may relate from change in indicator and increases in tariffs.

This analysis occurs with the use of six-month assumption data for Payment 1–July 2008 payment and removes the COPD and the Cardiac payments as per caveats 1 and 3 outlined in “Caveats to Analysis”, section 5.11.3, above.

From Payment 1–July 2008 to Payment 3–July 2009, there was approximately a 25.8% increase in total payments secured by eligible sites from $2,134,300 (assumed) to $2,685,160. This is reflected by an initial increase of 3.2% from $2,134,300 (assumed) for Payment 1–July 2008 to $2,202,820, and a subsequent
further increase of 21.897%, or $482,358, from the Payment 2–Jan 2009 to Payment 3–July 2009 payment periods, as detailed in Table 5.18 “Six Month Assumption”.

Table 5.18: Six Month Assumption

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>$1,067,150.00</td>
<td>$2,202,820.00</td>
<td>$2,685,160.00</td>
</tr>
<tr>
<td>Six-Month Assumption</td>
<td>$2,134,300.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If the COPD and Cardiac payment amounts are removed, and the six-month caveat assumption is used for the Payment 1–July 2008 amount—as shown in Table 5.19 “Adjusted for no COPD or Cardiac”, below—then a 56% or $910,860 increase in payments has occurred between Payment 1–July 2008 and Payment 3–July 2009. This is an initial increase of 33.979% or $548,520 to Payment 2–January 2009 followed by a 16.753% or $362,340 increase to Payment 3–July 2009.

Table 5.19: Adjusted for No COPD or Cardiac

<table>
<thead>
<tr>
<th>Indicators</th>
<th>July 2008 ($2M)*</th>
<th>Jan 2009 ($4M)</th>
<th>July 2009 ($4M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental Health Community Follow-up</td>
<td>$45,750</td>
<td>$130,500</td>
<td>$220,800</td>
</tr>
<tr>
<td>Mental Health Depot</td>
<td>$14,400</td>
<td>$55,380</td>
<td>$60,780</td>
</tr>
<tr>
<td>Stroke Antiplatelet therapy</td>
<td>$17,500</td>
<td>$16,850</td>
<td>$75,400</td>
</tr>
<tr>
<td>Stroke Dysphagia Screen</td>
<td>$9,800</td>
<td>$35,000</td>
<td>$67,000</td>
</tr>
<tr>
<td>Emergency Department</td>
<td>$258,600</td>
<td>$905,640</td>
<td>$1,163,580</td>
</tr>
<tr>
<td>Discharge Medication Information</td>
<td>$461,100</td>
<td>$1,019,450</td>
<td>$937,600</td>
</tr>
<tr>
<td>Totals</td>
<td>$807,150</td>
<td>$2,162,820</td>
<td>$2,525,160</td>
</tr>
<tr>
<td>Six-Month Assumption</td>
<td>$1,614,300</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* three-month data payment period

However, if the Payment 3–July 2009 figure was recalculated at the original tariff rates for Mental Health and Stroke indicators, and again removing COPD and Cardiac indicators, then the total figure secured for Payment 3–July 2009 would have been only $2,360,685. This is just over 9% or $197,865 higher for the six-month period of comparison between Payment 2–January 2009 and Payment 3–July 2009. Table 5.20, “July 2009: Compare Change in Tariff”, and Table 5.21 Compare Jan 2009 with increase in Tariff illustrates this comparison.

However, still keeping the three assumptions of a six-month data calculation for Payment 1–July 2008, removing COPD, Cardiac, and the use of initial tariff rates,
then there would have been an overall increase in payments between Payment 1 and Payment 3 of 46.236% or $746,385.

Table 5.20: *July 2009 Compare: Change in Tariff*

<table>
<thead>
<tr>
<th>Indicators</th>
<th>July 2009 increase tariff</th>
<th>July 2009 pre-rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental Health Community Follow-up</td>
<td>$220,800</td>
<td>$138,000</td>
</tr>
<tr>
<td>Mental Health Depot</td>
<td>$60,780</td>
<td>$60,780</td>
</tr>
<tr>
<td>Stroke Antiplatelet therapy</td>
<td>$75,400</td>
<td>$18,850</td>
</tr>
<tr>
<td>Stroke Dysphagia Screen</td>
<td>$67,000</td>
<td>$41,875</td>
</tr>
<tr>
<td>Emergency Department</td>
<td>$1,163,580</td>
<td>$1,163,580</td>
</tr>
<tr>
<td>Discharge Medication Information</td>
<td>$937,600</td>
<td>$937,600</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>$2,525,160</strong></td>
<td><strong>$2,360,685</strong></td>
</tr>
</tbody>
</table>

Table 5.21: *Compare Jan 2009 with increase in Tariff*

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Jan 2009</th>
<th>July 2009 increase tariff</th>
<th>July 2009 pre-rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental Health Community Follow-up</td>
<td>$130,500</td>
<td>$220,800</td>
<td>$138,000</td>
</tr>
<tr>
<td>Mental Health Depot</td>
<td>$55,380</td>
<td>$60,780</td>
<td>$60,780</td>
</tr>
<tr>
<td>Stroke Antiplatelet therapy</td>
<td>$16,850</td>
<td>$75,400</td>
<td>$18,850</td>
</tr>
<tr>
<td>Stroke Dysphagia Screen</td>
<td>$35,000</td>
<td>$67,000</td>
<td>$41,875</td>
</tr>
<tr>
<td>Emergency Department</td>
<td>$905,640</td>
<td>$1,163,580</td>
<td>$1,163,580</td>
</tr>
<tr>
<td>Discharge Medication Information</td>
<td>$1,019,450</td>
<td>$937,600</td>
<td>$937,600</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>$2,162,820</strong></td>
<td><strong>$2,525,160</strong></td>
<td><strong>$2,360,685</strong></td>
</tr>
</tbody>
</table>
**5.11.12 Economic Cost model**

This minor economic cost analysis presents an initial model for determining the economic costs of reporting and analysing the Mental Health clinical indicator:”Patients with the DRG Schizophrenia seen by a community mental health professional within 7 days following discharge from the same district mental health service provider”

The analysis was over three payment cycles with an estimated 2514 patients achieving the above clinical indicator. The wage costs estimated for reporting and analysing the clinical indicator equated to $7,346 compared with the $397,050 secured in CPIP.
### Table 5.22: Economic costs of reporting and analysis - all hospitals

<table>
<thead>
<tr>
<th>Mental Health Indicator</th>
<th>Costs of participation</th>
<th>Position</th>
<th>Hourly Rate</th>
<th>On cost</th>
<th>Hours</th>
<th>Minutes</th>
<th>Patients</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Development of required data elements</td>
<td>A07</td>
<td>$47.76</td>
<td>25%</td>
<td>14.72</td>
<td>0</td>
<td></td>
<td>$878.79</td>
</tr>
<tr>
<td></td>
<td>Extracting data</td>
<td>A06</td>
<td>$42.52</td>
<td>25%</td>
<td>7.36</td>
<td>0</td>
<td></td>
<td>$391.16</td>
</tr>
<tr>
<td></td>
<td>Data profiling</td>
<td>A07</td>
<td>$47.76</td>
<td>25%</td>
<td>14.72</td>
<td>0</td>
<td></td>
<td>$878.79</td>
</tr>
<tr>
<td></td>
<td>Transform and load data</td>
<td>A07</td>
<td>$47.76</td>
<td>25%</td>
<td>14.72</td>
<td>0</td>
<td></td>
<td>$878.79</td>
</tr>
<tr>
<td></td>
<td>Indicator calculations</td>
<td>A07</td>
<td>$47.76</td>
<td>25%</td>
<td>14.72</td>
<td>0</td>
<td></td>
<td>$878.79</td>
</tr>
<tr>
<td></td>
<td>Develop and publish reports on QHERS</td>
<td>A07</td>
<td>$47.76</td>
<td>25%</td>
<td>14.72</td>
<td>0</td>
<td></td>
<td>$878.79</td>
</tr>
<tr>
<td></td>
<td>Revision on indicators</td>
<td>A07</td>
<td>$47.76</td>
<td>25%</td>
<td>1</td>
<td>0</td>
<td></td>
<td>$59.70</td>
</tr>
<tr>
<td></td>
<td>Data entry</td>
<td>CN</td>
<td>$37.04</td>
<td>25%</td>
<td>0</td>
<td>1</td>
<td>2514</td>
<td>$2,501.46</td>
</tr>
<tr>
<td><strong>Total Cost</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$7,346.28</td>
</tr>
<tr>
<td><strong>Total CPIP Payments secured</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$397,050.00</td>
</tr>
<tr>
<td><strong>Balance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$389,703.72</td>
</tr>
</tbody>
</table>

**Wage Assumptions**

- A07 Level 4
- Clinical Nurse (CN) Level 4
- 25% On-costs
- 7.36 hour working day

QHealth Public Service Award - State: District Health Services
Nurses and Midwives (Queensland Health) Certified Agreement (EB7) 2009
The economic costs as outlined above in Table 5.22 “Economic Costs of Recording and analysis” appear to be in favour of the agent (clinical area) as the costs of recording are only $7,346 in comparison to costs of $397,050 secured from participation in the scheme. The benefit earned minus costs was $389,703.

5.11.13 Summary

The financial and economic costs of reporting and recording the CPIP clinical indicator for Mental Health have been outlined in this section of the results. The findings provide a good overview of funding secured over Phase One of CPIP and begin a process to determine the cost of participating in the scheme from the point of the agent or the clinical areas and hospital. As the CPIP scheme has progressed, it appears that there has been a greater uptake of the funds available (as per adjusted calculations that negate increases in tariff rates and changes in indicators). The economic evaluation is very interesting and demonstrated that, for the case of mental health, there is a positive return on the clinical area’s investment of $7,346 to record the achievement of the clinical indicator. This is the first stage of a future cost-effectiveness analysis that would need to account for costs of quality and efficiency.
Chapter 6 Discussion

6.1 Introduction

This study has been governed by three core research questions that concentrated on clinician knowledge, understanding, and attitudes regarding CPIP; potential improvements that can be made to the CPIP design variables; and the financial and economic costs of CPIP. The following discussion uses complementarity analysis, which was detailed in the “Research Design” (section 4.3) and “Method” (section 4.4) in Chapter 4. This approach intermingles and contrasts the results from each of the methods used to seek a richer understanding of the CPIP scheme for this formative process evaluation.

This chapter is formatted along three core themes that were identified in the analysis of the results. The themes are discussed in light of the aim of this study to strengthen and improve the CPIP scheme. These themes are clinician engagement, CPIP design variables, and the CPIP payment mechanism. The discussion will seek to inform a range of conclusions and recommendations for QHealth that will follow in Chapter 7. The QHealth setting and CPIP scheme, as outlined in the “Context for the Research” (Chapter 2), and the “Literature Review” (Chapter 3) will be used to contextualise this discussion. This will ensure that the recommendations are relevant to QHealth and in line with contemporary literature in the field of quality improvement science and pay-for-performance (P4P) methods.

6.2 Engagement of Clinicians

QHealth has implemented financial incentives to improve the performance and quality of health-care service delivery. At a macro level, the implementation has two clear roles. First, it supports the development of a component within the new funding model for QHealth that values and rewards quality, and second, it creates a positive pathway (or extrinsic motivation) to foster a culture of measuring and monitoring performance by clinicians and clinical networks. This encourages clinicians to be
engaged in identifying gaps in practice (variations), clinical indicators, and a process for measuring and monitoring achievement of these indicators to demonstrate a reduction of variation. This promotes greater levels of literacy regarding the value of measurement in health care and is done in a climate that is a positive experience for clinicians. This is an important strategy to increase the rigor of quality improvement science and ensure that interventions become specific and valid rather than universal and implemented ad hoc. The direction of the science is towards producing a health organisation that is predictable and reliable; the foundation of quality.

The concept of clinician knowledge, understanding, and attitudes was included to recognise the clinician’s role as an influential stakeholder for the successful delivery of pay-for-performance programs. This was a major finding of the US Rewarding Results national evaluation (Young et al., 2005). Engaging clinicians at all stages of designing and implementing P4P is essential to catalysing successful results. There is a need to ensure that the clinician trusts the program, that they understand the clinical indicators being used, and that the process of costs and payments are transparent (Folsom, Demchak & Arnold, 2007). Meterko et al. (2006) identified that this assessment of clinician attitudes is advanced “intelligence” and enabled incremental adjustments to be made with newly implemented P4P-type programs. Waiting the lag time to determine the actual impact or outcomes to emerge was not desirable. The use of the self-completed “Clinician Perceptions” interview tool provided a good snapshot of the levels of knowledge, understanding, and attitudes towards CPIP. This information has provided insight into how and where the program should be improved and strengthened.

Clinicians’ support overall for continuing the CPIP scheme was 74% within the respondent group surveyed. The surveyed clinical areas of COPD, Discharge Medication, and Stroke reflected very high support at 92%, 86%, and 85%, respectively. Emergency Medicine and Mental Health support was not as high with only 57% and 45%, respectively. Mental Health responses need to be explored further. This lack of support, plus their results from the ‘attitude’ component of the survey, indicated that they had limited awareness of the clinical indicator, lack of control over achievement, and that CPIP had limited impact on quality. In
comparison to the other four clinical areas surveyed, Mental Health was unique in this level of negative score.

The reasons for this general high level of support, except by Mental Health clinicians, were not elicited in the survey. It may be due to emerging evidence, which indicates that the strength of P4P’s approach is its ability to rapidly produce improvements in quality and change medical practice (Garber, 2005) or that P4P programs are able to “cut the implementation corner” and reduce the delay between the producing of robust evidence and changing clinical practice (Ashworth & Jones, 2008). More likely, this is why health administrators support P4P schemes. Clinicians’ support of CPIP probably occurs because it is a valuable source of bonus funds for “doing what you should be doing”. In an environment of scarce resources, this is seen as a great opportunity.

CPIP does appear to have a role in assisting clinicians to identify and articulate evidence-based practice. Potentially, it promotes the reallocation of resources within their district to achieve this clinical indicator. This idea of CPIP being a “spotlight” or “attractor” on both the clinical indicator and the clinical area of variation was a rich finding of this study. Clinicians said that it enabled them to gain the attention of non-clinical managers, provided them with a degree of influence and power when negotiating, and gained them attention for the clinical improvements they were implementing. There are potentially exciting avenues for future research that examines CPIP as an “attractor” within a “complex adaptive systems”. This literature is grounded in organisational ecology theory (Grol, Baker & Moss, 2004; Holland, 1992; Institute of Medicine, 2001).

6.2.1 Change in Clinical Practice

Despite this high level of support, the ‘attitudes’ section of the “Clinical Perceptions” survey did not strongly reflect that the scheme had a large impact on clinicians’ practice. The clinicians’ ‘overall’ score and individual scores for COPD and Discharge Medication clinicians was above 3; however, the other clinical areas scored negatively in this domain. This reflects that they did not invest extra time to achieve the incentive or change their clinical practice. Furthermore, clinicians indicated that the incentive had no impact on how they worked nor did it focus their
time or effort constructively. Across the board, however, clinicians from all clinical areas identified a positive response regarding their ability to gain the cooperation of their peers and support staff to achieve the clinical indicator. This may indicate that respondents felt that, individually, there was no impact; however, the ‘clinical team’ was able to work together to implement required changes to achieve the clinical indicator.

To elicit rich information about impact and cooperation in the workplace, the survey sought further general data regarding operational changes that occurred in their clinical unit—such as staff allocation, appointment booking process, automatic referral to testing or procedure, venue location, or access to equipment—to ensure that the indicator was achieved. Overall, a small number of respondents (23%) indicated that, ‘yes’, operational changes had occurred. Some of the changes implemented included creating a new position, increasing level of support provided to clinicians, and implementing new processes such as the blanket allied health referrals. These operational changes come with a ‘cost’ for provision. The QHealth system is presently not sophisticated enough (similar to most health care systems worldwide) to calculate the cost of these changes and to determine if the costs are, in fact, offset by improved performance on a CPIP indicator and the subsequently acquired funds. Future impact or outcome evaluations of CPIP would be enriched by seeking an understanding of the sustainability of these operational changes after the retirement of the CPIP indicator.

6.2.2 Clinician Concerns

The literature identified the need to be aware of unintended consequences and a need for further evaluation to identify the benefits, risks, and costs of such programs (Mehrotra, Damberg, Sorbero & Teleki, 2009). This was a specific attitude scale in the “Clinician Perceptions” survey and findings indicated that clinicians universally did not perceive this to be an issue. They did not see that obtaining the financial incentive had an adverse impact on other patients or that it hindered their providing other clinical services. In the same survey, on the other hand, clinicians did not necessarily perceive that they had control of achieving the clinical indicator or that they were on a level playing field. COPD and Discharge Medication were the only
clinical areas where respondents viewed indicator achievement as slightly within their control.

On a broader scale, clinicians were asked to expand about the negative implications of the CPIP scheme during Phase One of implementation. Unsurprisingly, the methods of data collection were identified as a barrier to participation for both the electronic and manual data-collection systems. The early design concept for CPIP included a preference for the electronic collection of clinical indicator data through existing information systems. This was seen to reduce the potential administrative burden on clinicians to manually collect clinical indicator information. Administrative data that is already being collected through electronic information systems is often easily available without the burden of additional data collection such as that required for manual extraction. The added benefit is that these systems contain information about the demographics, coded diagnosis, and procedures performed (Duckett, Coory & Sketcher-Baker, 2007), which makes further sophisticated data mining and analysis possible.

Discharge Medication and Mental Health tapped into this desired approach and Emergency Department required additional coding boxes to be inserted in their information system with variable success. The once-off survey for the COPD indicator did not use existing information systems and the audit reduced impact on clinical time. Unfortunately, electronic systems are not always available and Stroke clinicians are reliant on manual teleforms to submit their data. The issues ranged from lack of computer access and concerns over accuracy to reliance on clinicians to enter the data. The difficulty is that in a system with imperfect information systems, it is difficult to achieve the ideal of seamlessly collecting this information electronically with minimal disruption to the clinician’s modus operandi. The risks of poor data collecting methods include conflict between professional roles, where one party records the clinician indicator, yet the work is performed by another clinician group and funds are targeted at this latter group. This occurred for two of the indicators in Phase One. The speech pathologists performed dysphagia screens predominantly, but were reliant on nurses to record activity. The contention was that either this recording did not occur or that the payment went to the Medical or Stroke clinical areas rather than to Allied Health. The Mental Health indicator required the
pharmacists to record that the antipsychotic injection was given, yet this payment went to Mental Health not Discharge Medication. Although, as outlined in the results, Discharge Medication clinical areas secured almost five times the amount of Mental Health clinical areas across Phase One. In both cases, CPIP most likely just highlighted underlying areas of contention; however, in future, QHealth should be conscious of this issue and ensure that it does not increase tension or hinder clinicians collaboratively improving patient outcomes.

6.2.3 Awareness and Understanding

Prior to implementing CPIP into QHealth, internal research and consultation were undertaken regarding the adoption of a pay-for-performance methodology to improve the quality of health care provision. The support of clinicians was viewed as being imperative and was elicited prior to implementing CPIP in Phase One (See Appendix 2 CPIP Pre-Implementation Phase). The findings of the attitudinal assessment—and the outright questions regarding knowledge, understanding, and clinician support for CPIP—identify that clinicians surveyed were somewhat, but not overly, engaged with the program. This is despite the overwhelming support for continuation of the scheme.

The attitude assessment tool outlined that the domain of awareness is associated with clinician motivation to participate, awareness of the clinical indicators being used, and an understanding of how the program works and how payments are made. However, given the score of 3.2 for clinicians overall, the strength of this motivation is questionable and could easily slide to the negative side of the scale. Information regarding clinicians’ general knowledge about the program was sought because the success of program may be related to levels of awareness. To be engaged and able to participate in the scheme requires the clinician to have knowledge about how to participate and how to demonstrate achievement of the clinical indicator. Only 17% of respondents identified having a high knowledge of program; 49% identified medium knowledge. This identified that 66% combined had a medium to high knowledge, and a reasonably high 34% stated that they had a low understanding, which provides significant room for improvement.
This level of understanding of the CPIP scheme and the positive score on awareness scale may be biased as a result of purposefully surveying clinicians at clinical forums or meetings. The clinicians surveyed are more proactive in seeking to participate in workplace activities in addition to their day-to-day clinical duties. There is a potential that if this attitude tool or survey question was proposed to all clinicians working within a clinical unit, the knowledge and awareness may not be as high.

The respondents identified clinical leadership groups as the dominant source for providing the information about the scheme. CPIC communications external to the clinical network forums were very limited with only 15 of respondents hearing about the scheme through the CPIC Newsletter or website. It was of interest that 17% heard about it through their clinical peers. This is a valuable mechanism for information flow and future consideration of communication strategies. The target of communication activities to date has occurred primarily through presentations to clinical networks, memorandums, emails, and the CPIC website. Phase Two saw the introduction of a specially designed CPIP Graphic Theme; however, to date, no formal communication strategy exists and may be a weakness. In addition, the formal role and responsibility of the clinical leadership bodies in communicating about the scheme is unclear. The scheme’s vulnerability to communication issues should be addressed.

A CPIP communication strategy should ensure that that clinicians involved in the clinical network are provided with engaging resources that assist them to share the information with their peers and clinical areas in an accurate and timely manner. One example is developing material for education opportunities, such as ‘in-service’ education sessions, within the district. The CPIP scheme is being implemented within clinical environments that have competing systemic priorities and escalating demands on clinicians; hence, there is a need to ensure that a comprehensive communication strategy exists to enable greater attention and traction for this quality improvement program.

### 6.2.4 Relevance of Clinical Indicators to Clinicians

The attitude assessment tool included a scale for relevance of the clinical indicators. This identified that the clinical indicators should reverberate with clinicians and be
judged as clinically relevant, be based on contemporary evidence, and have demonstrated positive impact on patients. This finding is supported by the relevance scale where clinicians ‘Overall’, and all individual clinical groups, scored within a range from high 3’s to above 4. Also, 76% of respondents outlined that they had either a high or medium understanding when asked to rate their knowledge of the clinical indicator.

The CPIP scheme has idealised the need for the clinical indicators to be supported by clinicians and for it to be a clinician-led initiative. This reflects the construct of the program with the respondents as opposed to it being seen as a corporate of managerial-led initiative. The other contextual information to note is that the scheme was formulated in the wake of the public inquires into QHealth and the recommendations from the Forster Report (Forster, 2005), which promoted the role of clinical networks as a means to value the clinician’s voice and clear responsibilities for these networks to foster and encourage clinical leadership. As such, there was a political sensitivity for new initiatives to be supported by clinicians, so this was fostered. Nevertheless, the evidence base for clinician-led improvement is stronger for effectiveness than manager- or organisation-led improvement programs (Scott, 2009). Therefore, there is significant value in maintaining and promoting CPIP indicators as clinician owned and endorsed. This will continue to maximise the engagement and participation of clinicians in reducing clinical variation in care processes. This clinician support and ownership requires the clinical indicator to be submitted by either a clinical network or clinical policy area, such as Safe Medication Practice Unit (SMPU), that have high levels of clinician engagement as a core operational feature.

6.3 CPIP Design Variables

The literature review identified a P4P Design Variable matrix. The matrix contains the design elements to consider when developing a P4P program. This concept for this design model came initially from an unpublished internal UK Audit Commission P4P Report (Audit Commission for Local Authorities and the National Health Service in England, 2009) that was subsequently enhanced and adapted for this study. The Phase One status and design features of the CPIP scheme were applied to the matrix at the end of the literature review in Chapter 3. The conceptualisation of this
model elicited a specific research question regarding how the design, administration, and monitoring of the CPIP scheme can be improved for the Post-Pilot Phase’ (October 2010–2013).

The CPIP scheme is reasonably immature. Although the design settings for the selection of clinical indicators remain valid, the scheme’s development trajectory over the next five years is uncharted territory. The P4P design variable matrix can assist in guiding this development. The scheme’s progression to maturity is reliant on the support of solid project planning and more resources being allocated for its administration. Table 6.1 “P4P Variable Design Matrix: Post-Pilot Phase” provides a suggestion of how the CPIP scheme should mature and develop over the Post-Pilot Phase. These areas are highlighted in yellow. In principal, the evaluation supports the continuation of new budget funding and payments targeted at the clinical unit, and a non-competitive model of assessment between clinical areas or hospitals. CPIP needs to align with the payment systems of QHealth and there is subsequently limited flexibility around increasing payment frequency from every six months. These elements will remain stable and unchanged for the Post-Pilot Phase. The areas of movement relate to the target of the payment, performance target, maturity of indicators and reporting, and analysis variables. The functioning of the CPIP payment mechanism is a theme of this discussion and will be examined separately. Hence, these variables will be focused on in further detail below.
Table 6.1: Variable Design Matrix: Post-Pilot Phase

<table>
<thead>
<tr>
<th>Source of funding</th>
<th>Sliced</th>
<th>New budget</th>
<th>Penalty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target of payment</td>
<td>Clinician/physician</td>
<td>Clinical unit</td>
<td>Organisation</td>
</tr>
<tr>
<td>Performance target</td>
<td>Structure</td>
<td>Process</td>
<td>Outcomes</td>
</tr>
<tr>
<td>Maturity of indicators</td>
<td>Quantity/count</td>
<td>Quality: Composite</td>
<td>Quality: All or none</td>
</tr>
<tr>
<td>Reporting analysis</td>
<td>Absolute</td>
<td>Proportion</td>
<td>Statistical Process Control</td>
</tr>
<tr>
<td></td>
<td>(suits pay for reporting)</td>
<td>(Suits pay for performance)</td>
<td>(advanced monitoring)</td>
</tr>
<tr>
<td>Assessment</td>
<td>Competitive</td>
<td>Non-competitive</td>
<td>Improvement</td>
</tr>
<tr>
<td>Payment method</td>
<td>Bonus</td>
<td>Penalty</td>
<td>Continuous</td>
</tr>
<tr>
<td>Use of payment</td>
<td>Private individual use</td>
<td>Invest in further</td>
<td>Professional and workforce development</td>
</tr>
</tbody>
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6.3.1 Performance Target

Clinical indicators are used as a tool to engage clinicians in clinical improvement activities through the quantifiable identification of key points in the process of the clinical care journey. Robust measurement and analysis is a key component of any quality improvement effort (Chetter, 2009). The foci is to quantitatively measure the congruence between the clinical evidence and clinical practice, and to identify and respond to variation (Shojania & Grimshaw, 2005).

To date, the CPIP scheme has endorsed the use of both structural indicators such as the COPD indicator, and process indicators such as the Discharge Medication indicator. Ideally, outcome measures linked to the process or structural measures should also be identified and monitored. Payment is not suggested yet regarding outcome measures, but the skills and literacy regarding this aspect, and knowledge regarding the impact of the structural or process indicator on outcomes, are weak.
The guidance provided by CPIC for the original development of the clinical indicators specified that the clinical indicators endorsed for inclusion within Phase One of the scheme be identified using the following outlined key concepts:

- a focus on areas of high disease burden
- a well defined single diagnostic group or intervention to increase the chance of demonstrating an unequivocal and attributable effect
- significant variations, from place to place, between optimal and current clinical outcomes and/or practices
- a good evidence base to concentrate attention on interventions of proven value
- clinician support — to increase uptake and sustainability. The relevant interventions would also need to be within the control of these clinicians. (Ward, Daniels, Walker & Duckett, 2007)

This evaluation supports these settings in relation to identifying performance targets. There is, however, a need to further develop these rules. The following is proposed for CPIP clinical indicator requirements to be endorsed for inclusion in the program:

Box 6.1 CPIP Clinical Indicator Requirements

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>1.</td>
<td>a focus on areas of high disease burden or strategic QHealth quality and safety initiatives</td>
</tr>
<tr>
<td>2.</td>
<td>specific identification of the degree of clinical variation in an area of high disease burden, or identification of the QHealth strategic priority area that needs to be addressed</td>
</tr>
<tr>
<td>3.</td>
<td>a well defined, single diagnostic group or intervention to increase the chance of demonstrating an unequivocal and attributable effect</td>
</tr>
<tr>
<td>4.</td>
<td>evidence of best practice or the standard that is required to address this variation, and QHealth clinical network/policy area agreement and support of evidence</td>
</tr>
<tr>
<td>5.</td>
<td>risk of perverse of adverse incentive assessment</td>
</tr>
<tr>
<td>6.</td>
<td>clinician support</td>
</tr>
<tr>
<td>7.</td>
<td>within clinician sphere of influence (e.g. not resource constrained)</td>
</tr>
<tr>
<td>8.</td>
<td>clear identification of structural- or process-clinical indicator for payment</td>
</tr>
<tr>
<td>9.</td>
<td>clear identification of outcome indicators linked to CPIP indicator</td>
</tr>
</tbody>
</table>
10. data collection methodology and a standardised system of collecting and analysing all indicators (pre-pilot tested for feasibility)
11. clinical network and policy area state-wide monitoring plan
12. clinical network and policy area communication strategy for communicating clinical indicator/s.

A principal of the CPIP business rules clearly articulates that the clinical indicators were required to be developed and endorsed by the clinical area. This specific business rule outlines the following:

*State-wide clinical networks will have responsibility for developing and endorsing indicators; communication with network regarding indicators; data quality, collection, analysis and reporting of clinical indicators; and participating in CPIP evaluation.*

Given the large role that these clinical networks or policy areas have in relation to ownership of the clinical indicator, there is a need to consult with them regarding these revised CPIP settings for endorsing clinical indicators. The purpose of this consultation is to further negotiate and formalise these roles and responsibilities, and to identify levels of increased support required from the CPIP scheme to assist in achieving this new model. This may support an argument for increased human resources to administer the program over the Post-Pilot Phase.

### 6.3.2 Maturity of Clinical Indicators and Reporting

The above CPIP settings require the methodology, and the standardised system for collecting and analysing all indicators, to be clearly identified. This will assist in improving the monitoring and tracking of clinical indicators and their outcomes. Additionally, it will enable the process of reporting and analysing clinical indicators to mature, and it will raise the bar for achievement. The P4P evidence supported phased, incremental approaches to implementing P4P programs. It was identified in the literature that measuring clinical indicators needs to advance from identifying the ‘easy fruit’ to payment for monitoring more complex aspects of the care process (Ashworth & Jones, 2008). The concepts of measurement are difficult for the system
to adjust to. As the competency and literacy levels are raised, the ‘bar’ should be set higher.

In line with this, the CPIP clinical indicators need to mature from simple quantity counts towards a use of a suite of clinical indicators within the same clinical process. Within the Post-Pilot Phase, the scheme should progress towards composite quality counts, where payment is reliant on at least two indicators within same clinical process being achieved. Within five years, there should be a progression to the “Quality: All or None” model, where each indicator within the suite needs to be demonstrated in order to achieve the incentive payment. This will make the quality of health care indicators more robust. Further, it will reduce the risk of gaming as it is difficult to demonstrate quality on a range of indicators that must correlate as opposed to single indicators that can easily be distorted.

There is generally a significant lead time required for identifying clinical indicators and appropriate collecting methods. A suggestion is for clinical areas to be given a clear time frame for the stages of clinical indicator maturation. For example, stage one uses simple counts for 12 months only and a pay-for-reporting method. Stage two moves to proportion-based reporting. During stage two, period payment should occur when set performance targets, which may be varied across sites, are achieved. This would account for variable factors such as remoteness or lack of specialised skills to level the playing field. This moves the clinical indicators along a spectrum from an initial, simple ‘rate count’ to a proportion of achievement that enables self-benchmarking over time or in comparison with like clinical areas. Knowledge of this firm trajectory of CPIP indicators’ maturation will assist the clinical areas in planning, developing and communicating the scheme to their members. The use of proportion measurement and movement towards true P4P, as opposed to pay-for-reporting, is supported.

6.3.3 Monitoring CPIP Process Clinical Indicators with SPC

The US Attitude evaluation study (see 3.7.5) identified that the quality target should be achievable and that, to enable independent monitoring, feedback regarding achievement of the indicator should be transparent, regular, and frequent. Yearly feedback was viewed as inadequate (Meterko et al., 2006). The movement towards
SPC-methods would add value. The weakness of CPIP has been the lack of overall monitoring and governance of the scheme, and a lack of systematic examination of the results. Clinical leadership groups, plus a potential overriding clinical body, need to take greater ownership over the clinical indicator achievement rates. Furthermore, poorer performing sites should be identified, monitored, and supported to address achievement.

The CPIP scheme to date has had sporadic use of a monitoring tool such as SPC. The initial proposals for CPIP did, however, indicate a potential role for this methodology. SPC can be time intensive and it requires resources as well as SPC literacy. Prior to launching and committing to routine and regular SPC analysis, there is a need to improve the clinical network literacy with such tools. Additionally, SPC requires a specific skill set and the firm allocation of resources to the scheme to support routine use. SPC was trialled to determine its value as a routine methodology. Mental Health, Stroke, and Discharge Medication clinical areas were able to provide data for the Pre-Implementation Phase of CPIP. Emergency Department indicator data was included for 2007, although there was no formal process around the collection of this specific indicator.

To facilitate this discussion, the SPC Graphs for the clinical areas of Mental Health and Emergency Department are compared. The MH clinical indicator is part of the National Minimum Data Set and, prior to CPIP, it was formally collected, validated, and reported. QHealth and the Australian Government have invested significant effort and resources to ensure that this indicator is robust and can be collected by clinicians. An example is the Australian Mental Health Outcomes and Casemix Network (AMHOCN), which provides jurisdictions with national leadership to sustainably improve the quality of their electronic information sets. In the case of MH, the inclusion in the CPIP scheme was a bonus to support a process that was already firmly in place and significantly supported by both QHealth and national-level resources. Given this investment, the accuracy of the demonstrated achievement of the clinical indicators is fairly robust.

In contrast to Mental Health, the Emergency Department SPC graphs are insightful and reflective of the anecdotal messages being directed at the CPIP scheme. They are generally chaotic and involve significant variation and multiple points of special-
cause variation. In comparison to Mental Health, this indicator relied on the use of an existing clinical information system (EDIS), but the indicator and its data collection were not supported by any comprehensive strategy or resource. During Phase One, messages from clinicians identified incongruence in reporting, instability, lack of agreement regarding collection, minimal clinical ownership, and potential gaming. The ED indicator was retired at the end of Phase One. On reflection, the use of the SPC on this indicator from the commencement of the pilot may have brought these issues to all parties’ attention sooner. This clinical indicator continued for 15 months without decisive or effective review. This in itself demonstrates that the use of SPC as a trending tool may play an important role in early identification of indicator weakness for the CPIP scheme. A final note of interest in this comparison is that the negative scores from Emergency Department clinicians, identified in the CPIP survey on the fields of awareness, control, and impact, were similar to that of Mental Health clinicians.

The findings of the above comparison between Mental Health and Emergency Department clinical areas should be reflected upon for the future roll out of CPIP. Not all clinical areas will have access to the rich support that Mental Health has in identifying and developing CPIP indicators. For many clinical areas, identifying clinical indicators is a difficult journey. It must be acknowledged that while CPIP is a catalyst for identifying and monitoring clinical indicators, significant support will be required for some clinical areas to increase levels of literacy and knowledge about clinical indicators and their measurement. Potentially, a lack of experience and a hurried attempt driven by the extrinsic reward can result in endorsing a weak indicator and inadequate data collection processes that are easily gamed. In these cases, the first stage of involvement in the scheme may benefit from a structural indicator that relies on an audit, similar to the COPD clinical indicator, and, as confidence grows, moves towards more sophisticated indicators and use of existing information systems.

The Stroke Dysphagia SPC graphs, except for the one special-cause point noted, remained relatively stable and consistent over time. This indicator was identified and collected prior to CPIP, similar to Mental Health, and again CPIP was seen to be a bonus for a process that already existed. This indicator, however, relies on the
clinical indicator being manual collected, which has resulted in inconsistent data collection over the time-based analysis. The SPC graphs from two sites reflected the sporadic nature of manual data collection. There could be a range of reasons for this. Potentially, the key champion in the workplace changed roles, a decision may have been made that the costs of collection were outweighed by the funds secured, or even that the funds were never received by the clinical area and hence the clinicians disengaged very quickly.

Finally, in this review of the individual clinical indicator SPC results, Discharge Medication is examined. Generally, the processes remained very stable and there was minimal variation in the process. Of interest here are the significant sums of funding that DM secured in comparison with other clinical areas; a quick summation is that the proportion of achievement remained unaffected. Potentially, the clinicians continued as per the status quo, but now were receiving significant additional funding for their clinical areas. This is interesting to explore further, especially given the overall high degree of positivism towards the CPIP scheme by this clinical group.

The SPC P Graph was used, which is suitable for applying SPC with clinical indicators in future. Future use of the SPC P graph using a month-by-month comparison is supported. CPIC have embraced a model to investigate SPC findings known as the Pyramid Model of Investigation. The pyramid model provides a staged approach to investigating SPC results (Mohammed, Cheng, Rouse & Marshall, 2001; Mohammed et al., 2004). If there are concerns, such as identifying a special-cause variation, then CPIP would benefit from a more timely analysis of exploring and identifying what is occurring to create this result. Initial investigations should review the data for accuracy. Moving up the pyramid, the investigation would be valuable to then examine the patient mix; structural and resource issues; changes in contextual landscape, such as a new process commencing; and, finally, a review of the clinical practice of individual clinicians involved with the variation (CPIC, 2008; Duckett et al., 2007; Mohammed et al., 2004).

### 6.3.4 Summary of CPIP Design Variables

The above discussion has provided a number of recommendations in relation to the further development and maturation of the CPIP scheme. There is significant value in
formal adoption of the matrix and adapting it to the unique QHealth context. In addition, the criteria for selecting and adopting the clinical indicators would be beneficial. Significant questions remain, such as the ideal length of time for including a clinical indicator and the capacity of the organisation working within the limits of existing information systems and competing clinician priorities, if this progression will be achieved during the CPIP Post-Pilot Phase. Continued research and evaluation around these factors are recommended to continually assess and improve the scheme in the future.

6.4 CPIP Payment Mechanism

6.4.1 Alignment with Funding Reform

The literature review outlined the need for health financing reform (Rosenthal, 2008). Under traditional arrangements, the delivery of poor quality of care has no impact on the financial salience of organisations delivering that defective health care (Ferman, 2007). A strategy for this reform is to implement supply-side mechanisms to encourage increased risk sharing and promote pay-for-performance systems where providers are required to adhere to specific standards (Rosenthal, 2009).

CPIP was operationalised to transfer ‘risk’ to the districts and clinical areas. Previously ‘quality’ funding was provided upfront to districts, where as this funding is now only provided following demonstration of clinical indicator achievement. QHealth acknowledged, early in the formulation of a casemix adoption plan, the potential risk of indirectly supporting poor outcomes with the introduction of casemix. The concept of risk relational to securing funding was not always welcomed by clinicians or districts. Financial investment by a district is required up front to implement the required clinical process and make operational changes to achieve the clinical indicator.

A major barrier identified by clinicians was related to resources, or lack thereof. The argument from some clinicians was the need for ‘start up’ resources and also an inequity of funding across QHealth. The comments related to the lack of a level playing field and a sense that the better resourced sites had a greater ability to achieve the clinical indicator and subsequently receive more resources to forge further ahead in the performance stakes. These views support the experience of the
CPIP scheme administrators because funding guarantees, pre-payments, or requests for the funding up front were sought from districts. This evaluation does not support upfront payments as the ‘transfer of risk’ supply-side strategy is a pivotal aspect of CPIP. An option may be to provide regular or timelier advice on performance, potentially on a monthly basis, so that early payment predictions can be made by clinical areas. This would serve two purposes. First, it would increase clinician engagement in the monitoring of indicators. Second, it may contribute to improved performance as the achievement of the indicator becomes more correlated to the receipt of financial payments. This would result in an increased ability to commit to spending secured funds and create a momentum for ongoing achievement as funds are committed and more are sought.

Overall, though, the risk is a limited risk as there are no ‘penalty’ options encompassed in the CPIP model. The introduction of such a component would escalate this risk transfer. The CPIP scheme has significant potential to incrementally shift the health financing culture in QHealth where increasing ‘risk’ is transferred to the hospitals from the fund holding administrators. In time, most likely 5–10, CPIP may evolve into a model where a penalty component is included. This involves no payment for delivering poor quality care; for example, a ‘never event’ which is defined as rare and preventable errors and complications (Rosenthal, 2008). This would reflect a ‘no pay for no performance’ model and would accelerate this transfer of risk. The cultural climate or the robustness of data collection is currently not amenable to such a strategy at this point in time.

6.4.2 Financial Costs of CPIP

The focus of P4P schemes such as CPIP is the linking of payment with performance. The concept aims to tap into extrinsic motivation factors and use financial reward to create change in clinician and organisational behaviour (Conrad & Perry, 2009; Frolich, Talavera, Broadhead & Dudley, 2007). This is about provoking a response through the use of extra or bonus funding as an external driver (Frey & Osterloh, 2005; Osterloh, Frey & Frost, 2001). The theory is presently unclear about the size of incentive payments required to invoke this change in practice. The questions invariably asked are: “Is this worth my while”? If the payments are too small, then the individual or the organisation may respond that it is not worth their while. The
inclination to change is linked to the size of reward (Leatherman et al., 2003). The issue for this study was to determine the financial payments distributed, but to also commence a discussion around the economic costs of participating in the scheme as a trade off for rewards received. This information would enable a greater assessment to be made about the size of tariffs of indicators and the ideal lump-sum funding size.

The domain of financial salience in the attitude assessment tool relates to the payment amount versus cost, and views the time and effort to achieve a clinical indicator as a key factor in participation. The survey results returned a low strength positive finding for this scale with scores above 3. The interesting aspect was that financial rewards across the clinical areas varied significantly and that there was significant inequity in payments. For example, the total payments secured for the pharmacy-based Discharge Medication indicator across Phase One were $2,418,150, whereas Stroke secured only $221,550. This disparity in funding did not appear to reflect a difference in the clinical area scores on this financial salience scale with clinicians responsible for achieving the Discharge Medication indicator scoring 3.6 and Stroke scoring 3.4. This finding should be questioned, however, due to the recommendation from the authors of this survey that the minimum sample size be 128 for this scale to be relevant. Furthermore, it is recommended that the internal consistency and reliability of the financial salience indicator could be improved through addition of more items (Young et al., 2007). This research would support this finding.

The cost of CPIP analysis enabled comparison of the spread and equity of these payments. This was viewed as the ‘hard evidence’ regarding the implications of the CPIP scheme within QHealth. This hard evidence is of value as clinicians were reasonably uninformed about how much funding their clinical areas had secured.

The above discussion has outlined that although there appears to be good levels of general knowledge about both the CPIP scheme and the clinical indicators, only 40% of clinicians identified that they knew the specific details of funds secured. The risk of relying on memory or clinician perception is a risk of creating rumour and innuendo about the positive or negative implications of the scheme. The scheme will be enhanced by a transparent approach to funding allocation across QHealth and advice regarding the specific use of CPIP funding.
In total, from January 2008 to July 2009, a total amount of $5,955,130, or just more than 50% of a potential $10 million in payments, was secured by all QHealth districts and the Mater Health Services. The CPIP funding not secured was not rolled over or reallocated. In essence, QHealth districts missed a further $4 million in bonus incentive payments. Three large districts—Metro North, Metro South, and Sunshine Coast – Wide Bay—secured the highest rate of CPIP with a combined $3,615,255 of the total $5,955,130 distributed. This represents nearly 61% of the total payments made. The top five earning sites, all in the South East Corner, accounted for $4,858,925 or 81% in payments over the three payment cycles. This is understandable given these are the largest QHealth Districts and contain the highest population numbers. Overall, after making adjustments to ensure comparison between payment periods was equitable, there was an increase in payments between Payment 1 and Payment 3 of 46.236% which is positive for CPIP. The reasons for this may be related to increased awareness over time about the scheme, more 'buy in', and higher reporting rates for activities that were already occurring at districts; or it may reflect a significant improvement in rates of demonstrated quality being delivered.

Discharge Medication and Emergency Department clinical areas were the largest earners. This is not reflective of best performance but rather a degree of inequitable initial allocation as determined by the volume of cases and payment tariff. Future development of the scheme will need to address this issue to improve the fairness of allocation. Worthy of attention is the fact that the Discharge Medication clinical indicator was the most dispersed across the state and ensured incentives were secured by some of the smaller rural hospitals, such as Central West and South West, which would have otherwise been excluded from the scheme. Additionally, this indicator ensured that the Children’s Hospital secured funding as the clinical indicators were predominantly adult or older person centric.

6.4.3 Economic Costs of CPIP

The concept of “is it worth my while” was a key driver of the small economic study undertaken. There is a known correlation between motivation to change and financial rewards (Frey & Osterloh, 2005; Osterloh et al., 2001). The basic economic costs of reporting and analysing the Mental Health indicator were determined by a
methodology proposed. Presenting this tangible model of costs of participating versus rewards is valuable when clinicians ask if participating is worthwhile. This economic costing was performed on a clinical indicator that was electronically collected. It is anticipated, that if a paper-based audit system was in place that required the revision of clinical charts, the cost analysis may shift given the significant additional time. For example, it was estimated that it would take only one minute to report the clinical indicator, whereas a chart audit could take 30 minutes.

The economic costs of recording and analysing the Mental Health indicator appear to be greatly in favour of the agent (clinical area) as the costs of recording are only $7,346 as compared with $397,050 secured from participation in the scheme. The benefit earned was $389,703, which is large return for the small investment calculated. In this case, one would be able to argue that “yes, it is worth your while”. But only if the actual payment secured reaches the intended clinical unit recipients. As noted in the literature review, there is a lack of economic studies in relation to pay for performance and cost effectiveness in health care settings. This small study has the potential to promote further, more sophisticated research into determining the economic costs of CPIP.

6.4.4 Payment Mechanism Failure

The CPIP payment mechanism was the focus of considerable discussion, complaint, and requests for review of process. The payment process functions well at the front end. This involves the indicator being successfully demonstrated and payments being calculated, formally approved, and then allocated to districts. The failure occurs at the point in the process where the lump-sum payments to districts are then required to be allocated to the clinical areas that have secured these payments. The failure point related predominantly to the point governed by the following CPIP Business Rule:

*Incentive payments will be made generically to the district. Districts should allocate 80%, at a minimum, of earned incentive payment directly to the cost code of the clinical unit principally responsible for the clinical activity which earned the incentive payment. Determination of splits of funds*
between multiple clinical units within a district will be left to local resolution.

CPIC has little influence and control to oversee or audit the correct allocation of these payments once the funding is transferred, hence this rule. This represents the major risk to the successful implementation of the CPIP scheme and should be addressed immediately.

The literature review outlined that it is naïve to rely on clinician altruism or intrinsic motivation alone to improve clinical practice. The point was to implement CPIP as an extrinsic motivator to facilitate this change. As such, the actual financial incentive needs to be visible and accessible to ensure that this extrinsically motivating factor is maximised in the clinical setting. Although elements of this funding are reaching the intended targets, demonstrated by items listed as being purchased, clinicians are reporting that the funding either never arrives or there is a difficult negotiation process required to gain access to this funding.

A specific risk is related to the lack of guaranteed assurance that the funds will arrive as they should. The themes raised by respondents follow a spectrum of complaint. This includes not receiving funding and seeking location of funding. A strong theme emerged regarding significant effort to ‘find’ the funding. Requests were made for the payments to be made to individual cost codes and lump sum funding to the district as part of consolidated revenue was flawed. The funding did not appear in budgets and often there was a lack of clarity over where funding had been allocated. A number of requests were made for CPIP to be allocated to discrete cost codes within a district; however, discussions with finance proved this was not possible. The difficulty with addressing this issue is implementing CPIP into a large system that has a lack of flexibility with its rules. The ability to change the payment method or address issues is difficult within this context.

A reflection of this issue is that 50% of respondents identified that they had been able to achieve the clinical indicator yet only 37% of respondents identified that their clinical unit had received the payment. Survey respondents who identified that they did not receive the secured funding were asked why this occurred. A strong, interesting theme about conflict between management and clinicians emerged. CPIP
was implemented into a rich contextual environment of QHealth that has a significant history of mistrust between administration and clinicians. Indeed, this was a predominant focus of the Forster Report. The report identified major systemic deficiencies and failures within QHealth and included an assessment that the culture was seen to be one of control and demand, and the organisation was viewed as dysfunctional (Forster, 2005). Specifically, conflict was noted regarding the focus on cost-control interventions and a lack of value of patient outcomes. This was seen as a source of clinician negativity and disenchantment. (Van Der Weyden, 2005). The language used in the CPIP Survey responses were reflective of this ‘culture of mistrust’ and displayed an ‘us’ and ‘them’ mentality between clinicians and management, represented clearly by the quote: “…only after a fight with administration”. It is important to acknowledge this contextual landscape as the CPIP scheme develops and moves forward. The main learning for CPIP from this is that clinicians are easily wearied by any struggle required to access funding that they see they are deserving of. Continuing issues with the CPIP payment mechanism may easily cause clinicians to shift from being neither negative nor overly positive about the scheme. Continuation of problems with transparency and lack of access to funding in a timely manner may shift attitudes towards the scheme into disenchantment and ultimately lead to failure.

The payment mechanism failure is not just about ensuring that payments are received but about issues of timeliness, the ability to roll over payments, the use funds for recurrent spending, and timeframes in which to spend funds. The rules and boundaries around payment were not determined by the CPIP scheme but rather CPIP was developed to align with these existing payment processes and rules. As such, the ability to influence or change this process is difficult.

An example of the complexity that challenges improvement is that CPIP funding is transferred as ‘operational funds’ rather than ‘capital funds’. Some clinicians report that it did not pose an issue, whereas others become frustrated about the limitations placed on funds by their district.

A level of variation exists between QHealth districts as to how this specific ‘quarantining’ of funds as ‘operational’ works. In some instances, it appears that funding was swapped and mixed and that capital expenditure was possible, whereas
some districts were very rigid. This incongruence in consistency of rules across QHealth districts is a form of confusion.

In summation, there is a need to further engage and investigate with key financial stakeholders about what changes can be made to the payment mechanism system. Given that CPIC is not the fund holder; its ability to control and adjust this process is limited. This supports the need for a formalised governance body with a range of stakeholders, including finance, to manage these issues as they arise. Furthermore, Chief Finance Officers within districts are a new stakeholder group that has emerged since CPIP was first implemented as a result of the reform and restructure process that is incrementally occurring in QHealth. As these positions become further established and embedded in the organisational structure of districts, they need to be formally approached as key stakeholders to provide official advice regarding the most effective way to ensure that these clinical funds, which have been secured by clinicians for their clinical areas, actually reach the point of influence.

Despite all of the articulated issues about acquiring CPIP funding, it does appear that funding did make its way to clinical areas and was spent. The CPIP survey enquired about how funds were spent. The scope of purchases made with the CPIP funding was interesting and diverse. Essentially, it appears that the money was generally used for clinical improvement to enable the purchase of valuable, but otherwise unfunded, clinical resources. This included the items such as the smokerlyser, dispensing trolley, and ultrasound equipment. Some funding was used to support LEAN practices and to improve patient flow, such as enhancing waiting areas. Information systems were upgraded to improve tracking patient outcomes; clinicians were taken off-line to implement clinical improvement activities; and professional development was enabled through backfill, library enhancements, subscriptions, or conference registrations.

The commitment of clinicians to improve the quality of service available was evident with funding used to provide additional clinical hours, including the addition of after-hours services. Furthermore, there was evidence of using funding to enhance the patient/consumer experience of health care by providing an LCD TV in a waiting area and purchasing paediatric play material. Although this study does not aim to demonstrate that CPIP improved the quality of health care, the list of expenditure...
items outlined in Chapter 5 (Table 5.6: “Use of Funding”) does reflect that this funding was used for the purpose of quality improvement or service enhancement and provided an additional resource that enabled clinical improvements to be continued.

6.5 Conclusion

The CPIP pilot was essentially delivered and administered as planned from the CPIC perspective. Fundamentally, the clinical indicators were developed and endorsed, and implementation commenced on the pre-set date of 1st January 2008. All clinical areas secured CPIP payments by demonstrating the clinical indicators, and payments were paid, by PBA transfer, in accordance with the CPIP implementation plan in July and January of each year. This is not to conclude the project was without incident or failure. The clinicians who were surveyed for this study have experienced the CPIP scheme first hand and as ‘users’ of the system were able to give unique and valuable insight into the issues that need to be addressed to enhance this program. Within QHealth, resources are limited, so CPIP has been embraced by the majority of clinicians as an opportunity to increase resource allocation to their clinical areas to enhance the clinical delivery of service. Predominantly, the issues, as identified, relate to the CPIP payment mechanism and the need to continue to engage clinicians. The use of project planning, including a review of the roles and responsibilities of all stakeholders and the development of a communication strategy, will enhance the CPIP scheme. This formalised planning will assist the future maturation and development of the scheme in alignment with the recommendations made regarding the CPIP design variables discussion (section 6.3 “CPIP Design Variables”). At a macro level, CPIP is a vehicle for developing a measure and monitor culture to support the establishment of a predictable and reliable system that is the core driver of quality.
Chapter 7

Conclusions and Recommendations

7.1 Introduction

The discussion in Chapter 6, regarding the results of the three studies, provided rich insight into the operationalisation of the CPIP scheme. The overarching goal of the research was to undertake a formative evaluation and make recommendations to improve and strengthen the CPIP design and implementation strategy. The research focused on Phase One of the scheme and the recommendations outlined below target the Post-Pilot Phase that starts in October 2010. These recommendations are provided to further develop the scheme as it enters a new three-year funding cycle. The aim is to facilitate incremental adjustments to the program to ensure that the CPIP scheme obtains the greatest opportunity to improve the quality of health care in response to the financial investment that has been made by QHealth.

CPIP was initially formulated after a review of the P4P literature. The final design, however, took into account the QHealth context plus the limited status of information systems and performance measurement literacy and skill base within the organisation. These contextual factors remain important and require further consideration. One example is the lack of flexibility with financial management systems within QHealth. A consequence is that solutions to the schemes payment mechanism are not able to be creatively applied, but rather have to work within the existing rules of a large public health care system.

The quality improvement agenda endorses the need to quantitatively identify variation in clinical practice through the use of robust measurement and monitoring methods. A risk is that the level of clinician and health service management literacy and the capacity of the system for this scientific measurement may not exist. This is not an impost you can place on system without a systematic planned and phased approach. The skills and literacy need to be built and matured over time. As discussed in the literature review successful design and implementation is
dependent on local context and the organisation’s history, culture, trust, experience, leadership and motivations, and levels of consumer engagement (Young, Conrad & Fallat, 2007). This research affirms a need to consider contextual information when implementing programs similar to CPIP into large public health care systems. This research further supports the value of a formal risk assessment regarding levels of clinician, management and systemic literacy and competency with measurement and monitoring of quality. In summary three basic factors should be fostered to enhance readiness and effectiveness for a pay for performance scheme; first the development of positive clinician attitudes towards P4P; second, enhanced clinical network and clinician competency and literacy to identify variation in clinical practice and improvement strategies. Thirdly there is a need for adequate structural systems, including patient centric information systems that enable clinical variation to be measured and monitored. Without these three factors a P4P program may continue to struggle to establish itself successfully.

This research supports previous findings outlined in the literature review that recommend a phased introduction of P4P programs (Conrad & Perry, 2009; Scott, 2007; Young et al., 2007). This is where the P4P Design Variable Matrix is of value. It not only provides a guide for selection of program features, it provides a framework for the phased development of P4P programs. A phased implementation will provide the time required to build capacity within the organisation and further evolve information systems and procedures to produce valid and reliable data. In turn this will guide program maturation and ensure that quality is being measured in a valid and reliable way. This can be supported by solid program planning and communication strategies, clear roles and responsibilities of all stakeholders, responsive governance systems and programs of ongoing research and evaluation including the routine monitoring of clinician attitudes using mixed methodological approaches. These supporting elements will assist clinicians to navigate the program, build literacy and competency and identify points of failure early.

A unique feature of the CPIP program is that the payments are made to the clinical units within hospitals. The literature review highlighted the ethical concerns and attitudes of clinicians regarding financial payment for what some clinicians perceived to be ‘what you should be doing’. However the funds in this situation are going to the
clinical work unit. Funds are then being used to further benefit the patients and improve the quality of care, such as improving waiting areas for patients and providing extended after hour services. CPIP is a valuable source of additional funding for clinicians to improve the quality of care delivered by their clinical unit. Aligning this altruistic behaviour as a positive outcome of CPIP may result in a combined extrinsic and intrinsic motivational response, thus enhancing the effectiveness of CPIP in the future.

The attitudes of clinicians for this study have been reasonably positive as demonstrated by both the results from the adapted US attitudinal survey results and the general single item questions about knowledge, understanding and support. Of further interest is exploration of the impact of cultural and structural differences between different clinical groups and attitudes held. In this situation mental health clinicians surveyed demonstrated more negative responses to CPIP. Significant resource has been applied to information development in mental health and it is the only CPIP indicator that has dedicated resources to ensure validity of indicators given they are part of a national data collection regime. Additionally they are recognised as being well resourced due to prioritisation by COAG for mental health reform.

The continuation of CPIP into the Post-Pilot Phase is supported by this research, although this was not the aim of the study. The research findings and discussion captured a number of key issues, in particular the clinicians’ support of the scheme, the weakness of the CPIP payment mechanism, and a potential trajectory for the future maturation and development of the CPIP scheme. Other, minor themes emerged, such as the need for project planning and the development of a communication strategy. The series of recommendations have been generated from these findings and are intended to strengthen the CPIP scheme.
7.2 Recommendations

7.2.1 To undertake a comprehensive and consultative review of the CPIP payment mechanism, as a priority, to ensure that the points of failure are addressed.

The risk for the effectiveness of this scheme is located within the payment mechanism. A continuation of problems with transparency and lack of access to funding in a timely manner may lead to the failure of the scheme. The small economic study identified that the return of investment for participating in CPIP (in the case of MH) was in the favour of clinical areas, but only if the funds reach the correct recipient. A full review of the mechanism, including the CPIP business rules relating to payment, is required. The Chief Finance Officers are significant stakeholders in the review process and should be engaged for advice. The non-negotiable aspects of the review are the use of penalty payments and the provision of upfront or seed funding to districts. The following lists the primary points for review:

- identifying systems to ensure transparent funding allocations
- reaching an effective of local resolution following lump sum payment
- continuing allocation of 20% of funds to district administration
- making timely payments once a clinical indicator is achieved
- revisiting feasibility of payments to direct cost codes or to clinical networks for allocation
- examining financial risks and issues related to providing quarantined funding to the districts twice yearly
- applying the best approach to ensure the use of CPIP for ongoing clinical improvement.

7.2.2 To develop a plan to guide the maturation and development of CPIP in order to foster and increase Clinical Networks and clinicians level of literacy and competency regarding the identification of variation and systems to measure and monitor this variation

Clear timeframes and goals need to be set about how the scheme should develop over the post implementation phase. In order to do this the following elements of the process are required to be developed:
- a detailed project plan
- the CPIP communication strategy
- standardised CPIP templates for administering the scheme
- stakeholder map and analysis
- roles and responsibilities documentation.

7.2.3 To adopt the P4P Variable Matrix and revised CPIP Clinical Indicator Settings to guide the maturation of the scheme

The areas of movement in the P4P design matrix relate to the target of the payment, performance target, maturity of indicators, and reporting and analysis variables. The goal over the Post-Pilot Phase is to mature the program by:

- adopting of CPIP Clinical Indicator settings based on criteria outlined in Box 6.1 to guide indicator inclusion priority
- fostering competency and literacy levels in clinicians with regards to identifying variation
- supporting the use of proportion measurement and movement towards true P4P as opposed to pay for reporting
- supporting the adoption of routinely using SPC monitoring for process indicators and the adoption of the pyramid model of investigation
- identifying poorer performing sites and providing support to improve achievement.

7.2.4 Use formative evaluation findings to generate ongoing CPIP research and evaluation opportunities to ensure program effectiveness and costs can continued to be assessed

The literature in the field of P4P is relatively undeveloped. This evaluation was formative and has provided a solid foundation for a future program of research. Future research is encouraged in the following areas of:

- review of P4P Variable Design Matrix and further development
- impact or outcome evaluations of the CPIP scheme
- the role of CPIP as an ‘attractor’ within a ‘complex adaptive system’
• A wide-scale roll out of the P4P attitude survey contextualised to the QHealth CPIP scheme to continue to serve as program intelligence
• an economic cost effectiveness study
• the ideal tariff response size to extrinsically motivate clinicians and clinical areas
• the ideal length of time for including a clinical indicator.

7.3 Strengths and Limitations of Research

There were a number of strengths and limitations to this research. First the review of the literature highlighted that the engagement of clinicians in quality improvement activities was linked to effectiveness. Furthermore the specific literature around P4P outlined that an integral conceptual component of evaluation activities is an assessment of clinician attitudes towards such schemes. Consequently the scope of the research focused predominantly on the response of the clinician to the scheme, rather than the organisational, corporate, management or patient/consumer responses.

Second the adaptation of the US attitude survey tool to the QHealth context was valuable and the findings of this validated tool were supported by the second element of the CPIP survey that incorporated single item quantitative and qualitative questions. The richest aspect of the study was the qualitative open ended questions that elicited information about the contextual environment and the difficulties being experienced by clinicians with the payment mechanism in particular. The attitude survey component alone was not able to elicit this information and in future the researcher would support a combined use of both the attitude component and opportunity for qualitative responses.

Third, this research cannot be generalised to other programs within QHealth and outside of QHealth. The findings can only be attributed to those clinicians surveyed. Within this sample group it is likely that those clinicians surveyed were the most engaged of the clinician population given their existing involvement in broad quality improvement activities such as active participation in Clinical Network activities.
Future research will be required to adopt more rigorous sampling methodologies to enable results to be generalised.

Fourth, the research aimed to provide a formative broad snapshot evaluation. In this sense three small studies were planned rather than one larger more detailed or expansive study. This is a strength given the stage of the evaluation cycle and enables the narrowing or focusing of research questions in the future. This includes the need for a robust cost effectiveness study and a wide scale roll out of the attitudinal survey.

Finally the strength of this research was the further development of the P4P Design Matrix. This is a new contribution to the P4P literature and will enable a template or framework for the future development of P4P schemes to develop and evolve.

### 7.4 Conclusion

CPIP has the ability to be a powerful extrinsic motivator and contribute, in partnership with other QHealth quality and safety initiatives, to the reduction of clinical variation in QHealth. It provides a spotlight role on good clinical practice and is ideal for supporting implementation of QHealth quality and safety priorities. Additionally, it is an effective means of allocating quality improvement funding where the risk is transferred to the district. Historically, upfront funding has been provided for service improvement projects with limited effectiveness and guarantees that the project will be completed. The CPIP scheme requires districts to demonstrate their achievements prior to receiving funding.

Overwhelmingly, clinicians surveyed were supportive of the CPIP scheme being continued. There is a need to continue to foster this support and engagement. Without clinician support, there would be no value in moving forward with this concept; their support should be capitalised upon. The advice received from clinicians for this study was astute and insightful. The CPIP payment mechanism requires an urgent review to ensure that the funds are allocated correctly. Failure to address this will result in the CPIP scheme failing to develop. This research provides
guidance on how to develop and mature the scheme with a P4P variable matrix structure. In addition, new recommendations have been provided for the future endorsement of clinical indicators. Over the Post-Pilot Phase, CPIP will be required to move towards a pay-for-performance model of operation and this will present unique challenges.

The CPIP scheme was implemented with an aim to improve quality directly through the achievement of the clinical indicators and, more importantly, indirectly through the symbolic message that quality is valued and rewarded in QHealth (Duckett et al., 2008). As identified in Chapter 2, “Context for the Research”, the outcomes of the program were not formally articulated, yet the goals were to engage clinical networks in the development of clinical indicators reduce variation at the clinical level, promote the clinical network endorsed clinical indicator, change clinician and management behaviour and value quality. It is difficult to identify from this research whether the CPIP scheme has enabled quality to be valued and variation reduced. However, the findings of this evaluation support that the informal goals have been achieved.
Appendix 1  CPIP Pre-Implementation Phase

1.1  Briefing Note

The dialogue and vision for a proposal to connect funds with quality outcomes within QHealth was internally championed in early 2006 by Emeritus Professor Mike Ward, previous Senior Director of CPIC (now Commissioner Health Quality and Complaints Commission (HQCC)) and Dr Stephen Duckett, an economist and previous Executive Director of the Centre for Healthcare Improvement (CHI).

In September 2006 an official Briefing Note for Information, which proposed a structure and justification for the scheme, was sent to the Executive Director of the Reform and Development Division by the Director of CPIC. This official document included attachments that outlined a draft CPIP Position Paper and an extract of a draft Casemix Technical Paper. The documents included a review of the empirical literature on pay-for performance and international experiences. The paper recommended a phased CPIP implementation to reduce, minimise and resolve unexpected effects and for clinical measures utilised to remain stable and predictable, but able to be refined incrementally.

The proposed $8M of funding required for the scheme was to be sourced from ‘growth funds’ or other identified ‘new money’. Over time it was anticipated that 0.4% to 1% of funding could be sliced from the operational budget to sustain the scheme past its pilot phase. Governance of scheme formulated as a clinician lead multidisciplinary reference body that would review and make recommendations to approve clinical indicators. Implementation was originally planned for July 2007.

1.2  CPIP Design Consultation

An explanation of the main drivers for the proposed CPIP scheme were publically presented at the 2006 Biennial Health Conference hosted by the Commonwealth Department of Health and Ageing from 14th to 16th November 2006. Professor Ward’s presentation was well received by interstate counterparts as a concept. The

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arguments in support such a scheme were articulated as follows: geographical variations in quality of care existed; there were known gaps between evidence and practice and P4P type schemes were being implemented, with some initial success in the USA to improve the quality of care; QHealth was undergoing significant reform which presented a unique opportunity to trial new methodologies; changes to the existing historical funding model were imminent; and there was a need to strengthen health systems that reported performance and facilitated use of statistical reporting methodologies, such as SPC, to identify aberrations in quality of care in a timely manner (Ward, Daniels, Walker & Duckett, 2007b).

The CPIP system was conceptualised as a pilot to test the role of incentives to promote quality. Ideally it could increase monitoring of process indicators within the organisation and counteract the known weakness of casemix funding. It was acknowledged that the capacity of the required information systems, processes and literacy for a complicated incentive model did not exist. Hence indicators would need to be easily identified and achievable in the first instance and be accompanied by a basic payment methodology.

There was a deliberate avoidance of a competitive P4P model whereby only the top performers were paid. The playing field was seen as unfair. In the QHealth system this factor could potentially alienate those hospitals who would lack the enthusiasm to ‘compete’ having a belief that they did not have the ability to challenge the top performers. Initially the goal was for the scheme to commence as a simple ‘pay for reporting’ program, indicators were the ‘low fruit, able to be easily picked’ and the payments were seen to be ‘the cream’. This would encourage participation and engagement by clinicians. Over time, the clinical indicators were envisioned to become more challenging, the bar would be set higher, and movement could hedge towards the setting of performance targets as literacy and competency with the program increased.

Process Indicators were valued for payment as they were measurable, had potential to predict outcomes and identified clear pathways of clinical activity. But outcome measures were not to be overlooked. It was thought that initially indicators should focus on the clinical tasks and move towards the inclusion of patient focused
dimension of care indicators as time progressed, such as, access and symptom resolution.

Formal support by the Resources Committee (now Resources Executive Committee) and the Patient Safety and Quality Board (now Patient Quality and Safety Executive Committee) for a three (3) year pilot CPIP scheme was received in mid 2007. Initial funding requests were variable and ranged from $15 million to the final approval for $8 million per year for a three (3) year pilot which was approximately 0.1% of the overall budget of QHealth (Duckett, Daniels et al., 2008).

1.3 Clinical Practice Improvement Discussion Paper

The final stage of moving CPIP towards actual implementation was contingent on clinician and district management support. A ‘Clinical Practice Improvement Discussion Paper’ describing the CPIP concept was formulated by CPIC. This paper was widely circulated internally to QHealth leaders, such as District Managers and Chairs of Clinical Networks. The paper was also circulated externally to the Australian Medical Association of Queensland (AMA) for review and comment in August 2007.

The Discussion Paper localised CPIP to the QHealth setting and outlined that all QHealth Districts would be within the scope of this activity. It further identified the State-wide Clinical Networks were to be responsible for endorsing clinical indicators, that targets needed to be achievable, that payments would go to the clinical unit and payments that perversely affected quality of care were to be avoided. The process of payment identified that 80% of funds were to go to the clinical unit and 20% of funds could be retained by the district in recognition of costs that may be generated by participation outside of the clinical unit. A number of potential clinical areas, draft indicators and payments were proposed.

Proposed payments for each indicator ranged from $30 to $200. This is in context to an average case mix price of $3800 per patient treated in QHealth (Duckett, Daniels et al., 2008). No clear methodology for determining indicator tariffs was outlined except a reference to potential number of cases (denominator) and a need to ensure
the total budget stayed under $8M. The Budget was calculated using a scenario of 100% achievement of all clinical indicators. To ensure there would be no budget overruns a ‘cap’ payment was determined for total number of indicators that would be paid, such as for the Discharge Medication indicator, which was capped at ‘60 000’ cases at a tariff of $50 per unit. Total payment possible was $3 Million for this clinical area.

There was a detailed process map for determining and assessing clinical indicators to ensure they met the criteria of being ‘in scope’. An answer of ‘no’ to the following questions would render a proposed clinical indicator ‘out of scope’:

1. Is it a well defined DRG with major burden of disease?;
2. Are there significant variation in outcomes?;
3. Is intervention under the control of clinicians?.

The discussion paper articulated that this was an innovative and exciting opportunity to test a method of connecting funds directly with specific processes of patient care designed to optimised outcomes.

1.4 Clinician Feedback

Feedback to CPIC on the Discussion Paper was sought by mid September 2007 and sequences of questions were propositioned to the reader as follows:

1. Do you agree with these CPIP principals?
2. Are these appropriate target areas (high burden, variation in outcome, within clinician control)?
3. Will this model of payment introduce the right incentives?
4. Do these indicators capture an appropriate range for the pilot?

CPIC received thirty three (33) formal responses from clinical leaders and health service managers. Responses were collated, but not all questions were directly responded to. Most responses were related to the proposed set of clinical indicators, identification of potential data collection systems and they offered suggestions for further development of the proposed indicator/s or for new clinical indicators for
inclusion. Some of these proposed indicators included; “consider indigenous health indicators project for potential incentive payments in the future”. Fifteen (15) responses documented their clear support for CPIP for example “I support concept”; “good initiative to link improvement with reward”; “have read your paper and it look(sic) exciting”; and “good criteria for choice of target areas”. Only three (3) responses were outright negative, with comments such as “payment of a monetary reward inappropriate and professionally insulting”; “poor funding model”; and “…potentially dangerous funding model in a resource starved organisation”. Other feedback about the scheme questioned logistics such as “need to ensure small hospitals do not miss out”; “who will receive the payments?”; and “require greater clarity around process of incentive payments”. CPIC collated the feedback and forwarded collated material to the Executive Director of the Reform and Development Division. Overall the feedback was interpreted as positive and supportive of the scheme. Clinician and management formal feedback was used to review and assess the proposed CPIP model and planning for actual implementation in January 2008 commenced.

Within a tight timeframe significant meetings were held with Clinical Network Steering Committees, Policy Areas, Clinical Network Chairs and Coordinators to ‘fine tune’, adjust, discard and consider fresh clinical indicators that could be included for Phase One of CPIP. A reasonable level of engagement occurred around the finalisation of clinical indicators. Seven (7) clinical indicators from five (5) clinical areas (Chronic Obstructive Pulmonary Disease (COPD), Mental Health (MH), Discharge Medication (DM), Stroke and Emergency Department (ED) were endorsed (Duckett, Daniels et al., 2008). These clinical indicators all aimed to address weaknesses in the process of care in areas such as communication, recording and assessment. The indicators had limitations but it was envisaged that with experience and improved information systems that the indicators would evolve to become more sophisticated over time (Duckett, Daniels et al., 2008).

The principal factors that supported the inclusion of the seven (7) specific indicators relied on the ability to collect data about the indicator with ease, the presence of clinician consensus regarding the indicator and the existence of a Clinical Network or Clinical Policy Area to take responsibility for engaging clinical areas regarding
demonstration of the indicator. The process of clinical indicator identification and
collection method was easier for MH and Stroke as these were pre-existing
indicators adopted by the clinical networks with data collection systems already
operating. CPIP essentially applied a financial reward to an existing clinical process
monitoring activity. In the case of COPD, ED and DM the Clinical Networks or Policy
Area owners of the clinical indicators had to rapidly define the indicator and
implement new data collection methodologies to enable monitoring.
Appendix 2

CPIP Payment Mechanism Flow Chart

Statewide Clinical Network endorsed clinical indicator information collected by clinician
Six month data cycles
   April – September
   October – March

Collated data submitted by Statewide Clinical Networks to PSQ
   May and November

CPIP funding secured calculated by PSQ

Submission to Resource Executive Committee for noting

Memo sent by PSQ to CEO and CFO; Chairs Clinical Networks; Clinicians outlining CPIP (payments) secured by clinical areas within District

Payments made by PBA Incentive NF CPIP Incentive funding/Non Recurrent
   January and July

CFO or delegated Business Manager to allocate through internal resolution funding to hospital/facilities and clinical cost centre codes of clinical units responsible for securing funding
Appendix 3   CPIP Phase Two

4.1  Phase Two Business Rules

April 2009 to September 2010

These Business Rules describe the accountability arrangements for the operation of the pilot Clinical Practice Improvement Payment scheme:

1. CPIP is a bonus incentive payment scheme that districts and clinical areas have the ability to earn as a reward for demonstrable achievement of CPIP endorsed clinical indicators that have been developed and endorsed by the relevant State-wide Clinical Networks or Clinical Policy Unit.

2. The pilot phase of CPIP will commence on 1 January 2008 and will end on 30 September 2010.

3. Clinical indicator analysis periods for incentive payment calculation are six (6) monthly (April to September and October to March). Data is required to be submitted in required format (e.g. use of electronic information system or completion of teleform) within 1 month of end of data cycle (end of April or October) to be eligible for payment. (Please email or phone clinical contact person identified in Chapter 5 for specific details for your clinical area)

4. Incentive payments will be made generically to the district as a lump sum payment in January and July each year as a Post Budget Adjustment (PBA) payment. Payments are unable to be made to individual cost centres. Documentation will be provided to the District with each payment outlining specific amounts secured by hospitals/facilities and associated clinical areas.

5. Districts are responsible for allocating the secured funding to the hospital/facility and associated clinical area. Districts should allocate 80%, at a minimum, of earned incentive payment directly to the cost code of the clinical unit principally responsible for the clinical activity which earned the incentive payment. Determination of splits of funds between multiple clinical areas within a district will be left to local resolution.
6. Finance/Business Managers and Clinical Directors are encouraged to set up specific cost codes for incentive payments to enable accurate tracking and accountability regarding this funding by clinical areas.

7. The District Chief Executive Officer’s(CEO) and Chief Finance Officer’s(CFO), Chairs, State-wide Clinical Networks, Directors of Clinical areas and Clinicians will be formally notified by a memorandum from the Senior Director of the Clinical Practice Improvement Centre (CPIC) regarding incentive payments due in June and November of each year.

8. Upon receipt of this formal notification by memorandum from the Senior Director of CPIC expenditure against incentive payment monies is able to commence.

9. CPIP is to be used for clinical improvement initiatives, projects or professional development of clinicians or consumers within your clinical unit or district. The expenditure must be non-recurrent. CPIC can be contacted for support to identify potential clinical improvement initiatives with your clinical unit or district.

10. CPIP funding is not to be used for capital or operational expenditure, the intention is for this funding to support local clinical improvement initiatives. If a clinical improvement project requires capital expenditure, special approval can be sought from the Senior Director of CPIC to ensure this expenditure meets the clinical improvement aims of CPIP.

11. State-wide clinical networks and clinical policy units are responsible for developing and endorsing indicators; communication with individual network contacts regarding indicators and the CPIP scheme; data quality, collection, analysis and reporting of clinical indicators where required; strategic direction for use of incentive funding; and participating in CPIP evaluation.

12. The Clinical Practice Improvement Centre (CPIC) will have responsibility for generic CPIP communication; provision of support to develop indicators; data analysis and reporting on indicators where required; administering the CPIP budget and payment schedule; evaluation of CPIP; and approval where required for capital purchase as per 3.10.

1. The endorsed CPIP clinical indicators and payment amounts will be reviewed annually, or earlier as required, by CPIC, state-wide clinical networks and clinical policy units involved in the scheme.
2. CPIP payments to districts are to be approved by the Queensland Health Resource Committee.

3. CPIP will be additional to any other payments under the New Funding Model and are not offset against any Transition Payment.

4. CPIP will be comprehensively evaluated, both quantitatively and qualitatively, from the commencement of the pilot.

4.2 Phase Two Clinical Indicators

Phase Two suite of clinical indicators are outlined in Table A4.1 below. Joining the existing clinical areas of MH, ED, DM, Stroke, COPD (now Respiratory) are new indicators endorsed by Maternity, Diabetes, Cardiac, Renal, and Intensive Care State-wide Clinical Networks. Total budget remained at $8 million per annum, however program was oversubscribed to $12 million in case of 100% compliance in all areas. Although this case was unlikely, strict cap payments were implemented to maintain project within budget per annum.

The ideal longevity of clinical indicators within QHealth has not yet been determined. Hence an experimental approach was applied to the development and endorsement of new clinical indicators for Phase Two. One (1) Mental health and one (1) Stroke indicator were retained unchanged, but with an enhancement of funding to $200 per indicator each. Mental Health was particularly passionate regarding the need to retain the seven (7) day follow up clinical indicator. Quick agreement was reached between CPIP and Mental Health to continue this indicator. The Discharge Medication indicators were retained but the criteria for achievement were expanded. In addition there was a commitment to commence setting targets and reporting on proportion to clinicians as a precursor to moving towards a pay-for-performance model in 2010. The Emergency Department implemented two (2) new clinical indicators amidst significant clinical disagreement regarding the value of the original indicator. Specifically this was related to the lack of robustness of the electronic collection methodology. The Respiratory Clinical Network (previously COPD) had adopted a wider clinical scope and submitted a range of new respiratory clinical
indicators. The full list of ‘Phase Two’ endorsed clinical indicators are outlined in Table x below.

Table A4.1: Clinical Indicators and Payments

<table>
<thead>
<tr>
<th>Clinical Indicator</th>
<th>Payment per indicator (capped total payment)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mental Health</strong></td>
<td></td>
</tr>
<tr>
<td>1. Patients with the DRG Schizophrenia seen by a community mental health professional within 7 days following discharge from the same district mental health service provider.</td>
<td>$200 per indicator ($600,000) Electronic Data</td>
</tr>
<tr>
<td><strong>Renal</strong></td>
<td></td>
</tr>
<tr>
<td>1. Patients with a diagnosis of End Stage Renal Disease (ESRD) receiving peritoneal dialysis are screened for nasal carriage of Staphylococcus aureus at least annually (NB Honeypot trial patients eligible as per teleform)</td>
<td>$500 per indicator ($400,000) Manual Teleform</td>
</tr>
<tr>
<td>2. Patients with a diagnosis of ESRD receiving peritoneal dialysis who tested positive for the nasal carriage of Staphylococcus aureus receive murpircin treatment</td>
<td>$500 per indicator (included above) Manual Teleform</td>
</tr>
<tr>
<td><strong>Cardiac</strong></td>
<td></td>
</tr>
<tr>
<td>1. Completion and submission of a survey identifying their priority areas for clinical practice improvement</td>
<td>$5000 lump sum per hospital/facility Manual Audit</td>
</tr>
<tr>
<td><strong>Acute Stroke</strong></td>
<td></td>
</tr>
<tr>
<td>1. Acute Stroke – Patients receiving dysphagia screen (minimum requirement) within 24 hours.</td>
<td>$300 per indicator ($300,000) Manual Teleform</td>
</tr>
<tr>
<td><strong>Diabetes</strong></td>
<td></td>
</tr>
<tr>
<td>1. District diabetes education programs are based on ongoing needs assessment of people with diabetes and the community as a whole.</td>
<td>$15,000 per district ($500,000) Manual Audit</td>
</tr>
<tr>
<td>2. District diabetes service contributes to regular analysis of avoidable admission data for diabetes.</td>
<td>$15,000 per district (included above) Manual Audit</td>
</tr>
<tr>
<td><strong>Intensive Care Unit</strong></td>
<td></td>
</tr>
<tr>
<td>1. The number of intensive care patients with central lines for whom all five elements of the “Central Line Bundle” are documented on the central line checklist</td>
<td>$150 per indicator ($500,000) Manual Teleform</td>
</tr>
<tr>
<td><strong>Emergency Department</strong></td>
<td></td>
</tr>
<tr>
<td>1. The number of ED’s with total presentations over 10,000 per annum that have an ED Procedural Sedation(EDPS) Credentialing Program meeting minimum standards as endorsed by the Statewide ED Network</td>
<td>($1,200,000 across both ED indicators) Manual Audit</td>
</tr>
<tr>
<td>2. The proportion of ED Chest pain presentations that are risk stratified for cardiac risk as determined by the ED Chest Pain Protocol</td>
<td>($1,200,000 across both ED indicators)</td>
</tr>
</tbody>
</table>
## Discharge Medication Information

1. An eLMS Discharge Medication Record (DMR) is completed for adult patients who are 65 years and older with 4 or more medications; and paediatric patients who are 18 years and younger with 4 or more medications. (In the case of adult patients returning to Residential Aged Care Facilities or paediatric patients returning home, a Home Medication Administration chart is completed. Note: the HMAC is a DMR printed in chart format. **All medications must have a completed record of changes made in hospital (i.e. the ‘changes’ field must be completed)** as an indicator that medication reconciliation has been done. For unchanged medications, note ‘unchanged’ in this field.

   - **$50 per indicator**
   - **$70 Rural and sole pharmacist**
   - **($1,500,000)**

## Respiratory

1. **COPD Action Plans** Individualised written action plan developed to assist self-management of chronic obstructive pulmonary disease symptoms and exacerbations, presented to the patient and/or carer and discussed with clinicians.

   - **$120 per indicator**
   - **($1,000,000)**
   - **Manual Audit**

2. **Pulmonary Rehabilitation Program Completion** Attendance at a minimum of 80% of pulmonary rehabilitation program exercise training sessions and completion of post-program assessment.

   - **$200 per indicator**
   - **Manual Audit**

3. **Performance of complex lung function testing** by suitably trained and experienced staff, and reporting of results to the treating physician within 5 working days of testing.

   - **$120 per indicator**
   - **Manual Audit**

## Maternity

1. **Clinical Guideline Group** develops 4 guidelines and they are adopted by 50% of hospitals.

   - **$100,000 per indicator**
   - **($400,000)**
   - **Manual Audit**

2. **Each maternity unit meets a demonstrated standard** in the implementation of the Management of Preterm Labour Clinical Guideline.

   - **$7500 x 40**
   - **($300,000)**
   - **Manual Audit**

3. **Each maternity unit meets a demonstrated standard** in the implementation of the Management of postpartum haemorrhage Clinical Guideline.

   - **$7500 x 40**
   - **($300,000)**
   - **Manual Audit**

4. **Each maternity unit meets a demonstrated standard** in the implementation of the Prevention of neonatal early onset group B streptococcal disease Clinical Guideline.

   - **$7500 x 40**
   - **($300,000)**
   - **Manual Audit**

5. **Each maternity unit meets a demonstrated standard** in the implementation of the Management of neonatal respiratory distress incorporating the administration of continuous positive airway pressure (CPAP) Clinical Guideline.

   - **$7500 x 40**
   - **($300,000)**
   - **Manual Audit**
Mental Health Clinical Practice Improvement Payment: Clinician

1. Clinical Practice Improvement Payment (CPIP) Survey

Thank-you for taking the time to complete this survey regarding the pilot Clinical Practice Improvement Payment (CPIP) scheme and the associated Mental Health Indicator:

"Patients with the DRG Schizophrenia seen by a community mental health professional within 7 days following discharge from the same district mental health service provider"

It will take you about 10 minutes to complete.

This research is being undertaken as part of an Internal Evaluation of the CPIP scheme that is being conducted by the Clinical Practice Improvement Centre (CPIC) in Queensland Health. Additionally this research will contribute to a Doctorate of Health Science thesis being undertaken by Alexis Stockwell, PPO CPIC.

Once you have completed please place in collection box at the front of the room

1. In which Queensland Health District do you work?

2. My occupational discipline is
   - Allied Health
   - Pharmacist
   - Nurse
   - Doctor
   - Academic
   - Administration
   - Policy/Project Officer

Other (please specify)
3. How did you become aware of the Clinical Practice Improvement Payment (CPIP) scheme? (Tick all that apply)

- My Manager
- Discussion/consultation Paper
- CPIC Newsletter
- Medication Services Unit Meeting
- CPIC Website
- Clinical Network communication
- Clinical Peer
- Business Manager
- QI/PS
- District Manager/CEO
- Policy Unit electronic communication
- Management Meeting
- Director General (DG) Brief
- Journal Article
- Other (please specify)

* 4. Please rate the following:

My overall understanding of how the Clinical Practice Improvement Payment (CPIP) scheme works is

My knowledge of the Clinical Practice Improvement Payment (CPIP) indicator for Mental Health is

High ☐ Medium ☐ Low ☐

High ☐ Medium ☐ Low ☐
Mental Health Clinical Practice Improvement Payment: Clinician

5. The Mental Health clinical indicator used was chosen by (tick all that apply)

- Central Corporate Office
- Clinical Interest Groups
- Clinical Network
- Clinical Practice Improvement Centre (CPIC)
- District Managers/CEO's
- Mental Health Collaborative
- Policy Unit (SMPU)
- The Director General
- Other (please specify)

2. Clinician Perspectives

*1. In relation to following statements please identify the response which represents how you feel

I invest extra time and effort in the care of those patients who are the focus of this incentive payment
This financial incentive represents a great opportunity to increase the funding available in our clinical unit

*2. In relation to following statements please identify the response which represents how you feel

Overall, my patients who are the focus of this incentive are getting better care
I would be just as focused on this clinical indicator without the financial incentive

*3. In relation to following statements please identify the response which represents how you feel

The financial incentive is sufficiently large to compensate for expenditures that might be necessary in order to meet the clinical indicator
I have changed my clinical practice to obtain this financial incentive for our clinical unit.
Mental Health Clinical Practice Improvement Payment: Clinician

**4. In relation to following statements please identify the response which represents how you feel**

- I know the amount my clinical unit will receive for achieving the clinical indicator
- I receive useful assistance in response to my questions regarding this clinical indicator

**5. In relation to following statements please identify the response which represents how you feel**

- Achieving the clinical indicator helps me focus my time and effort constructively
- The financial incentive aside, achieving the clinical indicator is good for our patients

**6. In relation to following statements please identify the response which represents how you feel**

- The financial incentive is tied to an indicator that is clinically meaningful
- The financial incentive is tied to an indicator based on best evidence

**7. In relation to following statements please identify the response which represents how you feel**

- I have adequate information about how to earn the incentive payment
- I am able to get cooperation of my clinical colleagues in relation to achieving this clinical indicator

**8. In relation to following statements please identify the response which represents how you feel**

- I am able to get cooperation of Administrative Officers (support staff) in relation to achieving this clinical indicator
- The effort required to obtain this financial incentive has had an adverse effect on other types of patients within my clinical unit
### Mental Health Clinical Practice Improvement Payment: Clinician

<table>
<thead>
<tr>
<th>Question</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. In relation to following statements please identify the response which represents how you feel.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I get useful feedback regarding our progress towards achieving the clinical indicator.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have adequate information about the definition of the clinical indicator.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. In relation to following statements please identify the response which represents how you feel.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The data used to assess the clinical indicator are accurate.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efforts to obtain this financial incentive hinder me from providing other essential clinical services to this group of patients.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. In relation to following statements please identify the response which represents how you feel.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical Units are on a level playing field for obtaining this incentive.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The actions necessary to obtain this financial incentive are largely within my control.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obtaining the financial incentive brings me favorable recognition from my peers.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 3. CPIP Payments

<table>
<thead>
<tr>
<th>Question</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Was your clinical unit able to achieve the Mental Health clinical indicator?</td>
<td>Yes, No, Unsure</td>
</tr>
<tr>
<td>2. If your clinical unit achieved the indicator, did your clinical unit receive the incentive payments earned?</td>
<td>Yes, No, Unsure</td>
</tr>
</tbody>
</table>
Mental Health Clinical Practice Improvement Payment: Clinician

3. If your clinical unit achieved the indicator, but did not receive any incentive payment do you know why?


4. If your clinical unit received a payment, do you know how much incentive payment your clinical unit received?

☐ Yes
☐ No
☐ Unsure

If YES, please specify amount received


5. If your clinical unit received the incentive payment, how were these funds used by your clinical unit?


4. Organisational Impact

1. Did operational changes (for example: staff allocation, appointment booking process, automatic referral to testing or procedure, venue location, access to equipment) occur in your clinical unit to ensure indicator was achieved?

☐ Yes
☐ No
☐ Unsure

If YES please outline what these changes were


2. What were the barriers to participating in the Clinical Practice Improvement Payment (CPIP) scheme?

3. Do you think the Clinical Practice Improvement Payment (CPIP) scheme should be continued and expanded in the future?
   - Yes
   - No
   - Unsure
   Please explain further:

4. In what way could the Clinical Practice Improvement Payment (CPIP) incentive scheme be improved in the future?

Thank you very much for taking the time to complete this survey. Please place in the collection box.

If returning the survey after the meeting could you please send to:

Clinical Practice Improvement Centre (CPIP)
Alexis Stockwell
Royal Brisbane & Women’s Hospital
PO Box 128
HERSTON QLD 4029 Australia
Appendix 5
Permission to US Attitude Survey

From: Young, Gary J <health@bu.edu>
To: Alexis Stockwell <Alexis_Stockwell@health.qld.gov.au>
CC: White, Bert <Bert.White@va.gov>
Date: 11/11/2008 11:17 am
Subject: RE: Professor Young

Hi Alexis, yes that is fine. Please feel free to contact us with any questions.

Gary Young
Professor and Chair
Department of Health Policy and Management
Boston University School of Public Health, and
Associate Director, Center for Organization, Leadership and Management Research, Department of Veterans Affairs

From: Alexis Stockwell [mailto:Alexis_Stockwell@health.qld.gov.au]
Sent: Sunday, November 09, 2008 5:58 PM
To: Young, Gary J
Subject: Professor Young

Hello Professor Young,
I am writing in regards to an article 'Physician Attitudes Towards Pay-for Quality Programs' in the Medical Care Research and Review journal.

I am undertaking a Doctorate of Health Science through the Queensland University of Technology(QUT) in Australia. For this doctorate, I am evaluating a program in our public health service that was developed from the Pay for Performance literature. Our program, the Clinical Practice Improvement Payment(CPIP), however pays clinical units rather than physicians directly. I am very interested in using the survey that you and your team have developed and adapting it to our context. For example:
Q. 28 I know the amount of financial incentive my clinical unit (l/my practice) will receive if I achieve the clinical indicator(quality target).

I will ensure your work is correctly attributed and acknowledged in all documentation and any publication that is developed.

Please advise if you support this use of your survey and any requirements that you have in relation to its use.

kind regards
Alexis Stockwell
Principal Project Officer (Mon-Wed)
PARTICIPANT INFORMATION for RESEARCH PROJECT

Implementing a clinical quality incentive payment scheme in the public health sector: Clinician Perspectives.

Research Team Contacts

<table>
<thead>
<tr>
<th>Alexis Stockwell</th>
<th>A/Professor MaryLou Fleming</th>
</tr>
</thead>
<tbody>
<tr>
<td>07 3636 9779</td>
<td>07 3138 3370</td>
</tr>
<tr>
<td><a href="mailto:alexis_stockwell@health.qld.gov.au">alexis_stockwell@health.qld.gov.au</a></td>
<td><a href="mailto:ml.fleming@qut.edu.au">ml.fleming@qut.edu.au</a></td>
</tr>
</tbody>
</table>

Description

This research is being undertaken as part of an Internal Evaluation of the CPIP scheme that is being conducted by the Clinical Practice Improvement Centre (CPIC) in Queensland Health. Additionally this research will contribute to a Doctorate of Health Science thesis being undertaken by Alexis Stockwell, PPO CPIC.

The purpose of this project is to seek feedback from clinicians and policy officers regarding the Clinical Practice Improvement Payment (CPIP) scheme regarding what has worked and what has not been as successful in relation to CPIP’s design and implementation into clinical units within Queensland Health.

CPIC and the research team requests your assistance given your recent involvement with the CPIP scheme.

Participation

Your participation in this project is voluntary. Your decision to participate or not will in no way impact upon your current or future relationship with QUT or with Queensland Health and your decision will be without comment or penalty.

Following submission of the anonymous (non-identifiable) questionnaire, it will not be possible to withdraw given the inability to identify your contribution to this research.

Your participation will involve the completion of a questionnaire on a once off basis.

Expected benefits

It is expected that this project will not benefit you. However, it may benefit by contributing to advancing the science of quality improvement in health care.

Risks

There are no risks beyond normal day-to-day living associated with your participation in this project.

Confidentiality

All comments and responses are anonymous and will be treated confidentially. The names of individual persons are not required in any of the responses.

Consent to Participate

The return of the completed questionnaire is accepted as an indication of your consent to participate in this project.

Alexis Stockwell
Questions / further information about the project
Please contact the researcher team members named above to have any questions answered or if you require further information about the project.

Concerns / complaints regarding the conduct of the project
This research has secured ethics approval from both Queensland Health, RBWH, Human Research Ethics Committee (HREC), and QUT HREC.

QHealth and QUT are committed to researcher integrity and the ethical conduct of research projects. However, if you do have any concerns or complaints about the ethical conduct of the project you may contact the QUT Research Ethics Officer on 3138 2340 or ethicscontact@qut.edu.au or the RBWH HREC on 3636 5490 or RBWH-Ethics@health.qld.gov.au. The Research Ethics Officers are not connected with the research project and can facilitate a resolution to your concern in an impartial manner.
Appendix 7  Ethical Approval (RBWH HREC)

Ma Alexis Stockwell  
Clinical Practice Improvement Centre  
Clinical Quality Strategy Team  
Block 7 Level 13

Dear Ms Stockwell,

Re:  Ref N°: HREC/08/QRBW/2 Implementing a clinical quality incentive payment scheme in the public health sector: clinician perspectives

The Chairperson of the Royal Brisbane & Women’s Hospital Human Research Ethics Committee reviewed the above study on 05/11/08. The Committee is duly constituted, and operates and complies with the National Health and Medical Research Council’s “National Statement on Ethical Conduct in Human Research” 2007. There were no objections and the study was confirmed as meeting the criteria of a negligible risk study in accordance with the National Statement. As such, a full Committee review was not required.

The following documents are approved:

1. Application dated 03/11/08
2. Budget dated 29/10/08
3. Letter of support from Professor Maarten Kamp dated 28/10/08
4. QH recommendation regarding privacy dated 17/10/08
5. Approval Letter from Faculty Research Committee for Confirmation of Candidature dated 23/09/08
6. Clinical Practice Improvement Payment (CPIP) Implementation Plan dated 31/01/08
7. Clinician Perspectives Questionnaire

The Chairperson advises that the above project is approved subject to the following conditions:

- If the project has not commenced within 12 months, please advise the Coordinator, HREC.

- The project must be carried out to the latest statement by the National Health and Medical Research Council on Human Experiments and on Scientific Practice, and in accordance with the NHMRC’s National Statement on Ethical Conduct in Human Research (2007).
other relevant National Health and Medical Research Council and QH guidelines on research and quality assurance activities.

- **Please provide a report on the project**, annually from the date of this letter, if appropriate, and at the completion of the study.

- If the results of your study are to be published, an appropriate acknowledgment of the Hospital should be contained in the article.

- The Hospital administration and the HREC may inquire into the conduct of any project reviewed under NHMRC guidelines, whether approved or not and regardless of the source of funding, being conducted on hospital premises or claiming any association with the Hospital; or which the Committee has approved if conducted outside the Royal Brisbane & Women’s Hospital Health Service District. This may include consultation with the Principal Investigator and/or a visit to the research site by a member of the HREC and/or Coordinator of the HREC.

The Chairperson and I would like to offer you every success for the outcome of the study.

Should you have any queries please contact the Research Ethics office on 07 3636 5490.

Yours sincerely

Odette Petersen  
**Coordinator Human Research Ethics Committee**  
Royal Brisbane & Women’s Hospital Health Service District  
6/11/08
Appendix 8  Ethical Approval (QUT HREC)

Dear Ms Alexis Stockwell

Re: Implementing a clinical quality incentive payment into Queensland Health clinicians perspectives

This email is to advise that your application has been reviewed and confirmed as meeting the requirements of the National Statement on Ethical Conduct in Human Research. Your ethics approval number is 0800000882. Please quote this number in all future correspondence.

Whilst the data collection of your project has received ethical clearance, the decision to commence and authority to commence may be dependant on factors beyond the result of the ethics review process. For example, your research may need ethics clearance from other organisations or permissions from other organisations to access staff. Therefore the proposed data collection should not commence until you have satisfied these requirements.

If you require a formal approval certificate, please respond via reply email and one will be issued.

Decisions related to Low Risk ethical review are subject to ratification at the next available Committee meeting. You will only be contacted again in relation to this matter if the Committee raises any additional questions or concerns.

This project has been awarded ethical clearance until 12/11/2011 and a progress report must be submitted for an active ethical clearance at least once every twelve months. Researchers who fail to submit an appropriate progress report may have their ethical clearance revoked and/or the ethical clearances of other projects suspended. When your project has been completed please advise us by email at your earliest convenience.

Please do not hesitate to contact the unit if you have any queries.

Regards

Research Ethics Unit | Office of Research
O Block Podium | Gardens Point Campus
p: +61 7 3138 5123 | f: +61 7 3138 1304
e: ethicscontact@qut.edu.au
w: http://www.research.qut.edu.au/ethics/
Appendix 9  Permission: Data Release

MEMORANDUM

To: Alexis Stockwell, Principal Project Officer, Clinical Quality Strategy Team
Copies to: Justin Collins, Director Clinical Quality Analysis Unit
            Alison Cole, Manager Clinical Quality Strategy Team
From: Maarten Kamp
      Senior Director
      Clinical Practice Improvement Centre
Subject: Release of information: CPIP

In my role as Senior Director and data custodian of information held by the Clinical Practice Improvement Centre (CPIC), I permit the release of non invasive administrative data associated with the administration of the Clinical Practice Improvement Payment Scheme to Alexis Stockwell. This release is limited to the following information:

- Electronic and paper file administration documents
- Financial payment data
- Indicator collection rate performance and
- Indicator collection and analysis procedure data

Advice received from Jane Jacobs, Principal Advisor of the QLD Health Research Ethics and Governance Unit, is that non invasive administrative data only requires approval of the data custodian for release. As such, ethics approval or data release under legislative requirements is not required.

This data is only for the purpose of Alexis undertaking evaluation research on the pilot Clinical Practice Improvement (CPIP) scheme for Queensland Health and for the award of Doctorate of Public Health though the Queensland University of Technology (QUT). Additionally it may be used for a peer reviewed journal article; however article will require the endorsement of CPIC prior to submission for publication.

QLD Health retains intellectual property rights to this information and acknowledgement of this will be provided in all reports produced from this CPIP evaluation research. Alexis will gain permission from CPIC to publish this material in a peer reviewed journal.

Maarten Kamp
Senior Director
Clinical Practice Improvement Centre
28/10/08
Appendix 10  Measuring Variation

10.1  Total Quality Measurement

Healthcare has more recently drawn parallels with high risk industries, such as aviation and oil industries, which have made greater progress in addressing variation in processes and avoidable error. This has occurred through the implementation of organised scientific approaches to improve the quality of systems. This changed the paradigm of focus from traditional quality assurance models towards a continuous and comprehensive effort to improve quality. The adopted data driven approaches, known as Total Quality Management (TQM), are used to study work processes that lead to long term system improvements. It encompasses highly structured and scientific tactics to encourage improvement.

At its heart TQM focuses on variation in structure, processes and outcomes and seeks to remove negative variation. It recognises that processes are complex and subject to concerns over efficiency and effectiveness (Al-Assaf & Schmele, 1993). The approach encapsulates the need for systems to be predictable and reliable; these are the drivers of quality. The philosophies and concepts of TQM do not focus solely on the individual; rather they promote an organisation culture that supports consumer’s needs, empowers employees to work as teams, emphasises self development, and requires a new leadership style in which employees are viewed as resources. The nature of this approach is “preventative maintenance” (Wakefield & Wakefield, 1993). Inherently these approaches utilise change management practices which requires clarity of intent, shared goals, explicit definition of resource requirements and stability of purpose (Greco & Eisenberg, 1993; Leatherman, 2002).

This TQM approach in the health care setting is valuable as sometimes specification and standardisation are required and at times this is counterproductive. A balance is required to ensure that the system remains flexible to meet the expectations and needs of individuals seeking services (Institute Of Medicine, 2001). What is valued is the need for an alert radar or ‘dashboard’ for aspects of the system where variability in care exists despite high levels of certainty, clinical agreement and a consistent
clinical evidence base. The intent is to eliminate variation where there is no justifiable reason, and having systems to support this rather than a flawed reliance on the ‘all knowing’ knowledge base and intrinsic motivation of the individual clinician (Cruickshank et al., 2006; DeLaune & Ladner, 1998).

10.2 Clinical Indicators

Robust measurement and analysis is a key component of any quality improvement effort (Chetter, 2009). The foci is to quantitatively measure the congruence between the clinical evidence and clinical practice, and to identify and respond to variation (Shojania & Grimshaw, 2005). Fundamentally measurement is about assigning numerical values to an element to enable a quantifiable count to occur (Mainz, 2003a). The challenge for the health care industry is to determine what aspects of the care process are quantifiable. Crucially it requires the clinical structures and processes to be dismembered into a quantifiable series of steps or stages that lead to a measurable outcome.

A clinical indicator is a clearly defined measurable element contained within a care process and can be used to determine if the care delivered was appropriate and the frequency with which a process occurred. They are not to be confused with guidelines, reviews, standards or outcome measures (Campbell et al., 2004). Clinical indicators are best viewed as the building blocks of the care process known to correlate with good outcomes. Ideally clinical indicators need to be; evidence based; based on agreed definitions and clearly articulated; specific and sensitive, valid and reliable; able to discriminate; clearly identifiable; and be accompanied by consistent data specifications (Mainz, 2003a). Although there is room for error with this approach to measuring quality, the achievement of these features will enhance the credibility of the clinical indicator (Campbell et al., 2004). Clinical Indicators require ongoing review as the evidence can change and new methods of data collection may be available, hence opening up opportunities for new more relevant clinical indicators (Ashworth & Jones, 2008).

The ability to standardise care processes and dissect the clinical care process into measurable clinical indicators is not without critique by clinicians. Not all aspects of
clinical care are able to be measured and it is only able to present a snapshot of reality. Clinical tasks are often complex in nature, involve multiple clinicians within a fragmented organisational environment, are performed in front of the patient/consumer and family creating distraction and require significant knowledge; all making measurement of the clinical process difficult (Tucker & Edmondson, 2003). Fear of losing power and autonomy is evident in the behaviour of some clinicians who have resisted attempts to introduce what they term ‘cookbook’ medicine as a direct threat to a clinician’s professional knowledge and power base (Genuis & Genuis, 2004). The use of standards, clinical guidelines or ‘one size fits all medicine’, and the measurement of quality is seen by clinicians to be politicised, and is only valued by governments as a means to cost effective care. Some clinicians have resisted these government and management endorsed approaches by arguing that quality is hard to measure; the autonomy of the clinician should be valued; and the selection of performances that can easily be measured has actually turned quality improvement into oppressive and coercive surveillance (Norenberg, 2009).

10.3 Collection of Clinical Indicators

The significant challenge to the development of clinical indicators is the availability and/or the lack of uniformity of data across clinical settings (Nolte, McKee & Wait, 2005). Accurate data requires reliable data collection systems that are well established with uniform rules of implementation and use across all comparable settings. Traditionally clinical indicator data has been collected through a manual chart audit process. The reliability of the manual extraction method is questionable as the time commitment required and lack of prioritisation over clinical demands limits the likelihood that all cases will be reported upon. Understandably, there has been an attraction for the indicator data to be collected as part of an existing electronic data set more recently.

This administrative data contained within electronic information systems is often easily available, able to be collected retrospectively and creates minimal disruption to existing processes. Data mining can elicit rich information and the costs of setting up the data collection method are reduced (Campbell et al., 2004). Although a large
amount of this data is already entered into enterprise wide information systems by
the clinician or administrators, it is less demanding than the use of additional manual
extraction and collection methods that only serve one purpose. The benefit is that
these systems contain information about the demographics, coded diagnosis and
procedures performed (Duckett, Coory & Sketcher-Baker, 2007). The challenge is
that many information systems in the health care settings have not been developed
within a patient centric system, but rather they have commenced as a means of
financial or administrative control. The subsequent adaptation for the purpose of
measuring and monitoring health care clinical indicators can create significant
challenges. There can be significant room for error related to variability in data input
by different types of users, time lag between intervention and input and the ability of
the data to capture all aspects of care. It is a reductionist methodology and the
weakness is that no one measure can capture all the elements of the health care
process (Nolte et al., 2005). There can however be a limited ability to adapt existing
information systems. Subsequently, this may result in a clinical indicator being
endorsed, that is of a lower standard than preferred, due to the restraints of what
data is available for analysis. With experience and improved information systems it is
anticipated that clinical indicators will be able to evolve and become more
sophisticated over time (Duckett et al., 2008).

Expertise is required behind the scenes to extract, validate and analyse this
electronic data. Use of this data for the measuring of clinical indicators often involves
a review of existing routine data that is collected and an assessment is made
regarding the ability to use this data to measure a preferred clinical indicator. The
value is that these pre-existing data sets will often include information about specific
processes of care given such as follow up appointments, length of stay, and
completion of letters to General Practitioners, medication provided or the
development of discharge medication reports.

10.4 Benchmarking Clinical Indicator Performance

Clinical indicators are very valuable units of measurement in that they enable the
degree to which desired or undesirable clinical activity occurs to be recorded,
analysed and ideally they enable comparison of performance across time or between similar clinical units. The application of clinical indicators to monitor and improve quality is strengthened by reporting achievement by proportion (percentage). To measure proportion a score is calculated by dividing the numerator (all care that was given) by the denominator (all care that should have been given) (Charlotte, 2006) and multiply by ‘100’ to determine a percentage or proportion of cases that meet the clinical indicator. This enables the performance of the clinical unit against other similar clinical units to be compared. Alternately the individual clinical unit can benchmark against itself over time. Proportion reporting enables a comparable score to be determined as it is flexible to adapt with the fluxing denominator case numbers which is expected in real world health care settings. Box 10.1 below provides an example of the determination of proportion across two time periods for a Stroke Clinical Unit.

**Box 10.1: Stroke Clinical Unit**

**Time A: Pre Quality Improvement Intervention**  
**Numerator**  
The number of acute stroke patients who receive a dysphasia assessment within 24 hours of admission = 3255 cases  
**Denominator**  
The total number of patients admitted with acute stroke = 5895 cases  
**Proportion:** $\frac{3255}{5895} \times 100 = 55.22\%$

**Time B: Post Quality Improvement Intervention**  
**Numerator**  
The number of acute stroke patients who receive a dysphasia assessment within 24 hours of admission = 4222 cases  
**Denominator**  
The total number of patients admitted with acute stroke = 5777 cases  
**Proportion:** $\frac{4222}{5777} \times 100 = 73.08\%$

Often several process and outcome indicators are required to assess the quality of the process and outcome of care. For example, in addition to the Stroke clinical indicator you can report on a suite of clinical indicators within the same care process.
Indicators could encompass the provision of chest x-ray, anti platelet therapy within ‘48’ hours of admission, and a phased introduction of thickened foods. The outcome measure could be the absence of pneumonia. These interventions could be assessed as a ‘suite of clinical indicators’ during the patient’s admission.

When numerous process clinical indicators are selected within the one care process that is being monitored, different approaches can be applied to determine how they correlate and what the meaning is. This can include reporting ‘Item by Item’, ‘Composite or All or None Measurement’ (Nolan, 2006). “Item by item” is the lowest benchmark of achievement whereas “all or none” requires a series of processes to occur to be eligible for a mark of achievement. These types of approaches to the analysis of clinical indicator data can determine how the indicators are reported to reflect the quality of the health care delivered. The data generated can be used to compare care, reward, penalise, monitor, benchmark or compare though methods such as league tables or public reports (Campbell et al., 2004).

10.5 Statistical Process Control

The use of control charts in QHealth has been applied to clinical indicators as a means to enhance the utility of performance indicators and reporting (for example VLADS Variable Life Adjusted Display program) and clinical indicators identified by clinical networks as part of a standardised clinical improvement system that is used sporadically across all clinical networks.

10.6 Investigating SPC Findings

The value of SPC is its ability to provide a visual picture of the status of the clinical process. The interpretation of control charts requires a systematic approach to ensure the visual picture is reflective of the true clinical process. One model developed to investigate SPC findings is known as the Pyramid Model of Investigation. This model was adopted from the original theoretical approach proposed in a paper published in 2004 regarding a retrospective analysis of data as
an outcome of the Shipman enquiry in the United Kingdom (UK) (Mohammed, Cheng, Rouse & Marshall, 2001; Mohammed et al., 2004).

The Pyramid Model advocates a staged approach to investigation commencing at the base of the pyramid. First data must be assessed and interrogated for accuracy that could be affected by incorrect coding or errors due to poor documentation. For this reason, the next stages are to move up the pyramid by examining patient case mix classification; then what are the structural or resource issues?; Have there been any changes in the process of care such as implementation of a new clinical guideline?; to a final examination of the clinical professionals such as change of staffing, or recent change in skill or method (CPIC, 2008; Duckett et al., 2007; Mohammed et al., 2004). A basic interpretation of this pyramid is that data problems are the most likely cause of variation and this should constitute the primary investigation. This is escalated upward to the tip of the pyramid review that leads to examination of the clinical practitioner if previous reasons such as poor data or changes in process of care are not eliminated early in investigation.
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