What is the clinical placement experience of prevocational doctors in Victorian health services compared with the defined curriculum, and how may this have been shaped by contemporary healthcare delivery?

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Abstract

Medical training in Australia and comparable countries internationally is based on an apprenticeship model of training. However this has been challenged by contemporary healthcare practices as well as the limited training capacity of the acute care settings where medical training is largely undertaken. While this impacts all phases of medical training, it is the prevocational phase in Australia that is most vulnerable as its training outcomes are poorly defined and not routinely measured. Similarly, while a twelve-month rotation-based internship has existed in Australia for decades, the effectiveness of this model in providing core training and clinical competencies for prevocational doctors has not been rigorously evaluated, and is currently being questioned.

This research seeks to better understand the clinical placement experience of prevocational doctors in Victorian Health Services, and to consider how this may be affected by contemporary healthcare delivery. The research has been designed as a mixed –methods study, where data obtained from a broad-based survey of exposure to a range of clinical curriculum-based activities of junior doctors from seven Victorian health services was explored by groups of junior doctor supervisors and managers.

These research findings have concurred with limited previous literature, noting that prevocational trainees have limited exposure to a number of curriculum areas, particularly within the curriculum domains of procedures and emergency management, as well as teaching and learning activities, and other more complex patient management and interaction activities. It has identified that particular intern core terms and PGY2 clinical streams may provide better access to curriculum experiences than others, and that there may be particular curriculum strengths and weaknesses of prevocational training in metropolitan versus regional areas. It has also suggested that the current prevocational curriculum framework is variably understood by health service supervisors and managers, and that these findings have potentially significant implications for the trainees themselves, for length of training, and for the confidence and competence of the end practitioner.

Essentially a key finding from this research is that *acute health services are increasingly performing high-risk activities within constrained environments, resulting in changes to healthcare teams and individual roles – and the legitimate peripheral participation of junior doctors in clinical care has decreased in proportion to the acuity and specialisation of the*

activity involved. While local educational initiatives to overcome this challenge are currently being variably utilised by health services, they do not ensure ongoing repeated curriculum exposure and therefore curriculum mastery. Instead, system-wide issues require to be addressed by a system wide approach.

Lave and Wanger's Situated Learning theory (1991) provided a framework through which the research results were viewed, and provides a lens through which recommendations can be conceptualised. Essentially, this thesis recommends reform of prevocational training - that redefines its role; that addresses curriculum ambiguity; that enhances junior doctor access to legitimate peripheral participation; and that re-establishes communities of practice. These medical training reforms need to be undertaken within a clear, integrated governance model, and supported by ongoing evaluation and innovation.

Declaration

This is to certify that:

    I.   **The thesis comprises only original work towards the Doctor of Philosophy,**

    II.   **Due acknowledgement has been made in the text of all other material used,**

   III.   **The thesis is less than 100,000 words in length, exclusive of tables, maps, bibliographies and appendices.**

Susannah Fleur Ahern

Signature:

Acknowledgments

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Chapter 1 - Literature Review

1.1 Introduction & Chapter Overview

Medical training in Australia is divided into entry to practice (undergraduate and graduate-entry), and postgraduate (prevocational and vocational) phases. This thesis explores the clinical experiences of doctors within the prevocational phase of training and how these experiences may be shaped by contemporary health service delivery.

Figure 1: The Three Phases of Medical Training in Australia

Medical School → Prevocational Training → Vocational Training

Australia has seen a significant increase in the number of medical graduates over the last 10 years (Flanagan 2013). These graduates subsequently undertake a structured internship, and a majority then undertake a second (PGY2) or further clinical years which together is defined as prevocational training, prior to entering vocational (specialist) training. Prevocational training is provided by employing health services or jurisdictions, with jurisdictional Postgraduate Medical Councils (PMCs) being responsible for accreditation of intern (and in some jurisdictions also PGY2) positions. Prevocational and indeed postgraduate medical training has its origins in the 'apprenticeship' model of training, where junior doctors work long hours alongside senior staff and registrars, and where training is provided primarily through on-the-job-exposure.

However concerns in relation to the capacity of Australia's public health system to provide suitable training for the expanded intern cohort have been well reported (Crotty 2005, Crotty 2007), leading to the establishment of new educational frameworks to complement the apprenticeship model, including competency-based training and simulated learning. Regardless, little is known about what training is achieved during the prevocational period as individual training objectives are broadly defined and summative outcomes are not measured. This is an exploratory study that aims to address these gaps in current knowledge.

This chapter will initially consider the main educational models that have driven and contributed to postgraduate contemporary medical training over recent decades. A summary and critical analysis of the local and international literature applicable to the research question then follows, including contemporary drivers of health service delivery and evidence relating to the clinical placement experience of prevocational trainees. This literature summary is then used to provide a rationale for the development of the specific research question for this thesis. The chapter concludes with an outline of the thesis structure and remaining chapters.

1.2 Educational Models that underpin Postgraduate Medical Training

1.2.1 Apprenticeship model of prevocational medical training

Australia's apprenticeship and traineeship system arrived with the early settlers from Great Britain in the late eighteenth century, and while it has evolved and diverged in some areas it retains many of the features of this early British model. In the last thirty years in particular, apprenticeship training has evolved from a system dominated by young males undertaking apprenticeships in the trades to one that provides apprenticeships and traineeships to people of all ages and genders, and in a much wider range of occupations (Knight 2012).

In contemporary Australia (and a number of northern European countries) an apprenticeship or traineeship is defined (Knight 2012) as:

- the existence of a regulated, employment-based training arrangement, and a registered legal training agreement

- a commitment by the employer, the apprentice or trainee, and a registered training organisation (RTO) to an agreed training program in a specified occupation, all of which are set out in the training agreement

- an occupational training program that consists of a concurrent combination of paid employment and on-the-job training, and formal (usually off-the-job) training that leads to a recognised qualification

- training that is provided at an agreed level in the Australian Qualifications Framework (AQF) and to standards set down in the Australian Quality Training Framework (AQTF).

However the term 'apprenticeship' may also have a generic meaning and be used to describe training models that have many of the same characteristics e.g. they consist of a combination of employment, on-the-job training, and formal training; but do not have a registered legal agreement. This is the model on which medical postgraduate, and particularly prevocational training in Australia is based.

Prevocational medical training in Australia has traditionally been undertaken as apprenticeships in large teaching hospitals, with training in second year undertaken within a broader range of settings. Australia's medical apprenticeship model is similar to historical practice in the United Kingdom (UK). Wilson (Wilson 1993) surveyed and interviewed thirty-three consultants in hospitals in the Yorkshire region to determine the main educational teaching methods, and found that the teaching ward round with clinical meetings was the primary training tool, and that the apprenticeship model had strong support by consultants. Teaching and supervision of junior doctors by senior clinicians was also found to be crucial for workplace learning in a New Zealand study [(Sheehan 2005) cited by (Paltridge 2006)].

However Wilson's respondents also noted that there were increasing risks to the sustainability of the apprenticeship model including workload pressures, non-clinical duties such as management and audit, and shorter junior doctor hours; and similarly Paltridge (Paltridge 2006) noted that '*the changing healthcare environment is putting the apprenticeship model under threat. Increased patient throughput, reduced lengths of stay, increased patient complexity and workforce shortages are threatening the ability of the apprenticeship model to address all the learning needs of PGY1 and PGY2 doctors'.* These local and international concerns led to concurrent educational changes including the rise of competency-based training, both within postgraduate medical training as well as the broader apprenticeship and trainee sector.

1.2.2 Competency-based Training

Competency-based training (CBT) began to be incorporated into Australian apprenticeships in the 1980s (Knight 2012). CBT dispensed with a focus on time-based learning in favour of one that specified the desired outputs. In postgraduate medical training, CBT requires the successful demonstration of the application of the specific knowledge, skills, and attitudes necessary for the practice of medicine; and progression within training requires that the learner demonstrate competence at critical stages of development (Iobst 2010). Such a model also reflects Miller's Pyramid – where learning is demonstrated through competence in performance [Miller 1990 cited by (Phillips 2008)].

Figure 2 Miller's Pyramid (1990)
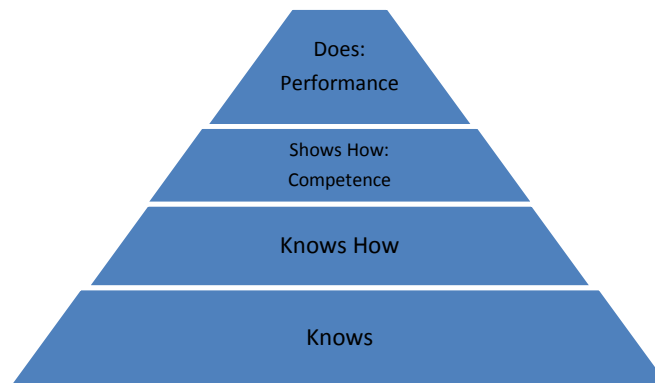
The General Medical Council launched *Tomorrow's Doctors* in the United Kingdom in 2009 (Rubin 2009) which was a shift in the framework guiding medical education from a time and process based framework to a competency-based model (Iobst 2010). International acceptance of this paradigm shift was reflected by the release of the Canadian CanMEDS framework (Frank 2005); and the American ACGME Outcomes Project (Swing 1998, Swing 2007). Similarly, the Australian Curriculum Framework for Junior Doctors (Graham 2007), launched in 2006, is also a competency based curriculum framework, although it has been overlaid on a time-based medical registration model and its implementation has not been supported by a formal program of competency assessment.

The CanMEDS Physician Competency Framework, developed by the College of Physicians and Surgeons of Canada (Frank 2005), describes the knowledge, skills and abilities that specialist physicians need to practice to support better patient outcomes. The framework is based on seven key physician roles: Medical Expert, Communicator, Collaborator, Manager, Health Advocate, Scholar, and Professional. The CanMEDS framework was approved by the Canadian Royal College Governing Council in 1996 and it has been the basis for all specialty objectives of training within Canada as well as informing many international college curricula, including in Australia the Royal Australasian College of Physicians (RACP 2015) and the Royal Australasian College of Medical Administrators (Boyd 2011).

There have been some concerns by educators that the CBT approach may downplay the importance of generic skills, prior knowledge, and time on task; additionally there has been criticism regarding the quality of learning outcomes being delivered by the 'pure' competency-based model (Knight 2012). Iobst (Iobst 2010) notes that CBT may be considered to reduce the practice of medicine to itemized lists of objective observable criteria; yet the demonstration of

competence in the delivery of actual patient care represents what Fleming (Fleming 1993) has described as meta-competency – recognition of the complex mix of knowledge, skills, attitudes, and cultural and social contexts required for safe and effective practice. Additionally, professional activities usually reflect several domains of competence; thus in assessing professional activities and their outcomes, multiple domains of competence are usually considered (ten Cate, Snell et al. 2010). Therefore the demonstration of 'competence' in specific skills may be difficult to individually assess; and their assessment may not necessarily be indicative of broader practitioner 'competence.'

Iobst (Iobst 2010) further notes that CBT requires 'valid and reliable assessment tools' and 'intensive faculty development.' He considers that current resource constraints within medical postgraduate training will necessitate a '*transition (that) will likely include intermediate hybrid frameworks containing time and process components as well as specific competency-based outcomes*.' This is the current practice for most postgraduate training programs within Australia.

1.2.3 Entrustable Professional Attributes

Potential issues related to competency-based training in postgraduate medicine have been described above. In order to better clarify its role in postgraduate medical training, ten Cate (ten Cate 2005) in the Netherlands defined Entrustable Professional Attributes (EPAs), where clinical competence is described as the interplay between the individual trainee and the clinical environment (Teherani and Chen 2014). This approach is predicated on competencies being most relevant when they are defined in the context of the clinical environment, and goes beyond the traditional focus of CBT where outcomes are often limited to a set of end-characteristics of the physician, such as abilities, approaches to health care, or professionalism (ten Cate, Snell et al. 2010).

EPAs are tasks that should be entrusted only to those individuals who have adequate competence to carry them out. More specifically, EPAs form part of essential professional work in a given context; they require adequate knowledge, skills and attitudes, which are generally acquired through training; they lead to recognized output of professional work; they are usually confined to qualified personnel; they are independently executable within a time frame; they are observable and measurable in their process and their outcome; and reflect one or more of the competencies to be acquired (ten Cate 2005). Ten Cate proposed that in postgraduate medical training, a teacher or supervisor judges whether a trainee can be

entrusted with specific clinical tasks, and the outcome of this assessment may then be to entrust the trainee with their performance.

Entrustable Professional Attributes are informing the medical education debate within Australia, and some postgraduate specialist colleges have expressed interest in piloting this approach (RACS 2012). Nevertheless, issues in relation to the specific requirements of associated assessment processes and supervisor training remain.

1.2.4 Simulation Training

Concurrently with the development of CBT, there has been increasing use in Australian and international health services in providing opportunities for undergraduate and postgraduate medical training and demonstration of competence, via simulated clinical learning environments. This has originated both from a recognition of potential lack of clinical opportunities available in ward and clinical settings, as well as potential risks associated with novices performing procedures and activities for the first time on actual patients.

There are a number of studies that have assessed junior doctor confidence in a specific skill following a simulated intervention. One example is by Garrood (Garrood 2010) who considered the effect of a simulated course on invasive medical procedures for junior doctors, and noted significant improvements in self-reported confidence, sustained at three months. Aiyappan (Aiyappan 2013) also noted that a training model integrating knowledge and skill based learning in simulated and real environments resulted in improvements in patient safety; and studies have shown that the use of simulators improve the diagnostic and procedural skills of doctors.

However educationalists are also aware that " *'training transfer' i.e. the capacity to take learning from the situation in which it is trained to the one in which it is used cannot be assumed following a simulated intervention"* (Mishra 2003). Boots (Boots 2009) also acknowledges that while supplementary programs such as simulation training can provide a clinical experience for interns that may not otherwise be available to them, that skill transfer cannot be assumed, and such programmes are not to be considered a substitute for patient-based training.

Summary

In summary, postgraduate medical training in Australia originated from an informal apprenticeship model of training derived from the early settlers from Great Britain. Concurrently with changes to the broader apprenticeship model in Australia, postgraduate medical training over the last couple of decades has embraced the international development of competency based training, usually as a supplement to time-based training requirements. More recently, entrustable professional attributes (EPAs), derived in the Netherlands, have been considered by educational bodies internationally and locally as a framework for more specifically defining activities that can be safely undertaken by postgraduate trainees. Trainee practice of clinical procedures within a supported simulated environment prior to being undertaken within the clinical environment has also been a feature of postgraduate medical training over the last decade, and one that reflects both the priority for patient safety as well as the potential lack of clinical opportunities for trainees to regularly practice such procedures.

The following section describes contemporary drivers within clinical healthcare environments, both locally and internationally, that further challenge the apprenticeship basis of medical education, and the outcomes of this in terms of junior doctor clinical experience and clinical practice opportunities.

1.3 Drivers of contemporary health service delivery

Over the last two decades there have been significant changes to the drivers of healthcare delivery within health services, both internationally and within Victoria. The role and operations of the acute-care hospital, where the majority of prevocational training is undertaken, has undergone major transformation. Australian hospitals have historically been practitioner-centric (Hillman 1999) where medical practitioners worked predominantly in private practice and attended large public hospitals to provide a charitable service. However in Australia, similar to the United Kingdom, medical service provision has since changed from a professionally autonomous model, to a management-led scientific-bureaucratic model (Davies Huw T O 2003). In particular, health services have changed their focus from practitioner-led service provision to one that is more in line with consumer demands and policy directives based on population health needs. Escalating demands for health services, constrained budgets, and population health characteristics of an ageing population and chronic disease

that increase the complexity of healthcare requirements have also affected the drivers of healthcare, which are now based around considerations of efficiency, capacity, safety and quality, and innovation.

In Australia, as in many developed countries, complex care requiring sophisticated technology has become centralised in major metropolitan and large regional hospitals. The typical patient admitted to a contemporary major hospital in Australia, as in the United Kingdom, is elderly, admitted as an acute emergency and has a complex combination of multiple co-morbidities (Kellett 2009). In Australia, as health services seek to manage demand, less complex patient care is increasingly provided through community programs such as hospital in the home (HITH), leaving hospitals to manage patients with serious, complex and less common illnesses (Grace 2007). Specialised units caring for the seriously ill are increasing; operating suites are performing more complex procedures for in-patients; more intensive-care and high-dependency beds have been required. Concurrently, specialties such as psychiatry, geriatrics, rehabilitation and palliative care are increasingly becoming community based; a proportion of operations are undertaken in separate day surgery centres; and outpatients have been privatised. While there has been a redistribution of a number of these less acute clinical activities away from Australian public hospitals where training has traditionally occurred (Crotty 2005) this has not been accompanied by a coordinated redistribution of medical training places (Dowton 2005).

The effects of contemporary healthcare delivery models on medical education and training are potentially significant. Systems to manage high levels of patient acuity and specialisation have developed in large health services. Patient care is provided by highly specialised teams consisting of specialist doctors, doctors-in-training, and an increasing array of paramedical ancillary staff. In Australia, as in the UK, the knowledge and skills of the prevocational medical trainee may not fit well with this highly specialised model of acute care, presenting challenges in providing appropriate clinical experience for training (Grant 2007). A number of healthcare drivers and their potential effects on medical training taken from the literature will be considered in further detail.

1.3.1 Efficiency

Perhaps surprisingly, there is little literature regarding how increased clinical service efficiency may affect medical training. In particular, Emergency Department (ED) throughput targets have been in place in the UK for a number of years, and concerns have been raised there particularly by senior doctors on the potential effects of this on junior doctor training. Croft

(Croft and Mason 2007) from Sheffield, UK, surmises that efficiency pressures on EDs require consultants and senior doctors-in-training to perform more procedures, rather than teaching and supervising more junior doctors. White (White, Armstrong et al. 2010) of Dundee, also in the UK, concluded that senior doctor input into patient care in the ED adds accuracy to disposition decisions, improves patient safety and departmental flow. Adamiak (Adamiak and Karlberg 2004) of Stockholm, Sweden, also concluded that it was cost-effective to have all decisions on admission to hospital care confirmed by senior doctors. This international experience suggests that the most efficient patient management systems rely on senior doctor decision-making, and do not necessarily support junior doctor participation or autonomy.

The '4 hour rule' (which sets targets for the proportion of ED patients to be discharged home or admitted to a ward within 4 hours of presentation) was introduced by the Commonwealth Government into Australian tertiary hospitals initially via a pilot in Perth in October 2009. An early multicentre review of the participating Perth hospitals concluded that the 4 hour rule led to a reversal of overcrowding in three tertiary hospital emergency departments and coincided with a significant fall in the overall mortality rate in the combined tertiary hospitals (Geelhoed and de Klerk 2012). The 4 hour rule is being gradually rolled out in emergency departments throughout Australia (National Emergency Access Targets – NEAT), with the 'expectation of improved clinical outcomes.' However concerns regarding junior doctor training opportunities in the ED (similar to the previous international concerns) have been noted by the Australian Medical Association Doctors in Training (Maor 2011).

Innovations in models of care such as within acute health services are also being driven by efficiency targets. Examples include increased ambulatory-based service models (e.g. day procedure centres, hospital in the home) and compartmentalised service models such as inpatient assessment units. Such models may have a number of potential effects on the clinical experience of junior doctors, including sequestration of clinical opportunities away from junior doctor involvement, greater decision-making and disposition by more senior medical staff, and fragmentation of patient care; although little research has been published in relation to their impact on medical training.

1.3.2 Clinical Placement Capacity

As a result of the large expansion of Australian medical schools in the early 2000s in response to medical workforce misdistribution (with 10 new medical schools established or announced since 2007), numbers of medical graduates have increased by as much as 90%, peaking in 2012 (Chong 2010). In Australia, acute care hospitals remain the mainstay of clinical training,

however they are approaching training capacity as undergraduate and postgraduate trainees compete for the same clinical 'material' (Crotty 2005, Grace 2007).

Crotty notes that in order to address this issue of 'training capacity', what is needed is '*to provide exposure to patients in other settings: general practice, specialists' private rooms, privatised clinics and private hospitals'*, however he notes that with the exception of general practice, '*there are significant financial disadvantages to teaching in these settings'* (Crotty 2005). Additionally, the requirement for interns to undertake mandatory terms in medicine, surgery and emergency medicine is a limiting factor in the broadening of clinical experience outside of metropolitan and regional teaching hospitals.

Two significant local studies were commissioned by the Commonwealth to determine whether the Australian health system had the capacity to cope with the additional medical trainees – the Emergency Medicine Capacity Assessment Study (EMCAS) study, and a study undertaken by Health Workforce Australia.

In 2008, The Commonwealth of Australia's Department of Health and Ageing contracted St Vincent's Hospital, Melbourne, to perform a medical training capacity analysis of Emergency Departments (EDs) (MacKinlay 2011). Using qualitative interview methodology, the Emergency Medicine Capacity Assessment Study (EMCAS) sought to identify the capacity and strategies of EDs and their staff to support increasing numbers of medical graduates. This study, published by Weiland (Weiland, MacKinlay et al. 2010) concluded that the increase in intern numbers (with ED being a 'core' rotation for general medical registration for interns) represented a significant challenge to the capacity of the ED and maintenance of the ED experience for interns.

In 2012, Health Workforce Australia released a report, *The effects of medical graduate expansion in Australia* (Scott 2012), which aimed to examine the impact of medical graduate expansion on the short term working pattern of doctors. The report noted that while the number of intern places had increased it was 'too early' to tell if the number of vocational places could keep pace with demand. The results showed few consistent changes in working patterns of junior doctors and their supervisors associated with graduate expansion, and suggested that the growth in junior doctors had been absorbed by additional training capacity in non-metropolitan areas. However the Report Forward notes, '*there may be no difference because of insufficient sensitivity in the measures used, or bias in the samples due to low*

response, which could be affecting the results. For these reasons HWA recommends readers of this report interpret the findings with considerable caution.'

In summary, while concerns have been raised regarding available training capacity within Australian health services, literature has been limited by available data. While the literature includes examples of prevocational rotations in alternative settings (Young 2008, Best 2015), these remain a minority for a range of reasons as above, including a lack of funding. Indeed, while general practice rotations, funded through the Prevocational General Practice Placement Program (PGPPP) - established in 2005 to provide opportunities for prevocational doctors to undertake a rotation in primary care settings (usually rural) – have been very well evaluated (Anderson 2015), this Australia-wide program was ceased in 2015 following the withdrawal of Commonwealth funding.

1.3.3 Safety and Quality

Patient safety and the quality of healthcare has become a major focus of healthcare delivery internationally over the last twenty years and in Australia since the release of a seminal report in 1995, *The Quality in Australian Health Care Study* (Wilson 1995). In particular, international and local literature notes that clinical risks arise from the training of health professionals (predominantly junior doctors) (Cowan 2000), that doctors in training may expose patients to harm because of lack of knowledge, experience and supervision (Aiyappan 2013), and that junior doctors are involved in adverse events and hence require adequate supervision (Leeder 2007) (Kroll 2008).

In the United Kingdom, the trend is towards consultant-led medical care in order to improve patient safety (Bull 2013), and ethical concerns of 'non-competent' novices performing procedures on patients are driving current surgical practice in health services (Hamaoui 2014). However a consequence of these changes, as Bull notes is that '*junior doctors have less responsibility ….. In this context, concerns have been voiced about the development of expertise in junior doctors (pg 403).*'

From New South Wales, Iedema (Iedema 2010) noted that '*Recent national and international inquiries into hospital based adverse events highlight the urgent need for improving effective supervision of junior doctors.... (who) are more likely than medical professionals at later stages of their careers to be involved in adverse events. Not surprisingly, junior doctor supervision is now a focal concern for policy makers, medical educators and hospital managers.*' He identifies factors such as patient complexity inappropriate for training, poor roster design and lack of continuity of care, and inadequate overnight supervision as contributing to an environment

where adverse events occur. Also locally, Orman (Orman 2010) undertook a review of supervision policies for junior doctors in the Emergency Departments (EDs) of Australian hospitals and concluded that '*ideal supervision in the ED would probably consist of senior review in person for every patient seen by a PGY1 or PGY2, in order to maximize patient safety and opportunities for clinical teaching (pg 305).*'

However, closer supervision may have implications for junior doctor autonomy in clinical assessment and decision-making. Kennedy from Toronto, Canada (Kennedy 2005) noted that '*a number of studies documenting that higher levels of direct supervision result in improvements in guideline compliance, changes in treatment plans, or better patient outcomes all directly or implicitly conclude that the level of supervision provided to clinical trainees should increase, and trainee autonomy decrease, in order to improve quality of care and patient safety*', and that '*.....the issues shaping clinical training in recent decades have been social, political, and administrative, rather than educational. The resultant changes in clinical training practices have occurred without the support of a body of empirical or theoretical work examining their educational impact (pg S107).*'

Reduction in working hours

Over the last decade there has been a consistent international reduction in the working hours of junior doctors driven by patient safety concerns of potential errors made by overworked and exhausted doctors (Jagsi 2004, Flinn 2011). In the UK this has been effected by the European Working Time Directive (EWTD), where from August 2009 junior doctors' maximum working hours were reduced to 48 hours per week. In the United States, the profession's Accreditation Council for Graduate Medical Education (ACGME) guideline required a maximum of 80 hours per week from 2002. In Australia a similar reduction in junior doctor hours has occurred as a result of industrial award requirements based on the Australian Medical Association (AMA)'s Safe Working Hours. Additionally, as junior doctor numbers have increased, health services have met service demand through recruiting additional junior staff to minimise overtime. As a result, shift-based rostered hours of 38-44 per week for prevocational doctors are standard across Australian health services.

There has been debate in the literature as to whether the reduction in junior doctor hours has affected patient safety (e.g. by reducing continuity of care) and/or doctor training (e.g. by reducing clinical experience). Two seminal reports have emerged recently in relation to this. One is an international systematic review (Moonesinghe 2011) with the objective of determining whether a reduction in working hours of doctors in postgraduate medical training

has had an effect on objective measures of *medical education* and *clinical outcome*. This systematic review identified 72 studies eligible for inclusion. Findings included that '*a reduction in working hours from greater than 80 hours a week (in accordance with US recommendations) does not seem to have adversely affected patient safety and has had limited effect on postgraduate training. Reports on the impact of European legislation limiting working hours to less than 56 or 48 a week are of poor quality and have conflicting results, meaning that firm conclusions cannot be made (pg 11)*.'

The second significant review was commissioned by Medical Education England specifically into the effect of the EWTD on the quality of junior doctor training. The review, led by Professor John Temple (Temple 2010), was conducted 3-6 months following the introduction of the EWTD. The report Introduction notes that, '*Training is Patient Safety for the next 30 years*', highlighting the importance of quality medical training in providing the quality medical workforce of the future. The review acknowledged that there was an absence of outcome measures not confounded by other variables, nevertheless the key findings of the review were that high quality training could be delivered within 48 hours except when trainees have a major role in out of hour's service, were poorly supervised or access to learning was limited. It also noted that traditional models of training and service delivery wasted learning opportunities particularly in reduced hours, and recommended that fundamental changes to the delivery of training and service should be made. No similar substantial reviews regarding the impact of reduced working hours on prevocational doctors have been undertaken in Australia; however given the similar reduction in working hours over recent years it is likely that the findings and conclusions would be similar.

1.3.4 Innovation

Examples of innovation in healthcare delivery include the introduction of new technologies and workforce substitution of a number of clinical care activities. While the introduction of new technologies has had a significant impact on service delivery, there has been little literature regarding its specific impact on junior doctor training other than an acknowledgement that such technologies offer treatment to patients of increased age and clinical complexity which may impact on junior doctor involvement.

Additionally the last decade has seen the development of many medical assisting roles that may replace activities previously undertaken by junior doctors. In Australian hospitals these include the ICU liaison nurse, who receives calls from ward nursing staff to troubleshoot unstable ward patients; the care co-ordinator who organises inpatient referrals and plans

discharges; the specialist pathology nurses who undertake inpatient venepuncture; and nurse practitioners who may have limited rights in investigation initiation, prescribing or other specified patient management. Highly specialised teams may also override the traditional role of the junior medical officer, including medical emergency teams (METs) which exist in most large Australian health services and allow for a specialised team of medical and intensive care staff to attend to a call, bypassing the traditional hierarchical model of escalation (Jones 2012).

Role substitution is an international phenomenon, as Srivastava (Srivastava 2008) from the UK notes that '*career development opportunities, new technologies, patient needs, as well as the reduction in junior doctors' hours, are driving the development of new roles for nurses*' and that '*in adult, neonatal and paediatric intensive care, specialist trained nurses and designated advanced nursing practitioners are increasingly taking on extended practice of clinical tasks previously undertaken by medical staff*.' There is little literature regarding the impact of workforce substation on junior doctor training, however as Linda Hutchinson from the UK notes - '*devolving care to other professionals is claimed to allow doctors to concentrate on more complex cases, which raises the question of how doctors are to train for that role without experiencing simple cases first* (Hutchinson 2006).'

While these drivers of contemporary healthcare delivery would appear likely to shape prevocational trainee clinical placement experience, this depends on individual health service, unit and supervisor characteristics which may mitigate against such drivers. As Kilminster (Kilminster 2011) from Leeds University, UK, notes, '*actual practice (as observed and reported) was determined much more by situational and contextual factors than by the formal (regulatory and management) frameworks...Trainees' and health professionals' accounts of their actual experiences of work showed how performance is dependent on the local learning environment*.' It is exactly this 'actual practice' that this research intends to understand, and therefore whether or not the clinical placement experiences and roles of junior doctors are being materially affected by system-wide factors.

Summary

The contemporary healthcare environment is a challenging one for medical learning, and many factors are potentially straining the current model. The literature reviewed has supported the notion that contemporary healthcare delivery is driven by factors including efficiency, capacity (of service and training), safety and quality, and innovation, and that these drivers may shape prevocational doctor clinical placement experience due to:

- Increased complexity and specialisation of inpatient acute-care services where prevocational training is predominantly undertaken
- Reduced prevocational access to ambulatory and community clinical activities
- Efficiency targets in the ED potentially reducing junior doctor access to training opportunities including procedures
- Training capacity reaching limits which result in competition between doctors for clinical experience
- Patient safety concerns resulting in increased supervision of junior doctors with potential reduction of clinical autonomy
- Patient safety initiatives that escalate/override prevocational doctor clinical management
- Reduction in prevocational doctor hours for both safety and financial reasons, potentially resulting in reduced clinical opportunities
- Individual and team role substitution of prevocational doctor activities

These effects may occur to a greater or lesser extent, depending on local mitigating factors.

1.4 Reported prevocational doctor clinical experience and skills

Having considered some of the drivers shaping international contemporary acute healthcare, this section of the literature will review reported contemporary junior doctor clinical experience and skills.

1.4.1 Clinical skill surveys

There have been a number of reports of surveys published regarding prevocational doctor clinical experience and clinical/procedural skills. While early surveys were not related to a defined prevocational curriculum, the development of the Australian Curriculum Framework for Junior Doctors (ACFJD) in Australia and the Foundation Program Curriculum (FPC) in the UK in the mid-2000s supported more consistent survey content. Surveys have generally been single-site based although a few multi-site surveys have also been undertaken. Survey findings have been similar in studies from Australia, New Zealand and the UK, and are presented here in chronological order.

In his article published in Medical Education, Marel from the University of Sydney (Marel 2000) noted that '*little is known about patterns of clinical skills acquisition among cohorts of junior*

doctors undertaking clinical training in the early postgraduate period.' In 1999 he undertook a 69-item survey regarding confidence and experience with a broad range of clinical skills of 92 interns, PGY2s and PGY3s from a Sydney metropolitan hospital. Questionnaire items were derived from skill lists identifying competencies expected of junior doctors within 3 domains – practical/procedural skills; clinical assessment and management skills; and professional/clerking skills - and tested for face validity by a committee of medical educators and clinicians.

The survey results identified three main patterns of clinical skill acquisition over the 3 years – confidence and experience that was primarily acquired during PGY1 (a majority), confidence and experience that was acquired throughout PGY1 and PGY2, and experience that was obtained primarily between PGY2 and PGY3. Marel's study concluded that '...*early postgraduate medical trainees in a Sydney teaching hospital acquire high levels of confidence and experience in most skill areas after two years of training. The first postgraduate year is particularly significant for the development of clinical skills.*' He did not identify any particular areas of skill deficiency, although noted that by PGY3 the majority were reporting lack of confidence in endotracheal intubation, defibrillation and nasal packing.

However there was evidence that the pattern of skill acquisition was changing when five years later Barnsley (Barnsley 2004) also from the University of Sydney, undertook a study where she surveyed 30 interns regarding their confidence in performing a range of procedural clinical skills, and then assessed them in those skills. The main findings of the study were that there was no correlation between confidence and competence, and that in general the interns performed the procedures more poorly than was expected. She considered that this may reflect the fact that interns may never have been formally taught but were expected to 'pick up' the procedures, and recommended the '*need for a more systematic education and evaluation programme for clinical skills in this group*.'

Around the same time, a study of the clinical skills of prevocational trainees was undertaken by Old (Old 2006) from the Auckland District Health Board, who sought to '*determine whether the current skills list for postgraduate year 1 (PGY1) training in New Zealand is appropriate and an accurate reflection of the experience gained in this year.*' He surveyed PGY1 doctors regarding their experience with 86 skills at the beginning (n = 30) and at the end (n = 25) of their first postgraduate year; 28 of these skills were from the Medical Council of New Zealand's (MCNZ) 'Indicative List of Skills' for PGY1.

The results showed that by the end of the PGY1 year, all doctors had performed 21% of the skills listed by the MCNZ, compared to 4% at the beginning of the year. Additionally, 39% of the skills defined as important to achieve during PGY1 by the MCNZ had been performed by fewer than half of the sample at the end of their PGY1 training. He concluded that '*there is a significant discrepancy between the skills expected of graduates at the end of PGY1 (as indicated by the MCNZ) and those attained*', and that '*experience with most procedural skills deemed important by the Medical Council of New Zealand does not increase significantly during a doctor's first postgraduate year working in a major tertiary hospital (pg 5).*'

In Old's discussion he queries whether the skills surveyed accurately reflected those undertaken by PGY1 doctors or not, and noted that workforce substitution by nurses and phlebotomists was likely to reduce the exposure of medical graduates to specific procedures. He also noted the conundrum regarding acute care skills such as endotracheal intubation as being a procedure that a PGY1 doctor is unlikely to perform, but may be required in an emergency*.* He recommended that '*a more systematic approach to ensure junior doctors are adequately trained to provide safe, competent care is fast becoming a necessity. Such a programme would require the introduction of more formal, competence-based education into the PGY1 year and a necessary shift in focus from the service dominated working model that exists currently (pg 7)*.'

In 2008, Duns (Duns 2008) published a multi-site study to determine perceived preparedness of Australian prevocational doctors in resuscitation skills and management of emergencies. Of a total of 470 responses, 31% felt well prepared, 41% felt adequately prepared and 28% did not feel well prepared for resuscitation and management. He concluded that, '*Many prevocational hospital doctors feel inadequately prepared for the management of emergencies…. Increasing exposure to learning of emergencies in undergraduate and prevocational years could reduce the number of junior doctors who feel poorly prepared for emergencies (pg 144).'* This is supported by Tallentire, Edinburgh, UK (Tallentire 2011) who noted that '*previous research has suggested that the care of acutely unwell patients is an area in which many medical graduates feel poorly prepared (pg 995)*.'

Boots of Brisbane, Australia (Boots 2009) surveyed intern experience and confidence in common bedside procedures. Three hundred and fourteen doctors completed the survey at the commencement and conclusion of their intern year between 2000 and 2004. Results showed a limited and variable experience in bedside procedural skills at commencement and throughout internship. In his discussion, Boots noted that overall experience obtained during

the intern year may not support PGY2 and above clinical requirements particularly when working in rural services where less supervision is available, and that that traditional 'training casemixes' were either not available or potentially too complex within hospital environments for interns to adequately train.

Similarly to Old, Boots also queried what procedures should be considered necessary for general registration. While acknowledging the positive benefit of dedicated skills programs, he further noted that '*confidence and competence require repeated exposure, and skill atrophy is a significant risk of intensive programmes that have little opportunity for reinforcement.*' The importance of 'deliberate practice' and 'repetition of skills' in developing and maintaining competence has also been noted by Conn (Conn 2012) and by Jolly; '*the best predictor of competence on a particular procedure is the volume of experience on that procedure*...' (Jolly 2007).

Ruddlesdin of Manchester, UK, (Ruddlesdin 2010) published a study undertaken within the North Western Foundation School, that considered the potential for individual PGY1 and PGY2 terms and 2-year rotation plans to achieve the UK Foundation Program Curriculum (FPC) - defined competencies. A tool was designed derived from the UK Foundation Curriculum and completed by Foundation Directors (FDs) using red (no opportunity to gain competency)/amber (limited opportunities) and green (ample opportunities) judgements for each post. Her findings indicated that in general there should be adequate opportunities to achieve the required competencies by the end of each individual 2-year programme, with only 18 essential competencies not having ample opportunity for achievement during that period. Those competencies that FDs considered difficult to achieve across the majority of host providers included central venous line insertion, joint aspiration, lumbar puncture, nutrition, complaints handling and initiation of advanced life support (ALS). Similarly to Old, and Boots, Ruddlesdin queried whether they should remain within the national curricula, and additionally suggested that a similar national review process may be a useful driver to re-evaluate the FP curriculum content.

Kelly of Southern Health, Victoria, published a study undertaken in 2009 (Kelly 2011) regarding preparedness for internship. Interns completed a survey that considered the tasks that interns undertake frequently, their preparedness for these, and their confidence in completing them. Tasks identified as being most frequently undertaken by the interns of those listed in the survey were: communication with other treating professionals, ordering investigations, completing documentation, routine patient assessment, and insertion of IV cannulae.

Additionally, the study concluded that although most felt reasonably well prepared for many common tasks, they did not feel well prepared for undertaking preoperative patient review, handover, fluid and medication management, patient admissions, assessment of unstable patients, communication with patients and families, and pain management.

Mason (Mason 2013) in 2011 conducted a national survey in the United Kingdom of Foundation Year (PGY1) doctors and core medical trainees (following PGY2) regarding their experience in relation to the management of 10 common medical conditions, eight common medical procedures and other aspects of medical training. A total of 728 medical trainees completed the surveys. Findings included a lack of experience in both the management of medical conditions and the undertaking of common procedures. While after hours care and participation in post take ward rounds provided the best learning opportunities for the trainees, there was increasingly limited access to these experiences. Mason considered that these inconsistencies in training opportunities had implications for the experience and skills of trainees at latter stages of the training continuum.

Young (Young 2013) undertook a systematic review of 36 relevant articles regarding the skills and competencies gained by junior doctors in Australian rural and regional general practice placements relative to the ACFJD. While the data analysis provided evidence that interns undertaking rural general practitioner placements gained advanced skills in the areas of communication and professionalism, including autonomy in decision-making, less evidence was available regarding the development of specific clinical skills.

Carr of the University of Western Australia, undertook a study to review the results of implementation of a 10-item junior doctor assessment tool (JDAT) developed by the PMC of Western Australian in 2012 based on the ACFJD (Carr 2014). The JDAT assessment data was collected from 200 junior doctors at three public tertiary hospitals in Western Australia over 2008-9. The results showed that the highest scoring items on the JDAT for the sampled population were related to teamwork, interpersonal skills and professional behaviour, with the lowest scoring items on the JDAT being procedural skills, emergency management and adverse event management. Junior doctor mean scores were significantly lower in Emergency Medicine and significantly higher in Medicine and Surgery rotations; Carr postulates that this may be due to the emphasis placed on practical and emergency skills in the Emergency Medicine term, versus interpersonal and communication skills in the Medicine term, however noted that this finding warranted further qualitative investigation.

Agrez (Agrez 2013) undertook a study over 2008-9 to assess the self-reported exposure of interns within the Hunter New England Local Health District across 115 common conditions and procedures as recommended by the ACFJD across the three core rotations of medicine, surgery and emergency and across both metropolitan and rural sites. A total of six hospitals and 59 intern responses informed the results. His findings noted that intern exposure (observation) to ACFJD-listed common conditions and procedures was similar for all three core rotations for all sites combined; however a higher proportion of procedures were performed by interns in the emergency departments of rural health services compared with metropolitan health services (p=.004).

1.4.2 Evolving roles of junior doctors

Two observational studies provide further insight into the health service experience and role of prevocational doctors in Australia.

Zhu (Zhu 2008) undertook an observational study of interns in the EDs of three Melbourne teaching hospitals over five months in 2006. The results indicated that patient-related tasks accounted for 86.6% of total intern time; of these the majority were *indirect* patient care tasks (44% of total time was spent on liaising and documentation; with ordering and interpreting investigations, clinical handover and other clinical activities made up the remainder of this group); and approximately 32% of time was spent on direct patient contact activities (obtaining patient histories, undertaking physical examinations and procedures). In his discussion Zhu noted that *'Although the ED is perceived as an environment rich in procedural opportunities, procedures took up only 5.6% of intern time, and ranked sixth in terms of activity frequency, similar to other studies.... Lack of procedural experience has been linked with lower confidence and competence*.'

Westbrook (Westbrook 2008), cited by Lancashire (Lancashire 2009)) undertook an observational study of the amount of clinical contact that junior doctors experienced in a New South Wales public hospital in 2006. Nineteen junior doctors (interns, residents and registrars) were observed for a total of 151 hours. The study showed that for all groups that professional communication consumed the greatest proportion of time, and junior doctors overall spent 15% of their working day in direct clinical contact with patients. Interns spent less time with patients than registrars and residents, and interns' administrative tasks consumed almost twice as much of their time as direct patient contact.

Qualitative literature is acknowledging that indirect patient care activities such as working within teams are increasingly the roles that junior doctors are undertaking. Sheehan (Sheehan

2005) studied intern learning in clinical rotations in Christchurch, New Zealand, through individual interviews (n= 5) and a focus group (n=12) in 2002-3. Her conclusions were that the two key roles of interns involved patient care and engagement within the clinical team.

Brennan (Brennan 2010) of Plymouth, United Kingdom, undertook a qualitative study to explore the experiences of junior doctors during their first year of clinical practice. In this, she notes that more recent curricula (such as the UK Foundation Programme) '*recognises that doctors now require a broader range of skills and competencies*', and that formal assessment of these skills is emerging. Similarly, Iedema (Iedema 2010) from New South Wales, acknowledges the impact on clinical work of these interactions and suggests that junior doctors require access to training and resources to develop team-based, organisational and managerial skills. Such indirect patient care competencies have been identified and incorporated into both the ACFJD and the UK FP, reflecting their increasing importance in the junior doctor role.

Summary

The local and international literature has considered junior/prevocational doctor clinical placement experience to a limited extent (Marel 2000; Old 2006; Duns 2008; Boots 2009; Croft & Mason 2007; Boots 2009; Ruddlesdin 2012; Kelly 2011; Mason 2013, Young 2013). In summary, these surveys and reviews have increasingly noted over the last decade that prevocational clinical terms may not be providing the experience expected from the relevant prevocational curriculums, in particular for undertaking clinical procedures and participating in emergency resuscitation. As a result, the validity of some curriculum items within prevocational curricula has been questioned by a number of researchers in Australia, New Zealand and the UK. Further, recent observational studies (Zhu 2008; Westbrook 2010) and qualitative studies (Sheehan, 2005 and Brennan, 2010) have identified that the predominant duties undertaken by prevocational doctors included indirect patient care activities such as professional communication, with direct clinical care taking up a smaller proportion of junior doctors' time. While there was some evidence that regional placements supported higher levels of non-clinical (indirect) patient skill development, the effect on clinical skill experience was less clear.

1.5 Chapter Summary and Conclusions

Postgraduate medical training in Australia is based on an informal apprenticeship model of training, but over the last couple of decades has embraced principles of competency based training (CBT) which has influenced medical education internationally. As a supplement to time-based training requirements, CBT has most recently been embodied in the concept of entrustable professional attributes (ETAs), derived from the Netherlands, and which is currently being introduced into some Australasian specialty training College curricula. CBT, together with other medical education initiatives such as learning in simulated educational environments, aims to complement traditional apprentice-based learning. Yet the effectiveness of this as an overall educational approach for prevocational trainees has not been broadly evaluated within Australia.

Contemporary health services where much of current prevocational training takes place are different organisations from their historical counterparts (Davies, Harrison 2003) as a result of increasing consumer awareness, efficiency requirements, safety and quality frameworks, and innovative models of healthcare delivery. It is repeated exposure that allows for mastery of an activity (Jolly 2007, Conn 2012), however these health service factors may be impacting prevocational trainees' exposure to particular clinical activities (Kennedy 2005, Hutchinson 2006, Croft & Mason 2007, Brennan 2010, Jones, 2012) and therefore negatively affecting trainee clinical experience (Old 2006, Duns 2008, Boots 2009). While this may occur across the medical training continuum from undergraduate to vocational training, the prevocational period is particularly susceptible given a lack of detailed curriculum and summative assessment that occurs during the undergraduate and vocational phases of training.

1.6 Relevance of literature and Rationale for Research

Australia has seen a significant increase in the number of medical graduates over the last 10 years (Flanagan 2013). Recently concerns in relation to the capacity of Australia's public health system to provide suitable training for the expanded intern cohort have been well reported (Crotty 2005, Crotty 2007), however little is known about what training is achieved during the prevocational period as individual training objectives are broadly defined and summative outcomes are not measured.

In medical education and training, Universities have for a long time kept academic data to continue to drive performance improvement, and specialist medical Colleges, like Universities, are also required by their accrediting body (the Australian Medical Council) to keep data that supports the rigour of their training programs including assessment and training outcomes. However the Australian Medical Council (AMC) does not require data collection in relation to prevocational training outcomes and therefore no significant primary data source for prevocational training currently exists. This is a significant factor limiting research and evaluation into prevocational training.

Much of existing research has been conducted using locally-developed skill lists or questionnaires. Despite the introduction of the ACF in 2006 there has been very little literature evaluating prevocational training outcomes against this, and little literature comparing training experience across intern core terms or in different regional settings. This is a key focus of this research study, and this research addresses these gaps.

This research study investigates the current clinical placement experience of prevocational trainees within Victorian health services through a comparison with a national curriculum framework for the intern and PGY2 years (derived from the Australian Curriculum Framework for Junior Doctors -ACFJD) that was developed in 2006 (Graham, 2007). For the purposes of this research 'clinical placement experience' refers to a specified set of clinical activities undertaken within the health service/practice environment, derived from ACFJD competencies. The possible effects of contemporary healthcare delivery on this experience and the implications for the medical training continuum are also considered through qualitative analysis of group interview data from junior doctor supervisors.

This literature review has reinforced the need for research to obtain further broad-based quality data to better describe the prevocational trainee experience and to better understand the contribution of regional, organisational and discipline-specific factors associated with this. A comprehensive understanding of the contemporary clinical placement experience of Victorian prevocational trainees may provide information to guide local and national policy development to both review and better support achievement of curriculum objectives, both within the prevocational period and across the medical training continuum.

1.7 Thesis Structure

Chapter 2: Background provides information regarding the structure of medical training in Australia, the composition of the intern and further prevocational years, the derivation of the Australian Curriculum Framework and recent changes to governance and quality assurance processes.

Chapter 3: Methods describes the methods of research undertaken in this mixed methods study.

Chapter 4: Results - Surveys details the results of the quantitative findings, and Chapter 5: Results – Group Interviews presents the results of qualitative research.

Chapter 6: Discussion integrates the literature and quantitative and qualitative findings, supplemented by a brief section regarding the strengths and potential limitations of the research.

The thesis concludes with a final chapter (Chapter 7) which proposes a series of recommendations for key policy makers and implementers regarding prevocational training in Victoria and more broadly.

A list of References, Definitions and Appendices follows at the conclusion of the thesis.

Chapter 2: Background

This chapter provides information regarding the structure and governance of medical training in Australia and briefly compares this with international models. It then provides background information regarding the derivation and structure of the Australian Curriculum Framework for Junior Doctors (ACFJD), a key document used in this research, and a brief outline of the United Kingdom's Foundation Program Curriculum (FC), which is also used. A significant national initiative relating to prevocational training that was developed at the time of this research, the National Intern Training Framework, is also briefly discussed.

2.1 Structure of the Intern and PGY2 Years in Australia and internationally

Medical training in Australia is currently generally considered as three discrete phases. Universities provide entry to practice medical courses that may be undergraduate or postgraduate, with both models being represented across Australia and internationally. Australian medical schools are accredited by the Australian Medical Council (AMC) and their aim is to produce medical graduates who are ready to practice medicine under supervision.

Postgraduate training is variable across different English-speaking countries, with the two main models being (1) that of the United Kingdom and Australia/New Zealand which includes a prevocational period of training prior to entry to vocational training, and (2) the North American/Canadian model where medical graduates are selected directly into a vocational training program.

The prevocational period of training in Australia (PGY1 and generally PGY2) is not governed by a registered training organisation. State-based Postgraduate Medical Councils (PMCs), funded by the Medical Board of Australia (MBA) and jurisdictional health departments, accredit intern (and some also review PGY2) positions, but do not register trainees in a training program; instead training is devolved to employing health services as the providers of training. Health services employ supervisors of training to oversee delivery of an on-site education program and also provide educational, mentoring, pastoral and career advice. Health service prevocational training programs are accredited every four years by the relevant PMC.

PMCs and health services have been supported in these roles by the Confederation of Postgraduate Medical Education Councils (CPMEC). However, McGrath (McGrath 2006) notes that compared to the US and Canada where universities oversee postgraduate training, and the United Kingdom, where postgraduate deaneries are funded to undertake this, that within Australia the PMCs are variously and overall inadequately funded for this task. CPMEC has a Board of Directors comprising the Chairs (or nominee) of the PMCs of each jurisdiction and represents supervisors of training and prevocational doctors. Key activities of CPMEC have included the development and revision of the ACFJD, and the Prevocational Medical Accreditation Framework (PMAF)(CPMEC 2008), which informed but has largely been superseded since 2014 by the National Intern Training Framework (see below).

Medical graduates are provisionally registered with the Medical Board of Australia (MBA) until satisfactory completion of internship, upon which the MBA then confers general registration. The requirements of satisfactory completion of internship has for many decades been essentially time-based and required completion of specified 'core' terms/rotations – in emergency medicine, medicine and surgery generally undertaken (particularly in Victoria) as three 10-week terms (8 weeks for emergency medicine), with two further 10-week 'non-core' terms in other clinical disciplines completing the intern year. Interns are formatively assessed in the workplace regarding their performance in these terms, with satisfactory completion of all terms being required before the granting of general registration.

Figure 3 Example of Intern year rotation plan

The PGY2 and other prevocational years similarly comprise short terms/rotations, usually a minimum of 3 months each; however there is no requirement for specific or 'core' terms. Increasingly PGY2 years have become 'streamed' into clinical disciplines, usually in medicine, surgery and sometimes in critical care or other/general streams, allowing PGY2s to undertake a year of similar type rotations. The endpoint of prevocational training is generally reached once the PGY2+ has been selected to enter specialist/vocational training, which may require

completion of specific prerequisite requirements such as particular clinical rotations, and College interview/assessments.

Figure 4 Example of PGY2 medical stream rotation plan
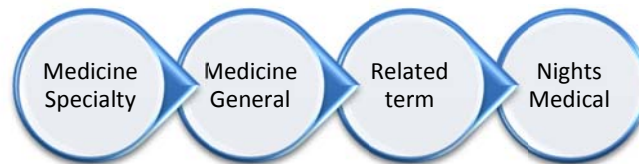
In Australia, vocational training is undertaken when a junior doctor is selected to or registers with a vocational College. Similar to medical schools, Colleges are accredited as training organisations by the AMC; they have an assessment and progression process; they have a governance structure supporting medical training; and they monitor trainee and program outcomes. Vocational Colleges aim to produce graduates who are ready to practice medicine independently.

2.1.1 The Structure of Postgraduate Medical Training in the United Kingdom and New Zealand

In the United Kingdom (UK), prevocational training is a structured two-year program (called the Foundation Program), that is governed by the postgraduate Deaneries associated with the universities and medical schools. The UK's Modernising Medical Careers training framework for Foundation (prevocational) Training has been in operation since 2005 and consists of trainees rotating through 6 posts/terms over a 2-year period, supported by the Foundation Programme Curriculum.

New Zealand's medical intern training program is overseen by the Medical Council of New Zealand and includes both postgraduate years 1 and 2. Interns undertake in general four thirteen week clinical attachments per year, aligned to the New Zealand Curriculum Framework for Prevocational Medical Training which has been adapted from the Australian Curriculum Framework for Junior Doctors. This has been supplemented from 2015 by the introduction of an e-portfolio which forms a record of the intern's progress and performance during clinical attachments and includes a professional development plan, a skills log, end of

term assessments, a record of clinical professional development activities, and outcomes from multisource feedback (MCNZ 2015).

2.2 The Australian Curriculum Framework for Junior Doctors

The Australian Curriculum Framework for Junior Doctors (ACFJD), the first curriculum framework for prevocational doctors in Australia was funded by the Australian Government Department of Health and Ageing's Medical Training Review Panel (Graham 2007) and launched in 2006 by the Confederation of Postgraduate Medical Education Councils (CPMEC). The ACFJD was the outcome of some initial work by the then Postgraduate Medical Council of New South Wales following the circulation of a questionnaire to junior medical officers in NSW regarding their clinical experiences and learning needs. A draft national core curriculum was initially scoped in 2004 by a national project steering committee, and in 2005 CPMEC established a writing group that developed the initial draft curriculum. This was revised by stakeholder consultation and the inaugural curriculum was launched in October 2006.

The curriculum framework was informed by key existing documents at the time including the prevocational curricula of New South Wales, South Australia and Western Australia; the United Kingdom Foundation Programme; and the Royal College of Physicians and Surgeons of Canada CANMEDS curriculum framework. Reference was also made to other relevant local documents including the National Patient Safety Education Framework and the Committee of Deans of Australian Medical Schools Indigenous Health curriculum. Working parties with national representation revised the ACFJD again in 2009, and in 2012, although not significantly.

The ACFJD was designed to support clinical learning throughout the intern and subsequent prevocational years (particularly PGY2), and its structure comprised three main *domains* which were subdivided into *categories* that were further subdivided into *topics*. For each category, a set of capabilities were defined relating to knowledge, skill and behaviour. The curriculum also incorporated a set of common problems and conditions that prevocational trainees would be expected to appropriately assess and initially manage under supervision.

This research used the 2009 version of the ACFJD (CPMEC 2009) which comprised:

- Three *domains* - Clinical Management, Communication and Professionalism
- A total of eleven *categories* (e.g. Safe Patient Care, Patient Assessment).
- Sixty *topics* (e.g. Systems, Risk & Prevention).
- 96 discipline-specific skills & procedures

- 77 discipline-specific clinical problems & conditions

The ACFJD has been supported by Postgraduate Medical Councils that have encouraged health services to align their term learning objectives and education programs with its content, and had '*created a unique opportunity to improve the quality of medical training in Australia* (Gleason 2007).' However, while the curriculum was well received by stakeholders, there were concerns regarding its implementation within health services. The need for a broader strategy for ACFJD implementation was noted at the time of its inception; '*The definition of core content alone will only go part of the way to establishing "the curriculum" that will drive learning for our junior doctors....Additionally, a consistent and coherent set of aims and objectives related to that content, a teaching and learning strategy, and an assessment program focused on monitoring the outcomes are required* (Jolly 2007)'. It was subsequently noted that **s**pecific barriers to implementation included limited knowledge and understanding of the ACFJD, limited use by supervisors and medical educators, and limited use by junior doctors including relating curriculum content to their rotations (MacKinlay 2011).

Graham (2007) notes that the curriculum framework was underpinned by the principles of adult learning –recognition of prior learning, regular feedback and reflection - and practice-based learning, and was intended to integrate with curriculums for undergraduate and vocational training programs. CPMEC continued to advocate for the ACFJD, and received project funding from the Commonwealth Department of Health and Ageing to support this until CPMEC itself had its funding from the Commonwealth ceased from July 2014.

2.2 The United Kingdom Foundation Programme Curriculum

The United Kingdom (UK) Foundation Programme (FP) was established for medical postgraduate years one (F1) and two (F2) (prevocational) doctors in 2005 in response to concerns regarding a lack of defined training objectives and assessments for doctors-in-training. The Foundation Curriculum (FPC) was further revised in 2007, 2010 and July 2012 (Collins July 2012).

The 2012 Foundation Programme Curriculum (FPC) defines two key curriculum domains/sections – '*The foundation doctor as a professional and a scholar*', and '*The foundation doctor as a safe and effective practitioner*', and has a syllabus that is outcome based, with 'outcome descriptors' for F1 and F2 doctors developed for each item in the syllabus.

This research used the 2012 version of the FPC which comprised:

- A syllabus which is outcome based, and consists of two main *sections – The foundation doctor as a professional and a scholar* and; the *foundation doctor as a safe and effective practitioner*.

- These sections are further divided into 39 *subsections*.

- Each subsection is headed by outcome descriptors indicating the levels of performance that foundation doctors are expected to achieve in F1 and with increasing independence in F2.

- Additionally has a list of 14 procedures.

2.3 The National Intern Training Accreditation Framework (NITF) 2014

From 1 July 2010, an Australian National Registration and Accreditation Scheme replaced the previous State and Territory based health practitioner registration and regulation systems; and from 2014, the Medical Board of Australia (MBA) implemented a new registration standard '*Granting General Registration to Australian and New Zealand Medical Graduates on Completion of Internship'* (MBA 2012). Similar to many previously existing jurisdiction-based processes, the current Medical Board of Australia's requirements for certification (i.e. satisfactory completion of internship), as per the Registration standard are:

- The intern has satisfactory completed at least 47 weeks equivalent full-time experience in supervised clinical practice.

- The intern has performed satisfactorily under supervision in terms that provide 8 weeks experience in emergency medical care, 10 weeks in medicine and 10 weeks in surgery.

- The intern has met the above requirements, including satisfactory Term Supervisor reports, and an overall satisfactory rating awarded by the Director of Clinical Training, the Director of Medical Services or other authorised person.

The MBA subsequently sought the assistance of the Australian Medical Council (AMC) to develop a National Framework for Medical Internship (AMC 2012). These framework documents were approved by the AMC in November 2013 and by the MBA in December 2013, and implemented in 2014. The relevant framework documents consist of:

- Intern Training Outcomes
- Guidelines for Terms

- Term Assessment Form

- Assessing and certifying completion of internship

Intern Training– Intern Outcome Statements

The AMC document *Intern Training – Intern Outcome Statements* (AMC 2014) describes the new national intern outcome statements as '*not a curriculum, but state the broad and significant outcomes that interns should achieve by the end of their programs'*. The four domains in which the statements are grouped are:

- Domain 1: The intern as scientist and scholar

- Domain 2: The intern as practitioner

- Domain 3: The intern as a health advocate

- Domain 4: The intern as a professional and leader

These AMC Intern Outcome Statements are closely vertically aligned with the Australian Medical Council's Graduate Outcome Statements from its revised Standards for Assessment and Accreditation of Primary Medical Programs 2012 (AMC 2012).

The relationship between the NITF's Intern Training Outcomes and the ACFJD has been maintained, as the NITF's Guide to completion of intern training in Victoria (pg 2) states, '*the Australian Curriculum Framework for Junior Doctors (ACF)…… defines the knowledge and skills that should be acquired within the first two years after graduation from medical school. The ACF is not specific to the internship. The Intern training – Intern outcome statements detail the expected intern-specific outcomes...*' The NITF documents further state '*it is anticipated that intern training providers will continue to use the ACF as an appropriate curriculum framework to deliver the outcomes*'. The Intern Outcome Statements document includes a 1-page mapping of the ACF domains and categories with the Intern Outcome Statements.

Guidelines for Terms

The AMC's Guidelines for Terms (AMC 2013) outlines the broad experience that interns are expected to obtain in particular during the terms in medicine, surgery and emergency medical care, within the framework of the four Intern Training Outcome domains.

Intern Training - Term Assessment Form

The AMC's intern term assessment form (AMC 2014) consists of twenty items within the four Intern Outcome Domains against which interns are assessed by their term supervisor on a Likert scale, as well as a global rating for the whole term (satisfactory, borderline, unsatisfactory). This tool is recommended although not mandated.

Assessing and certifying completion of internship

The AMC's NITF continues the previous jurisdiction-based practice of certifying completion of internship via term supervisor reports, supplemented by a requirement for end of year sign-off by a senior medical administrator or supervisor at the health service (AMC 2014).

In summary, the NITF has seen the development of a national suite of documents to define internship that supports the new national MBA registration standard for completion of the intern year. While the NITF now provides national consistency regarding intern term requirements and assessment across jurisdictions, it aligns its new intern outcomes with medical school program outcomes, rather than with the pre-existing domains of the ACF (clinical management, communication and professionalism) or with the domains of the other postgraduate College curricula (e.g. CANMEDs – medical expert, communicator, collaborator, manager, health advocate, scholar and professional from RACP Curriculum).

Additionally, the MBA registration standard embeds for a further 5 years the pre-existing core term requirements, despite there being no data regarding ideal intern placement duration or whether the *'traditional core medicine, surgery and emergency rotation(s are) appropriate and the only option* (Landau 2007)'. The NITF processes provide no new rigour regarding intern assessment, in that there is no summative independent assessment of interns against the intern outcome statements or ACF. Further, the NITF only supports the intern year, with the ACFJD remaining the sole national curriculum document of relevance for the PGY2 cohort (and beyond).

This research therefore remains relevant to inform future curriculum and policy review regarding the internship in Australia, and is also particularly relevant to the development of emerging information regarding clinical experience gained in the PGY2 postgraduate year, of which there is currently no governing body or outcome requirement.

Chapter 3: Methodology

3.1 Introduction and Study Design

This study utilised a mixed methods approach, where both quantitative and qualitative methods of data collection and analysis were applied. The methods of data collection utilised in this study were:

1. Surveys of junior doctors (interns and PGY2 doctors) – primarily *quantitative data*
2. *Group interviews of health service supervisors and managers of junior doctors – qualitative data*

This methods chapter will describe (1) the study design and its rationale; (2) the quantitative method components of the study (Intern & PGY2 surveys); and (3) the qualitative method components of the study including an underlying theoretical framework. At the conclusion is a brief discussion of some ethical considerations, and a chapter summary.

It should be noted that as per the diagram below, in the execution of the research the quantitative components (surveys) were separated by the qualitative component of the research (Supervisor group interviews).

Figure 5 Timeline of research components

Study Design

The nature of the research question lent itself to a mixed methods study design. In order to answer the first part of the research question, *'What is the clinical placement experience of prevocational doctors in Victorian health services compared with the defined curriculum?'*, (new) primary quantitative data was required to be collected, as existing data sources were insufficient for this purpose, as identified in the preceding literature review.

The second part of the research question, '*and how may this have been shaped by contemporary healthcare delivery?*' aimed to consider underlying factors regarding junior doctor exposure to particular curriculum activities. Although this could have also been ascertained through further quantitative methods such as surveys, qualitative research was selected because of its strength in providing greater breadth and depth of information. Selection of the particular qualitative methodology is discussed later in the chapter.

Quantitative Research

Quantitative research is concerned with measurement. Its goal, as expressed by Neuman (Neuman 2014) pg 203) is '*to precisely capture details of the empirical social world and express what we find in numbers*.' The most widely used social science data-gathering technique is the survey (Neuman 2014), and for the purposes of this research surveys were used to gather information for exploratory and descriptive purposes. The surveys did not seek to be explanatory – for this research, a complementary qualitative research method was used to seek to explain the findings of the survey data. The steps involved in conducting a survey, as defined by Neuman and as generally followed during this research were:

1. Develop hypotheses & design survey instrument
2. Pilot test survey instrument
3. Determine target population, sample size and sample
4. Conduct survey and record data
5. Check and statistically analyse data
6. Write up and present findings

Qualitative Research

Qualitative research may be described as being an interpretative approach to exploring phenomena (Flick, 2009 cited by (Ritchie 2014)), or a research design methodology that considers 'what', 'why' and 'how' questions (Ritchie 2014). Key characteristics of qualitative research include aiming to obtain an in-depth and interpretive understanding of the issue being studied, creating data that is detailed and complex, and enabling analysis that allows for emergent themes (Ritchie 2014). For the purposes of this research, a qualitative approach provided a number of functions. Quantitative data previously collected and analysed was reviewed and interpreted by health service managers and supervisors during group interviews (contextual function); interview participants considered potential explanations for the survey findings (explanatory function); participants made connections regarding the implications of

the findings including potential impacts to training outcomes (evaluative function); and interview participants suggested solutions to the issues identified (generative function).

Combining Qualitative and Quantitative Methods – Mixed Methods

Ritchie (2014) considers an *'effective way of combining quantitative and qualitative methods is to see them as equal but separate, suited to answering different questions about the same or related topics…. (where) each of the two research approaches is seen as providing a distinctive kind of evidence and, used together, they can offer a powerful resource to inform and illuminate policy or practice'* (pg 40).

Quantitative research may precede qualitative research, particularly where quantitative data creates findings that may need further explanation or detail. This approach has been used in this study design, where the quantitative research (survey responses) provided measurements regarding the relative frequency of different clinical activities undertaken during the intern and PGY2 years, and the qualitative research was intended to determine the underlying factors (the how and why) as well as considering potential opportunities to enhance exposure to particular curriculum activities. The combination of the two methods also provides a 'triangulation' of data, where a study of a particular phenomenon from multiple perspectives may provide a more valid and accurate view of that phenomenon.

3.2 Research timelines

The Intern survey was distributed in December 2012, and the PGY2 survey was distributed in December 2013 – January 2014, allowing for completion of the survey questions relating to all terms undertaken throughout those years. The surveys could have been distributed concurrently, however it was decided that the Intern survey findings would be reviewed initially to consider whether it would be useful to amend the PGY2 survey prior to distribution. The surveys were not intended to be undertaken as a longitudinal study, where the aim is for data to be collected over periods of time to observe changes as a result of factors under study. It was considered as there were not any significant changes in the external environment between December 2012 and December 2013 that undertaking the PGY2 survey after a period of 12 months was unlikely to provide materially significant data compared to if the PGY2 survey had been undertaken in 2012.

The group interviews were undertaken 6 months following the intern surveys, in July-August 2013. This allowed the researcher to undertake some preliminary data analysis of the Intern Surveys, and prepare individual health service reports to stimulate discussion when considering the interview questions. Thus there were three discrete episodes of data collection over a period of approximately twelve months.

3.3 Quantitative Data

3.3.1 Data Collection - Sampling & Selection of Participants

The primary use of sampling is to create a representative selection of cases that closely represents features of interest in a larger collection of cases (the population) (Neuman 2014). Quantitative research may use probability or non-probability sampling; in this research non-probability (convenience) sampling was used.

Participating Health Services

Particular health service subsets were selected based on health service region (inner metropolitan, outer metropolitan and regional). The researcher considered it important for the survey sample to contain participants from different geographic areas as there was some literature suggesting different training experiences in regional areas (Young 2008), and this would be investigated in the survey findings. The total number, and number of health services within each geographic area was determined based on broad sample size considerations (described below).

Recruitment

Recruitment of health services involved sending a letter of invitation to participate to the health service Directors of Medical Services (DMSs). The DMSs then acted as the gatekeeper for the researcher and facilitated intern and PGY2 recruitment via other intermediaries including Supervisors of Intern Training, Directors of Medical Education and Medical Education Officers. At no time did the researcher make direct contact with the interns or PGY2s themselves. Health service intermediaries recruited participants via their usual channels of communication with junior doctors including emails and message boards.

Sample Size – Intern Survey

Determining sample size is generally used for probability, or random, sampling. Nevertheless probability sample size considerations guided some broad principles to assist in determining the sample size requirements for the Intern & PGY Surveys for this research.

1. Samples from homogenous populations with simple data analysis can be effective when they have smaller samples (Neuman, 2014). For this research, medical interns and PGY2s in Victoria are a relatively homogenous population; the majority of data analysis undertaken was basic descriptive and statistical analysis including comparison of means; and the study was largely exploratory; hence a smaller sample size was considered likely to be effective.

2. Some sample sizes reported from surveys in the reviewed literature were:
   - Marel (2000) (single site) – 92 interns/PGY2s/PGY3s
   - Barnsley (2004) (single site) – 30 interns
   - Old (2006) (single site) – 30 interns
   - Boots (2009) (single site over 4 years) – 314 interns
   - Duns (2008) (Australia-wide) – 470 responses
   - Agrez (2013) (multi-site) – 59 responses
   - Carr (2014) (multi-site) – 200 interns

3. Additional logistic factors regarding achieving a reasonable sample size included;
   - Availability of interns at the health service on the day of survey completion due to being on rostered days off, night shifts, rotation to other campuses etc
   - Non-response rates for academic surveys have been reported at 25-33% (Neuman, 2014), with response rates generally being lower for electronic (email) surveys.

The researcher selected a sample of *seven* health services to participate in the study, out of a total of *eighteen* health services with interns in Victoria in 2012; the total number of interns at these seven health services was 374, which was 53.5% of the total number of interns in Victoria in 2012 (699) (PMCV 2013). It was considered that given the logistical issues identified above, that a sample of approximately 150 interns could be obtained from this number of participating health services, which was comparable to or greater than many previous reported intern sample sizes. While the exact number of PGY2s at each of the seven participating health services is not publicly available information, the assumption was that the

number of PGY2s at the seven participating health services would be a similar proportion of the overall PGY2 cohort (e.g. approximately 50%) and would similarly provide a sufficient sample size.

The sampling of <u>individual junior doctors</u> within each health service was by *convenience* sampling i.e those interns who attended the intern education session and completed the Intern Survey; and those PGY2s who responded to the email and completed the survey link.

3.3.2 Intern Survey Development

Aims of Survey

The survey aimed to provide a comprehensive understanding of the clinical placement experience of Interns & PGY2s in Victorian Health Services by asking questions in relation to specific prevocational curriculum items. It was considered important for the survey to cover a comprehensive range of curriculum items as there has been no published research that comprehensively reviewed experience against the broad prevocational curriculum.

The survey design also allowed for junior doctor experience to be considered in relation to individual terms, in particular the intern terms of core medicine, surgery, and emergency. This aimed to provide information regarding the potential learning value of the different core rotations. Together with health service region, these were the two main subgroup analyses of the intern survey data undertaken for the purposes of this research study.

Design of Survey Instrument

The layout of the <u>Intern Survey</u> (see Appendices) broadly comprised 3 main sections:

Table 1 Layout of Intern Survey

Section/ (pg nos.)	Survey Information (variables)	Variable classification
1/pg 1	• Demographic questions • Global Survey Question	• Categorical nominal/ordinal • Numerical – continuous (Likert scale)

2/pg 2 - 10	• 53 Clinical Activity Questions:
	   - frequency by rotation
	   - sufficiency (over year)
		• Numerical – continuous (Likert scale)
		 • Categorical nominal

3/pg 10	• Strengths & Weaknesses of clinical experience	• Free text

Section 1

Demographic Questions

The survey comprised six demographic questions including employing health service, type of medical degree (undergraduate/postgraduate), university from which medical degree was obtained, proposed career specialty, gender and age (optional). All interns undertake three core terms mandated by the Medical Board of Australia – Medicine, Emergency and Surgery - and also undertake two other (non-core) terms during their intern year which are more variable in discipline and location (MBA 2012). Interns were asked to note their two non-core rotations in this section of the survey, and to refer to these throughout the remainder of the survey.

Demographic information was primarily collected to describe the demographic features of the sample and to validate that the sampled population was broadly representative of the total population. Demographic variables were occasionally considered in analysis of data relating to low scoring survey items. In general, however, the demographic data was not extensively analysed for the purposes of this research, however could potentially be analysed in future research.

Global Satisfaction Question

The survey then asked a global satisfaction question; *'I believe that my clinical experience this year has enabled me to meet intern curriculum objectives as defined by the Australian Curriculum Framework for Junior Doctors'* This was measured via a Likert Scale *(Strongly disagree, Disagree, Neutral, Agree, Strongly agree)* - as an introduction to the main survey questions.

Section 2

Prevocational Curricula Questions

This section of the survey was designed to measure intern exposure to a broad range of prevocational curriculum activities, both within each term/rotation and across the whole intern year.

Curriculum Mapping

The main body of the Intern Survey comprised questions derived from curriculum items in the ACFJD. However this curriculum framework (2009 version) contained over 250 items, and the researcher needed to determine a process to systematically reduce these to a manageable

number (approximately 50) for inclusion in the Intern Survey. Given the large number of items in the ACFJD, it was decided to map this curriculum against the recently revised prevocational curriculum from the United Kingdom (the Foundation Program Curriculum - FPC) version July 2012 (Appendix 1).

The aim of the mapping exercise was to identify a set of generic 'common curricula items' that could form the basis of the Intern/PGY2 survey. The FPC was selected for this mapping purpose, as it had been used in the derivation of the 2006 ACFJD and was therefore likely to be similar (Agrez 2013); the FPC was a comprehensive curriculum targeted to the prevocational years; and the United Kingdom had a similar rotational program for internship to Australia. Specific prevocational curricula did not exist for the United States or Canada given that they do not have separately defined prevocational programs.

Mapping Results

The ACFJD is a much longer document than the FPC, having 60 topics (included within 11 categories), 96 procedures, and 77 clinical problems & conditions, compared with the FPC having 39 subsections and 14 procedures. Additionally, structural differences between the curricula included:

1. The FPC does not include discipline-specific clinical problems/conditions and discipline-specific skills/procedures, which are included in the ACFJD.
2. The ACFJD does not include a list of Investigations which is included in the FPC.

However, there was a high degree of congruence between the two documents.

ACFJD topics that did not map to the FPC were excluded from the Intern Survey. These included:

Table 2: 2009 ACFJD topics that did not map to the FPC

Clinical Management (13)	Communication (3)	Professionalism (6)
Safe Patient Care	**Patient Interaction**	**Doctor & Society**
• Adverse Events & Near Misses	• Open Disclosure	• Access to healthcare
• Public Health (infectious diseases notification)		• Culture, society & healthcare
		• Indigenous patients
• Radiation Safety		• Healthcare resources

Patient Assessment	Managing Information	Professional Behaviour
• Patient Identification	• Electronic health records	• Practitioner in difficulty

Emergencies	Teaching & Learning
• Prioritisation	• Supervision
• Acute Patient Transfer	

Patient Management

- Fluid & electrolyte management
- Subacute Care
- Ambulatory & community care

Skills & Procedures

- Preparation & anaesthesia
- Procedures
- Post-procedure

FPC subsections that did not map to the ACFJD were also excluded from the Intern Survey. These included:

- Safe use of medical devices
- Manages patients with impaired consciousness, including seizures
- Manages acute mental disorder and self-harm
- Manages sepsis
- Nutrition

There were a total of approximately 50 'common curricula items' from which it was considered that the Intern survey questions could be derived. The final Intern survey included 53 clinical activity questions that were short, simple and grouped according to the eleven ACFJD categories (Appendix 2).

Design of Rating Scale for Curriculum Activity Questions

The survey aimed to identify individual exposure/experience in relation to each curriculum activity, as it is known that it is the repeated undertaking of an activity that develops skills and eventually leads to mastery (Jolly 2007, Conn 2012). While the frequency of exposure to different activities may vary significantly (e.g. participating in a quality improvement activity versus the performance of venepuncture), this may be appropriate for mastery of different

activities. There is no reported (benchmark) expected frequency of exposure for any of the activity items derived from the ACFJD, so the survey was not able to compare exposure in relation to a known standard.

The Rating Scale for the Curriculum Activity Questions measured:

1. Clinical experience with each survey item, by rotation (a frequency measure)

The rating scale developed for this purpose was a Likert scale that had as its unit of measurement 'the proportion of patient encounters' i.e. each time the intern had an interaction with a patient, how often did they undertake the particular activity?

2. Intern opinion on whether activity clinical experience had been 'sufficient' for future competent performance of activity

The survey asked respondents to give a subjective assessment of whether the clinical experience of a particular item was sufficient to meet curriculum expectations (Yes/No response). This question was necessary to offset the potential for some clinical activities to be undertaken infrequently, but to be sufficient to meet curriculum expectations. Additionally, the relationship between activity exposure and sufficiency of experience was able to be explored for the different activities.

Section 3

Section 3 of the survey included two open-ended questions that allowed respondents the opportunity to raise other issues that may not have been elicited in the bulk of the survey;

- *Do you have any further comments you would like to make regarding the strengths of the clinical experience in your Intern year?*
- *Do you have any further comments you would like to make regarding the weaknesses of the clinical experience in your Intern year?*

3.3.3 Pilot Testing of Survey

For this research project the Intern Survey was piloted at a PMCV Junior Medical Officer (JMO) Forum, a quarterly meeting facilitated by the PMCV, and which included JMOs from a number of different health services. At the conclusion of one of these meetings, JMOs were invited to stay behind for a few minutes to complete the draft survey and provide feedback regarding any difficulties they had in understanding the survey or any ambiguity of individual survey questions. A total of 16 responses from this session were received and a small number of adjustments to individual questions were made.

3.3.4 PGY2 Survey Development

The ACFJD is a 2-year curriculum, and the majority of prevocational trainees complete at least 2 years in health services prior to entering vocational training. Initially, this research project proposed using a single survey instrument for both Intern and PGY2 surveys to allow for a comparison between the two cohorts across the complete range of clinical activities. However, following the distribution and analysis of the intern survey it was decided to make quite substantial amendments to the PGY2 survey design for the following reasons:

- Analysis of the Intern Survey results revealed that there were a proportion of clinical activities surveyed for which over 90% of interns felt they had obtained sufficient clinical experience in their intern year. It was thought that there would be little value in asking PGY2s about these activities, and instead, there would be a potential risk of disengaging them from the survey. Thus the PGY2 survey included fewer than the original 53 questions.
- PGY2s do not have core and non-core rotations and instead undertake a vast number of different rotations; therefore it was considered that measuring the frequency of activity exposures for each individual rotation would *not* be useful. Alternatively, the majority of PGY2s undertake a 'streamed' year – generally within a general, medical, surgical or critical care stream. Rotations are of similar disciplines within these streams and therefore it was considered that reviewing survey results referenced to these streams would be more useful as there would be larger absolute numbers of PGY2 respondents within each stream.
- Additionally, the researcher wished to ascertain whether PGY2s who were registered with a vocational College (which may be available to prevocational doctors from PGY2 depending on the specific College) had different access to particular clinical experiences compared to those who were not registered. This particularly relates to training and curriculum governance which the researcher considered may be potentially important to the policy related aspects of the thesis.

It was therefore decided that the main aim for the PGY2 survey for this research study was to ascertain whether 'gaps' in exposure to specific curriculum activities identified in the Intern Survey had been 'closed' i.e. whether sufficient activity experience had been obtained during the PGY2 year. This required only a 'holistic' assessment by the PGY2s of their experience in relation to specific identified clinical activities across the PGY2 year.

Design of Survey Instrument

Similar to the Intern Survey, the PGY2 Survey (Appendix 3) broadly comprised 3 main components:

Table 3 Layout of the PGY2 Survey

Section (pgs)	Survey Information (variables)	Variable classification
1	- Demographic questions - Clinical PGY2 Stream/Vocational Training questions - Overall Survey Question	- Categorical nominal/ordinal - Numerical – continuous (Likert scale)
2	32 Clinical Activity Questions - Sufficiency only	Categorical nominal
3	Strengths & Weaknesses of clinical experience	Free Text

The PGY2 questionnaire was much shorter (3 pages).

Section 1

While the demographic questions were similar for both Intern and PGY2 surveys, there were no questions relating to core/non-core terms as this is not applicable to PGY2s. Instead these questions were replaced with questions relating to their Clinical Stream and whether or not they were registered with a vocational College:

Following this, the survey then asked the same overall survey question as for the Intern Survey with one small amendment - *'I believe that my clinical experience this year has enabled me to meet prevocational (instead of intern) curriculum objectives as defined by the Australian Curriculum Framework for Junior Doctors' (Strongly disagree, Disagree, Neutral, Agree, Strongly agree).*

Section 2

The second section of the PGY2 survey comprised the 32 questions (of the 53 questions of the Intern survey). Given that the questions did not necessarily cover all ACF categories, the ACF category headings were removed from the PGY2 survey, and the questions were listed from 1 to 32 (as a result, the PGY2 Survey question numbers do not correspond to the Intern Survey

question numbers). The explanation at the commencement of the 32 PGY2 Survey clinical activity questions explains the derivation of the questions;

'The following activities have been identified from a larger survey of interns in 2012 as activities in which a proportion of interns did not feel they had obtained sufficient experience. This survey seeks to determine whether sufficient experience in these activities is obtained during the PGY2 year.'

As the aim of this survey was to determine if potential identified intern curriculum 'gaps' had been closed off by the end of PGY2 (and as there are no core/common rotations undertaken by all PGY2s), the sole measurement of these questions was regarding exposure sufficiency (a closed yes/no response). No measurement of exposure frequency was sought.

Section 3

Similar to the intern survey, the PGY2 survey also included two open-ended questions at the conclusion of the survey (regarding strengths and weaknesses of the PGY2 year) to provide respondents with the opportunity to note any other outstanding concerns that had not been considered within the body of the survey.

3.3.5 Survey Distribution

Intern Survey

The researcher communicated with participating health services via their Directors of Medical Services, seeking attendance at each health service in December 2012 to distribute the Intern Survey. The researcher was aware that each health service held weekly intern education sessions, and suggested that this might be an appropriate forum for survey distribution. The DMSs then facilitated the attendance of the researcher by liaising with the health service Medical Education Officer or Supervisor of Intern Training to arrange a mutually suitable time. This was advertised to the health service interns as the topic for their education session for the day. The surveys were completed during the education session and returned to the researcher when completed.

PGY2 Survey

Following feedback from health services, it was decided that the PGY2 Survey would be distributed at health services via a Survey Monkey survey link distributed via the Directors of Medical Services/Directors of Medical Education, as the majority of health services did not have regular PGY2 education sessions. The smaller size of the survey (3 pages) and therefore shorter time required for completion (estimated at approximately 5-10 minutes compared

with 20 minutes for the Intern Survey) enabled the PGY2 Survey to be more amenable to electronic survey distribution. Distribution of the survey was undertaken via a health service intermediary, the Director of Medical Services/Director of Medical Education or similar, who had access to email distribution lists of the health service PGY2s. A two-week time-frame was given for completion of the survey, and one follow-up email was forwarded after two weeks. At no time did the researcher contact the PGY2s directly.

3.3.6 Data Analysis - Intern Survey Data

The Intern Survey data obtained needed to be recorded in a format suitable for analysis, analysed and summarized, and then interpreted.

The Intern Survey data from sections 1 & 2 was initially coded and entered onto an Excel spreadsheet. This was then inputted into an SPSS (Statistical Package for Social Sciences) version 21 file format for further analysis. Data from Section 3 (free text responses) were entered onto a separate Excel spreadsheet, and grouped according to similar themes.

Data Manipulation

Data manipulation was required to create new variables to assist in the descriptive and inferential analysis; for example data treatment included the creation of new variables (ACFJD Category means) by averaging the means of the intern responses for the relevant items within each ACFJD Category.

Descriptive Analysis

Descriptive analysis of the demographic (section 1) data included calculating means and percentages to provide a summary of the demographic characteristics of the sample population.

Descriptive analysis of the curriculum (section 2) data included calculating means and percentages, and enabled a ranking of the 53 activity questions from those most frequently experienced to those less frequently experienced, as well as the percentage of respondents who considered that their experience was sufficient.

Inferential Analysis

Core Term Comparison

For the core term comparison, data treatment included the creation of new variables (ACFJD Category means of each core term) by averaging the means of the intern responses for ACFJD Categories within each core term.

Comparison of the mean ratings for selected individual ACFJD activities and for ACFJD categories by *core term* was undertaken using a Repeated Measures analysis of variance with core term as the repeated measure. Pairwise comparisons were used to identify the specific core term differences where a significant variation ($p < 0.05$) had been identified. The F-ratio was reviewed to validate the sensitivity of the comparative analysis processes.

Regional Health Service Comparison

For the regional health service comparison, data treatment included the creation of new variables (inner metro, outer metro and regional health services) by averaging the means of the intern responses for ACFJD Categories within each health service region.

A comparison of the mean ratings for the ACFJD topics by *health service region* (inner metro, outer metro and regional) was undertaken using one-way analyses of variance (ANOVA). Follow-up post hoc testing identified the source of variation between regions.

Limited Demographic Analysis

Limited demographic analysis was undertaken using the independent t-test, with demographic factors (gender, course type, age) as the dependent variables and the Global Survey Question mean score as the independent variable. This was to identify if the mean score of the Global Question differed significantly based on underlying demographic factors.

Multiple linear regression analysis was also used for the same dependent and independent variables to establish whether there were any significant relationships between the variables.

Demographic and health service analyses were undertaken for those individual curriculum items where less than 80% of respondents considered that they had obtained sufficient experience, to consider any potential underlying demographic/health service factors.

The analysis of the open-ended comments in Section 3 included broadly grouping the comments into related themes.

3.3.7 Data Analysis – PGY2 Survey Data

The PGY2 Survey was conducted using Survey Monkey, and the survey data was saved to an Excel file format. This was then exported to an SPSS Version 21 file format for the undertaking of data analysis. Similar to the intern survey, new variables were created for health service region (inner metro, outer metro, regional).

Descriptive Analysis

The PGY2 survey data was largely analysed descriptively.

Descriptive analysis of the demographic (section 1) data included calculating means and percentages to provide a summary of the demographic characteristics of the sample population.

Descriptive analysis of the curriculum (section 2) data included calculating percentages, and enabled a ranking of the 32 activity questions based on the percentage of respondents who considered their experience in that activity sufficient. A summary table of results for the PGY2 sufficiency ratings for questions 1-32 was generated, and compared with the intern survey ratings for the same 32 questions.

Inferential Analysis - Demographic Analysis

Limited demographic analysis was undertaken using the independent t-test, with demographic factors (gender, course type, age) as the dependent variables and the Global Survey Question mean score as the independent variable. This was to identify if the Global survey Question mean score differed significantly based on underlying demographic factors.

As for the intern data, analysis of the open-ended comments in Section 3 for the PGY2 data included broadly grouping the comments into related themes.

3.4 Qualitative Data

3.4.1 Theoretical Framework

This research has been conducted within a *Situated Learning Theoretical Framework* (Lave 1991). Maudsley & Strivens (2004, cited by (Cruess 2006) assert that of the educational theories available, that situated learning theory best describes the '*most effective model to assist in the design of programs which have as their objective the transformation of students from members of the lay public (or non-experts) to expert members of a profession* (Cruess 2006, pg 205).'

Situated learning has been used as a framework in recent medical education literature, including regarding socialisation of junior doctors into the medical profession (Bleakley 2002), on the teaching and learning of professionalism (Cruess 2006), and as educational theory to support student immersion programs including rural immersion programs (Young 2008).Lave and Wenger's theory of situated learning was a pedagogical shift from the pervading educational approach of information processing theory, where knowledge was something transferred from the teacher to the learner and became stored in the learner's memory for

later use (Durning 2011). In situated learning, key tenets are *'legitimate peripheral participation'* which involves access to and meaningful involvement in an activity as a way of learning, sponsored and supported by '*communities of practice'* which are the professional and social communities of practitioners who define and interpret the relevant professional practice (Lave 1991).

Lave and Wenger note that when apprentices learn a specialised occupation, they are essentially 'sponsored' into a community of practice that includes other apprentices and near-peers from whom much of the learning takes place. Acceptance by and interaction with acknowledged adept practitioners make**s** learning legitimate and of value for the apprentice. It is this practice of the community and the opportunity for engagement in practice which creates the potential '*learning curriculum'* – it is not a 'taught' curriculum. Lave defines a learning curriculum as '*situated opportunities for the improvisational development of new practice.*' In comparison, a teaching curriculum arises through structured opportunities of what the teacher believes is important for learning. Lave's framework states that it is the embedding of learning in authentic activities within a culture of practice which helps to transform knowledge from the abstract and theoretical to the usable and useful. 'Situated' learning takes place within areas which have learning resources – for junior doctors this includes the ward environment, patients, medical and other team members, equipment of practice, and other accessories to learning.

Lave notes that '*the key to legitimate peripherality is access by newcomers to the community of practice and all that membership entails* (pg 173)'. This requires an understanding by the newcomer of the tools, culture and activities of practice; and this and the context of use must be made clear and *transparent* to the newcomer. To be able to participate in a legitimately peripheral way entails that newcomers have broad access to arenas of mature practice, even though the activities that the apprentices undertake will be simpler, of lower risk and of limited responsibility. However Lave also notes that communities of practice generally control access, and may 'sequester' newcomers either directly or in more subtle and pervasive ways.

By participating in legitimate peripheral practice, newcomers participate in a community of practitioners as well as in productive activity, which leads to a sense of intrinsic value and reward. As apprentices move towards full participation with the increased scope of activities and responsibilities that that affords, they develop an increasing sense of identity as a master practitioner.

The situated learning framework and associated concept of legitimate peripheral participation, is a useful framework in which to consider this research study, as it acknowledges the inextricable relationship between the apprentice (junior doctors) and their learning environment (the health services), and the important role of participation in activities within this environment in leading to knowledge and skill development. It also acknowledges that the interaction with the work environment is highly dependent on the culture of the 'community of practice' (e.g. the medical and health service culture) which may allow or refuse entry for the apprentices (junior doctors) to access to particular clinical experiences and thereby to the actual 'learning curricula'.

This research study aims to understand junior doctors' exposure to a variety of curriculum-based activities within their health service rotations, and to consider factors, particularly environmental factors, which may affect this. Thus the framework of situated learning may provide a lens through which to consider the research findings regarding junior doctors' exposure to clinical activities. It may help to conceptualise and explain health service characteristics that potentially influence access to peripheral participation, and that may lead to sequestration and reduced participation in communities of practice. The implications of these for the development of knowledge and clinical skills across the medical training continuum, and ultimately for practitioner identity as a medical expert will be considered.

3.4.2 Data Collection – Group Interviews

The qualitative data collection was undertaken via semi-structured group interviews of supervisors and managers of junior doctors in the participating health services.

Group interviews were selected as the interview model, as while individual interviews allow for detailed focus on an individual's experiences and perspectives, group interviews allow for interaction between group participants to enrich the data – including refining ideas, development of solutions and exploring different participants' views. As Ritchie (2014) notes (pg 58), '*Group discussions could be used to 'validate' or enrich understandings of research findings*.' The purposes of the qualitative component of this research study was to explore the intern survey findings in more depth and generate a shared understanding of underlying factors if possible, hence use of group interviews was considered the best method to achieve this.

An alternative interview model would have been the creation of a focus group, where individuals with similar status are brought together. However this would have been

inappropriate as it would likely have resulted in a smaller number of total participants, as well as being impractical to achieve due to likely scheduling issues; thus the use of group interviews was an alternative appropriate interview format for the research project.

Selection of Participants

Group interviews comprised a convenience sample based on recommendations of the researcher to the Directors of Medical Services regarding the roles/positions to comprise the group interviews - including Supervisors of Intern Training, Directors of Clinical Training, Directors of Medical Education, Medical Education Officers as well as the DMSs themselves. The groups thus comprised individuals with complementary roles and expertise, however an absence of power imbalances could not be guaranteed.

It was decided to capture in-depth qualitative data from health service supervisors and managers, rather than from junior doctors because:

- A primary objective of the research was to ascertain underlying factors, particularly system factors that may contribute to the variation in exposure to clinical activities by the interns. These contributing system factors (such as quality and safety systems and efficiency drivers) were complex and high-level and may not be apparent to the very junior doctor such as the intern, whose main developmental and cognitive task during the intern year is coming to grips with being a practicing doctor.
- The cumulative experience in medical education and training obtained by interviewing groups of supervisors and managers would be significant, as many had been in those roles for many years or even decades and could provide a rich source of experience and reflective material.
- Supervisors are in a position to create curriculum experience where potential gaps are identified.
- There was an opportunity to compare supervisors' views with the junior doctors' views using intern and PGY2 free-text responses in the surveys

Sample Size - Group Interviews

Qualitative research uses non-probability methods of sampling. Qualitative research is not designed to determine statistically significant outcomes; instead the information is sought for its richness of detail. Specific factors which may bear on the sample size include the heterogeneity or homogeneity of the population, where a more homogenous population can

allow a smaller sample size, and the number of selection criteria required of the sample, where the fewer criteria the smaller the sample possible.

For this qualitative research, the populations were homogenous (similar roles across the health services), and the selection criteria for participants related solely to the role undertaken within the health service. Adler and Adler (2012, cited by Ritchie 2014) consider that for group interviews, between 6-12 groups are the optimal sample size. Samples larger than this may become unmanageable in terms of data, and smaller samples may not be sufficiently representative.

Group Size

Ritchie (2014) considers interview groups to typically comprise six to eight participants, however optimal size of the group may be affected by factors including level of engagement (smaller group appropriate), complex or sensitive issues (smaller group), and whether breadth (larger group required) or depth (smaller group required) is the focus of the interviews. The group interviews conducted at health services were expected to comprise highly engaged participants, discussing a specialised and complex issue, and exploring underlying related issues in depth, hence small group sizes were appropriate. Another factor determining the size of the group interviews for this research project was also the number of available participants i.e. the number of each of the defined roles at each participating hospital.

3.4.3 Interview Preparation

A number of documents were developed and made available to support the group interviews, and allow for a semi-structured interview format. These included:

- Health Service Reports
- Interview Questions
- Intern Survey

The derivation and development of the intern survey has been discussed previously.

Health Service Reports

Following the Intern survey distribution in December 2012, preliminary data analysis was undertaken over the subsequent months. This data analysis was used to develop a Health Service Report for each of the seven participating health services (example at Appendix 4). The reports were each twelve pages long each and the content of the reports included:

- A cover sheet with Health Service name, date, author, and a summary statement of the research
- Brief summary of the methodology of the intern survey and preliminary analysis
- Survey response data of the individual participating health service, aggregate results overall, and results compared by health service region
- Summary/conclusions

These Health Service Reports were used as the starting discussion point for the Group Interviews. They were provided confidentially to the participating health service DMSs prior to the interviews to allow participants to read the reports and come to the interviews prepared. The student researcher briefly discussed the findings in each report and allowed opportunities for participants to ask questions or seek clarification. The discussion of the specific report information generally lasted 10 minutes or so, and then led into the semi-structured interview questions.

The development of the Health Service reports was a conscious effort on behalf of the student researcher to acknowledge the participation of the health services involved, and to provide them with meaningful feedback that they could potentially use to review and make improvements to their local junior doctor programs based on the findings.

Interview Questions

The semi-structured Group Interviews Questions are provided at Appendix 5. They provided a general guide of the issues to be explored throughout the interview to ensure some consistency between groups, while still allowing flexibility to explore individual comments which may be of relevant although unanticipated issues.

The purpose of the group interviews were:

- To assess the face validity of the initial intern survey findings
- To consider the underlying contributing factors
- To consider some of the implications of the findings

In the interviews, the participants were asked:

- Whether the findings were expected; whether they were likely representative of the intern experience at their health service; as well as possible explanations for apparent discrepancies of the findings from what may have been expected.

- Potential barriers for interns in accessing particular experiences, and potential opportunities to overcome identified barriers.
- Whether the defined curriculum activities were appropriate for the intern curriculum, particularly for those activities which interns had less exposure; and what level of consensus there was regarding the required curriculum content for junior doctors.
- Whether the survey findings and issues identified had implications more broadly for medical training, and prevocational training policy.

Intern Survey

Copies of the intern survey (uncompleted) were also made available during the group interviews so that any queries regarding the survey format or content could be addressed immediately.

The surveys were all audio-recorded and transcribed in full by the student researcher. This allowed the researcher to take minimal notes during the interviews and to fully focus on participating in the interviews.

3.4.4 Data Analysis

Selection of Qualitative Analysis Methodology

'Substantive approaches' to analysis, such as thematic analysis and grounded theory, are concerned with capturing and interpreting *meanings* in the data, compared with 'structural approaches' to analysis such as discourse analysis and narrative analysis, which focus instead on the structure of the language and text (Ritchie 2014). For this research with a mixed methods design, the purpose of the qualitative component of the research was to explain the findings of the first component of the research (the intern survey results). Given the presence of some literature in the field, the researcher's experience in this area, and the potential for the research to inform policy, it was considered that *thematic analysis within an existing theoretical framework*, would be the most appropriate approach to substantive qualitative analysis for this research.

In the United Kingdom, two researchers at the National Centre for Social Research, Ritchie and Spenser, developed an analytic tool to support policy-based research, calling it the 'Framework approach' (Ritchie 2014). This tool applies the general thematic analysis process, but uses a slightly more structured format that includes data summary and display ('charting'). Additionally, although the 'framework approach' reflects the original accounts and observations of the people studied (that is, is 'grounded' and inductive), it starts deductively

from pre-set aims and objectives. In this approach, the data collection tends to be more structured than would be the norm for other qualitative research and the analytical process tends to be more explicit and more strongly informed by a priori reasoning.

As the findings of this research study were expected to be able to inform policy regarding junior doctor curriculum and training in Victoria and potentially nationally, the researcher adopted this approach to analysis to ensure sufficient analytical rigour to meet the requirements of the expected audience.

The level of abstraction of the analysis depends on the nature of the research question and the purpose of the study. Analysis may be limited to a detailed description of the phenomena being studied, go on to develop explanations for the patterns observed in the data, or use the data to construct more general theories. The analysis used in this research attempts to do all these – (1) by verifying and qualifying the findings of the intern survey, (2) by suggesting explanations for some of these findings, and (3) by considering the broader systems issues and how these may potentially be influenced using a theoretical framework – in this case the theoretical framework of situated learning.

Thematic Analysis Process

The thematic analysis undertaken using the Framework approach is described in the following five key steps (Pope 2000):

1. Familiarisation – immersion in the raw data (transcription of all six group interviews by the researcher)
2. Constructing a thematic framework – developing an initial set of issues, concepts and codes/themes derived from the research question, the literature, and emergent themes from the data
3. Indexing/coding – applying the codes systematically to all the data by annotating the transcripts
4. Reviewing/refining the themes derived from the coded data
5. Data summary and display/Charting – rearranging the data according to the appropriate part of the thematic framework to which they relate, and forming charts/matrices (this step embodies the Framework approach to thematic analysis)

Framework Analysis has a case and theme based approach i.e. it sorts data both thematically and by each case. The Framework approach develops a hierarchy of main themes and related subthemes, and is operationalised through the creation of a grid/matrix where each case has

its own row and columns represent subtopics. Cells contain summarised information from the data set, and the charts are examined for patterns and connections in the data.

Raw Data

The raw data consisted of the transcripts of the health service group interviews, transcribed by the researcher. Each transcript was approximately 12-20 pages long.

Coding Development

Thematic analysis involves a process of labelling, organising and interpreting data with reference to a set of 'codes' or 'themes.' 'Codes' may be adopted 'a priori' from the literature or relevant field, or created by the researcher as they emerge from the data. One approach (Braun and Clarke, 2006 cited by Ritchie 2014) to coding is to adopt descriptive labels early to ensure closeness to the data, and then later in the analytical process to adopt more abstract interpretative codes. This approach was used in the data analysis undertaken for this research, and the codes developed were reviewed by an external researcher to ensure transparency and rigour in the process.

Codes were specifically developed from:

1. The interview questions/topics
2. The literature review
3. The experience and views of the researcher
4. The transcripts

'Constant comparison' was undertaken - every time a passage of text was selected it was compared with other passages already coded in that way – to ensure that the coding was consistent, or to indicate a requirement to develop a new code. Subsequently, codes and sub-codes were merged, redundant codes (not widely found in the data) were removed, and the coding process shifted from a more superficial descriptive approach to a more abstract and interpretative approach.

Coding of Transcripts

Following this iterative process, a manageable number of codes (thirteen) were arrived at to code the group interview transcripts. This coded text was then charted onto a series of Excel spreadsheets as per the 'Framework Approach'.

Developing Themes from the Coded Transcripts

From the codes that were used to code the transcripts, a set of eight main themes were identified by:

- Moving from descriptive-based to more interpretative-based themes
- Regular referral to the literature
- Ensuring that the main themes related to the research question(s), other themes as potentially relevant to other/future research

Aligning Themes to the Situated Learning Framework

These themes were then compared with the theoretical framework of Situated Learning, as a framework with which to conceptualise and broadly encompass the themes. It was identified that the majority of resultant themes from the interviews could align within this framework and this was then determined as the basis for the presentation of the findings. This has enabled the research findings to acknowledge and progress further Lave's previous significant theoretical work in situated learning, and to demonstrate its applicability to the field of junior doctor training.

3.5 Ethical Considerations in Research

3.5.1 Ethics Approvals

The study received ethics approval from the University of Melbourne and the seven participating health services.

3.5.2 Ethical Considerations

Some key ethical issues and how they were addressed in this study included:

- *Informed consent* was managed in accordance with the University of Melbourne and each Health Service Ethics Committee's requirements, by providing Plain Language Statements (PLSs) and Participant Information and Consent Forms (PICFs).
- There were some potential *adverse consequences* for the Group Interview participants. These included:
  - Data was presented to each health service which compared the survey results of their interns to the overall group survey results. For most health services this included both positive and negative feedback; however for a couple of health

services the feedback was more negative than positive in comparison to the aggregate results. Reviewing negative feedback may have been awkward for the participants from these health services, particularly for the more junior members of the group whose role involved the direct implementation of the intern training program, and particularly in the presence of their direct supervisors (usually the SIT and/or DMS). The student researcher attempted to mitigate this by reinforcing that the findings suggested system issues.

- Issues relating to *confidentiality* were managed in the following ways:
    - Individual intern survey results were not discussed or reported.
    - An important issue relating to confidentiality arose because of the work role of the researcher at the time of the data collection, being the Medical Director of the PMCV. The PMCV accredits health service intern and PGY2 programs in Victoria, and the Medical Director was an accreditation team leader, Deputy Chair of the Accreditation Subcommittee and reviewed most of the health service accreditation reports from the PMCV. The researcher made clear to participating health services that the survey findings would in no way affect health service accreditation and that records relating to the research study were not available to the PMCV but were kept at the University of Melbourne.

3.6 Chapter Summary

This research study has utilised a mixed methods approach, based on the objectives of the research and the most appropriate research methodologies to achieve these. The research data collection was undertaken over a period of approximately twelve months, and included three discrete phases (1) the Intern Survey (December 2012), (2) the group interviews (July-August 2013) and (3) the PGY2 Survey (December 2013-January 2014).

The research used a convenience method of sampling to identify participating health services, samples of junior doctors (interns and PGY2s), and their supervisors/managers. Broad sample size considerations for the surveys were undertaken to provide overarching principles for selection of the number of participating health services required to achieve sufficient numbers of intern and PGY2 respondents.

The Quantitative research component utilised a survey instrument, the most common research tool in contemporary social sciences research. The Intern survey instrument comprised 3 main sections, with the bulk of the survey comprising questions relating to clinical activities derived from the Australian Curriculum Framework for Junior Doctors. An extensive mapping exercise was undertaken between the ACFJD (2009 version) and the United Kingdom Foundation Program (2012 version) to develop a set of approximately 50 questions regarding junior doctor exposure to clinical activities. A frequency measure was created that measured the proportion of patient encounters where each activity was undertaken by the Interns. Exposure to individual clinical activities was measured for each of the five intern terms. A similar but briefer survey was created for the PGY2 cohort. This survey focused on the most relevant individual activity questions based on the initial results of the Intern Survey. As well as reduction in the length of the PGY2 survey, the method of distribution was revised, based on specific features of the PGY2 cohort's working environment.

Following collection, the Quantitative data was coded and analysed using SPSS software version 21. This included data manipulation and treatment, descriptive (summary) analysis, and some inferential data analysis including analysis by core terms and by health service region. The PGY2 data was analysed by descriptive (summary) analysis, with limited inferential data analysis.

The Qualitative component of the research sought to gain a deeper understanding of the Intern survey results. A theoretical framework, that of situated learning (Lave 1991), used previously in medical education literature, was selected to assist in interpreting the qualitative research findings. The qualitative research consisted of group interviews of junior doctor supervisors/managers at participating health services. The interviews were facilitated by the development of Health Service Reports based on the findings of the Intern Survey, and a set of questions, to allow for a semi-structured interview format.

The Framework method of thematic analysis was selected to organise the data. This involved coding the raw data, developing themes from the coded data, and finally aligning the themes to the situated learning framework for the reporting of results. This process required a number of iterations before the final themes emerged. This research was considered low risk for the purposes of ethical approval, which was obtained by the University of Melbourne and the ethics committees of all seven participating health services.

Chapter 4: Results - Surveys

4.1 Introduction

This chapter describes the findings of the quantitative components of the research – the Intern survey (undertaken in December 2012) and the PGY2 survey (undertaken in December 2013). Although these two surveys were undertaken 12 months apart and used different methods of distribution and data analysis, they are presented together in the one chapter as they represent findings regarding junior doctor clinical exposure in Victorian health services at two points in the continuum of postgraduate training.

Figure 6 Timeline of Research Components

It should be noted that the qualitative component of the research, the Group Interviews, were undertaken mid-way between the two surveys (July-August 2013), and their results are presented in the next Chapter (Chapter 5: Results – Group Interview Findings).

4.2 Intern Survey - Analysis of Findings

4.2.1 Participant Information

Overall, one hundred and eleven (111) interns completed the survey. This represented 30% of the total interns employed at those seven health services (n = 374), and 16% of the total 2012 Victorian Intern cohort (n =699) (PMCV 2012). A true response rate is difficult to determine, as the majority of interns who attended the intern education sessions (denominator) completed the survey (numerator), however there were a few interns who commenced the session and left early, and so the true denominator is unknown.

The distribution of intern respondents were, 31 (28%) from inner metropolitan health services, 39 (35%) from outer metropolitan health services, and 41 (37%) from regional health services. Compared to the total intern cohort in Victoria, regional interns were somewhat over-

represented in the survey sample. However the sample is reasonably geographically representative of the total population of interns, which was the main aim of the (modified) convenience sampling undertaken.

Table 4 Distribution of Health Services of participating Interns

Health Service distribution	Total Respondents	Proportion of total respondents	Proportion of total Intern cohort by region in Victoria (699)
Inner Metro (2 HSs)	31	28%	34%
Outer Metro (2 HSs)	39	35%	45%
Regional (3 HSs)	41	37%	21%
Total	111	100%	100%

4.2.2 Survey Section 1

Demographic Information

Employing Health Service

Participating intern numbers at each health service varied from eleven at Health Service C to twenty at Health Service E, with the remaining health services having between thirteen to nineteen participating interns each. The number of interns participating generally reflected the size of the health service.

Table 5 Employing health service of participating Interns

Health Service	No. who completed survey	Proportion of total completed surveys
Health Service A	13	12%
Health Service B	17	15%
Health Service C	11	10%
Health Service D	15	14%
Health Service E	20	18%
Health Service F	19	17%
Health Service G	16	14%
Total	111	100%

Type of Medical Degree

There was a slightly higher number of respondents who had undergraduate medical degrees (54%) compared with those who had postgraduate medical degrees (46%) (where the University of Melbourne and Monash University both had undergraduate degrees in 2012, and Deakin University/some interstate Universities had postgraduate degrees).

University where Medical Degree Obtained

The largest group of respondents were from the University of Melbourne (n=50; 45%), which had nearly double the number of respondents of Monash University (26), closely followed by Deakin University (23), then interstate (10) and overseas (2) universities.

Proposed Specialty of Medical Career

Respondents provided a free text response to the question of their proposed specialty of medical career. This required coding into different categories in order to sort and manage the resulting data. Additionally, a significant minority proposed more than one specialty.

In summary, there was a wide range of potential career specialties by the respondents. The largest response to this question was not applicable (unsure), being approximately 29%, which supports earlier literature (Bunker 2009) that notes that the prevocational period is a time of career decision-making, and that a proportion of interns remain undecided regarding their future career. Other high responses included (as a sole proposed career choice):

- General Practitioner (17%)
- General medicine (9%)
- Surgical specialties (8%)
- General Surgery (6%)

Gender

The gender distribution of respondents was approximately 40% male and approximately 60% female.

Age

Thirty (30) respondents of the 111 did not indicate their age, as this was an optional field for the survey. A histogram of the variable Age shows a right-skewed distribution, therefore the median (26.00) and inter-quartile ratio (IQR) (1st quartile – 25.00; 3rd quartile 28.00) are

reported. This skewed distribution likely reflects a bimodal distribution of undergraduates (predominantly 24-5 years), and postgraduates (from 27 years and into the mid-30s).

Non-Core Terms

All Victorian Interns must undertake core terms in Medicine, Surgery and Emergency Medicine. Additionally, interns undertake 2 other terms, which may be further terms in core rotations, or terms in other rotations (or 'non-core' terms). The survey asked respondents to state their non-core terms and to refer to them in the same order throughout in the survey.

The results indicated that Victorian interns undertook a wide variety of additional/non-core terms, including terms that covered more than one specialty. A total of over 50 different non-core terms, or combinations thereof were identified including medical and surgical specialties (respiratory, cardiology, vascular etc), subacute specialties (rehabilitation, aged care, palliative care) and relieving and nights positions. Of these, the most common non-core terms (wholly in the specialty) were:

- Psychiatry (22 interns)
- Orthopaedics (17 interns)
- Geriatrics/Aged Care (12 interns)
- Rehabilitation (11 interns)
- General Practice (10 interns)

Given the small sample size of individual non-core terms, analyses of individual non-core term findings were not further undertaken for the purposes of this research. This data may be suitable for future research however.

Overall Intern Experience - Global Survey Question

In order to obtain a 'holistic' rating of interns' experiences of their year, a Global curriculum question was included; '*I believe that my clinical experience this year has enabled me to meet intern curriculum objectives as defined by the Australian Curriculum Framework for Junior Doctors*'. The rating scale was a Likert scale with the following ratings (1 – Strongly disagree, 2 – Disagree, 3 – Neutral, 4 – Agree, 5 – Strongly agree).

There were 110 respondents to the global question (out of a maximum possible 111).

The mean response to the Global Curriculum Question was **4.08** with a standard deviation of 0.623, however given the histogram is slightly left-skewed, the results may also be reported as having a **median of 4.00** with IQR of 4.00 for the 25th quartile and 4.00 for the 75th quartile. This score indicates that most interns **agreed** that their clinical experience during the year had met prevocational curriculum objectives. Additionally, less than 10% were neutral or did not agree with the statement.

Inferential analysis was undertaken in relation to the Global Survey Question (independent variable). Mean scores for the Global Survey Question were compared by type of medical degree, gender, and health services by region. In summary:

- Interns with an undergraduate medical degree had a lower mean score (**4.05** ± 0.622) compared with those with a postgraduate medical degree (**4.12** ± 0.627), however this difference was not significant (p=0.560; 95% CI; -0.307 – 0.167).
- Males had a higher mean score (**4.18** ±0.843) compared with females (**4.02** ± 0.414), however this difference was not significant (p=0.230; 95% CI: -0.108 – 0.441).
- Inner metro interns had a higher mean score (**4.19** ± 0.543) compared with regional interns (**4.08** ± 0.797) and outer metropolitan interns (**4.00** ± 0.459), however the difference was not significant (p=0.436).

4.2.3 Survey Section 2: Intern Exposure to Specific Curriculum Activities

Prevocational Curriculum Questions Results

This section of the analysis reports the survey results for individual survey questions. The results are grouped according to the eleven ACFJD Categories (within the three ACFJD Domains of Clinical Management, Communication & Professionalism).

The vast majority of items were completed by the significant majority of respondents (n ≥104 out of a possible 111), however the number of responses reduced to 100-98 for the last 4 questions (Teaching and Learning category).

For each ACFJD category, the results are presented in tabular form (below) as:

- mean scores for each activity for each term/rotation;
- mean scores for each activity/question (averaged across the 5 terms);
- percentage of respondents who recorded that they had sufficient experience in the activity.

Means and SD are reported even though histogram charts for each activity mean may not always be symmetric; this follows accepted convention for statistical reporting of Likert scale data.

- For activities with <u>low mean scores</u>, statistical analysis was undertaken to determine whether the variations in the mean scores by terms/rotation or by health service region were significant.
- In many of the questions, the <u>non-core terms</u> had a higher standard deviation than the core terms, reflecting their heterogeneous makeup. Non-core terms were not analysed further for the purposes of this research.

The key for the tables below:

CE = core emergency term; CM = core medicine term; CS = core surgery term; NC1 = non-core term #1; NC2 = non-core term #2

The rating scale for exposure (proportion of patient encounters where activity was undertaken) was: *1 = None, 2 = A few, 3 = Some, 4 = Most, 5 = All*

Table 6 Intern exposure to Patient Assessment Category Activities

Domain 1: Clinical Management

CLINICAL MANAGEMENT				
Patient Assessment				
		Mean & SD Rotation	**Mean & SD Question**	**Sufficient Experience**
1. **Make focussed clinical patient assessments**	**CE**	4.55 ± 0.614	**3.68 ±0.538**	**92%**
	CM	3.52 ± 0.686		
	CS	3.21 ± 0.74		
	NC1	3.58 ±0.959		
	NC2	3.54 ±0.986		
2. **Develop a patient problem list**	**CE**	4.38 ± 0.701	**3.79±0.657**	**92%**
	CM	3.97 ± 0.772		
	CS	3.36 ± 0.961		
	NC1	3.61 ± 1.002		
	NC2	3.66 ± 1.052		
3. **Regularly review patient problem list**	**CE**	3.37 ± 1.27	**3.65±0.67**	**94.5%**

	CM	4.09 ± 0.668		
	CS	3.54 ± 0.818		
	NC1	3.63 ± 1.039		
	NC2	3.61 ± 0.923		
4. Interpret a variety of investigations	CE	4.41 ± 0.731	**4.06±0.56**	**93%**
	CM	4.28 ± 0.575		
	CS	3.9 ± 0.797		
	NC1	3.94 ± 0.877		
	NC2	3.8 ± 0.965		
5. Participate in referral to other care providers	CE	4.23 ± 0.849	**3.99±0.672**	**98%**
	CM	4.2 ± 0.711		
	CS	3.87 ± 0.832		
	NC1	3.81 ± 1.023		
	NC2	3.85 ± 0.966		

For the 5 Patient Assessment Questions,

For an <u>average term</u>, interns said that:

- For <u>most</u> patients (score 4+) they interpreted a variety of investigations, and participated in referral to other care providers.
- For <u>some</u> (score 3+) patients they made focussed patient assessments, developed and regularly reviewed a patient problem list.

The <u>terms</u> with the <u>highest</u> relative scores were:

- Core Emergency (highest score for all except regularly reviewed patient problem list)
- Core Medicine (highest score for regularly reviewed patient problem list)

The <u>terms</u> with the <u>lowest</u> relative scores were:

- Core Surgery received the lowest scores for making focused clinical assessments and developing a patient problem list
- Core Emergency received the lowest score for regularly reviewing patient problem list
- Non-core terms received the lowest scores for interpreting a variety of investigations and participating in referral to other care providers.

Sufficiency

More than 90% of respondents considered that they had sufficient experience in Patient Assessment activities during the intern year. These results suggest that interns overall have good exposure to clinical assessment activities, particularly during their Core Emergency and Core Medicine terms.

Table 7 Intern exposure to Safe Patient Care Category Activities

Safe Patient Care				
		Mean & SD Rotation	Mean & SD Question	Sufficient Experience
6. Participate in a quality improvement activity.	CE	1.65 ± 0.911	**2.27 ± 0.805**	61%
	CM	2.35 ± 1.109		
	CS	2.88 ± 1.319		
	NC1	2.32 ±1.321		
	NC2	2.15 ± 1.099		
7. Recognise a potential risk to patient safety.	CE	3.5 ± 1.038	**3.45± 0.927**	90%
	CM	3.49 ± 0.943		
	CS	3.5 ± 0.962		
	NC1	3.43 ± 1.084		
	NC2	3.35 ± 1.08		
8. Practise minimising transmission of infection.	CE	4.43 ± 0.696	**4.34 ± 0.709**	95%
	CM	4.41 ± 0.732		
	CS	4.4 ± 0.778		
	NC1	4.21 ± 0.935		
	NC2	4.25 ± 0.9		

For the 3 Safe Patient Care Questions,

For an <u>average term</u>, interns said that:

- For <u>most</u> patients (score 4+) they practised minimising transmission of infection.
- For <u>some</u> (score 3+) patients they recognised a risk to patient safety.
- For <u>a few</u> patients (score 2+) they participated in a quality improvement activity.

The <u>terms</u> with the <u>highest</u> relative scores were:

- Core Surgery (scored highly for participating in a quality improvement activity)
- All core terms scored highly for recognising a risk to patient safety and minimising transmission of infection.)

Comparison of the rotation/term mean results for Qn 6 (via paired samples t-test) showed that the difference in the mean scores for Core Surgery and Core Emergency were significant (p-value <0.001; 95% CI: 1.495 - 0.973). The difference between the mean scores of Core Medicine & Core Surgery, and Core Emergency and Core Medicine were also significant (p<0.001). This suggests that the core surgery term provides the best exposure to quality improvement activities for interns.

When the mean score for Question 6 was compared by health service region (via one-way Anova), regional health services scored the highest (2.31 ± 0.819), followed by outer metro health services (2.28 ± 0.824) and inner metropolitan health services (2.18 ± 0.780) although these differences were not significant (p=0.771).

The terms with the lowest relative scores were:

- Core Emergency received the lowest score for participating in a quality improvement activity.
- Non-core terms received the lowest scores for recognising a risk to patient safety and participating in a quality improvement activity.

Sufficiency

At least 90% of interns considered that they had had sufficient experience in minimising transmission of an infection and in recognising a risk to patient safety, however only 61% considered that they had had sufficient experience in participating in a quality improvement activity. The results suggest that interns have fair to good exposure to Safe Patient Care activities, particularly during core terms, and that Core Surgery is particularly valuable for interns to access quality improvement activities.

Emergencies					
			Mean & SD Rotation	Standard Deviation	Sufficient Experience
9. Assess an acutely unwell patient		CE	3.95 ± 0.903	**3.49 ± 0.744**	83%
		CM	3.6 ± 0.877		
		CS	3.41 ± 0.933		
		NC1	3.2 ± 1.077		
		NC2	3.31 ± 1.138		
10. Recognise a deteriorating patient.		CE	3.74 ± 0.97	**3.60 ± 0.857**	89%
		CM	3.74 ± 0.902		
		CS	3.67 ± 0.877		
		NC1	3.42 ± 1.187		
		NC2	3.42 ± 1.095		
11. Implement BLS.		CE	2.59 ± 1.209	**2.23 ± 0.951**	48%
		CM	2.29 ± 1.056		
		CS	2.13 ± 1.019		
		NC1	2.06 ± 1.185		
		NC2	2.11 ± 1.112		
12. Participate in ALS resuscitation		CE	2.05 ± 1.174	**1.71 ± 0.746**	25%
		CM	1.82 ± 0.974		
		CS	1.57 ± 0.816		
		NC1	1.52 ± 0.916		
		NC2	1.6 ± 0.921		

For the 4 Emergencies Questions,

For an average term, interns said that:

- For some (score 3+) patients they assessed those who were acutely unwell and recognised those who were deteriorating.
- For a few patients (score 2+) they implemented basic life support.
- For less than a few/no patients (score 1+) they participated in advanced life support resuscitation.

The terms with the highest relative scores were:

- Core Emergency (scored highly in all questions), with Core Medicine also scoring highly for recognising a deteriorating patient.

The terms with the lowest relative scores were:

- Non-core terms (for all activities).

For Questions 11 & 12 (implement BLS and participate in ALS), the mean exposure during the Core Emergency term was significantly greater than the mean exposure during the core surgery and medicine terms (paired sample t-test, p-value<0.001 for all except p-value<0.05 for Qn 12 comparison between CE and CM). These results suggest that the Core Emergency term provides the best exposure to participation in emergency management.

When the mean score for Qns 11 & 12 were compared by health service region (one-way ANOVA), inner metropolitan health services rated highest (2.45 ± 1.15; 1.84 ± 0.731 respectively), followed by regional health services (2.22 ± 0.951; 1.71 ± 0.831) and outer metropolitan health services (2.08 ± 0.761; 1.61 ± 0.662) however there was no significant difference (p=0.281, p=0.449 respectively).

Sufficiency

While over 80% of interns considered that they had had sufficient experience in the recognition and assessment of an unwell or deteriorating patient, less than half of interns felt that they had sufficient experience in basic life support, and only one quarter felt that they had sufficiently participated in advanced life support resuscitation. Not unexpectedly, interns ranked their emergency medicine term as the rotation where they could access this experience best.

Table 9 Intern exposure to Patient Management Category Activities

Patient Management				
		Mean & SD Rotation	Mean & SD Question	Sufficient Experience
13. Implement a patient management plan.	**CE**	4.29 ± 0.797	**3.84 ± 0.679**	92%
	CM	3.86 ± 0.803		
	CS	3.56 ± 0.98		
	NC1	3.71 ± 0.994		

	NC2	3.78 ± 0.998		
14. Manage a patient's medication throughout their stay.	CE	3.65± 1.253	**3.94± 0.815**	**94%**
	CM	4.21± 0.847		
	CS	3.98± 1.023		
	NC1	3.89± 1.07		
	NC2	3.99± 1.084		
	Total			
	Qn10			
15. Prescribe pain therapies.	CE	4.25 ± 0.706	**4.13±0.665**	**95%**
	CM	4.05 ± 0.783		
	CS	4.34 ± 0.707		
	NC1	3.96 ± 1.075		
	NC2	4.05 ± 0.927		
16. Prescribe medicines, blood products or fluids.	CE	4.31 ± 0.865	**4.17± 0.827**	**97%**
	CM	4.29 ± 0.817		
	CS	4.3 ± 0.796		
	NC1	3.97 ± 1.153		
	NC2	3.96 ± 1.143		
17. Participate in patient discharge planning.	CE	4.17 ± 1.067	**4.32 ± 0.694**	**98%**
	CM	4.61 ± 0.592		
	CS	4.41 ± 0.772		
	NC1	4.49 ± 1.159		
	NC2	4.21 ± 1.082		
18. Take part in discussions regarding end of life care.	CE	2.5 ± 1.102	**2.73±0.836**	**72%**
	CM	3.28 ± 0.997		
	CS	2.48 ± 1.02		
	NC1	2.66 ± 1.273		
	NC2	2.72 ± 1.304		

For the 6 Patient Management Questions,

For an <u>average term</u>, interns said that:

- For <u>most</u> patients (score 4+) they prescribed pain therapies, medicines and fluids/blood products and participated in discharge planning.
- For <u>some</u> (score 3+) patients they implemented a patient management plan and managed a patient's medication throughout their stay.

- For <u>a few</u> patients (score 2+) they took part in discussions regarding end of life care.

The <u>terms</u> with the <u>highest</u> scores were:

- Core Medicine (scored highly for managing a patient's medication throughout their stay, participating in discharge planning and taking part in discussions regarding end of life care)
- Core Emergency (scored highly for implementing a patient management plan and prescribing medicines and fluids/blood products)
- Core Surgery (scored highly for prescribing pain therapies)

The <u>terms</u> with the <u>lowest</u> scores were:

- Core Emergency, Core Surgery and Non-core terms received the lowest score for 2 items each.

For Question 18 (participation in end of life care), the mean exposure during the Core Medicine term was significantly greater than the mean exposure during the Core Emergency and Core Surgery terms (paired sample t-test, p-value<0.001; CIs 0.585 – 1.011, 0.629 – 0.971 respectively). These results suggest that the Core Medicine term provides the best exposure to participation in end of life care discussions.

When the mean score for Qn 18 was compared by health service region (one-way ANOVA), regional health services scored most highly (2.77 ± 0.833) followed by outer metropolitan health services (2.74 ± 0.874) and inner metropolitan health services (2.65 ± 0.814) although this difference was not significant (p=0.837).

Sufficiency

Over 90% of interns responded that they had had sufficient experience to four of the five activities within the Patient Management category. The exception was the activity of taking part in discussions regarding end of life care. Even though there was good exposure during the Core Medicine term, approximately 30% of respondents did not feel that this was sufficient.

Table 10 Intern exposure to Skills & Procedures Category Activities

Skills & Procedures		Mean & SD Rotation	Mean & SD Question	Sufficient Experience
19. Explain process of informed consent.	CE	2.91 ± 1.077	**3.08 ± 0.897**	**82%**
	CM	3.07 ± 1.012		
	CS	3.46 ± 1.012		
	NC1	3.05 ± 1.052		
	NC2	2.91 ± 1.11		
20. Perform venepuncture.	CE	4.14 ± 0.949	**3.91 ± 0.905**	**97%**
	CM	4.09 ± 0.9		
	CS	4.00 ± 0.963		
	NC1	3.73 ± 1.234		
	NC2	3.62 ± 1.292		
21. Perform IV cannulation.	CE	4.28 ± 0.788	**4.07 ± 0.722**	**100%**
	CM	4.32 ± 0.726		
	CS	4.32 ± 0.713		
	NC1	3.63 ± 1.368		
	NC2	3.83± 1.226		
22. Administer IV medication.	CE	2.57 ± 1.405	**2.23 ±1.21**	**51%**
	CM	2.3 ± 1.359		
	CS	2.3 ± 1.399		
	NC1	1.96 ± 1.272		
	NC2	2.00 ± 1.278		
23. Administer IV infusions of fluids.	CE	2.46 ± 1.469	**2.22 ± 1.30**	**49%**
	CM	2.26 ± 1.462		
	CS	2.37± 1.532		
	NC1	1.96 ± 1.354		
	NC2	2.03 ± 1.343		
24. Administer IV infusions of blood/products.	CE	2.00 ± 1.285	**1.89 ± 1.09**	**48%**
	CM	2.04 ± 1.299		
	CS	2.01 ± 1.303		
	NC1	1.71 ± 1.108		
	NC2	1.7 ± 1.113		
25. Perform peripheral blood culture.	CE	3.44 ± 0.924	**3.13 ± 0.890**	**93%**
	CM	3.45 ± 0.882		
	CS	3.25 ± 1.031		

	NC1	2.65 ± 1.255		
	NC2	2.85 ± 1.205		
26. Perform IM injection.	CE	2.38 ± 1.066	**1.80 ± 0.865**	**69%**
	CM	1.65 ± 0.913		
	CS	1.56 ± 0.934		
	NC1	1.68 ± 1.066		
	NC2	1.71 ± 1.021		
27. Perform SCT injection.	CE	1.7 ± 1.005	**1.50 ± 0.757**	**51%**
	CM	1.48± 0.821		
	CS	1.4 ± 0.792		
	NC1	1.44 ± 0.924		
	NC2	1.49 ± 0.846		
28. Perform an ECG.	CE	2.3 ± 1.154	**1.89 ± 0.914**	**61%**
	CM	1.96 ± 1.141		
	CS	1.71 ± 0.961		
	NC1	1.68 ± 0.928		
	NC2	1.74 ± 0.925		
29. Interpret an ECG.	CE	3.93 ± 0.766	**3.58 ± 0.717**	**90%**
	CM	3.79 ± 0.679		
	CS	3.45 ± 0.853		
	NC1	3.35 ± 1.169		
	NC2	3.37 ± 1.099		
30. Perform arterial puncture (ABGs).	CE	3.05 ± 1.132	**2.76 ± 0.911**	**86%**
	CM	3.27 ± 0.957		
	CS	2.75 ± 1.104		
	NC1	2.27 ± 1.241		
	NC2	2.45 ± 1.228		
31. Perform & interpret peak flow measurement.	CE	1.61 ± 0.849	**1.44 ± 0.505**	**45%**
	CM	1.67 ± 0.893		
	CS	1.24 ± 0.557		
	NC1	1.29 ± 0.682		
	NC2	1.36 ± 0.631		
32. Perform injection of LA to skin.	CE	3.12 ± 0.965	**2.24 ± 0.778**	**74%**
	CM	1.84 ± 0.992		
	CS	2.32 ± 1.075		
	NC1	1.87 ± 1.242		
	NC2	2.06 ± 1.137		
33. Perform urethral catheterisation.	CE	2.78 ± 1.022	**2.63 ± 0.835**	**88%**

	CM	2.78 ± 1.022		
	CS	2.94 ± 0.927		
	NC1	2.23 ± 1.167		
	NC2	2.39 ± 1.182		
34. Perform airway care including adjuncts (e.g. Lardel airway).	CE	1.9 ± 1.078	1.61± 0.752	30%
	CM	1.59 ± 0.899		
	CS	1.54 ± 0.872		
	NC1	1.58 ± 0.987		
	NC2	1.45 ± 0.811		

For the 16 Skills & Procedures Questions,

For an <u>average term</u>, interns said that:

- For <u>most</u> patients (score 4+) they performed IV cannulation.
- For <u>some</u> patients (score 3+) they;
    - Explained the process of informed consent
    - Performed venepuncture
    - Performed blood culture
    - Interpreted an ECG.
- For <u>a few</u> patients (score 2+) they;
    - Administered IV medications & infusions of fluids
    - Performed arterial puncture (ABGs)
    - Performed injection of local anaesthetic (LA) to skin
    - Performed urethral catheterisation
- For <u>less than a few/no patients</u> (score 1+) they;
    - Administered IV infusions of bloods/products
    - Performed IM or SCT injections
    - Performed an ECG
    - Performed peak flow
    - Performed airway care

The <u>terms</u> with the <u>highest</u> relative scores were:

- Core Emergency scored highly for:
    - Venepuncture, administering IV meds & fluids,

- IM, SCT and LA injections
- Perform & interpret an ECG
- Airway care
- Core Medicine (scored highly for IV cannulation, administering IV blood products, performing blood culture, arterial puncture, & peak flow measurement)
- Core Surgery (scored highly for explaining informed consent, IV cannulation, & urethral catheterisation)

The <u>terms</u> with the <u>lowest</u> relative scores were:

- The Non-core terms for the majority of activities.

Overall, the Skills & Procedures items were rated as activities to which there was variable exposure by interns. Of the sixteen procedures, there were five (5) which interns undertook on most or some of their patients generally per term – IV cannulation, blood culture, venepuncture, interpreting an ECG, and explaining process of informed consent. This suggests that there are a core group of procedures that interns regularly undertake and may have the opportunity to master.

For the remaining eleven (11) skills/procedures, interns had the opportunity to undertake these on a few or less patients during each term. A number of these procedures – such as injections, performing an ECG, and medication administration – are common procedures in the hospital environment; hence these results suggest that these procedures are being done by other clinical staff rather than interns.

When comparing by <u>core terms</u> (using paired t-test), for the low scoring procedures;

- *Administration of drugs, fluids, blood* (questions 22, 23 & 24) - Core Emergency scored significantly higher than CM and CS for administration of drugs (p<0.001) and scored significantly higher than CM in administration of fluids (p=0.001).
- *IM injection, SCT injection, performing an ECG, peak flow measurement* (questions 26, 27, 28 & 31) – Core Emergency scored significantly higher than CM and CS (p<=0.001) for all except for peak flow measurement, where Core Medicine scored significantly higher than CS (p<0.001) but not CE (p=0.374).

- *Performing airway care* (question 34) – Core Emergency scored significantly higher than both CM and CS for performing airway care (p<0.001).

These results suggest that for the majority of these low scoring procedures, that Core Emergency provides significantly more exposure.

When comparing the means of the low-scoring Skills/Procedures by health service region (one-way ANOVA), inner metropolitan health services had the highest scores for administration of drugs, fluids and blood, peak flow measurement and airway care; and regional health services had the highest scores for IM and SCT injections and performing an ECG, however none of these differences were significant.

Sufficiency

Sufficiency of experience was generally correlated with exposure to procedure, with >80% of interns responding that they had sufficient experience for 7 of the activities, and <50% of interns responding that they had sufficient experience for 4 of the activities, with the remainder in between.

Table 11 Intern exposure to Patient Interaction Category Activities

Domain 2: Communication

COMMUNICATION				
Patient Interaction				
		Mean & SD Term	**Mean & SD Question**	**Sufficient Experience**
35. **Involve patients in discussions regarding their care.**	**CE**	4.29 ± 0.824	**4.17 ± 0.753**	**97**
	CM	4.25 ± 0.792		
	CS	4.05 ± 0.882		
	NC1	4.12 ± 0.974		
	NC2	4.21 ± 0.893		
36. **Include families/carers in decision-making.**	**CE**	3.7 ± 0.954	**3.79 ± 0.837**	**97**
	CM	3.94 ± 0.881		
	CS	3.65 ± 0.994		
	NC1	3.8 ± 1.107		
	NC2	3.86 ± 1.014		
37. **Break bad news to**	**CE**	3.01 ± 1.009	**2.99 ± 0.834**	**83**

patients/relatives.	CM	3.25 ± 0.95		
	CS	2.85 ± 0.969		
	NC1	2.92 ± 1.158		
	NC2	2.93 ± 1.052		
38. Apologise for an error (open disclosure)	CE	2.19 ± 1.2	**2.10 ± 1.04**	**73**
	CM	2.17 ± 1.074		
	CS	2.07 ± 1.115		
	NC1	2.05 ± 1.124		
	NC2	2.03 ± 1.104		
39. Take steps to minimise impact of an error.	CE	2.92 ± 1.224	**2.87 ± 1.20**	**80**
	CM	2.96 ± 1.159		
	CS	2.87 ± 1.261		
	NC1	2.81 ± 1.284		
	NC2	2.79 ± 1.301		
40. Identify a potential patient complaint.	CE	2.74 ± 1.072	**2.59 ± 0.95**	**80**
	CM	2.67 ± 1.006		
	CS	2.56 ± 1.018		
	NC1	2.53 ± 1.011		
	NC2	2.45 ± 1.08		

For the 6 Patient Interaction Questions,

For an <u>average term</u>, interns said that:

- For <u>most</u> patients (score 4+) they involved patients in discussions regarding their care.
- For <u>some</u> (score 3+) patients they included families/carers in decision-making.
- For <u>a few</u> patients (score 2+) they broke bad news, apologised for an error, tried to minimise an error or identified a patient complaint.

The <u>terms</u> with the <u>highest</u> relative scores were:

- Core Medicine (scored highly for involved families/carers in decision-making, broke bad news and taking steps to minimise an error)
- Core Emergency (involving patients in discussions regarding their care, apologising for an error, and identifying a potential patient complaint)

The terms with the lowest relative scores were:

- Core Surgery and Non-core terms received the lowest score for 3 items each.

The Patient Interaction activities had variable exposure, with interns regularly involving patients and their families/carers in decision-making regarding their care. However, breaking bad news, apologising for an error, minimising an error and identifying a potential patient complaint were undertaken infrequently by interns. Exposure to these activities occurred particularly in the Core Medicine and Core Emergency terms.

Sufficiency

While exposure to many of these activities was infrequent, >80% of interns ranked their experience as sufficient in five out of the six activities.

Table 12 Intern exposure to Managing Information Category Activities

Managing Information				
		Mean & SD Rotation	Mean & SD Question	Sufficient Experience
41. Prepare correspondence e.g. discharge summaries.	CE	4.72 ± 0.577	**4.69 ± 0.497**	**100%**
	CM	4.77 ± 0.442		
	CS	4.78 ± 0.436		
	NC1	4.62 ± 0.878		
	NC2	4.58 ± 0.831		
42. Use evidence in decision-making.	CE	3.86 ± 0.855	**3.73 ± 0.800**	**88%**
	CM	3.87 ± 0.814		
	CS	3.61 ± 0.93		
	NC1	3.62 ± 1.004		
	NC2	3.71 ± 0.932		
43. Perform clinical handover.	CE	4.31 ± 0.787	**4.03 ± 0.751**	**94%**
	CM	4.15 ± 0.804		
	CS	4.05 ± 0.844		
	NC1	3.76 ± 1.173		
	NC2	3.87 ± 1.081		

For the 3 Managing Patient Information Questions,

For an <u>average term</u>, interns said that:

- For <u>most</u> patients (score 4+) they prepared correspondence and performed clinical handover.
- For <u>some</u> (score 3+) patients they used evidence in decision-making.

The <u>terms</u> with the <u>highest</u> relative scores were:

- Core Medicine (scored highly for using evidence in decision-making)
- Core Emergency (scored highly for performing clinical handover)
- Core Surgery (scored highly for preparing correspondence)

The <u>terms</u> with the <u>lowest</u> relative scores were:

- Core Surgery and Non-core terms received the lowest scores for the items.

The Managing Patient Information activities were undertaken by interns for some or most patients. Exposure to these activities occurred particularly in the three core terms. Preparing correspondence scored the highest of all the activities (with 100% considering the experience sufficient).

Sufficiency

The majority (at least 88%) of interns rated their experience of the activities within the Managing Information domain as sufficient.

Table 13 Intern exposure to Doctor in Society, Professional Behaviour, and Working in Teams Category Activities

Domain 3: Professionalism

PROFESSIONALISM				
Doctor & Society				
		Mean & SD Rotation	**Mean & SD Question**	**Sufficient Experience**
44. Recognise specific legal requirements.	CE	3.29 ± 1.11	**3.21 ± 1.02**	74%

	CM	3.19 ± 1.08		
	CS	3.17 ± 1.09		
	NC1	3.22 ± 1.15		
	NC2	3.19 ± 1.15		
45. Undertake health promotion.	**CE**	3.11 ± 0.936	**3.04 ± 0.805**	**84%**
	CM	3.16 ± 0.873		
	CS	2.85 ± 0.961		
	NC1	3.06 ± 1.153		
	NC2	3.02 ± 1.023		
Professional Behaviour				
46. Prioritise daily tasks.	**CE**	4.39 ± 0.868	**4.51 ± 0.605**	**99%**
	CM	4.67 ± 0.527		
	CS	4.62 ± 0.649		
	NC1	4.44 ± 0.873		
	NC2	4.45 ± 0.877		
47. Justify clinical decisions.	**CE**	4.16 ± 0.76	**3.93 ± 0.738**	**94%**
	CM	3.99 ± 0.807		
	CS	3.82 ± 0.88		
	NC1	3.84 ± 0.991		
	NC2	3.86 ± 0.957		
48. Take on a leadership role.	**CE**	3.25 ± 1.145	**3.05 ± 0.956**	**81%**
	CM	3.07 ± 1.081		
	CS	2.81 ± 1.105		
	NC1	3.07 ± 1.194		
	NC2	3.05 ± 1.166		
Working in Teams				
49. Understand own role within a team.	**CE**	4.36 ± 0.821	**4.40 ± 0.616**	**99%**
	CM	4.5 ± 0.617		
	CS	4.36 ± 0.81		
	NC1	4.42 ± 0.794		
	NC2	4.37 ± 0.889		

For the 6 Doctor in Society, Professional Behaviour & Working in Teams Questions,

For an <u>average term</u>, interns said that:

- For <u>most</u> patients (score 4+) they prioritised daily tasks and understood their role within a team.

- For <u>some</u> (score 3+) patients they recognised specific legal requirements, undertook health promotion, justified their clinical decisions and took on a leadership role.

The <u>terms</u> with the <u>highest</u> relative scores were:

- Core Emergency (scored highly recognising legal requirements, justifying clinical decisions and taking on a leadership role)
- Core Medicine (scored highly for undertaking health promotion, understanding own role within a team and prioritising daily tasks)

The <u>terms</u> with the <u>lowest</u> relative scores were:

- Core Surgery (for recognising specific legal requirements, undertaking health promotion, justifying clinical decisions and taking on a leadership role).
- Core Emergency and Core Surgery terms received the lowest scores for understanding own role within a team (and prioritise daily tasks for Core Emergency).

The results suggest that the majority of interns likely have good exposure to activities within the Doctor in Society, Professional Behaviour, & Working in Teams categories of the ACF. In particular, Core Emergency scored highest for justifying clinical decisions and taking on a leadership role, suggesting that this term provides a greater opportunity for autonomy in patient decision-making.

Sufficiency

Interns considered they had reasonably sufficient exposure to the majority of the activities within these domains (>80% sufficiency for 5 of the 6 activities), with the exception of 'understanding specific legal requirements'. This suggests that more repeated exposure to legal issues in the workplace may be required for interns to feel they are proficient in this area.

Table 14 Intern exposure to Teaching & Learning Category Activities

Teaching & Learning				
		Mean & SD Rotation	Mean & SD Question	Sufficient Experience
50. Plan your learning needs.	**CE**	3.25 ± 0.863	**3.22 ± 0.683**	**70%**

	CM	3.23 ± 0.772		
	CS	3.03 ± 0.878		
	NC1	3.32 ± 0.924		
	NC2	3.26 ± 0.961		
51. Reflect on clinical practice.	CE	3.76 ± 0.890	**3.68 ± 0.719**	**85%**
	CM	3.75 ± 0.805		
	CS	3.55 ± 0.841		
	NC1	3.73 ± 0.911		
	NC2	3.64 ± 0.867		
52. Participate in teaching of others.	CE	2.69 ± 1.068	**2.92 ± 0.807**	**70%**
	CM	3.15 ± 0.934		
	CS	2.95 ± 0.919		
	NC1	2.93 ± 1.098		
	NC2	2.86 ± 1.083		
53. Receive feedback on teaching.	CE	2.43 ± 1.201	**2.48 ± 1.12**	**55%**
	CM	2.56 ± 1.24		
	CS	2.44 ± 1.184		
	NC1	2.5 ± 1.215		
	NC2	2.5 ± 1.223		

For the 4 Teaching & Learning Questions,

For an <u>average term</u>, interns said that:

- <u>Sometimes</u> (score 3+) they were able to plan their learning needs and reflect on their clinical practice.
- <u>Rarely (score 2+)</u> they were able to participate in teaching of others and receive feedback on their teaching.

The <u>terms</u> with the <u>highest</u> relative scores were:

- Core Medicine (scored highly on teaching others and receiving feedback on teaching)
- Core Emergency (scored highly for reflecting on clinical practice)
- Non-core terms (scored highly for planning learning needs)

The <u>terms</u> with the <u>lowest</u> scores were:

- Core Surgery (for planning learning needs and reflecting on clinical practice).
- Core Emergency (for teaching others and receiving feedback on teaching).

When comparing by <u>core terms</u> (using paired t-test), for the low scoring procedures;

- *Planning learning needs and reflecting on clinical practice* (questions 50 & 51) - Core Emergency scored significantly higher than core surgery (p=0.020; 95% CI 0.036 – 0.417) and (p=0.006; 95% CI 0.064 – 0.370) respectively.
- *Teaching and receiving feedback on teaching* (questions 52 & 53) – Core Medicine scored significantly higher than core emergency (p<=0.001; 95% CI 0.300 – 0.652) and (p=0.032; 95% CI 0.11 – 0.241) respectively.

These results suggest that core emergency provides the best exposure to learning activities, and core medicine provides the best exposure to teaching activities.

When comparing the means of the low-scoring Teaching and Learning items by health service region (one-way ANOVA), regional health services had the highest scores for planning learning needs and reflecting on clinical practice, and inner metropolitan health services had the highest scores for teaching and receiving feedback on teaching, however none of these differences were significant.

Sufficiency

Intern perception of sufficiency of experience correlated with the exposure to the activity, with ≤70% of interns considering they had sufficient experience for all activities except reflection on clinical practice. These results suggest that there is likely opportunity to increase exposure to teaching and learning activities for interns. In particular, there is an opportunity to increase learning activities during Core Surgical terms, and to increase teaching activities during Core Surgical and Emergency terms.

4.2.4 Intern Curriculum Activities Ranked according to Exposure

A key objective of the research was to determine which curriculum activities interns had regular exposure to versus those that they did not. As well as reporting the results of individual activities according to their ACFJD curriculum category, the 53 individual activities were also ranked from highest mean score to lowest mean score for an average term (column 1).

The results are presented in the following Summary Table which also includes:

1. Intern Survey Question number

2. Activity description

3. Relevant ACF curriculum domain

4. Relevant ACF curriculum category

5. The % of interns who considered they had insufficient experience (calculated as 100% less the % that considered had sufficient experience)

6. An 'Assigned Insufficiency Level' (colour-coded) based on (5) above, where –

Insufficiency Rating	% of interns who considered their experience in the activity insufficient
High	≥ 25%
Moderate	10% ≤ score <25%
Low	<10%

Table 15 Intern Curriculum Activities ranked according to Exposure (Highest - Lowest)

Mean Activity Score	Qn	Activity Description	ACF Domain	ACF Category	Insufficiency Rating (%)	Assigned *Insufficiency* Level
Interns undertook the following activities for *most* patients						
4.69	41	Prepare correspondence e.g. letters/discharge summaries	C	Mx Info	0.0	Low
4.51	46	Prioritise daily tasks	P	P behaviour	1.0	Low
4.40	49	Understand own role within a team	P	Teams	1.0	Low
4.34	8	Practice minimising transmission of infection	CM	SPC	4.7	Low
4.32	17	Participate in patient discharge planning	CM	P Mgt	1.9	Low
4.18	35	Involve patients in discussions regarding care	C	P I/action	2.8	Low
4.17	16	Prescribe medicines, blood products or fluids	CM	P Mgt	2.8	Low
4.13	15	Prescribe pain therapies	CM	P Mgt	5.5	Low
4.07	21	Perform IV cannulation	CM	S & P	0.0	Low
4.06	4	Interpret a variety of investigations	CM	P Axmt	7.3	Low
4.03	43	Perform clinical handover	C	Mx Info	5.7	Low
Interns undertook the following activities for *some* patients						
3.99	5	Participate in referral to others	CM	P Axmt	1.9	Low
3.94	14	Manage patient's medication	CM	P Mgt	6.5	Low
3.93	47	Justify clinical decisions	P	P Behav	5.8	Low
3.91	20	Perform venepuncture	CM	S & P	2.8	Low
3.84	13	Implement patient	CM	P Mgt	8.4	Low

		management plan				
3.80	2	Develop patient problem list	CM	P Axmt	8.3	Low
3.79	36	Include families in decision-making	C	P I/action	2.8	Low
3.73	42	Use evidence in decision-making	C	M Info	12.3	Moderate
3.68	1	Make focused patient assessments	CM	P Axmt	8.2	Low
3.68	51	Reflect on clinical practice	P	T & L	15.0	Moderate
3.65	3	Regularly review patient problem list	CM	P Axmt	5.5	Low
3.60	10	Recognise a deteriorating patient	CM	Emerg	11.1	Moderate
3.58	29	Interpret an ECG	CM	S & P	105	Moderate
3.49	9	Assess an acutely unwell patient	CM	Emerg	17.4	Moderate
3.46	7	Recognise potential risk to patient safety	CM	SPC	10.3	Moderate
3.22	50	Plan learning needs	P	T & L	30.0	High
3.21	44	Recognise specific legal requirements	P	Dr in Soc	26.2	High
3.13	25	Perform blood culture	CM	S & P	8.7	Low
3.08	19	Explain the process of informed consent	CM	S & P	17.6	Moderate
3.05	48	Take on a leadership role	P	P Behv	28.8	High
3.04	45	Undertake health promotion	P	Dr in Soc	15.5	Moderate
Interns undertook the following activities for *a few* patients						
2.99	37	Break bad news to patients/relatives	C	P I/action	17.0	Moderate
2.92	52	Participate in teaching	P	T & L	29.6	High
2.87	39	Take steps to minimise impact of an error	C	P I/action	20.0	Moderate
2.76	30	Perform ABGs	CM	S & P	14.3	Moderate
2.73	18	Take part in discussions regarding end of life care	CM	P Mgt	27.8	High
2.63	33	Perform urethral catheterisation	CM	S & P	12.4	Moderate
2.59	40	Identify potential patient complaint	C	P I/action	19.8	Moderate
2.49	53	Receive feedback on teaching	P	T & L	44.7	High
2.27	6	Participate in QA activity	CM	SPC	38.9	High
2.24	32	Perform LA injection	CM	S & P	26.0	High
2.24	11	Implement BLS	CM	Emerg	51.9	High
2.23	22	Administer IV medication	CM	S & P	49.1	High
2.22	23	Administer IV infusion of fluids	CM	S & P	51.4	High
2.10	38	Apologise for an error	C	P I/action	26.9	High
Interns undertook the following activities for *less than a few/no* patients						
1.89	24	Administer IV infusion of blood/product	CM	S & P	52.3	High
1.88	28	Perform an ECG	CM	S & P	39.0	High
1.80	26	Perform IM injections	CM	S & P	31.1	High
1.71	12	Participate in ALS resuscitation	CM	Emerg	75.0	High
1.61	34	Perform simple airway care	CM	S & P	70.5	High
1.50	27	Perform SCT injection	CM	S & P	49.0	High
1.43	31	Perform & interpret peak flow	CM	S & P	55.2	High

These results show that there was significant variation in intern exposure to the range of curriculum activities surveyed, from activities undertaken for all/most patients, to activities undertaken for very few patients. These results assist in answering the question, '*What is the clinical placement experience of prevocational trainees in Victorian health services*?' by identifying specific curriculum-based activities that interns undertake commonly and those activities that they undertake less frequently.

Examples of the most frequently undertaken activities surveyed were - prepare correspondence e.g. letters/discharge summaries ('Managing Information'), prioritise daily tasks ('Professional Behaviour'), understand own role within a team ('Teams'), practice minimising transmission of infection ('Safe Patient Care'), participate in patient discharge planning ('Patient Management'), and involve patients in discussions regarding their care ('Patient Interaction').

Examples of the least frequently undertaken activities surveyed were – administer IV infusion of blood/product ('Skills & Procedures'), perform an ECG ('Skills & Procedures'), perform an intramuscular injection ('Skills & Procedures'), participate in advanced life support resuscitation ('Emergencies'), perform simple airway care ('Skills & Procedures'), perform a subcutaneous injection ('Skills & Procedures') and perform and interpret peak flow ('Skills & Procedures') - all from the 'Skills & Procedures' and 'Emergencies' topics of the ACFJD.

There were 32 activities for which the vast majority of interns considered they had sufficient experience (Green Insufficiency rating); 13 activities in which up to 25% considered they had insufficient experience (Yellow insufficiency rating) and 19 activities in which over 25% of interns considered they had insufficient experience (Red insufficiency rating). The 'Red' activities where interns may have limited exposure to and insufficient experience in include:

1. **Skills & Procedures**
- Administer IV infusion of blood/product
- Administer IV medication
- Administer IV infusion of fluids
- Perform an ECG
- Perform IM injections
- Perform simple airway care
- Perform SCT injection
- Perform & interpret peak flow

- Perform LA injection

2. Emergencies

- Participate in ALS resuscitation
- Implement BLS

3. Teaching & Learning

- Receive feedback on teaching
- Participate in teaching
- Plan learning needs

4. Other

- Participate in QA activity
- Take part in discussions regarding end of life care
- Apologise for an error
- Recognise specific legal requirements
- Take on a leadership role

4.2.5 Aggregated Results - Intern Curriculum exposure ranked by Curriculum Category

In order to better summarise the curriculum experience of interns, the 53 curriculum activities were grouped according to their eleven ACF categories.

The following table shows a comparison of the mean response for each ACF category, and its (averaged) sufficiency response, ranked from highest score to lowest score.

Table 16 Aggregate Intern Curriculum Exposure ranked by ACF Category

	ACFJD Category	Mean Rating of 7 Health Services	Sufficiency of exposure (%)
1	Teamwork	4.40 ± 0.62	99
2	Managing Information	4.15 ± 0.52	93
3	Patient Management	3.85 ± 0.55	91
4	Patient Assessment	3.84 ± 0.48	94
5	Professional Behaviour	3.83 ± 0.57	88
6	Safe Patient Care	3.35 ± 0.59	82
7	Dr & Society	3.15 ± 0.79	79

8	Patient Interaction	3.09 ± 0.63	85
9	Teaching & Learning	3.08 ± 0.59	70
10	Emergencies	2.76 ± 0.66	62
11	Skills & Procedures	2.50 ± 0.54	69

The results show that the mean rating for intern experience by ACF curriculum categories varied significantly, with activities in the 'Teamwork' and 'Managing Information' categories undertaken for most patients (4.40 and 4.15 respectively), and activities in the 'Skills & Procedures' and 'Emergencies' categories undertaken for few or no patients (2.76 and 2.50 respectively). Activities that had higher means generally had a higher proportion of interns who considered they had sufficient experience.

4.2.6 Intern Curriculum Experience by Core Terms

52 of the 53 questions had a core term being the highest scoring term. The only activity for which a non-core term scored highest was '*Plan your learning needs*'.

As shown before, there was some variation in exposure to different individual curriculum activities by core term. The core term data was then summarised using ACF category means to compare the experience for the three core terms.

Within each ACF Category, the mean rating for the three core terms were compared.

Figure 7 Intern Curriculum Experience - Core Term Comparison
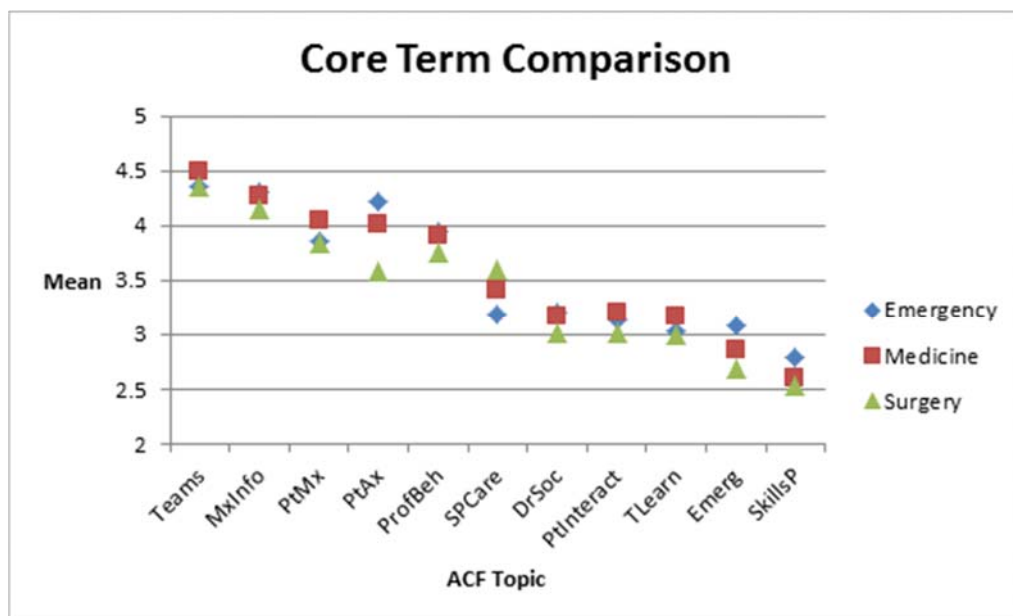
When mean scores for the core terms were compared, the Emergency and Medicine core terms were the highest scoring core terms for 10 of the 11 ACF categories, and core Surgery scored the lowest of the three core terms for experience in all curriculum categories except 'Safe Patient Care'. Statistically-significant differences ($p < 0.05$) were observed between the highest and lowest core term means for all 11 curriculum categories.

Comparison of individual terms/rotations

Core Emergency

High scoring activities for Core Emergency

Core Emergency had the greatest number of high scoring means for curriculum activities (29 of the 53 activities), including 3 equal highest scoring with other core term(s). These occurred in all ACF domains and categories (with the exception of Working in Teams). In particular, of the ACF categories – Emergencies, and Skills & Procedures - with lower mean scores, exposure to these activities was highest in the Core Emergency terms.

Low scoring activities for Core Emergency

Core Emergency had the lowest mean score for 9 ACF activities, in various ACF categories. These included:

- Regularly review patient problem list
- Manage a patient's medication throughout their stay.
- Participate in patient discharge planning.
- Explain process of informed consent.
- Prioritise daily tasks.
- Participate in a quality improvement activity.
- Understand own role within a team
- Participate in teaching of others.
- Receive feedback on teaching

Core Medicine

High Scoring activities for Core Medicine

Core Medicine had the highest scoring means for 20 of 53 curriculum activities, including 3 equal highest scores with other core term(s). These occurred in all ACF domains and topics. This suggests that Core Medicine terms provide a valuable experience for interns that is highly aligned to the ACF.

Low Scoring Activities for Core Medicine

Core Medicine had the lowest term score for only one activity – the procedure *'Perform injection of LA to skin'*. This is likely of itself not a significant finding.

Core Surgery

High Scoring activities for Core Surgery

Core Surgery had the highest scoring means for <u>7 of the 53 activities</u> (including 2 equal highest scores). These were in the ACF domains of Clinical Management; Categories – Safe Patient Care, Patient Management and Skills & Procedures; and the domain of Communication; Category – Managing Information. The 5 activities for which Core Surgery was alone rated highest were:

- Participate in a quality improvement activity.
- Prescribe pain therapies
- Explain process of informed consent.
- Perform urethral catheterisation
- Prepare correspondence e.g. discharge summaries

Low Scoring activities for Core Surgery

Core Surgery had the lowest scoring means of 18 activities, across all three ACF domains and a number of ACF categories. This suggests that for approximately one third of the activities surveyed across a range of ACF categories, that core surgery provided the least valuable experience for interns compared to any other term.

4.2.7 Intern Curriculum Experience by Health Service Region

Given that there has been some limited literature suggesting that interns may have different clinical experiences in regional compared with metropolitan settings, the researcher was interested in comparing intern survey results based on health service region (inner metro, outer metro and regional).

As can be seen by the table below, regional health services had the highest scoring means (highlighted green) for the most ACF categories, with the inner metro health services having the highest scoring means for the Teaching and Learning (equal with regional), Emergencies, and Skills and Procedures ACF categories. The lowest scoring means are highlighted red and predominantly occur for the inner and outer metropolitan health services.

Table 17 Intern Curriculum Experience by Health Service Region

TOPIC	Inner Metro	Outer Metro	Regional
Teamwork	**4.19** ± 0.658	**4.37** ± 0.590	**4.59** ± 0.566
Managing Information	**4.04** ± 0.629	**4.15** ± 0.489	**4.23** ± 0.458
Professional Behaviour	**3.77** ± 0.598	**3.79** ± 0.552	**3.91** ± 0.569
Patient Assessment	**3.80** ± 0.494	**3.84** ± 0.514	**3.86** ± 0.441
Patient Management	**3.67** ± 0.593	**3.84** ± 0.514	**4.00** ± 0.517
Safe Patient Care	**3.31** ± 0.568	**3.34** ± 0.584	**3.41** ± 0.622
Teaching & Learning	**3.12** ± 0.658	**3.00** ± 0.627	**3.12** ± 0.491
Dr & Society	**3.11** ± 0.947	**3.03** ± 0.805	**3.22** ± 0.651
Patient Interaction	**2.98** ± 0.764	**3.07** ± 0.604	**3.18** ± 0.541
Emergencies	**2.88** ± 0.673	**2.59** ± 0.58	**2.82** ± 0.699
Skills & Procedures	**2.65** ± 0.504	**2.41** ± 0.486	**2.47** ± 0.593

The ACF category mean scores were analysed by intern health service region using one-way ANOVA. The mean scores did not differ significantly by health service regions with the exception of 'Teamwork' (p = 0.022) and 'Patient Management' (p=0.037) where the difference between the regional health service and inner metropolitan health service means were significant.

These results are also depicted in the graph below, which also highlights that there is general concordance between the three health service regions regarding the highest and lowest scoring ACF category means; i.e. there is less variation within each ACF category by health service region, than there is variation between exposure to different ACF curriculum categories. This suggests that system-wide factors make a greater contribution to variation in clinical experience for interns than regional factors.

Figure 8 Intern Curriculum Experience by Health Service Region
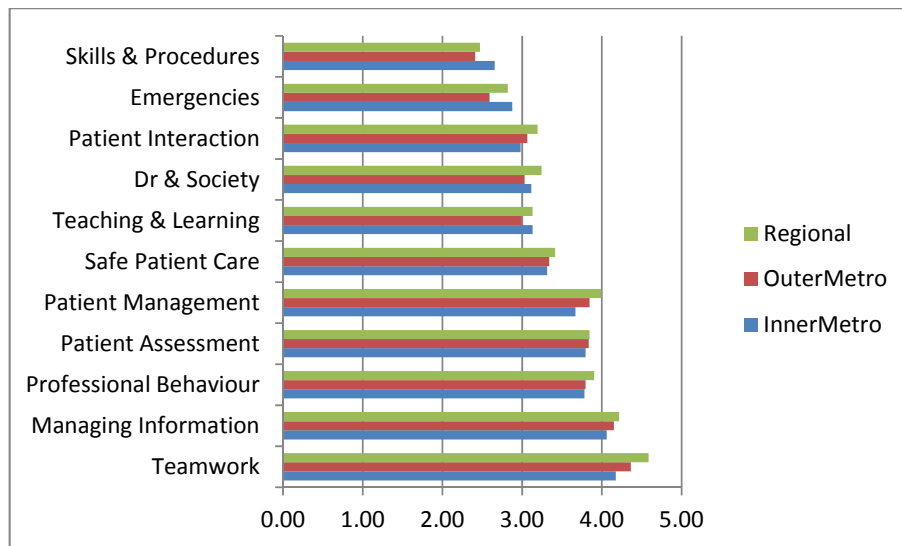
4.2.8 Survey Section 3: Intern Comments regarding Strength & Weaknesses

The third section of the Intern Survey invited comments from the interns regarding their intern year;

- *Do you have any further comments you would like to make regarding the strengths of the clinical experience in your intern year?*
- *Do you have any further comments you would like to make regarding the weaknesses of the clinical experience in your intern year?*

Thirty-four (34) interns provided comments under 'strengths', and thirty-nine (39) interns provided comments under weaknesses. A majority of intern comments broadly related to clinical experience and teaching and support. A brief summary of feedback is provided below.

Summary of Feedback

Clinical experience

Participants made a number of positive comments regarding their intern year. The 'general' nature of the year was cited as a positive feature, although 'general' equated to 'variety' of experiences rather than reflecting a 'general' characteristic of the experience itself. Comments validated the value of the core terms. However respondents also noted there was variation in access to clinical experience including limitations in access to clinical decision-making and

procedures, with one intern commenting that *'Interns need to work longer hours in general to gain appropriate experience (Health Service D).'*

Participants raised concerns regarding access to procedures, and made suggestions regarding positive opportunities to access these e.g. undertaking cover work and palliative care. There were also comments regarding preparedness for internship;

> *'There are a number of areas which could benefit from more focus in the medical school curriculum to streamline transition to internship – particularly prescribing of medication and administrative aspects of an intern job' (Health Service E)'*

One intern noted, '*I think clinical experience is an extremely personal and subjective experience and 99% will revolve around the intern's own motivation and drive (Health Service E)'* – however this differs to the overall Intern survey findings that showed that variation in access to specific clinical experiences was relatively consistent across health service regions.

Participants highlighted the administration burden of their roles but also highlighted the skills and roles that they had undertaken during their intern year, particularly in relation to the Communication and Professionalism domains;

'Developed prioritising and organisational skills, assertiveness, and ability to multitask under pressure (Health Service A)'

Teaching & Support

There were a range of views expressed regarding supervision and support, with some very positive;

'Good supervision and clinical contact (Health Service D),' and others less so*, 'Poorly supervised, taking responsibility for tasks not safe for my level (Health Service A).'*

Similar to the survey results, interns had some negative feedback regarding access to teaching and learning in the clinical environment, with only two of a total of eleven comments relating to teaching being positive.

In summary, the intern comments broadly supported the findings of the Intern Survey, in particular in highlighting similar areas of strength and weakness in relation to access to curriculum activities. The comments also note that quality of intern training relates to undertaking activities within a supervision and learning framework. This is a finding that is further explored in the group interview analysis and discussion.

4.3 Summary of Intern Survey Findings

A brief summary of the key findings from the Intern Survey results are:

o The respondent demographic characteristics indicated that a majority had an undergraduate medical degree, were from Melbourne University, were female, and the most common response regarding proposed career specialty was 'unsure'.

o The overall response to the global curriculum question was 'Agree' (mean 4.08).

o There was variation in exposure to the 53 surveyed activities that were based on the ACF curriculum, and variation in experience in activities by (core) term.

o There was similar variation in exposure to activities from the different ACF categories by interns from all health service regions, with ACF categories of Managing Information and Teamwork scoring highest overall, and ACF categories of Emergencies, and Skills & Procedures scoring lowest overall.

o There was some regional variation in scoring of ACF categories, with two being statistically significant (Teamwork and Patient Management were rated significantly more highly by regional interns compared to inner metropolitan interns).

o Interns generally considered they had insufficient experience in those activities in which they had less exposure – with activities within the ACF categories Emergencies, Skills & Procedures, and Teaching and Learning having the highest insufficiency ratings.

o Emergency medicine was the core term with the highest mean rating overall, and Core Medicine also had the highest mean rating for a large number of activities.

o Core Surgery rated the highest for a small number of activities and rated lowest for approximately one third of the clinical activities.

o Intern comments supported the survey findings, and additionally noted the importance of the clinical support and supervision in optimising access to quality clinical experiences.

4.4 PGY2 Survey - Analysis of Findings

As described in Chapter 3: Methods, a survey of PGY2s was undertaken in December 2013, the purpose of which was to assess whether the PGY2s felt that they had achieved sufficient experience in the specific activities that interns had rated less highly.

4.4.1 Participant Information

Participants completed an email survey via an opt-in process. As for the interns, the PGY2s were a convenience sample (from selected health services corresponding to regional areas).

The number of PGY2s who completed the survey in December 2013 was 59.

The exact number of PGY2s in Victorian health services for the year at December 2013 is unknown, for a few reasons, including that many non-vocational postgraduate positions in health services may be filled by PGY2s or PGY3s or by international medical graduates (IMGs). These positions are often flexible, particularly in rural areas, and the determination of exact numbers of PGY2 positions at any point in time can be difficult. There is no published data regarding the exact number of PGY2 positions in Victoria or at the participating health services as of December 2013. Previous data (PMCV 2012) suggests that the number of PGY2 positions in Victoria at that time is approximately 850 -900. A response rate from this cohort is difficult therefore to determine. If the number of PGY2s at the participating health services was approximately 50% of the total number of PGY2s (similar to the intern proportion) i.e. 425 PGY2s, then a response of 59 PGY2s who completed the survey (assuming that all were emailed the survey) is approximately 14% of the sample population, and approximately 7% of the total Victorian PGY2 population.

Up to 11 respondents did not complete the survey questions 1-32. Of those who commenced the survey questions 1-32, all completed them.

4.4.2 Survey Section 1

Demographic Information

Employing health service

PGY2s from a total of five health services responded (no PGY2s responded from one regional and one inner metropolitan health service). Of responding PGY2s, 61% were from outer metro health services, 22% were from regional health services and 17% were from an inner metro health service. Numbers from individual health services varied from 4 to 24.

Type of medical degree

There were 35 PGY2s with undergraduate medical degrees (approximately 60% of respondents) and 24 PGY2s with postgraduate medical degrees.

University where undertook medical degree

Two-thirds (67%) of respondents received their medical degree from Monash University (n=21) or the University of Melbourne (n=19), with the remaining third receiving their medical degree from Deakin university (n=7), interstate (n=4) or overseas (n=8) universities.

Proposed Career Specialty

The most popular proposed careers were general/specialist physician (14 responses), followed by general practice (11), general/special surgery (9), and critical care specialties (8). Compared to the intern survey where the most common response was 'unknown' (at 30%), only 2 respondents or 4% of PGY2s did not nominate a proposed specialty of career.

Gender

The majority (63%) of respondents were female (36, compared with 21 males).

Age

The mean age of respondents was 29.2 (± 5.417). The histogram of Age was right-skewed; so the median age was 27.00 (1st quartile 25.00 – 3rd quartile 31.5).

Clinical PGY2 Stream

The most common PGY2 clinical stream was General (36%, n=20), followed by Medical (31%, n=16), then Surgical (22%, n=13), with 3% (n=2) in a Critical Care stream. There were 3 respondents in other programs, including 2 in psychiatry, and one PGY3 critical care.

Vocational Registration

Thirty-one respondents, or just over half (53%) were registered with a Specialty college for vocational training. Half (50%) of those registered for vocational training, were registered with the College of Physicians (RACP), 27% were registered with the College of General Practitioners (RACGP), and 10% each were registered with the College of Psychiatrists (RANZCP) and College of Emergency Physicians (ACEM). One respondent was registered with the College of Surgeons (RACS).

Overall PGY2 Experience - Global Survey Question

Similar to the intern survey, the PGY2 survey asked a 'holistic' initial survey question to consider the overall impression of the PGY2 year; *'I believe that my clinical experience this year has enabled me to meet prevocational curriculum objectives as defined by the Australian Curriculum Framework for Junior Doctors (ACFJD).'*

The rating scale was strongly disagree = 1; disagree = 2; neutral = 3; agree = 4; strongly agree = 5.

The mean score for this question for the PGY2s was **3.45**, with a standard deviation of 0.878. Given the histogram is left-skewed, the median is reported also. The median score was 4 (1st quartile 3.00, 3rd quartile 4.00).

This compares to a mean score for the summary question for the Intern Survey of **4.08**.

When the Global Survey question was analysed by comparison of means (using independent t-test) , there were no significant differences in relation to the demographic factors, although the results showed higher mean scores for undergraduates and males.

4.4.3 PGY2 Experience by Clinical Stream

Given that the Intern survey results identified that different core terms provided different clinical curriculum experiences, the PGY2 global question means were compared for the different clinical streams. The clinical streams of Medicine, General and Surgery were compared, with the Critical Care stream not included due to the small number of respondents (n=2, although the mean score for the critical care stream was 4.00 ± 0.000)

The highest scoring PGY2 stream was the Medicine stream (3.75 ± 0.683), followed by the General stream (3.45 ± 0.999), followed by the Surgical stream (3.15 ± 0.899). When the means were compared via one-way ANOVA , there was no significant difference (p=0.405).

4.4.4 PGY2 Experience by Vocational Registration

In considering whether College oversight affected PGY2 views regarding their ability to meet the curriculum framework, the PGY2 global survey question scores were then compared by whether the PGY2 was registered with a vocational college or not.

PGY2s registered with a vocational college had a higher mean score (3.54 ± 1.071) compared with those not registered with a vocational college (3.37 ± 0.629), however when the means were compared by one-way ANOVA there was no significant difference (p=0.490).

4.4.5 PGY2 Experience by Health Service Region

The researcher sought to identify whether the PGY2 global survey question results differed based on health service region.

PGY2s from regional health services had the highest mean (3.91 ± 0.539), with PGY2s from inner metropolitan health services having the next highest mean score (3.70 ± 0.675), and PGY2s from outer metropolitan health services having the lowest mean score (3.24 ± 0.955), however this was not statistically significant (p=0.077).

4.4.6 Section 2 – PGY2 Exposure to Specific Curriculum Activities

The purpose of Section 2 of the PGY2 Survey (Survey Questions 1-32) was to compare the experiences of selected curriculum activities of PGY2s with those of Interns.

This was done by comparing the insufficiency rating (% of respondents who did not believe that they had sufficient experience) from the PGY2s and Interns for the common list of PGY2 Survey curriculum activities (Questions 1-32) i.e. only activities for which a high (>25%) or moderate (>10%, <25%) proportion of interns rated that they had insufficient experience were included in the PGY2 survey (activity n=32). Red results are those where ≥ 25% of respondents considered they had insufficient experience, yellow results are where ≥ 10 but < 25% of respondents considered they had insufficient experience and green results are where < 10% considered they had insufficient experience).

The number of PGY2 respondents for these questions was 49, compared to the total number of intern respondents which was > 100, and varied slightly with individual questions

Table 18 PGY2 vs Intern Exposure to Specific Curriculum Activities

	Activity	PGY2 Insufficient %	Intern Insufficient %	Categories
1	Participate in a quality improvement activity	43	39	SPC
5	Implement BLS	25	52	Emerg
6	Participate in ALS resuscitation	37	75	Emerg
9	Administer IV medication	27	49	S&P
10	Administer IV infusion of fluids	37	51	S&P
11	Administer IV infusion of blood/products	45	52	S&P
12	Perform IM injection	35	31	S&P
13	Perform SCT injection	47	49	S&P
14	Perform an ECG	39	39	S&P
17	Perform & interpret peak flow measurement	51	55	S&P
20	Perform simple airway care	47	71	S&P
22	Apologise for an error	25	27	P I/action
32	Receive feedback on your teaching	49	45	T&L

7	Take part in discussions regarding end of life care	14	28	PMgt
26	Recognise specific legal requirements in the clinical setting	10	26	DrSoc
28	Take on a leadership role	18	29	ProfBeh
29	Plan your learning needs	14	30	T&L
31	Participate in teaching of others	16	30	T&L
18	Perform injection of LA to skin	6	26	S&P
27	Undertake health promotion in the clinical setting	10	16	DrSoc
2	Recognise a potential risk to patient safety	6	10	SPC
3	Assess an acutely unwell patient	2	17	Emerg
4	Recognise a deteriorating patient	2	11	Emerg
8	Explain to a patient the process of informed consent	4	18	S&P
15	Interpret an ECG	2	11	S&P
16	Perform ABGs	6	14	S&P
19	Perform urethral catheterisation	6	12	S&P
21	Break bad news to patients or relatives	2	17	P I/action
23	Take steps to minimise impact of an error	8	20	P I/action
24	Identify a potential patient complaint	4	20	P I/action
25	Use best available evidence in decision-making	0	12	Mx Info
30	Reflect on own clinical practice	2	15	T&L

Of the 19 activities from the Intern survey for which at least 25% of interns said they had insufficient experience (highlighted red), 13 (68%) of these activities were still rated by >25% of PGY2s (red) as having insufficient experience although each activity insufficiency rating was generally not as high as for the intern survey for individual items. These activities were predominantly in the ACF topics of:

- Skills & Procedures
- Emergencies
- Non-clinical (participate in a Quality Assurance activity; take steps to minimise impact of an error; receive feedback on teaching)

There were 6 activities that had high insufficiency (>25%) for the Intern survey, but moderate to low insufficiency (<25%) for the PGY2s. These were predominantly in indirect clinical areas:

- Patient Management (take part in discussions regarding end of life care)

- Dr & Society (Legal requirements)
- Professional Behaviour (Leadership role)
- Teaching & Learning (plan learning needs, teach others)
- Skills & Procedures (LA injection)

There were 13 activities that had moderate insufficiency ratings (10-25%) for the Intern survey, but low insufficiency (<10%) for the PGY2s. These were:

- Skills & Procedures (Explain informed consent, interpret ECG, perform ABGs, urethral catheterisation)
- Patient Interaction (break bad news, minimise error, identify patient complaint)
- Emergencies (assess an acutely unwell patient; assess a deteriorating patient)
- Managing information (use evidence in decision-making)
- Teaching & Learning (reflect on clinical practice)
- Dr & Society (health promotion)

The number of activities given high, medium and low insufficiency ratings from the PGY2 Survey Questions 1-32 have been summarised in the table below:

Table 19 PGY2 vs Intern Curriculum activity 'Insufficiency'

	Intern	PGY2
High	19	13
Medium	13	7
Low	0	12
Total	*32*	*32*

Summary

The number of activities for which ≥ 25% of PGY2s felt they had insufficient experience to meet the curriculum requirements of the ACF (n=13) was fewer compared with number of activities for which ≥ 25% of interns felt they had insufficient experience (n=19). Nevertheless, for some of the activities, particularly in the Emergencies and Skills and Procedures categories, a proportion of PGY2s considered they had insufficient experience by the end of their PGY2 year. This suggests there is a core group of activities in these categories for which access is

limited during both the intern and PGY2 years. For the majority of the activities from other ACF categories for which Interns had high or moderate insufficiency ratings, by the end of PGY2 these activities generally had low or moderate insufficiency ratings.

There were 3 activities for which a slightly higher proportion of PGY2s felt they had insufficient experience compared with the interns. These were:

- Participate in a QA activity (SPC)
- Perform IM injection (S&P)
- Receive feedback on your teaching (T&L)

4.4.7 Survey Section 3: PGY2 Comments regarding Strengths & Weaknesses

There were a total of 30 comments made by PGY2s regarding their clinical experience in their PGY2 year – including 12 strengths and 18 weaknesses. Similar to the Intern Survey feedback, the summary PGY2 feedback is presented under the broad themes of clinical experience and teaching/support.

Clinical experience

Comments from PGY2s regarding their clinical experience varied, depending on the term and whether it aligned with the PGY2's vocational training requirements. Accessing the required clinical rotations to meet vocational training pre-requisites/requirements was a common concern. However there were positive comments in relation to the PGY2 year's capacity for greater autonomy, and responsibility;

> *'Felt it was great preparation for a registrar role next year.' (Health Service C)*

> *'You are more independent' (Health Service G)*

> *'More responsibility' (Health Service F)*

Teaching & Learning

The PGY2s commented on the self-directed learning nature of the PGY2 year, the lack of formal teaching, and the impact of this on their experience and learning.

> *'Very limited formal clinical teaching.' (Health Service C)*

> *'More difficult to get teaching as a resident than as an intern.' (Health Service F)*

4.5 Summary of PGY2 Survey Findings

- Most demographic measures indicated that the PGY2 cohort was similar to the intern cohort (female respondents > male respondents, undergraduate respondents > postgraduate respondents, a majority of respondents from Monash University or University of Melbourne, median age 27.)

- Compared to the Intern Survey where the most common response to Proposed Career Specialty was 'unknown/not sure', only 4% of PGY2s responded 'unknown/not sure', with the most popular career specialties being physician training, general practice, surgical and critical care specialties.

- The most common clinical PGY2 stream was a general stream, followed by a medical stream, then surgical, with a small proportion in other clinical streams.

- Slightly more than 50% were registered with a Specialty college for vocational training, and of those registered, 50% were registered with the RACP, with the RACGP the next most common.

- PGY2s were less positive overall about their clinical experience compared with interns, with a mean Global Survey score of 3.45 compared with 4.08 for the intern survey.

- When the Global Survey score was analysed for correlating factors, none were statistically significant, although:

  - PGY2s in the Medical & Critical Care streams and those registered with a vocational College were more positive overall about their experience, and PGY2s in the Surgical Stream were less positive overall.

  - PGY2s from regional health services were more positive about their experience.

- Some curriculum 'gaps' still remain at end PGY2 (mostly in Skills & Procedures, Emergencies, & some non-clinical categories), although many were 'closed off'.

Chapter 5: Results Group Interviews

5.1 Introduction and Overview of Chapter

As discussed in Chapter 3: Methods, a number of group interviews were conducted with health service supervisors and managers of junior doctor training to discuss and seek explanations for the preliminary findings from the Intern Survey. These interviews were undertaken approximately six months after completion of the Intern Survey, and were informed by preliminary findings from the survey:

Figure 9 Timeline of Research Phases

This chapter describes the research Qualitative results and includes:

- Participant information and conduct of interviews
- Thematic analysis results
- Preliminary participant comments
- Presentation of findings within the Situated Learning Framework
- Potential implications
- Chapter Summary

5.2 Group Interviews – Analysis of Findings

5.2.1 Participants

Health Service Participants

Six health services participated in the group interviews. One inner metropolitan health service did not participate.

Group Interview Participants

Group heterogeneity & member composition

Each group comprised members of the same health service, with roles that were inter-related and in many cases with direct reporting relationships. Group members usually had similar but complementary expertise.

Information regarding the health service participants is provided in the table below:

Table 20: Group Interview Participant Information - Summary Table

Health Service	No. of Participants	Title of Participants	Male /Female (M/F)	Medical (Y/N)
Health Service A	2	1. Deputy Director Medical Services	F	Y
		2. Supervisor of Intern Training/Emergency Physician	M	Y
Health Service B	2	1. Director of Medical Education	M	Y
		2. Supervisor of Intern Training/Nephrologist	F	Y
Health Service C	3	1. Chief Medical Officer	M	Y
		2. Deputy Chief Medical Officer	M	Y
		3. Director Clinical Training/Intensive Care Physician	M	Y
Health Service D	4	1. Director Medical Education/Intensive Care Physician	M	Y

		2. Director Clinical Training/Respiratory Physician	M	Y
		3. Supervisor of Intern Training/Rehabilitation Physician	F	Y
		4. Medical Education Officer	F	N
Health Service E	2	1. Chief Medical Officer	M	Y
		2. Deputy Chief Medical Officer	F	Y
Health Service F	4	1. Executive Director Medical Services	M	Y
		2. Supervisor of Intern Training/Career Medical Officer	M	Y
		3. Medical Education Officer	F	N
		4. HMO Manager	F	N
Total	17		M=10; F=7	Y=14; N=3

- There were a total of seventeen participants in the six group interviews.
- Five of the six groups had equal numbers of male and female participants, and one group had only male participants (Health Service C), giving a total number of 10 participants (59%) being male and 7 participants (41%) being female.
- Fourteen (82%) of the participants were medical practitioners, with three (18% of the participants) being support staff.
- Participating medical practitioners were from the clinical disciplines of medicine, emergency and critical care and subacute medicine. There were no medical practitioners from the discipline of surgery.

Directors (and Deputy Directors) of Medical Services (DMSs) were generally medical administrators and had organisation-wide responsibility for a range of portfolios, including junior doctor workforce and training. They often also had organisational responsibility for clinical governance and were aware at an executive level of the drivers of health service performance. The Supervisors of Intern Training and Directors of Clinical Training were

generally clinicians in the organisation who had a proportion of their role (e.g. 1-2 days/wk) dedicated to oversight of junior doctor training and welfare. These supervisors were also familiar with a number of health service factors contributing to junior doctor training, particularly in their own area of clinical practice. Directors of Medical Education and Medical Education Officers generally had expertise in education theory and program development, may or may not have been medically-trained, and generally had responsibility for design and implementation of the formal education program for junior doctors. The DMSs were the more senior roles within the group hierarchy, and the MEOs and HMO Managers were the more junior roles.

5.2.2 Conduct of Interviews

The interviews were conducted at each of the six health services, and took approximately one hour each. Plain Language Statements were provided for the participants, and consent forms were signed. The student researcher sought the consent of the group to record the interview. The interviews then commenced with a discussion based on the Health Service Report for that particular health service, and the generic interview questions. The interviewer allowed flexibility for individuals and the group to explore issues in addition to the generic questions, however tried to ensure by the end of each interview that the generic questions had also been covered at some stage during the interview.

The interview was interactive, with the researcher at times offering thoughts and ideas for the group to comment on, as well as probing for greater understanding of issues that were raised by participants. The interview allowed participants to consider data that had not previously been available, and the groups therefore were able to explore novel approaches to the issues raised. Ideas/suggestions raised in early groups were tested in subsequent groups to assess their acceptability until saturation. The interviews thus followed an iterative process.

5.2.3 Thematic Analysis

Development of Codes

An initial descriptive set of codes was developed based on the literature and the questionnaire, however this initial coding process generated 22 codes and over 100 sub-codes which were too numerous and unwieldy to code the six transcripts. Following a process of reduction and abstraction, the number of codes was reduced to thirteen, which were then used to code the six interview transcripts. These thirteen main codes also contained a number of sub-codes:

Table 21: Codes used to coder the transcripts, and related Sub-codes

1. **Validity of Findings**	2. **Access to clinical opportunities**
Survey not asking right questions	Available casemix
Findings have/not face validity	Workforce substitution
Respondent characteristics	Decision to exclude
Sampling issues	Previous generation
Validity of statistics/methodology	Medical competition for access
Intern under-reporting	Passive access
Reductionism	Good access
3. **Contemporary team dynamics**	4. **Medical Teaching & Learning Culture**
Autonomy vs team	Opportunities based on aptitude
Multidisciplinary	Opportunities based on interest
Team interaction	Informal teaching
Rostering practices	Registrar teaching
	Consultant teaching
	Non-medical teaching
	Non-clinical teaching
	Value of interns
5. **Patient Safety Culture**	6. **Service/Procedure Complexity**
Avoid litigation	New Service Models
Reduce adverse event risk	Technical complexity
Improved patient outcomes/expertise	Workplace redesign
Protocol-led processes	Hospital process complexities
Consumer empowerment	
7. **Service demands/Productivity**	8. **Resource Constraints**
Role relegation	Backfill
Throughput	Logistic
	Financial
	Supervisory capacity
9. **JMO Welfare**	10. **Intern engagement and attitudes**
Pastoral	Background
Supervision	Relevance
Safe Hours	Fear of error

Removal of Responsibility	Fear of abuse
	Expectations regarding access
	Interest
11. Training Continuum	**12. Learning Objectives**
Clinical Preparation	Clinical content
Clinical Confidence	Reconsider curriculum
Clinical skills (procedural)	Retain in curriculum
Length of training	Add to curriculum
Curriculum Integration	Career decision-making
	Patient responsibility
	Role of SMS
13. Potential Solutions	
Alternative settings	
Simulation	
Health Service KPIs	
E-Learning	
Formal Teaching	
Logbook	
Quarantined exposure	
Governance/Needs Assessment	
Structural Term Change	
Workforce Substitution	
Observe/Role model senior	

Data Display/Charting

Once all transcripts had been coded according to the 13 main codes, they were summarised and displayed (charted) in an Excel workbook according to the Framework approach. The workbook contained 13 individual spreadsheets, one for each code. Within each spreadsheet, sub-codes were allocated as columns, and each health service interview was assigned a particular row, to form a matrix. The spreadsheets were populated with verbatim quotes from the coded.

Development of Themes from Group Interview Transcripts

The thirteen main codes were further thematically analysed via reduction and abstraction, which led to the emergence of eight main themes:

Table 22 Eight main themes from the coded data

Themes
1. Limitations & Generalizability of Findings
2. Current Curriculum Opportunities
3. Health Service Clinical Governance Frameworks
4. Clinical Service Demands & Complexity
5. Supervisor – Learner Interactions
6. Curriculum and Teaching
7. Training Continuum
8. Potential Curriculum Opportunities

Alignment of Themes with Situated Learning Framework

The final iteration of theme definition involved reference to the Situated Learning theoretical framework (Lave 1991), in particular the tenets of *legitimate peripheral participation*, *communities of practice*, and the concept of a *learning curricula* as distinct from a *teaching curricula*. Situated learning stresses the importance of learning within a related environment; of legitimate access by apprentices to meaningful peripheral activities of practice; and of the development of an identity within the group of expert and near-expert practitioners – the community of practice. In the final analysis, the themes arising from the interview data have been integrated and aligned more intimately with the Situated Learning framework to develop a narrative that encompasses the broad interview findings.

Presentation of Results of Thematic Analysis

1. The presentation of the results of the thematic analysis commences with consideration of *Preliminary Participant Comments* in relation to the intern survey findings.

2. The main thematic analysis of the group interviews then follows, and is based around three of Lave's Situated Learning Framework's main tenets (as above) – *learning curricula*, *legitimate peripheral participation*, and *communities of practice* - informed by key findings from the data:

    i. *Learning Curricula – Problems with Ambiguity and Access*

    ii. *Efficiency, Complexity and Risk Management – Barriers to Legitimate Peripheral Participation*

   iii. *The Rise of the Technical Expert – and the Downfall of Communities of Practice*

3. Following this is a brief introduction to *Potential Implications* of these findings, as discussed by the group interview participants.

Table 23 Organisation of Results of Thematic Analysis

Preliminary Participant Comments
i. Learning Curricula – Problems with Ambiguity and Access
ii. Efficiency, Complexity and Risk Management – Barriers to Legitimate Peripheral Participation
iii. The Rise of the Technical Expert – and the Downfall of Communities of Practice
Potential Implications

In the following presentation of results, supporting quotes are annotated according to the Health Service and the participant e.g. Health Service A, participant 1 appears as '*A1*'; Health Service D, participant 3 appears as '*D3'* etc, according to the Group Interview Participant Information Summary Table (Table 20).

5.2.4 Preliminary Participant Comments

As described in the methodology, individual Health Service Reports which comprised initial results from the Intern Survey were presented to group interview participants. The group interviews then commenced with overarching questions relating to the Report findings such as;

- '*Were you surprised by the findings?*
- *What findings were expected and what findings were not expected?*'
- '*Do you think these survey findings are representative of intern clinical experience at your health service, or not?*
- *If not, how do you think these survey findings could be explained?*'

These questions encouraged participants to provide feedback relating to the results, and the assumptions underlying the presentation of the results. It should be noted that subsequent to the group interviews further statistical analysis was undertaken in relation to a number of survey results, thereby addressing some of the participant concerns regarding validity and methods.

A couple of interview participants were positive about the opportunity to review and discuss the initial survey findings (Health Service B & C). In addition, there were a number of comments from interview participants that supported the face validity of the findings;

> *"So in answer to your question, it doesn't surprise me at all that they perceive skills and procedures as being a thing that they are not doing.."*
> *(B2, pg7)*
>
> *"There was a note in the findings that the core terms tended to deliver the ACF framework points more often than the non-core terms, and I think that is completely predictable and not a problem. It's because the ACF is of course geared up around the idea of core terms. ….And I think that's fine, they (non-core terms) offer a whole range of other experiences, which aren't going to be captured so much in the ACF. So that didn't surprise me." (F2, pg18)*

Findings that surprised some participants, included findings that suggested that access for interns to opportunities in the Skills & Procedures domain was slightly higher in the inner metro health services (Health Service A). However possible explanations for this, such as patient acuity, were considered;

> *"But I wonder in fact whether some of the inner metro or true tertiary or whatever's after tertiary, there's more procedures to be done, so they get exposed to it a bit more? Like chest tubes and stuff like that" (B2, pg1).*

It was suggested that intern under-recognition and/or under-reporting may be a contributing factor in some of the low ratings for individual questions;

> *'So their role in quality, over the years when they tick those boxes they always leave 'participated in clinical risk management' blank. And I say to them 'What do you reckon is done to reduce clinical risk?' …..'How many doctors were there?' 'Were they a mix of seniority?' 'So is doing the roster a clinical risk management activity?' Oh yeah it is. 'And is checking the x-ray results one?' …So you start going through them, and you educate them.' (A2, pg18)*
>
> *'Undertaking health promotion in the clinical setting… I just think that might be an under-recognition because every patient who gets admitted gets the smoking and alcohol question and a lot of them get the drugs and obesity questions as well… but it may not be something that interns see as being health promotion.' (F2, pg10)*

The <u>methodology</u> of the research also raised a few questions among participants. It was noted that the premise of the survey was not initially tested in that there was not a survey question regarding intern awareness of ACFJD (Health Service A). It was also noted that regional respondents may also include a number of rotating interns from metro health services which may confound the results (Health Service E), and that the significance level of the initial data analysis was not reported (Health Service A).

There was discussion regarding the <u>rating scale</u> for section 2 of the Intern Survey (Health Service D), noting that the measurement of activity exposure (via proportion of patient encounters) was a 'relative' measurement and not an 'absolute' measurement.

> *"Well the other question that I have around the fact that you've said 7 out of 53, they were the lowest. You're doing this in a form of ranking?" ….."So what I'm saying is, maybe they're doing more than enough, it just happens to be out of the 5 options, it's the one that comes least, how much is least, we don't know, it could be nothing versus doing a reasonable amount. You know?' (C2, pg 13-14)*
>
> *"Is this the right way to assess it though? I mean, is another way to assess, not that they get the highest score, but they get an adequate score for the activity during that rotation. … Because it may be that surgery are providing an adequate, it's just that they're getting knocked off by medicine and ED to be the highest, but they might be the second highest across every domain.' (D2, pg 14-16)*

There was also some criticism of the survey's focus on specific activities, and that these may not define the holistic intern experience. In particular, caution was recommended regarding making conclusions in relation to the lower scores for activities in the core surgery term.

> *'The experience they're getting by seeing all these surgical patients, surgical disasters, all that infections and all that you know. That can't be recorded in 53 questions asked.' (C3, pg14)*
>
> *'There's one other thing I wanted to bring up with regards to this 53 question survey. I think there's a danger in reductionism when approaching or evaluating the intern experience or the value of a term etc….so I would be concerned about any progression towards guidelines that says 'You must perform a focused clinical assessment of a patient, you must, etc etc because, at the same time you have to see what the overall experience is, and what the overall purpose is.' (F2, pg16)*

Thus while the intern survey findings had face validity for the group interview respondents, there were some concerns raised in particular regarding the methodological approaches taken in the survey design and analysis.

The final three themes derived from the thematic analysis are presented within the Situated Learning Framework:

5.2.5 Theme 1: Learning Curricula – Problems with Ambiguity and Access

The Australian Curriculum Framework for Junior Doctors (ACFJD) provides guidance regarding curriculum activities and objectives for the first period of postgraduate training. However while it is a national curriculum, it has been variously embedded within health service rotation learning objectives, rotation assessments, and formal teaching programs. The ACFJD expects that junior doctors will have achieved the majority of the curriculum objectives on completion of two years of postgraduate training, but does not identify how this is to be achieved, beyond completion of the three core terms of medicine, emergency medicine and surgery. Further, the ACFJD does not specify the level of mastery of curriculum activities expected of a prevocational doctor, and how these are integrated within the continuum of medical training and learning.

Problems with Ambiguity

Given the limitations of implementation of the ACFJD, it is perhaps unsurprising that one of the findings to arise from the group interviews was the varying levels of understanding of, and agreement with, various ACFJD-derived curriculum items. In considering curriculum items to which some interns considered they had insufficient exposure, discussion arose as to the current appropriateness and relevance of some of these, particularly those relating to Skills & Procedures and Emergency Management.

Additionally, participants had a range of views regarding the potential curriculum objectives of the core surgical rotation as well as the strengths and limitations of the current rotational structure of the intern year. Emerging curriculum requirements were also identified, especially in relation to early management of the deteriorating patient, and the value in undertaking further robust needs analyses to better define training requirements was discussed.

Procedural Skills

Due to their lower ranking by the interns, the groups discussed the surveyed list of procedural skills and whether or not they should be retained in the ACFJD, particularly given the suggested difficulty in ensuring regular exposure during the prevocational years. There were

mixed views, frequently about the same curriculum items, both within groups as well as between groups.

Some participants argued for retention of specific items in the curriculum (including venepuncture, IV cannulation, blood cultures, ABGs, urinary catheterisation, IM injections, airway care, ALS/BLS, suturing, plastering, drug administration, and performing an ECG), generally on the basis that these skills would be required in later specialties, particularly general practice.

> *"I think that in general practice you might be expected to give vaccinations and various things so they sort of need to be in there" (A2, pg4).*
>
> *"'Wouldn't take ALS/BLS out ..'You're a doctor, what can you do? Resuscitate, I'll start with resuscitation and I'll add from there." (A2, pg6)*
>
> *"If you ask me I believe they should know at least how to administer drugs." (C3, pg6)*

However others disagreed with retaining a number of procedural items mainly with the rationale being recognition of lack of workplace opportunity to undertake and master.

> *"… there's probably debate whether they need to (do simple procedures) or not." (E2, pg3)*
>
> *"Maybe 'implement BLS' can be changed to say, you know, 'train in BLS', or 'have confidence in BLS', because the chance to do BLS is going to be quite low. ALS is the other thing; I mean ALS is going to be even less likely." (E1, pg5)*

Additionally, one health service participant reflected on how reduced intern participation in activities such as procedures may reflect the 'value' of the intern. While one perspective considered that a lack of regular undertaking of procedural activities by interns could be interpreted as a lack of 'value' of the intern role by the healthcare team, another participant considered that this instead reflected an increased value, being one not limited to routine tasks:

> *"It's the value that goes with this as well, and I just worry that it's a reflection of the fact that we actually don't value them.'(D2, pg 11)*
>
> *"I think that we actually value them (the interns) too much in a sense. We actually think that they're the doctors and they need to be doing far more important things than just giving someone an injection or setting up an IV." (D1, pg11)*

Emergency Management Skills

Some participants expressed a view that emergency management skills were only necessary for a subset of more senior doctors, in particular, <u>critical care specialists and general practitioners.</u> However there was also recognition that junior doctors may be expected to undertake procedures and emergency management in particular settings, particularly in <u>regional/smaller hospital settings and after hours</u>;

> *"So we don't want them giving IV medication …the only place you really see it happen is in theatre where they draw up their own stuff and give it'. (A2, pg3).*
>
> *"And the only place I've seen where it might be different is resusc especially on night duty, where we might ask doctors to draw up meds or prime the line or things. But that doesn't happen very often." (F3, pg16)*
>
> *Interviewer: "Do you think it's important that interns undertake these activities?"*
>
> *(F3): "I don't know. I don't think…if our healthcare continues as it is, no it won't be. I think they'll be deskilled more and more."*
>
> *Interviewer: "And is that OK?" (F3): "Yes I think it is OK. Unless they have a remote rotation. I think it is OK in a sense." (pg14)*

Surgical Term Objectives

Exposure to the surgical patient journey, and the importance of that experience to inform later clinical practice was identified in particular to support the core requirement of the <u>surgery term</u>. However while this was cited as the rationale, there was also some acknowledgement that this may not be delivered in practice, and that the lower ratings for exposure to curriculum activities during the core surgery term made its rationale as a core term less clear;

> *"I think we have to unpack the surgical term again and have a look at what we're trying to achieve. A lot of those things are not achievable the way surgery runs. To actually see and understand a surgical patient both in an elective and acute sense and see the flow through theatre of the process that's happening, and then the management of the patient after that process, is what I think the learning objective is. Because if you're, let's say you're a general practitioner and you're not going to go back into surgery again, you still have to be able to talk to your patient about that surgical process they might be going through when you're referring them to the surgeon. And you still have to be able to talk to them appropriately about what's happened to them when they come back." (B1, pg5)*

> *"Well that's the question… are they assessing an acute abdomen? Because when you read this, I'm not so sure that they are. That's the problem. I agree with you, you should be spending time in a surgery ward, but then you've got to do the stuff and learn what you should be." (C1, pg13)*
>
> *"If you're going to go down that pathway (surgery) then yes you have to do it, but if you're not, you pick up skills that you're never going to use again really, apart from being kind of useful to know what goes on.' (F2, pg18)*
>
> *"I mean they're really saying, this is, as you say, you actually got to wonder even if they should have it (surgery) as a core term, what they are learning." (C1, pg12)*

Rotation length & structure

Assisting junior doctors in determining their career intentions was cited as a potential value of multiple short (up to 10 week) rotations during the intern year.

> *"I think you need exposure to a whole range of different things, because a lot of them use the year to sort themselves out and really work out which way they want to go." (B1, pg12)*
>
> *"The biggest (career) category was 'I don't know', so I think that says it all. At the end of their medical years they really haven't had the practical experience of what it's like to work in surgery, you know, so how can they know that that's the subspecialty stream they want to go into?" (B2, pg13)*

However, some participants considered that <u>longer intern terms</u> would support improved team interaction and integration. It was noted that a four-term intern year exists in New Zealand (C2) and the UK (D3). The downside to this was a potential reduction in breadth of clinical experience;

> *"The rotation should go up a bit, because from the time they enter a surgical term, it's time for a mid-term assessment, and then it's time for an end of term assessment. They hardly get time to know their patients, know their colleagues and all that." (C3, pg15)*
>
> *'It does, I mean we say 10 week rotations, but actually a lot of our interns actually go through 5 week rotations....They're there, they barely hit the wards and they've gone. .....And they have actually no idea what they're actually doing, because they haven't had time to get to know their patients or anything like that.' (D3, pg20)*
>
> *"…in your intern rotations, you get an opportunity to be exposed to things, and that's really the exposure. So it's a trade-off between exposure and the opportunity to embed in a team..... and look, maybe, maybe the four month is a good sort of compromise.' (D1, pg20).*

Emerging curriculum requirements

Early management of patient deterioration

A number of interview participants nominated early management of the deteriorating patient (pre-MET criteria management) - relating to the National Safety and Quality Standards for Health Service accreditation - <u>as an increasingly important role for interns on the ward</u>, and perhaps not given sufficient priority in the current intern curriculum and teaching program;

> *"Particularly around and this is something…related to the new (national) Standards, recognising a deteriorating patient and the unwell patient. I think that's probably an important area to focus on.' (A1, pg19)*
>
> *"But most of these things are not providing complex interventions. Most of the interventions are things like pain relief, better fluid management, or oxygen. That is basically the outcome of 90% of out MET calls……..I'm saying, that might be saying something about a gap in management of the patients and the teaching of the base end of the team." (D1, pg9)*
>
> *"One could argue that for every single MET call we get - we get between 1200 and 1500, we got about 30 last week, from those we get about 10 patients that are deteriorating on the ward. And I don't think that they're taking advantage of those opportunities properly. That's where their real role is, to do that sort of stuff. When they actually start to be on the slippery slope and they have a, in our hands, between 15% and 80% mortality rate, this is way beyond the skill set of an intern' (D1, pg9)*

Needs assessments

In order to better define an appropriate curriculum for interns, participants from a number of health services considered that undertaking an appropriate <u>needs assessment</u> of intern learning requirements was an essential pre-requisite. Interestingly, however, the health service participants suggested reviewing training needs at a local health service level rather than more widely, despite the data that suggested that curriculum ambiguity was a system-wide issue.

> *"It would be good to get some breakdown of what they're actually experiencing, what they're experiencing well, and what they're not, and what we can provide through simulation or through intern tutorials. Because at the moment, and I think most places would be the same, intern tutorials tend to be a whole lot of specialists with what they think is interesting for interns, and just trying to slot people in and get it organised without a huge amount of correlation … ' (A1, pg18)*
>
> *"Like planning learning needs …we should do that actually. Think of the very formal approach that Colleges do." (E1, pg6)*
>
> *"But unless it's …linked to the ... outcome required by the health service, it's not going to get up." (B1, pg8)*

One health service did note that there may be a tension between what the junior doctors want to learn and experience, and the health service requirements of the intern role i.e. health services are not going to invest time in providing training opportunities or programs in a curriculum which isn't viewed as important/relevant to them. This comment highlights the ability of health services to influence curriculum content and delivery at the local level.

Problems with Access

Group participants discussed barriers to access to specific curriculum activities for interns; particularly in the categories of skills and procedures, emergency management, and some of the non-clinical activities. Lack of opportunities for direct patient contact and repeated practice to master skills was also noted. Rotations that were considered to provide good access to these curriculum activities as well as explanation for rotations that provided poor curriculum access (e.g. surgery) were also discussed.

Skills and Procedures

Some problems identified as limiting access to skills and procedures included lack of suitably acute clinical casemix within regional health services, and the opportunistic nature of such experiences, even in the rotations that interns ranked highest for experience such as in ED;

> "So there's only a limited group who get ABGs, so that reduces their capacity.' (A2, pg 4)
>
> "But it's very hit and miss, you have to be there when there is an opportunity." (B2, pg7)

Emergency Management

There was general agreement among participants that the intern was not expected to actively participate in patient emergency management. The role of the intern in these situations ranged from lack of any participation to a passive peripheral participation (passive access to the opportunity).

> "No, they might then provide some background info, that sort of thing, but it's basically the med reg who's on call that day …. They are the ones who lead it' (A1, pg6).
>
> "Doing BLS, they probably don't get a lot of opportunity…..because the interns are not part of the MET team." (E1, pg4)

Repeated practice

Repeated opportunities to practice activities to lead to mastery were also noted to be unreliable;

> "That's my other problem - If we do get them (interns to undertake procedures), then they need to consistently perform them throughout the year, every rotation.' (F3, pg 15)
>
> "That's the problem. What we've got here is this issue where we'd like them (interns) to learn how to do them (procedures), but in actual real life practice they do not do them.' (F2, pg15)

Access to indirect clinical curriculum activities was considered also limited in some areas as these were undertaken by more senior doctors. Formal curriculum teaching in these areas was also potentially difficult to junior doctors to consistently access;

> "A lot of the stuff that comes in, complaints etc, we usually don't involve them (interns) unless there's a need to because it's managed at a higher level' (A1, pg19)
>
> "I expect they (QI activities) occur (in ED) but the interns don't get involved."(B2, pg4)
>
> "Just because we're delivering the topics twice a year doesn't mean that everyone can attend them and if you miss out on it then bang you've lost all of your medico-legal teaching unless it's supplemented by ongoing medico-legal discussion and I can guarantee that's one topic that doesn't come up during ward rounds.' (F2, pg9)

Surgical Rotation

Participants noted that procedural specialties such as surgery had a narrower range of potential curriculum activities available to junior doctors because of the limited scope and highly technical nature of the discipline;

> "I mean, I'm not all that surprised (re low score for surgery). The thing about surgery in a lot of ways, it's fairly prescriptive, you admit, they have their operation, 2 days later they're .... going home." (C2, pg11)
>
> "Surgery is by definition, about surgery. It actually happens in theatre. Everything else is just ancillary to that." (E1, pg8)
>
> "Very, very hard to be really actively involved (in surgery)...(B1, pg..)

Good access

Group participants also identified from their own knowledge and experience opportunities where they believed interns could achieve enhanced access to these activities (particularly skills and procedures); this was generally from undertaking <u>specific rotations/terms</u> – including critical care, radiology and general practice terms.

> *"That's why our radiology rotation is a very popular one, because people actually get some hands on experience to do some procedures which are now done in radiology which would otherwise have been done on the ward.' (F1, pg1)*
>
> *"...ICU. Best place to learn because all these drugs will be given by the doctor. Anywhere else in the hospital it will be administered by the nurses." (C3, pg 6)*
>
> *"I think just reviewing and going through the list of what people have been doing, I really do find that the general practice term does cover a lot of the stuff that hospitals can't cover, and really cover well." (B1, pg13)*

5.2.6 Theme 2: Efficiency, Complexity and Risk Management – Barriers to Legitimate Peripheral Participation

Legitimate peripheral participation requires apprentices to be sponsored into a group of practicing experts, and to undertake activities alongside other members of the group that are relevant to the field of practice. In the setting of junior doctor training, this requires that the junior doctors are considered to have sufficient knowledge and skills to undertake peripheral activities, and that they are actively supported and taught within the clinical environment. It requires an organisational culture that values and accepts their role and provides opportunities for participation that are appropriate and in the first instance of low risk and low responsibility.

The Intern Survey results indicated that for the majority of surveyed curriculum activities across the range of curriculum areas, junior doctors considered that they had obtained regular clinical experience and were satisfied with this for their level of training. For the purposes of the group interviews, the focus of discussion was on the curriculum areas and rotations where a reasonable proportion of junior doctors felt that they did not have adequate clinical exposure or sufficient experience. In the group discussions considering explanatory factors for these results, two main levels of barriers to clinical exposure became evident – one was operating at the *organisational* or health service level, and related primarily to health service drivers including efficiency, complexity and risk management; and one was operating at the

team level and included increasing technical specialisation and role sequestration within teams.

A number of participants made a comparison with underline previous generations of junior doctors, and considered that while these generations may have undertaken many more activities and had greater responsibility than the interns of today, that this would not be acceptable contemporary practice due to changing junior doctor and health service governance expectations:

> *"I suppose the issue we had say with lumbar punctures was that we were probably a bit blasé when I went through, you know it really was 'See one, do one, teach one' and I mean that's at one extreme, but you're saying you've really gone to the other extreme, and there needs to be a middle ground." (F1, pg5) "And I agree that you don't want to go back to the …chucking people in is ridiculous. You know, in the old days when the emergency departments were staffed by interns overnight, I mean it's appalling, you know. But there's probably some halfway measure …" (F1, pg6).*

structured so as to underline minimise risk (to patients and to staff). Interns weren't considered suitable to take consent due to the risk that consent would not be fully informed (B2, pg 5; C1, pg 3; D1, pg 18); interns weren't considered suitable to administer medications due to previous experience with medication errors A2, pg 3); many procedures had been removed to the more tightly controlled staffing and environment of the specialist in the procedure room; and reduced hours for junior doctors had reduced their access to clinical work including the broader cover shift experiences;

> *"A lot of the safety systems are about not letting people do procedures when there's high risk" (pg1)……. "Some of our consultants for instance aren't even doing lumbar punctures because they're being done under guidance in imaging because of the potential risk" (pg6)……"And it depends if the hospital's had a bad exposure to a crisis…. See, some of this stuff's not happening anymore. Because, the safety system's pushed it out." (B1, pg7)*
>
> *"…and some of it is driven by the idea that, I've heard people saying 'We can't let the interns perform Procedure X' it's not the safest thing to do, they need to be performed by somebody who's more senior, more qualified, experienced. But really that just creates another stepping stone …and so what do we do, in 5 years' time we can't let a PGY2 perform this procedure' …I really struggle with ……. the paradigm between safety and quality versus experience.' (F2, pg5)*
>
> *"They'll say I suppose there's also the safe work hours stuff so people are getting less exposure to out of hours work and overnight work where they would have had more responsibility.' (F1, pg6)*

It was noted that contemporary health services had developed processes and structures to optimise patient outcomes. An example was the presence of the Medical Emergency Team (MET) team in all health services interviewed, which some participants noted may reduce clinical opportunities for junior doctors;

> *"Well I think again it's the same issue that we were talking about in relation to safety. Yes we are a teaching hospital but we're also a hospital and you need to ask the question, if you were the patient and you were the patient's family, who would you want looking after your mother or your child when they arrest, an intern who's doing it for their second time, and their first time on a live patient. I mean, you just wouldn't. That's a fact." (pg4)*
>
> *"Yes, it's surprising I must say, but I can now understand why that might be an issue (access to emergency management), because there's such a focus on getting it right...It's good for patients, but it's maybe not all that good for interns."(C1, pg3)*

Consumer empowerment and increased participation in decision-making (such as in providing consent) required increased expertise on the part of the practitioner;

> *"They need to get the right information so as they can make their mind up about the decision. I'd argue that it's not just 'we've made the decision and we're getting a bit of paper signed'. It's actually a consensus discussion about whether this operation's right for me or not.....So it's a really important issue. And I agree that there are training opportunities, but there are also patient safety issues. And it's a balance between all those.' (D1, pg19)*

As a result of these factors, it was also considered that responsibility for patient management had shifted up the medical hierarchy, with consultants having greater responsibility for patient care and outcomes than previously, as part of health service clinical governance processes. The implication of this for training for junior doctors was that they no longer had as significant a role in inpatient management that they had in the past;

> *"The registrars basically would run things, they made all the decisions and occasionally the consultant would come in and just touch base with what was going on, provide some guidance but that was it. There was a huge amount of responsibility and leadership demonstrated by the registrars, and in turn the interns were expected to be able to manage like adults and....I've seen in the last 16 years of my own clinical practice the reduction in the level of responsibility given to junior staff.... that's across the board'. (F1, pg5)*
>
> *"Maybe it's just my change in perspective, but I think consultants are much more accountable for being on the ward and providing advice than they used to be,' (B2, pg11)*

Additionally, it was acknowledged that with health service practices of investigation of adverse outcomes and open disclosure, that there was a heightened concern among some interns of making mistakes, i.e. a <u>fear of error</u> and that had the potential to disengage them from high-risk activities, and/or to require regular reassurance;

> *"The whole informed consent thing has scared them so that they really divorce themselves from that…...by divorcing themselves from it they're missing out …. "* *(B2, pg 5)*
>
> *"I think for the junior staff their general approach is 'My God legal issues, the last thing I want to do is be involved in something like that so they tend and avoid it. It's unpleasant to think about.' (F2, pg 9)*
>
> *"The fear of stuffing up an acutely unwell patient goes a bit to the whole…it's probably something that's there for a lot of them.' (F1, pg 11)*

Nevertheless a number of participants noted that specialised teams such as MET teams may not only improve patient outcomes but also improve junior doctor wellbeing;

> *"But the beauty of the MET call for interns I guess is it takes the stress away of a really sick patient, you know, the 'Oh my god I don't know what to do'. You know you actually get an experienced team and you can actually have the luxury of making sure that you're not going to arrest yourself and then observe what's happening.' (D3, pg9)*
>
> *"When the MET call's made, it's not to the ward but it's now the bed or the room number, so, the intern's actually asked for that, the junior staff said, 'you know we can't help but be anxious when we hear the MET call, it's on the ward, we don't know if it's the one that we saw in the morning who we might have done something wrong on', so now that's been a really positive thing actually.' (A1, pg …)*

Participants acknowledged that providing enhanced opportunities for junior doctors to access clinical activities such as procedures and emergency management needed to be undertaken within the overall Health Service clinical governance framework. The most common solution to limited access mentioned by participants from nearly all health services was to enhance access to <u>simulation training</u> in emergency management for prevocational doctors, especially for doctors who are more likely to be required to undertake these activities such as those rotating to smaller health services and on after-hours rosters. Formal assessment of competency was also recommended;

> *"Yes, well that's why we put all our interns through ALS, BLS before we rotate them out, because we know that that can happen. So it's targeting when we are doing the training in some cases." (B1, pg7)*
>
> *"I think the other thing is we obviously have wonderful resources now in terms of simulation facilities and the ability to do things. It's not losing the real world, you know, in vivo or the in vitro stuff. You want to do both I think. And in some ways if you can do the early training obviously on a mannequin that is better because I mean we are more risk averse; I mean we're very aware, we don't want to be, it's a bit like people doing examinations on patients in obstetric or gynaecological skills, I mean practices that perhaps were acceptable 30 or 40 years ago are totally unacceptable now. And I mean how do we train people up to be doing that? It's using both.' (F1, pg7)*
>
> *"So they don't get just training, they get their competency assessed (ALS/BLS).' (A2, pg6)*

Efficiency

Clinical service demands and an emphasis on throughput were highlighted as a significant organisational barrier to intern participation in learning opportunities, particularly in the areas of Surgery and increasingly in Emergency Medicine. Interview participants identified that the junior doctor role was largely service provision in these areas, with repetitive low-level tasks taking up much junior doctor time;

> *"The thing with surgery is how much of that intern role is just that clerking, is just doing the paperwork, is just keeping up with everything' (A1, pg7).*
>
> *"One of the issues we have is that all 4 surgical units at (Health Service F) are very, very, busy. They're completely work focused. …… While they're at work they're pushed to work extremely fast and efficiently, so any of the activities which are work-efficient they're going to get to do them and do them frequently, particularly the surgical focused ones. You mentioned things like catheterisation, pain management, that's obviously going to happen as part of the general course of work within the surgical unit, whereas some of the more….some of the activities which are more focused on professional development of the individual are not going to happen whatsoever.' (F2, pg7)*
>
> *"Look I think from the consultant's point of view the other thing being realistic is obviously the strong focus on access targets and NEAT and getting people in and out. That obviously has an impact on all of this as well.' (F1, pg4)*

The throughput demands of surgery and ED have required constant medical staffing of units. Therefore when unit teaching activities or other training opportunities such as participation in theatre are available, it is the most junior doctors who are excluded from these;

> *"Where they have those types of meetings they are dependent on the registrars and the interns keeping things…to man the floor and keep it running so they can have that meeting." (B1, pg4)*
>
> *"And I think it's a combination of what (F2) said with the demand as well and I think that people have got squeezed out of going to theatre because they need to be there to process the people feeding into theatres, so their exposure there is a bit reduced.' (F1, pg8)*

Similar to the health service governance imperatives which had driven patient responsibility higher up the hierarchy, there was also recognition that more senior medical staff are spending more time with patients in certain areas (e.g. ED and acute medical units), to improve patient flow and throughput;

> *"The process (in ED) seems to have evolved that way because of the demand to get large numbers through ED, and the only people who can actually put large numbers through are the consultants." (B1, pg3)*
>
> *"And so, what it tends to do, this is very simplistic, is it forces the ED to become a glorified triage service and I know that they feedback this. It means that they have to get the senior people involved early; it means that the exposure to the undifferentiated patient is very limited. Unless they do it as a sort of supernumerary after the consultant's actually seen them and made some decisions. So I'm very concerned that there is a potential to really lose a significant amount of training, as a result of this.' (D1, pg14)*

Resource constraints were also noted to contribute to the requirement for service efficiency. These included financial constraints such as lack of funding for recruitment of additional medical staff (Health Service A), lack of funding for good IT infrastructure (Health Service C), and shift rostering practices to minimise junior doctor overtime (Health Service E). Financial constraints also led to lack of logistical constraints such as rostering junior doctors to backfill others so that they could participate in educational opportunities.

> *"It comes down to that, how do we release interns for those sorts of activities? We have the budget to run these courses, like there's the Basic Course, there's other courses that we run here, using simulation, aimed at upskilling people at their acute management of patients, but getting interns and PGY2s and 3s released from their rosters to go and do that is actually quite tricky." (F2, pg 11)*

Complexity

Health system complexity was also considered to be a barrier to learner participation. This included the technical complexity of current surgical procedures, as well as patient age and co-morbidity complexity;

> "As general surgery is no longer general surgery, it breaks into three categories effectively, and a lot of it's keyhole now in terms of it's endoscopic type work." (B1, pg6)
>
> "If you're doing a surgical procedure that an intern can do, they should be able to get consent for it. But if you're doing cardiac surgery which involves double valve replacement in an 80 year old with impaired left ventricular and renal failure and diabetes, then I don't think in a pink fit for the next 10 years they'd be able to give appropriate informed consent.' (D1, pg19)

Health service complexity including new service models such as compartmentalisation of the patient journey, and complex interacting systems, have meant that junior doctors may not be participating in the same experience of the patient journey from pre-admission through to discharge;

> "Some of it, throughput is the issue, it's fragmented now. The pre-assessment, it happens in pre-op clinic, and so they may not be putting it all together because they don't see that seamless transition pre-op, op and post-op." (B2, pg5)
>
> "It's very difficult if someone else is writing discharge summary when they have not seen the patient, the patient is in ICU or the patient in the ward for 20 days and lots of things have happened." (C3, pg18)

Given these issues, participants advocated alternative potential placement opportunities to better provide specific clinical experiences and increased doctor-patient interactions (e.g. general practice, rural emergency terms).

> "I think the other one that would have been really interesting in hindsight looking at your data to have done this check against would have been the general practice rotation, because my experience is that most of them get a lot of what I call the softer topics ticked off when they do the GP rotation." (pg3)
>
> "There's a need to look at ED-like experiences in private, in rural, in community. So it may turn out that that definition of ED experience is going to change unrelated to what's happening in the big city ED.' (D2, pg15)
>
> "I guess what strikes me is that the doctor – patient interaction is relatively low' (pg3)....and that's where we've got to be honest and say there is a problem with the work environment.' (D2, pg5)

5.2.7 Theme 3: The Rise of the Technical Expert (& Sequestration of Roles) – and the Downfall of Communities of Practice

The implementation of health service clinical governance frameworks, processes to meet productivity KPIs, and practices to manage increased service and patient complexity have led to specific changes within the health service micro-environments and the clinical units that deliver patient care. Many of these changes can broadly be considered to be a result of the development of numerous technical experts across all components of the inpatient healthcare experience. Individuals with technical expertise, by undertaking similar tasks repetitively, have the dual advantages of providing optimum patient care in the most efficient timeframe. A consequence of technical expertise is that it requires individuals to work in a team, as one individual cannot be expert in all facets of the patient's healthcare management. Further, technical expertise requires activities to be 'sequestered' or explicitly delineated to specific individuals. This phenomenon was expressed through the interviews in all health service regions. It can thus be extrapolated that technical expertise has emerged widely within the healthcare system. A further consequence for apprentices of technical expertise is that autonomy is generally allowed solely within areas of expertise – and therefore opportunities for autonomy for junior doctors may be more limited as a result.

Communities of Practice & Healthcare Teams

As described above, for reasons of quality and efficiency, healthcare organisations have moved away from models of care that rely on the individual autonomous practitioner, and instead to models of care where individuals work as part of a broader multidisciplinary healthcare team, where each team member has their defined role. Teams exist both at the unit/discipline level, and there are micro-teams also throughout the health service, including MET teams. Both interns in their survey responses, and interview respondents, recognised the important role of teams in contemporary healthcare;

> *"I think the whole teamwork, I think that reflects the new generation coming through, the new postgrad school where they have that problem based team, multidisciplinary, that is part of a team.' (A1, pg16)*
>
> *"it's important in the sense, because when you have a resuscitation, teamwork needs to be the top thing that you do; with everyone knowing their jobs and everyone knowing their roles and everything." (E2, pg7)*

However the nature of specialised teams may mean that those who are not members of the team are not able to access those learning opportunities. MET teams were highlighted in particular as a potential barrier the substantial participation of junior doctors in the management of acutely unwell patients;

> *"I think how much involvement they actually have in MET is quite variable. Sometimes they get sent off you know with the ABG downstairs to pathology and then they actually miss the entire thing. That does happen.' (D3, pg9)*

The Downfall of Communities of Practice

Traditional features of healthcare teams as communities of practice were noted in the interviews. These included consistent team members, shared unit activities such as ward rounds and unit meetings, opportunities for role modelling of the senior team members by the apprentices, and opportunities for social and collegiate interaction. However it was noted that some *contemporary* healthcare teams lacked some of these traditional attributes.

Reduced junior doctor hours and changed patterns of rostering to more shift-based patterns were considered to have impacted on a number of traditional team features, such as shared formal and informal activities, as well as supervisor interaction with apprentices. Potential resulting effects of this included reduced team collegiality, reduced supervisor ability to undertake accurate work performance assessments, and a reduction in apprentice autonomy as a result.

> *"That's a reflection probably of the mornings off, the afternoons off, the working the weekend and having the days off during the week. The hours have changed…' (A1, pg20)*
>
> *"But the problem, what's happening, and what the surgeons tell me, is because of our shortened shifts and tandem workforce, interns might come at 12 o'clock one day and go until 8 o'clock. So again they don't have that collegial thing happening in the ward, so they become just scribes, you know, to do all the paperwork and discharge people." (E2, pg8)*

These contemporary team characteristics are probably amplified and best represented in the Emergency Department, which interestingly scored lowest for 'teamwork' of all the rotations by the surveyed interns. Characteristics of the ED team included shift-based rosters; large

numbers of personnel; limited team integration and shared activities; and their effect on junior doctor participation and learning were highlighted.

> *"This is exactly what ... that surgical guy was talking about, which is that the vocational spirit, you know, everyone belongs to a team, they're there together for some time during the day and they discuss like what's happening in the team and how to improve stuff; whereas ED is more of a shift sort of thing…………So you pretty much work on your own, you call your consultant and... just get your patient out. So you don't work as a …you don't have ward rounds… You don't have a real lack of teams, for one patient there might be a team, but then there'll be a different team for the next patient." (E2, pg7)*
>
> *"There are quite complex team dynamics (ED)…it's not like aged care etc where you've got the allied health meetings once a week. Instead in emergency, they arrive, they see a patient, they discuss it with the registrar or consultant, they'll have interactions with the nursing staff to some limited degree, but there's no get together to form a management plan." (F2) "Well they're going to somebody that actually doesn't know about the patient whereas as you say in an ordinary team they can refer to the consultant or the registrar who will know of that patient independently." (F1, pg2)*

Training Capacity

Over the last decade, the increase in medical schools and medical student numbers has led to increased competition among all levels of junior doctors for both formal access to training via entry into vocational training programs, as well as for access to patients and consultant interaction in which to develop clinical skills. Victoria's third medical school, the Deakin Medical School was established in 2008 and produced its first cohort of graduating doctors in 2011.

Interview participants considered that finite training capacity was a significant contributing factor to limited access for junior doctors to particular clinical experiences as priority was given to registrars. The extent of this varied with the size and regionality of the health service.

> *"They are very concentrated on their registrar training.." (B1, pg4)*
>
> *"The interns are the most junior in the hierarchy. Before they give procedures to the interns the rule of thumb is the registrars are competent in the procedures, central line, art line, that kind of thing. Then OK, then comes the resident, and last comes the intern. So they should be skilled as well. The first priority definitely will be to train the registrars, residents and then comes the interns." (C3, pg4)*

Role-modelling

There was a view that the consultant and registrar-intern interaction was changing, as a result of changing team work patterns. The opportunity for interns to participate alongside the activities of the more senior members of the team which allows for role-modelling and clinical learning has diminished as registrars have taken on the bulk of the clinical work and interns have specific roles that support patient throughput. This was most obvious in the surgical term.

> "So when I did my internship, when I did med, when we were receiving, the registrar took me down to Cas (casualty) and we worked as a team, we went to the wards and we worked as a team. Now we see very little evidence of teamwork from the registrars taking the interns around with them......And that for me was the making of me, was having my registrar take me...... So I've seen how it can work beautifully, and I've seen how it doesn't yet work.' (B2, pg8)

> "The typical pattern of surgical ward round is that the surgical registrar blasts through all of the patients within a ridiculously short space of time which means that they're leaving the ward round and the intern is writing the notes and catching up on their work afterwards. They're not given the opportunity to for example take charge of patient assessment or discussing their proposed management plan and having it commented on by the surgical registrar…it's just work focused.' (F2, pg8)

While the high-achieving apprentice may make the most of all learning opportunities provided, the current healthcare team environment – with organisational and vocational training priorities – will require junior doctors to be particularly assertive and proactive in order to access certain clinical opportunities, particularly in relation to the surgical term.

> "The good ones, no not the good ones, the interested ones, will find a way to get to theatre" (E1, pg 8)

> "When you have a junior doctor whose body language and attitude is obviously surgery's not for me, our surgeons pick it very, very quickly…..They don't get much help after that." (B1, pg6)

> "And because it's so easy to ask nurses to do the ECG, to give the injection etc, it becomes seen as the nurse's responsibility and I can tell you this it would be a very self-directed and intelligent young doctor who took it upon themselves to gain the experience, thinking of the future."

The Rise of the Technical Expert

The rise of the technical expert within healthcare teams was noted through various examples that allowed for increased efficiency and throughput. Simple, repetitive tasks, previously within the domain of the junior doctor (and still included in their curricula) are regularly being undertaken by other staff who are more familiar and efficient in this activity. Examples of such workforce substitution included ward and ED nurses undertaking common procedures (e.g. IV insertion, ECGs). Justification for this by participants included the potential for alternative staff to reduce junior doctor's workload, and it was noted that this is likely to be an ongoing feature of complex health workplaces.

> *"And there is a reasonable penetrance in say IV replacement that nurses are doing it. To actually take some of the load off" (B1, pg 2)*
>
> *"The nurses do ward ECGs after hours.' (F2, pg8)*
>
> *"It's a better system……There's a lot more (nurses) on in say the emergency floor than there are doctors, so nurses have kind of, they have 3 cubicles to care for, so they do all the tasks.' (F3, pg15)*
>
> *……."The main driver has been the volume. That's why everyone's had to take on slightly different roles." (B1, pg12)*

The roles of individual healthcare team members have become increasingly specialised, particularly within high-risk areas (acute patient deterioration, technical surgery on elderly patients with multiple co-morbidities) and in high throughput environments (emergency departments, surgery). The role of the intern in these settings will by necessity be peripheral, but it was considered in many cases that the intern activities being undertaken may have lost their direct relevance to the clinical activities undertaken by the rest of the specialist healthcare team, and particularly included administrative duties:

> *"If they do go to theatre though, it's still going to be in a watching role a lot of the time." (C2, pg11)*
>
> *"But you know the others just sort of go through the motions (in a surgical term) in terms of scribing and things like that." (E2, pg8)*
>
> *"Interns spend time in SSOU (Short Stay Observation Unit) & Fast Track (in the ED) so it's the same everywhere, the interns don't necessarily get exposed. . Most of my ED colleagues don't even believe that interns should be in ED." (A2, pg5)*
>
> *"There's a lot more discharge summaries'… (A1, pg20)*

During the course of the interviews, some participants reflected that the implications of role specialisation was potentially deleterious to junior doctor's professional development, and challenged each other within the interview to consider ways to overcome this; both through accessing currently limited opportunities, as well as considering new workforce substitution that will assist in removing some of the administrative burden from junior doctors.

(D1, pg 6): "What we expect of them (at a MET call) is … to contribute to the handover, to the ISBAR sort of discussion about the patient, what the issues are. … And then be the liaison person with the parent unit… And then liaise with the consultant, registrar or whatever. So it's very much a team thing. …. There's an expectation that they're there."

(D2) "Do you think that system actually facilitates them being incorporated into the team apart from being a passer-oner of information though?"

(D1) "Well, if they're there and active and they see their patient and they watch what's being done then that's a learning opportunity for them."

(D2) "But they're not being included into the actual resuscitation……Do you think, would the next step be to actively involve the intern in the process?" (D2, pg6)

> *"Look you have raised something which maybe is, I have to say it's the first time I've considered do we need to get a smart nurse to do this stuff (discharge summaries)?" (C1, pg19)*

Other participants noted that workforce substitution and role redesign were increasing trends which were appropriate in a cost-constrained and adaptive health system. While the justification may be that this supports doctors working at the high complexity decision-making end, there was no evidence that this was true for the most junior of doctors.

"Push of workforce substitution that's going to get more marked actually." (E1, pg3)

"But I think one of the findings could be that doctors have naturally moved away from these skills, they can be taken away from them, and that's the second tier workforce that we're talking about, those are the sorts of things that they do." (E2, pg3)

"If you like it's workplace redesign by the pressures of the volume and the complexity of the work that comes through. Doctors are being asked to work more and more at the high complexity decision-making end, and the basic procedural support end, other people are doing." (B1, pg12)

The discordance between the perceived required access to particular clinical experiences, compared with the actual limited access to these experiences may potentially produce frustrations for junior doctors. This was acknowledged by interview participants, although not necessarily generally supported by them;

> *"My surprise is they may not have made the connection between safe patient care and the procedural issues….. so I think some of the expectations now of some of those procedures are probably inappropriate." (B1, pg7)*
>
> *"I'm not sure what the expectations are from the interns' point of view. Are they expecting that they want to work as a registrar?" (C3, pg…)*
>
> *"They're incredibly clever people…they're going to be even smarter with the postgraduates; experienced I mean, you know. Emotionally smart. And we're not really letting them do stuff that we train them to do. So they're getting burnt out in first year, they feel unfulfilled….' (D2, pg18)*

More worryingly, the administrative burden for interns in some of the more complex and high-risk specialties such as surgery, can create pressures and stresses related to not being able to meet the needs and demands of the unit and in particular, of the senior medical staff. This can be detrimental to these doctor's self-esteem and mental well-being.

> *"I get this frequent feedback as well that they keep on expecting me to turn up to theatre but I've got all these patients on the ward that I have to do things for, and if I don't do that I get yelled at.' (pg 8)*

The apprenticeship model has at its centre the peripheral participation of apprentices in a community of practice. Within this situated environment learning takes place – as a result of participation in the activities of practice, and as a result of social participation within a community. Learning in such an environment is therefore largely informal. Nevertheless, it was acknowledged by interview participants, that the medical teaching/learning environment generally comprises medical staff with no/limited formal education/training in teaching methodologies, does not necessarily follow related curricula, and is not generally informed by learner feedback. This was generally true of medical teaching along the training continuum.

> *"Most of the teaching by interns is really looking after medical students attached to their unit and they're guiders, they're showing them around, they're showing them how the ropes and all that works, and direct them to the relevant patients to review etc. It's an indirect type of teaching; it's not a direct type of teaching" (B1, pg10)*
>
> *"Yes but they don't have any formal teaching that the intern is delivering. It is informal, and when it is informal, it doesn't get assessed, it doesn't get fed back." (E2, pg6)*

Lack of teaching opportunities through role modelling for junior doctors by more senior medical staff included a broad range of indirect clinical curriculum areas, including informed consent and breaking bad news.

> *"I mean I'd argue that we should train them to do it (informed consent) properly as interns…That part of a surgical rotation should involve sitting down on the day of orientation and learning how to…That's another example of how we're deskilling them." (D2) "But it's all about creating appropriate objectives around that particular learning opportunity……. And we don't do that. It tends to be dumped on people.' (D1) "And in a very nurturing supported environment, theoretically the registrar should be doing the consents with the interns so that they can actually learn the process…..but in effect what happens is that if they are allowed to do it, they would just be left to do it…Without having absolutely no idea what they're supposed to be doing." (D3, pg18)*
>
> *"Well who on earth ever says, 'I need to tell you something dreadful, do you mind if I have my intern standing with us?' No-one does that." (F2, pg17)*

Multi-disciplinary teaching was recognised to be standard for teaching of junior doctors in simple procedural skills, reflecting that nurse educators in particular were specifically trained and undertook these procedures potentially more frequently in the workplace than medical staff.

> *"And if they're actually getting a doc to teach them, you can guarantee they won't get it right. If you send them off with a nurse for a half a day or even a day it won't take them long before they get it right because they'll be following protocol to the letter." (C2, pg6)*

When considering potential solutions to the increasing trend towards individual specialisation and the impacts of this on the junior doctor role, participants identified releasing interns to spend more time observing and role-modelling alongside more senior staff, and requiring logbooks to be completed for particular skills and procedures, as potential options. Practical issues with logbooks were described including impact on supervisor time to review and risk of failure if opportunities remained difficult to access.

> *"If radiology now does procedures, interns should accompany their patients down to radiology and watch the procedure." (B2, pg20)*
>
> *"With our med students ….we said it's all very well to have it in a logbook but if they know that nobody's going to look at it" (F3)…..."It actually creates a massive amount of work …" (F2, pg13)*
>
> *"The students find the logbooks a little bit demeaning because, let's say they've stayed back and they've witnessed a type of surgery they otherwise wouldn't have got the opportunity to do, it's 1am, they think this is great, now I'd better get this reported in my logbook. They've approached the senior, and said thanks for letting me stay back, could you sign this. And then there's this flip in attitude that happens – the seniors tend to go 'Oh, so you only stayed back because you needed to get this signed off rather than because you were….' I know, it's unfair, but that's what's happening.' (F2, pg14)*

Potential solutions also included opportunities to provide formal teaching regarding clinical activities not undertaken in the workplace such as utilisation of the formal intern tutorials/programs (e.g. in relation to teaching skills, reflection on teaching, providing and receiving feedback on teaching (B2, E1) and on-line (e-learning) modules (B1).

5.2.8 Potential Implications

There were a number of different implications of these findings, particularly for the medical training continuum. While attempts have been made to align training curricula for the different components of medical training (undergraduate, prevocational, vocational), there was some feedback that this is not working in practice.

> *"So if you were looking at this from the viewpoint of comparing final year medical students to enter internship, you'd be saying what we should be concentrating on is all these things here …..Or if you were evaluating an intern's experience …you'd say well unfortunately we haven't given them the work experience that they were trying to do.....is another way of looking at it.....and that's what we're hearing from our interns." (D2, pg4)*

The effects of potential curriculum gaps at the intern and prevocational level may have implications on the training requirements and skill base of doctors entering vocational training. In particular, there was some discussion that potential gaps in procedural and emergency skill management of prevocational trainees may affect clinical skills in later vocational training;

> *"So how you then prepare them for being in a small centre where they might be the only person who can do it (procedures), I'm not sure. So it's a conundrum." (B2,pg8)*
>
> *"Well, it filters all the way down. I think a lot of the registrars are not confident with these procedures now, so they don't teach the intern." (B2, pg9)*
>
> *"One of my problems is the inpatient teams don't do any hand-on procedures whatsoever ......I'll give you a really good example, when a medical registrar came and saw a patient, and he decided that a lumbar puncture was necessary and came over to me. The patients had just been handed over from the night shift, and I said 'Well I've just taken over 15 handovers, I'm really busy, I agree with you that a lumbar puncture needs to be done, but I can't do it, I'm too busy, so can you do it?' 'Oh yes, OK' and then 15 minutes later you find he's talked himself out of the procedure, 'Oh actually I've decided, I've had a chat with the boss, and we don't need to do it.' (B2, pg10)*

There was further discussion regarding how potentially inadequate clinical preparation in the prevocational period could affect clinical confidence and practice throughout medical training and beyond;

> *"Because, you see, there's another part to this, and that is if you do some of that, and it may be unconscious to us and I'm mainly reflecting on that now, but if you do that and get proficient at some of these skills you develop confidence as a clinician.... If you haven't done it, there's this lingering, worrying lack of confidence that's in the back of your mind that you may or may not recognise, and it affects your practice later on, because you know, especially, and of course where it catches you out is in later years when you're it, and you actually can't deal with whatever you need to." (C1, pg17)*
>
> *"This doesn't actually mirror the real world is the difficulty as well, because we can obviously cope to a degree in within hospital but when you've finished and you're in private land or whatever and you're on call 24 hours a day for your patients, you will need to be able to do that, and I think it must come as a rude shock at some point that the buck's finally stopping with you." (F1, pg6)*

It was acknowledged that in the current system, that the effect of contemporary barriers to accessing clinical opportunities across the training continuum could be to lengthen the time of training;

> *(E1, pg12): "Inevitably if you restrict the working week to 40 hours, what's happening in the EU, and the UK, or in New Zealand, then training time will lengthen. And we are doing it here by defacto because we keep the costs to normal hours......Your procedural specialties are the hardest hit with the reduction in time, because they have to do major cases, all of them, in the year, and they're claiming that they can't do it. And the Colleges are all saying and threatening to not accredit the positions......So we're turning into almost what they do in the UK, right. ....in the UK you can become a consultant and pass your exams.........and then still be at Fellow level because you haven't got that much experience."*
>
> *(E2:) "That's what everyone's doing here also. Everyone's choosing to do one Fellow year."*

5.3 Summary of Qualitative Findings

Seventeen health service supervisors and managers participated in group interviews at six health services to discuss the preliminary results of the Intern Survey findings, and to develop a broader understanding of the underlying system issues. These findings were thematically analysed using the Framework approach and have been reported within themes aligned with the Situated Learning Framework. The interview participants overall validated the results of the Intern Survey, although noted some potential limitations in the survey design and initial analysis.

Interview participants had a range of views regarding appropriate curriculum objectives and activities for prevocational doctors, particularly in the areas of procedural skills, emergency management and some non-clinical activities, creating a picture of some supervisor ambiguity regarding the prevocational curriculum. The value of the current structure of the intern year also raised divergent views. However there was some consensus from the groups for further needs analyses to better define a prevocational curriculum, and that some of the emerging requirements in relation to the National Safety and Quality Health Service Standards (ACSQH 2011) may be suitable items to consider. It was acknowledged that access to many of these activities was limited in health services and that while there were some opportunities for access through specific clinical rotations, that these were not currently widely available.

Barriers to legitimate peripheral participation by junior doctors in clinical activities in health services were considered to relate to clinical governance frameworks that prioritised patient safety and maximised clinical outcomes. These had resulted in a shifting of responsibility up the medical hierarchy, and had created a fear of error among junior trainees in undertaking activities in which they did not feel confident. Clinical service demands with an emphasis on throughput led to junior doctors undertaking low-level repetitive tasks, and in some terms such as surgery and emergency, junior doctors were required to maintain an ongoing ward presence and thereby were removed from clinical activities involving the more senior staff. Patient complexity similarly reduced the range of activities that interns were considered able to undertake. Resource constraints were recognised as a further significant barrier in allowing interns clinical experiences that they otherwise had difficulty accessing.

While working in teams was a recognised feature of modern healthcare, it was noted that traditional features of teams such as shared activities was not a consistent feature in many settings due to changes to rostering and safe hours practices of junior staff, and this was

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perhaps most noted in the emergency and surgical terms. Limited supervisor capacity meant that team teaching had become increasingly focused on vocational training at the expense of prevocational trainees. Team member roles were also recognised by group members to be becoming increasingly specialised, leading to sequestration of roles and reduced opportunities for role modelling for junior doctors. It was also noted that the requirement for expertise had led to the development of workforce substitution and that this was likely to continue into the future.

The interview participants considered that the implications of these findings on junior doctors were potentially many. Junior doctors may feel frustrated at a lack of particular clinical expectations being realised, or stressed that they cannot live up to the expectations of their supervisors. They may also lack confidence in particular clinical skills which may affect their roles as clinical teachers higher up the medical hierarchy. Finally, the effect on the end practitioner was considered to potentially include reduced clinical confidence and skill, and to potentially require a lengthened training time, as has occurred in other countries overseas. These findings will be considered further in Chapter 6: Discussion.

Chapter 6: Discussion

What is the clinical placement experience of prevocational trainees in Victorian Health Services compared to the defined curriculum, and how may this have been shaped by contemporary healthcare delivery?

6.1 Introduction and Outline of Chapter

Despite the existence of a structured period of internship and further postgraduate (prevocational) training in Australia for over 20 years, there has been no formal evaluation of this program. There is also very little literature regarding the specific clinical experience and outcomes of prevocational training, with even less literature regarding the potential influence of the contemporary healthcare environment on this training. One reason for this may be the lack of unified governance of prevocational training in Australia – there being no national body responsible for registering prevocational trainees similar to Universities and Specialist Colleges, and no uniform role of the Postgraduate Medical Councils of each state/territory. Without an overarching governance structure and with internship being primarily the responsibility of individual healthcare networks or regional health areas, it is difficult for educators and researchers to recruit large numbers of interns and prevocational trainees to undertake evaluation and research. Further, the lack of summative assessment for this period also makes trainee learning and skill competency difficult to quantify.

It was expected that this research would therefore provide much-needed evidence regarding the effectiveness of current prevocational training, including the current assumption that multiple rotation-based clinical practice with specific core terms remains an appropriate model for interns to achieve the majority of their curriculum objectives.

This chapter will integrate both the quantitative and qualitative data findings with literature from the field and with consider some implications of the findings. It will conclude with the strengths and weaknesses of the methodology and an overall chapter summary.

Figure 10 Methodology of Integration of Findings
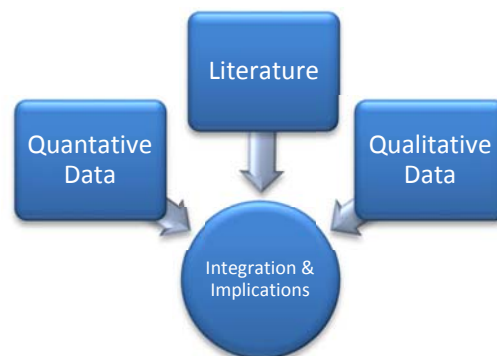
Recommendations to address identified issues arising from this chapter are developed in Chapter 7: Recommendations & Further Opportunities for Research.

6.2 Integration of Findings

This research has identified a range of clinical activities that prevocational trainees in 2012 and 2013 undertook during their intern and PGY2 years respectively, and for those activities that were more difficult to access, some of the potential contributing factors. The nature of the research was to focus in particular on the potential 'gaps' in the prevocational curriculum experience identified in the data, with less attention paid to the positive findings, which did in fact relate to a majority of curriculum items and a good proportion of intern and some PGY2 feedback. This should be remembered in the discussion that follows.

6.2.1 Overall Training Experience

Interns were generally more satisfied with their overall training experience (as measured by the Global Survey question) compared with PGY2s. For approximately two thirds of surveyed curriculum activities, three-quarters of interns believed they had sufficient experience. Nevertheless, at least one in four interns identified some limitations or potential 'gaps' in their exposure to approximately one-third of surveyed curriculum activities.

By contrast, even though by the end of the PGY2 year the proportion of activities for which at least one in four PGY2s felt that they had insufficient experience had reduced, their overall satisfaction for their achievement of curriculum objectives (as measured by the Global Survey

question) was also less. There is likely a range of complex reasons for this; however the free text responses suggest that concerns regarding some difficulty accessing appropriate rotations and clinical learning opportunities specific to their chosen vocation may be a factor, as well as lack of formal teaching. These issues would be worth exploring in further research.

6.2.2 Intern Role

The quantitative data provided information regarding curriculum activities that interns undertook for most or all patients, which provided an insight into their role. These activities included working within a team; prioritising a set of tasks including interpreting investigations and performing IV cannulation; communicating verbally and in writing with patients and other healthcare members including undertaking handover; prescribing routine medications; and participating in discharge planning. These findings are consistent with Sheehan's description of internship as primarily involved in working as part of the team and providing clinical care (Sheehan 2005), and they also suggest that a key role of interns is likely to be in managing patient information and clinical communication. These are the activities that interns are trusted within the healthcare team to undertake, and comprise their 'legitimate peripheral participation.' However they are also consistent with the observations of the research interview participants, that interns 'keep the ward going' and as 'the most junior staff (they undertake) the most basic tasks.'

The data suggested however, that this 'legitimate peripheral participation' of interns did not routinely extend beyond this relatively circumscribed set of clinical tasks. There was some evidence from the data that interns were not universally participating in activities such as patient assessments; developing and regularly reviewing patient problem lists; implementing a patient management plan; and justifying clinical decisions. Additionally, when patient interactions become more complex, such as breaking bad news to patients, taking part in discussions regarding end of life care, or identifying a potential patient complaint, approximately 20% of interns responded that they did not feel that they had sufficient experience to meet expectations. However generally the majority of junior doctors were comfortable with most of these activities by the end of their PGY2 year.

Previous ethnographic studies have identified that while junior doctors spend much of their time in clinical activities, that many of these do not involve direct patient contact (Zhu 2008; Westbrook 2008). Specifically, while administrative workload was noted in the group interviews to be increasing in healthcare generally, it was recognised that fragmented patient journeys, more complex patients requiring multiple specialist input, and lack of continuity of

junior medical staffing made administrative paperwork (such as discharge summaries) particularly onerous for junior doctors. While it was acknowledged that this is valuable experience for the trainee, it was also thought to potentially limit direct patient contact. Alternative options to support administrative workload such as electronic patient management systems and workforce substitution were discussed by group participants as a potential way forward.

The data was consistent in its findings of the sorts of activities that interns undertook, across all health service regions. While activities within the ACF categories of Teamwork and Managing Information were undertaken most frequently, activities within the ACF categories of Emergencies and Skills and Procedures were taken the least frequently. Additionally, there was good correlation between the frequency of activity exposure and junior doctor's perception of exposure adequacy. This highlights the overarching importance of system-wide factors in determining junior doctor clinical experience, a finding also supported by (Carr 2014) whose review of intern performance assessments in Western Australia identified the lowest rated activities as being within the same ACF categories of skills and procedures and emergency management . Thus activities for which interns potentially have reduced exposure are also activities in which they are rated as less competent.

6.2.3 Emergencies & Procedures

Emergency management of acutely unwell patients was an activity that many prevocational doctors did not participate frequently in and in which a proportion felt that they had insufficient experience. This also has been identified previously in the literature (Old 2006, Duns 2008). While interns generally considered they had sufficient experience in assessments of unwell or deteriorating patients, approximately half of respondents believed they had not had sufficient experience in basic life support management, and three-quarters believed they had not had sufficient experience in advanced life support. By the end of the PGY2 year, one quarter of respondents still did not feel they had sufficient experience in BLS, and over one-third of respondents did not feel they had sufficient experience in ALS.

While it is recognised that active resuscitation would generally be a low volume activity in many health services, group interview participants also identified that clinical deterioration had been formalised over the last few years through MET call processes where an individual or team with specific expertise was called to initially assess and manage deteriorating patients. The role of interns in this situation was largely peripheral and non-clinical, if they were expected to participate at all.

Clinical deterioration is Standard 9 in the Australian National Safety and Quality Health Service Standards (ACSQH 2011) against which Australian health services are now accredited. Accreditation requirements for this standard include that health services have organisation-wide monitoring, recognition, escalation and response processes for deteriorating patients, and that health services determine the emergency management training requirements for healthcare staff appropriate to the risk profile of the health service. Junior doctors are an important front-line responder in many health services given their on-site presence including after hours. In particular, junior doctors are also usually the first point of call before a patient reaches the MET call criteria. While simulation educational experiences have been utilised in many health services to support junior doctor training in emergency management, and were the proposed solution to this curriculum 'gap', these are likely of variable content and quality as they are locally developed. It would seem appropriate based on these research findings that junior doctors should be regularly and formally trained according to a standardised curriculum regarding clinical deterioration and initial management.

Procedures were another activity that scored poorly by both interns and PGY2s; these included common and routine procedures in the ward or emergency environment. These finding are consistent with previous literature that has identified that the number of procedures undertaken by junior doctors has declined over the last decade (Barnsley 2004; Old 2006; Boots 2009; Ruddlesdin 2010). The group interview participants confirmed that these procedures are being undertaken routinely by nursing staff in the ward or ED setting for efficiency and quality purposes. However there were a range of views regarding whether this was appropriate or was limiting the skill development of junior doctors. There are arguments regarding this on both sides. One view is that performing a wide range of routine procedures develops a skill base of procedural competency in junior doctors and may also increase doctor-patient interactions. Another view is that these are potentially low value procedures and that the acquisition of specific procedural competence later in medical training is sufficient.

For those procedures which are routinely done by nursing staff in the contemporary hospital setting, it is unlikely that junior doctors will regularly be able to access these activities in the future. It would seem instead that those procedures which are required for later vocational training (e.g. critical care, general practice) may be appropriately taught later in medical training. This does not devalue the procedural opportunities that may arise for individual prevocational doctors in particular circumstances with appropriate supervision. However given the competition for access to training opportunities including procedural training, it may be

appropriate that a broad range of procedural competence is no longer an expectation of the prevocational trainee.

Runciman, Professor of Patient Safety and Human Factors at the University of South Australia, and one of the authors of the 1995 *The Quality in Australian Healthcare Study* (Wilson 1995) noted in his 2010 editorial in the Medical Journal of Australia (Runciman 2010) that the safe practice of doctors requires a 'transformational' change in medical education. He noted that there was 'lack of system-wide progress' regarding patient safety in Australia and referred to learnings from the Leape Report of the Lucian Leape Institute in Boston. The recommendations of its Roundtable on Reforming Medical Education (Leape 2010) focus on embedding a medical culture that understands and embraces patient safety at all levels of the training continuum; in particular it recommends direct attention to safety-related preparation of graduates entering clinical training, and expansion of patient safety programme requirements in postgraduate training programs.

Common activities of junior doctors such as insertion of peripheral lines are examples of opportunities for them to be formally educated regarding their role in ensuring patient safety, with *S.aureus* septicaemia rates being monitored as part of Australian health service KPIs. The adoption of a standardised training and assessment program to support competency attainment of junior doctors in the safe undertaking of these procedures, similar to what has been suggested to support Standard 9, may be another example of an appropriate intervention to support skill development and safe patient care.

6.2.4 Teaching & Learning

For both interns and PGY2s there were a proportion of respondents who considered they had insufficient exposure to teaching and learning activities. This had been previously noted in Dent's survey (Dent 2006) where junior doctors identified a need for more education and training time and resources. Group interview participants considered there were a number of factors underlying this finding. Junior doctors may under-recognise and under-report clinical teaching due to its informal and opportunistic nature, its lack of detailed curricula and assessment, the lack of protected teaching time for PGY2s, and the fact that some teaching may be performed by non-medical staff, which may not be as easily recognisable as medical teaching. The lack of a clear understanding by some medical staff and supervisors of the curriculum expectations for junior doctors may also limit teaching of specific relevant clinical content.

While it was recognised that junior doctors play an important role in the teaching of medical students (and PGY2s may teach interns), it was also recognised by interview participants that their teaching is not formally acknowledged or assessed and that no feedback is provided to the junior doctor regarding this. Further, group participants identified the current training burden on supervisors, with the increased number of trainees in public hospitals combined with increasing focus on productivity and throughput leading to reduced available teaching time for individual trainees. This is also supported by literature particularly relating to training in the ED environment for junior doctors (Chong 2010). With increased competition, the educational needs of trainees in vocational training programs were prioritised ahead of junior doctors.

Yet the situated learning framework conceptualises learning as an activity that must take place within the work environment, where apprentices work alongside experts and participate in the range of activities – clinical, professional, and social – that comprise the community of practice. Learning in this model is not formal; it is incremental yet ultimately transformative. This is the learning that vocational medical trainees undertake; they have identified themselves as a legitimate member of a specific craft group through selection, application and often assessment, and participate as such. This legitimate participation is more difficult for the medical intern who is rotated through an unrelated series of mandated terms at short intervals, who may not be known to the unit, and whose knowledge and skills in that area may not be understood or valued.

It was suggested by group interview participants that increasing the length of time per rotation may allow for greater embedding of the intern within a clinical team. This would provide benefits in terms of reduced patient risk through greater continuity of care and reduced orientation requirements. Importantly, also such an approach would potentially allow for greater intern interaction within the team and to all the access to legitimate participation and learning that this may include. Additionally, introducing the concept of early streaming or selection of interns into preferred units would also potentially increase engagement of the healthcare team; *"When you have a junior doctor whose body language and attitude is obviously surgery's not for me, our surgeons pick it very, very quickly…..They don't get much help after that (Health Service B)."*

6.2.5 Learning Curricula
This research has suggested that the ACF reasonably reflects many activities undertaken and skills developed during the intern and PGY2 years. However the ACF as it currently exists is a

framework that is unbalanced. It largely reflects activities undertaken in the core medicine and emergency terms and because it is not a detailed curriculum it provides little guidance on specific clinical knowledge or skills to be obtained particularly in other settings.

Although the prevocational years have for nearly a decade been supported by a curriculum framework (the ACF), and since 2014 by the AMC National Intern Outcome Statements, this research identified that there is some lack of clarity around aspects of this curriculum, particularly for those curriculum areas which may be difficult for some prevocational trainees to access. Although literature has previously reported some difficulty for junior doctors in accessing bedside procedures, lack of clinical contact time and a decline in participation in assessment and management of emergencies, this has not led to a national conversation regarding the expectations of these specific curriculum areas or the clinical outcomes of prevocational training overall.

It was not a key outcome of this research to ascertain whether the ACF was 'appropriate', or whether individual items should be included in or deleted from the curriculum, however by investigating the alignment of Intern and PGY2 clinical experience against specific curriculum items, inferences can be made regarding activities that are currently being achieved within the prevocational period and those which are defined by the curriculum for which there is limited opportunity for achievement. Given that approximately 10 years have elapsed since the ACF was first introduced, and since that time there has been an almost doubling of intern placements nationally including in alternative settings, it is appropriate timing for a further needs analysis to be undertaken. Additionally, as discussed in the preceding paragraphs, there are elements of the prevocational curriculum that have taken on increasing importance in recent years due to health services' focus on patient safety and the National Standards for health service accreditation. This will be discussed further in Chapter 7: Recommendations and areas for further Research.

An important aspect to effective implementation of any curriculum is assessment for ensuring competency. The current lack of formal assessment in relation to specific skills potentially disadvantages junior doctors within the current patient safety framework, by potentially minimising their perceived capability compared with other healthcare team members. An assessment or competency framework for junior doctors is an important step to legitimising their participation in clinical activities. While there may be risks in developing a prevocational assessment or competency framework, it should nevertheless be considered as part of a reform process to improve the quality of prevocational training.

6.2.6 Curriculum Experience and Core Terms

The data identified overall that the *core* Intern terms of Medicine, Surgery and Emergency scored higher relative to the *non-core* terms for the vast majority of clinical activities surveyed. However this finding may be of limited value due to factors including that the ACF was derived with core terms in mind, as well as that the non-core terms had significant heterogeneity.

More importantly however, this research has identified that there were clear *differences* in intern exposure to different ACF activities within the different intern core terms of medicine, surgery and emergency; and in many cases these findings were statistically significant. These findings, supported by comments from the group interviews, provided an insight into the intern role within these terms, and the alignment of the core terms with the curriculum.

Core Medicine

Core medicine was a term that was rated highly by interns across all ACF domains and categories, and rated lowest for only a single procedural item. In particular, the activities for which core medicine rated highest among the core terms included:

- Patient management tasks – regular review of patient problem list, managing medication, discharge planning, using evidence in decision-making,
- Understanding own role within a team, and prioritising daily tasks
- Communication - involving families/carers in decision-making, breaking bad news
- Emergencies – recognising a deteriorating patient
- Skills & Procedures - IV cannulation, administering IV blood products, blood culture, arterial puncture, & peak flow measurement
- Patient interactions - undertaking health promotion, discussions regarding end of life care
- Teaching others and receiving feedback on teaching

This data suggests that core medicine probably best represents the 'traditional' apprenticeship learning model of the three core terms. It provides interns with good patient interaction in low to moderate complexity environments, continuity of care, opportunities to assess and manage unwell patients, and undertake procedures under supervision. Of the three core terms, core medicine is the one where interns best understand their role in the team; this is evidenced by their legitimate peripheral participation in a wide range of activities, and supported by the findings of Carr (2014).

Core medicine provides interns with opportunities for frequent interaction with families, and it incorporates interns within the teaching and learning activities within the unit, including using

evidence in decision-making. Medical units provide significant training throughput, where basic physician trainees (BPTs) nationally number the greatest training cohort of any specialty (Flanagan 2013). A more significant proportion of time in core medicine terms may therefore be directly or indirectly related to teaching and training.

Core Emergency

Core emergency was the core term that provided the most highest scoring activity means overall; including in the ACF categories of Skills and Procedures and Emergencies, which were the lowest scoring ACF categories overall.

Overall, core emergency was the highest scoring of the core terms for:

- Patient assessment and related tasks (develop patient problem list, review investigations, undertake referrals)
- Patient management tasks including implementing patient management plans and prescribing
- Emergency assessment and management, and the undertaking of related procedures in the ED e.g. venepuncture; administering IV meds & fluids; IM, SCT and LA injections; perform & interpret an ECG, and airway care
- More complex patient interactions including justifying clinical decisions, recognising legal requirements, apologising for an error, and identifying a potential patient complaint
- Taking on a leadership role, performing clinical handover and reflecting on clinical practice

This data suggests that the core emergency term provides significant clinical exposure for interns, including a direct role in patient assessment and management and related procedural skills. It also suggests that when patients require acute care that interns are more likely to participate in a clinical role than they may do in other core terms. The participation in more complex patient interactions may reflect the nature of the ED environment, where medical staff at the front line may need to deal with patients who have waited for long periods, who may present in an aggressive or confused state, or where there may be police presence (e.g. following a motor vehicle accident or assault).

The data also suggests that ED provides the best core term for interns to show leadership within the team, and to develop independent reasoning and decision-making skills (e.g. justify clinical decisions and reflect on clinical practice) which provides an ideal environment for

clinical learning. This was supported in the group interviews which acknowledged that ED provided the best opportunity for autonomy for interns.

However it was also noted that this environment is evolving due to the '4-hour rule', which is altering the medical staffing models of many busy EDs in metropolitan areas to meet these KPI requirements; *"The process (in ED) seems to have evolved that way because of the demand to get large numbers through ED, and the only people who can actually put large numbers through are the consultants." (Health Service B).* This requirement has been incrementally introduced in Victoria over the last few years and while there has been some early literature regarding potential impacts on junior doctor training (Maor 2011), the effects have not been formally evaluated over this period.

It is interesting that the junior doctors in this study rated their clinical opportunities in the Emergency Medicine term highly, and yet Carr (2014) in Western Australia found that mean scores for the junior doctor assessment tool were significantly lower for the emergency term. While the perspectives of supervisor and junior doctor may thus be perceived as different regarding the value of the ED term, they are not necessarily inconsistent. Junior doctors in this research appreciated the opportunity to participate in procedures and emergency management within the ED, and yet many note that this experience is not sufficient according to their curriculum expectations. This is consistent with supervisors scoring junior doctors poorly in their performance in relation to these activities.

The survey data did also indicate that core emergency had some of the lowest scoring means also. Some of these relatively low ratings may be associated with a lack of opportunity to undertake particular activities within the ED setting, mainly due to the lack of patient continuity of care compared to other ward-based specialties e.g.

- Regularly review patient problem list
- Manage a patient's medication throughout their stay.
- Participate in patient discharge planning.
- Explain process of informed consent.
- Prioritise daily tasks.

However the relatively low ratings for some other activities suggest that these activities are either not undertaken within the ED or the intern does not participate to the extent that they do in the other core terms e.g.

- Participate in a quality improvement activity.

- Understand own role within a team

- Participate in teaching of others.

- Receive feedback on teaching

These findings were considered in the group interviews. It was perhaps surprising that the ED term scored the lowest for '*Understanding own role within a team',* as the ED environment is generally considered a close-knit one where the healthcare team work in close proximity. However the group interviews identified that many of the traditional features of healthcare teams, as communities of practice, including shared clinical and professional activities, did not necessarily occur within the ED setting *("whereas ED is more of a shift sort of thing…………So you pretty much work on your own, you call your consultant and... just get your patient out. So you don't work as a …you don't have ward rounds… You don't have a real lack of teams, for one patient there might be a team, but then there'll be a different team for the next patient.").*

This notion of a 'team' as being temporary and patient-specific, together with the shift-based nature of medical staff rostering may also reduce regular opportunities for junior doctors to participate in formal teaching and quality improvement activities. Group interview participants also noted that while unit meetings including quality improvement activities do occur within the ED, that it is also likely that the interns do not participate due to the throughput demands of ED, where the interns and other junior doctors maintain the medical staffing of the unit (*"Where they have those types of meetings they are dependent on the registrars and the interns keeping things…to man the floor and keep it running so they can have that meeting.").*

Core Surgery

Core surgery had fewer activities for which it was rated the highest out of the core and non-core terms. These were:

- Participate in a quality improvement activity.

- Prescribe pain therapies

- Explain process of informed consent.

- Perform urethral catheterisation

- Prepare correspondence e.g. discharge summaries

These are all activities that are undertaken to some degree within other terms, but have a greater relevance to surgical terms as they reflect the procedural nature of the specialty with the specific requirements of pre- and post-operative care, allowing interns the opportunity to repeatedly practise related activities (e.g. explain informed consent, urethral catheterisation, prescribe pain therapies). The high throughput of these terms is likely reflected in the significant administrative role of the interns, such as in preparing discharge summaries.

'Participation in a quality improvement activity' is indicative of the surgical culture and practice of regularly reviewing patient outcomes in unit meetings, where junior doctors often have a role in collating and presenting patient activity and outcome information, and also participate within the team meeting. This high score for this activity contributed to Core Surgery having the highest relative rating for the ACF category Safe Patient Care, which also included activities of minimising transmission of infection and recognising potential risks to patient safety. This also reflects the high-risk nature of the surgical environment.

However the small number of ACF activities for which surgical terms achieved the highest score perhaps suggests that surgical terms do not align as broadly with the ACF as do the emergency and medical terms, and that the specific benefit gained from a surgical term as a core requirement for an intern is limited.

Further, core surgery had the lowest scoring means of the core and all the non-core terms for over one third of all the activities surveyed. This suggests that for these activities, that core surgery provided the least valuable experience for interns compared to any other term. When the mean scores for ACF categories were compared between core terms, core surgery scored the lowest relative to core medicine and emergency for ten of the eleven ACF categories (with Safe Patient Care being the exception), and this was statistically significant for all ACF categories.

Again, the group interviews considered reasons for this. The discipline of surgery has evolved significantly over previous decades, in terms of both subspecialisation and the technical skills involved in the procedures (*"As general surgery is no longer general surgery, it breaks into three categories effectively, and a lot of it's keyhole now in terms of it's endoscopic type work. Very, very hard to be really actively involved" (Health Service B).* The risk profile of surgery is increased even further when increasingly aged patients with multiple co-morbidities are undergoing procedures, leading to increased risk of intra- and post-operative complications.

In such environments, the role of the intern with very little technical knowledge or skills will be not considered a 'legitimate' participator. Additionally, the sequestration of junior doctors to 'man the wards' while the surgeons and registrars are in theatre does not allow for apprentice-based learning within the community of practice.

This data, supported by insights from the situated learning framework, suggests that the appropriateness of surgery as a core term for interns may be worth reconsidering. While it may still be a valuable term for interns who are considering a career in surgery, in general it may be a more appropriate experience for junior doctors at PGY2 level and beyond. In such circumstances prevocational surgical terms could be of longer duration, be supported by a curriculum defined by the Royal Australasian College of Surgeons for prevocational trainees (RACS 2014, RACS 2015), and be required by RACS to provide additional opportunities for learning alongside senior team members. There may also be opportunities for some workforce substitution (such as by clinical nurse consultants) given the limited and specific procedural nature of the work undertaken by interns in surgical terms.

There were a number of reasons cited in the group interviews for retaining surgery as a core intern term. These included maintaining a 'general' year; providing exposure to the patient surgical journey; and supporting career decision-making. These rationales are all refutable. The evidence is that the practice of surgery in metropolitan and increasingly regional health services is subspecialty-based and not a 'general' experience (Bruns 2014). (Additionally, feedback from the Intern Surveys suggested that the concept of 'general' experience primarily referred to a 'variety' of experience, not necessarily an inherent feature of the discipline itself.) Patient journeys in public health services are fragmented and so intern exposure across a 10-week rotation to the surgical journey components of pre-operative assessment, surgery and post-operative follow-up will be limited.

Regarding career selection, approximately 70% of survey respondents had determined their proposed career paths by the end of intern year, and over 95% by the end of the PGY2 year, suggesting that a number of factors other than the rotations undertaken are involved in career selection for junior doctors. Further, there is no data that suggests that there is a deficit in the number of applicants for surgical vocational training; on the contrary, RACS notes that entry to surgical training is becoming increasingly competitive (RACS 2014). There are however looming medical workforce shortages within other specialties, such as geriatric medicine and general practice (HWA 2012). These may be examples of alternative opportunities for interns to broaden their knowledge and skill in their intern year compared with a core surgical term. In

particular, lower acuity and lower risk environments such as in subacute and aged care, primary, community and palliative care, may allow for greater intern clinical participation and supervision at this level of skill development. Removing the requirement for surgery to be a core intern term would also remove this as a limiting factor in expansion of intern positions by health services.

6.2.7 PGY2 curriculum experience and Clinical Streams

Similar to the consideration of Intern experience by core term, the overall PGY2 experience as measured by the global survey question was analysed by clinical stream. Although not statistically significant, the medical stream rated highest, followed by the general stream, and then the surgical stream (with critical care scoring highest overall but the results discounted due to the small number of respondents). This is a similar trend to the intern survey results where the core emergency and medical terms overall scored higher relative to the surgical terms. This may also support the view that PGY2 experience and training within surgery provides less clinical exposure than in the other clinical streams, in its current format.

The PGY2 survey included a question regarding registration with a vocational college. This was to ascertain if formal association with a college at the PGY2 year - and the potential benefits including mentorship, educational and curriculum oversight, and the undertaking of preliminary clinical examinations etc - improved the clinical experience for those PGY2s. Approximately 50% of PGY2s surveyed were registered with a college, and those registered (generally RACP or RACGP) had a higher mean score for their overall PGY2 experience, although this was not statistically significant. There is no literature in relation to the PGY2 year and the potential impact on overall experience of clinical streaming or registration with a vocational college. This may be an area of future research.

6.2.8 Curriculum Experience and Health Service Region

The survey findings and analysis provided some insight into how health service region may affect prevocational clinical experience. For the overall (global) survey questions, the highest scoring mean for the Intern Survey was from inner metropolitan health services, and the highest scoring mean for the PGY2 Survey was from regional health services. The discussion below suggests that this can be potentially explained by interns seeking high levels of supervision and teaching to support their transition from student to novice practitioner which may be best provided at inner metropolitan health services, but by the PGY2 year trainees are seeking greater clinical autonomy and learning, which may be more available in the regional

health service environment. Thus, both types of health services likely have some specific clinical experience and training benefits.

It has been noted in the survey results that inner metropolitan health services provided the greatest experience for Emergency Management and Procedures, although this was not statistically significant. This differs from Agrez's findings (2013) that interns performed significantly more procedures in rural compared with metropolitan Emergency Departments, although Young's (2013) study was less conclusive about the benefit of clinical skill development in rural settings. While the variation between mean scores across rural and metropolitan settings of different procedures were not significant in this study, it is noted that inner metropolitan health services had the highest scores for administration of drugs, fluids and blood, peak flow measurement and airway care (potentially interventions required for a more acute casemix), and regional health services had the highest scores for IM and SCT injections and performing an ECG (potentially more common interventions required for a less acute casemix). An alternative explanation is that there may be greater opportunities for junior doctors to experience a broader range of discipline-specific procedures in rural settings compared with those listed in the survey, which were largely generic procedures. Further research into this may provide further insights regarding this finding.

Both inner metropolitan and regional health services scored equally highly in the Teaching and Learning category. Inner metropolitan health services scored highest for activities relating to teaching, which may reflect their focus on teaching and training at all levels of the medical training continuum. By comparison, regional health services had the highest scores for the learning activities, suggesting that regional health services provide an excellent practical learning experience for junior doctors, with likely increased autonomy due to less competition with senior trainees.

Overall however, regional health services scored the highest on the Intern Survey for nine ACF categories of which two – Teamwork and Patient Management, were statistically significant. This suggests that interns in regional health services have very good access to the majority of ACF activities, and supports literature which suggests that there are benefits for medical students and junior doctors in rural health services (Young 2013).

6.2.9 Demographic Factors & Clinical Experience

This research did not intend to focus on individual demographic factors and how they may affect access to clinical experiences for interns and other prevocational trainees. Nevertheless there have been a number of changes in the selection and training of medical students over

the past decade, most notably the increased number of female medical students and the establishment of postgraduate medical courses in Victoria, and it would be an appropriate area of study to consider whether these changes are impacting on their experience of prevocational and postgraduate training.

For both Intern and PGY2 global survey questions, males scored higher; however while postgraduates scored higher for the Intern Survey, undergraduates scored higher for the PGY2 survey. None of these results were statistically significant. Further analysis from this data set in future research may include comparison of means of gender and type of degree for individual low scoring activities such as emergencies and skills and procedures. If significant differences emerge, this may impact on the required teaching and learning styles required to accommodate the changes occurring in the contemporary medical cohort. There is already emerging literature that gender differences in learning styles (Walton 2015) are impacting on individual's experience of and career decision-making in medicine.

6.3 Implications of Research

6.3.1 Managing Expectations & Medical Engagement

Given that the quantitative data identified specific curriculum areas that may be difficult to access, and given the range and complexity of health service factors underpinning this, there was some discussion among group participants of how to manage the potentially unrealistic expectations of this cohort of junior doctors. The potential impact of this mismatch of junior doctor expectations and the reality of the role was suggested by one interview participant, "*They're incredibly clever people…they're going to be even smarter with the postgraduates; experienced I mean, you know. Emotionally smart. And we're not really letting them do stuff that we train them to do. So they're getting burnt out in first year, they feel unfulfilled.…(D2)*"

The importance of medical engagement in healthcare delivery is well documented (Bonias 2012),and yet the current model of prevocational training risks disengaging some doctors from the system and from a lifelong commitment to and enjoyment of medicine. This is currently compounded by increasing difficulty accessing specialist vocational training places, which is a source of anxiety among the junior doctor cohort (Fox 2008). Thus where there are opportunities to engage junior doctors in activities and experiences in which they are interested or in which they lack confidence, these should be actively explored.

6.3.2 The End Practitioner & Length of Training

This research suggests that the prevocational period is not providing all trainees with exposure to all their current prevocational curriculum requirements, and that this may impact negatively on their competence in specific clinical areas and confidence later in their practice. This may ultimately affect both the length of time required to be spent in training to acquire the required skills, as well as the skill set of the output – the specialist practitioner.

Medical school training may be via an undergraduate or postgraduate program and is generally of a total degree duration of between five to seven years. Prevocational training consists of a period of 'provisional' registration and training, currently one year, and then a variable period of further prevocational training with 'general' registration, depending on the vocational pathway. Vocational training is usually a minimum of three years and up to six years. Medical training is costly – for the providers (health services), for the funder (governments) and overall for the community. The most efficient use of staff for health services is when they work at the peak of their scope of practice, when they provide continuity of care, and when they provide a service that is quality and cost-effective. The most efficient outcome of training for governments is the production of the end product in the shortest and most cost-effective manner. Workforce data also notes that medical specialists are in general working fewer hours than in the past (Flanagan 2013), and governments are aware that it is currently costing them more to produce less productive senior medical staff EFT. This is a significant driver for central policy reform.

Alternatively, a reduction in length of training may be possible if a majority of time spent during training is a more differentiated experience that progresses towards the end goal of the discipline-specific practitioner. Efficient length of training must be balanced against the additional benefit to the trainee/practitioner of an extended period of undifferentiated practice. Reducing the length of training also has implications for the timing and process of career decision-making, and would need consideration across the training continuum, from universities to vocational colleges.

6.3.3 Solutions – Local vs Systemic?

This research has concurred with previous literature that has noted that prevocational trainees have limited exposure to a number of curriculum areas, particularly within the curriculum domains of procedures and emergency management, teaching and learning activities, and other more complex patient management and interaction activities. It has identified that some intern core terms and PGY2 clinical streams may provide better access to curriculum

experiences than others, and that there may be particular curriculum strengths and weaknesses of prevocational training in metropolitan versus regional areas. It has also suggested that the current prevocational curriculum framework is variably understood by health service supervisors and managers, has been incompletely implemented and that junior doctor achievement against the curriculum has not been robustly assessed. Finally, it has suggested that these findings have potentially significant implications for the trainees themselves, for length of training, and for the confidence and competence of the end practitioner.

Kilminster (2011) noted that system-wide factors may be mitigated by local factors. Local orientation and education programs, supervision and support structures, local governance that regularly evaluates feedback and makes improvements – these are all factors that may affect the nature and quality of the training experience for junior doctors. While there were clear system-wide trends visible in the data, there were also standard deviations for most activities in both surveys, suggesting that local factors were also important.

Local solutions recommended by interview participants in particular included increased access to simulated learning particularly to enhance emergency management skills; better utilisation of formal tutorials and the development of local e-learning modules to fill knowledge gaps; use of logbooks to support the undertaking of procedures; and quarantined time to spend with various experts (radiology, MET teams, procedural nurses). These are all initiatives that are currently being utilised to a variable extent within health services, and some local programs may be very well developed and evaluated. The difficulties however are that they are resource intensive and therefore not available at all health services; and specific educational initiatives such as these do not ensure ongoing repeated exposure and therefore activity mastery. To achieve this requires that appropriate curriculum activities are embedded within the clinical placement environment of the prevocational trainee.

Predominantly, however, the evidence from this and previous research suggests that the issues identified are system-wide, and therefore require a system-wide approach. The decline in participation of junior doctors in procedures and emergency management has been noted by literature over the last decade internationally (and this research has further highlighted that the findings are similar regardless of local health service region); underlying factors and trends in healthcare delivery and junior doctor workforce management practices are likewise national and international. Health service efficiency and patient safety requirements are not going to lessen, and while these remain significant drivers, prevocational medical training must adapt

as a system to these system changes. Tinkering around the edges is not going to meet the needs of skilling the medical healthcare workforce into the future – reform is required. While a number of systemic reforms have been identified so far in this thesis, these are consolidated and further explored in Chapter 7: Recommendations.

6.4 Strengths & Limitations of Research

6.4.1 Alternative Quantitative Method Considerations

Survey data was used in this research as a method to obtain measures of relative exposure to clinical curriculum activities by junior doctors. An alternative method of obtaining data would have been observational data collection (ethnographic research), where the researcher would have observed a number of junior doctors during their working hours to note the time spent on a range of different clinical activities. However this was discounted due to limitations of the methodology including:

- Practical considerations including requiring many hours to observe individual junior doctor shifts
- This method would have involved a much smaller sample size of junior doctors
- Potential difficulties obtaining consent from the junior doctors regarding observation
- Potential influence on the behaviour of the junior doctors by the presence of the researcher

It was also considered as to whether the surveys would be a cohort study, where individual interns were identified and the same interns were asked to complete the PGY2 survey the following year. However this was decided against as it would have required additional ethical and privacy measures including passwords and consent to follow up individual participants, which may have led to attrition and a reduction in the number of PGY2 participants. It was considered that the requirement for a particular cohort of individuals was not an essential requirement of the study; that the main features of the survey participants were that they were interns and PGY2s employed by the participating health services.

Setting up logbooks for junior doctors was another method of obtaining data regarding activity frequencies but that would have also had limitations around smaller sample size, as well as potential significant workload burden for the junior doctors leading to non-compliance.

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Potential Limitations of the Survey Tool

The development of a frequency measure for undertaking individual clinical activities created a number of challenges; the lack of literature relating to similar surveys being one. Others included:

- Interns/PGY2s do not keep log books and therefore recording exact numbers was not possible.
- There is no known number of activity/experiences required against which to benchmark the clinical experience of individual activities.
- Activity frequency varied significantly between activities, however the same rating scale needed to be used for ease of survey completion and to enable comparative analysis.

The strengths of using *patient encounters* as a unit of measurement for the rating scale were:

- It provided a more holistic approach to the investigation i.e. assisted in building a picture of the sorts of activities that were regularly undertaken by interns in their clinical duties
- It may be easier for interns to recall compared with recalling specific numbers or frequencies
- It was a scale that would appropriately describe different activities with different frequencies.

The weaknesses of this scale are similar to the previously defined weaknesses, in particular that the rating scale does not provide absolute numbers against a known benchmark, and also that this specific unit of measurement may have different values depending on the patient load e.g. a rating of 'All' may represent a total of one patient/day or 20 patients/day.

6.4.2 Alternative Qualitative Method Considerations

Potential Limitations of the approach to Qualitative Analysis

While a case has been made for selection of the Framework approach to thematic analysis for a number of reasons, it may be that alternative forms of thematic analysis such as grounded theory may have yielded different results that were less influenced by the limited literature and researcher's knowledge and experience. While this may have produced a more 'pure' understanding of the phenomena being studied, it may also have resulted in a less targeted and detailed account.

Likewise, while a case has been made for the selection of Situated Learning as the theoretical framework in which to structure the qualitative data analysis; other possible theoretical frameworks were considered – such as evaluative frameworks, organisational theory frameworks, and change management frameworks. The analysis of the data using an alternate framework may have produced an alternative view of the data – e.g. with a focus on evaluation, power and hierarchy, or influence within health services and patient care. Nevertheless the researcher believes that the Situated Learning Framework provided a lens for analysis of the data that is the most appropriate for the consideration of the research question – regarding the interaction between a junior doctor's clinical experience and their clinical environment.

Potential Limitations of Group Interviews

Potential limitations of group interviews may arise as a result of the interaction between participants, which while having the benefit of allowing a rich analysis of the issues raised, also has some limitations including the potential for the group to inhibit or distort the responses through factors such as groupthink or power imbalances within the group. In this research, participants in individual groups all worked closely together. There was evidence that this encouraged group members to participate openly, as there were a number of different opinions shared within each group. However these in-depth discussions were usually between the more senior members of the groups, and on reviewing the transcripts it was noted that the non-medical members of the group participated less in the interview discussion. This power imbalance within the group may have affected their contribution to these group discussions to some extent.

6.4.3 Mixed Methods Approach

Using a mixed methods approach to this study allowed for a triangulation of the data to create an overall narrative that described and explored the study objectives. The researcher used methods triangulation (quantitative data from intern and PGY2 surveys, and qualitative data from group interviews), as well as some triangulation of sources (comparing data from supervisors in the group interviews with survey data from the interns and PGY2s). This was a strength of the mixed methods approach to this research question.

6.4.4 Generalisability of Findings

Quantitative Findings

Findings that are statistically significant, taken from a representative sample, particularly with a finite and relatively homogenous group, are more likely to be generalizable.

The Intern Survey sample was designed to ensure geographic representation; was taken from a homogeneous and finite population, and the sample size was large enough to determine significant differences in means between exposure to different curriculum activities and in different core terms/rotations (where n=111 interns), hence it was considered an appropriate sample size for the purposes of this research.

However given the sample size for the PGY2 survey (59) and lack of statistically significant findings, this has been acknowledged as an exploratory study only and interpretation of these results has been made with caution.

The recruitment of interns and PGY2 doctors to the study was a two –stage process. Stage 1 involved recruitment of health services from different geographic regions. Once these health services were identified, interns and PGY2s were recruited through convenience sampling. Convenience sampling can result in a number of biases such as under or over-representation of particular sub-groups within the population. In order to assess this, a range of demographic information was collected from survey participants to consider whether selection biases may have been present.

There is little evidence of significant selection bias in the Intern Survey. Participating intern numbers generally reflected the size of each health service, thus there did not appear to be differences in the willingness of interns from different health services to participate. Additionally demographic characteristics including a majority being female, undergraduates, and from the University of Melbourne is reflective of the demographics of the broader intern cohort for 2012.

However there is some evidence of selection bias in the PGY2 Survey. While some respondent characteristics are also representative of the broader cohort – e.g. a majority of female and undergraduate respondents, and representative clinical stream participation; two health services did not have any respondents – the reasons for this are unknown. This then skewed the geographical characteristics of the respondents, where outer metropolitan health service and Monash University respondents were significantly over-represented. Given the relevance of the study to contemporary issues in relation to prevocational training as well as the relative absence of pre-existing data, it is considered that the findings are important nevertheless.

Qualitative Findings

This qualitative research is considered to be highly representative of the parent sample (being all supervisors and managers of interns in Victorian public health services in 2012) due to the

sampling based on health service region, and the selection of interview participants to include a cross-section of supervisors and managers at varying levels of seniority. While senior medical staff participants included practitioners from the disciplines of medicine, emergency and critical care, and subacute medicine, there were no participating surgeons, and this may have affected the explanations in relation to the surgical findings.

The conduct of the interviews, and focus on underlying system factors, encouraged broad-ranging and open discussion among participants, and led to a diverse range of views and suggestions. While overarching themes were applied, and there was some degree of consensus within the themes, it was noted that there were also divergent views in relation to some of these issues, such as the value or appropriateness of specific components of the curriculum (e.g. specific procedural skills) or of core terms (e.g. surgery term). These divergent views have been noted in the findings, and highlight the need for further research in these areas.

In this research study, given that all public health services that employ interns are accredited by the AMC, it could be deduced that the environments in which the interns work nationally are similar. This research has also identified a number of system factors that may apply to a greater or lesser extent in other contexts across Australia. Thus it would be reasonable to assume a reasonably high level of transferability of these findings to other settings nationally, and possibly internationally.

A factor that has not been specifically considered as part of this research is the quality of the prevocational activities undertaken. In particular, the Intern and PGY2 survey comments highlighted the inter-relationship between clinical experiences and supervision, teaching and support in the provision of a good quality training experience. Infrequent access to clinical experiences can be made more powerful by guided reflection, support and evaluation. In particular, this has been the model that has supported the introduction and use of simulation training for procedural and emergency management skills.

6.5 Summary of Chapter

Essentially a key finding from this research is that *health services are increasingly performing high-risk activities within constrained environments, resulting in changes to healthcare teams and individual roles – and the legitimate peripheral participation of junior doctors in clinical*

care has decreased in proportion to the acuity and specialisation of the activity involved. There is still much learning that occurs within the intern and PGY2 year – still a metamorphosis that occurs from student to practitioner – nevertheless as the wider population continues to experience the burden of age and chronic disease, and medicine experiences the improvements associated with increasingly sophisticated technologies and models of care, these findings need to be considered for their implications on junior doctor training across the continuum and for medical practice in the longer term.

This research has identified that there are many curriculum activities that junior doctors undertake during the course of their intern and PGY2 years, and there are some activities that they are not performing as regularly as they would like. Further, this research considers some underlying factors contributing to the variation in clinical experiences for junior doctors – difficulty accessing specific curriculum activities due to lack of legitimate peripheral participation for high risk activities in an increasingly risk-averse environment; variation in experiences in core terms due to patient complexity and throughput which lead to the creation of individual technical experts and sequestration of junior doctor activities; and variation in clinical experiences based on regionality of health services which have specific benefits and limitations. This research has identified that intern and PGY2 health service clinical experience is related to system, organisational and (to a lesser extent) individual factors, and that developing a deeper understanding of these may better support access to appropriate clinical experiences, skill development and quality training.

This goes beyond previous research by considering junior doctor experience in relation to core terms for interns and clinical streams for PGY2s. While (Agrez 2013) compared the findings of core terms in relation to conditions and symptoms encountered within the ACF, this study compares the findings relating to the broader range of junior doctor activities across all of the ACF domains and categories. This research also importantly examines clinical experience at two points in time, which is appropriate for the current 2-year curriculum framework. No previous research has considered this other than Marel (2000); and his findings that a majority of clinical skills are acquired during the intern year has been further supported by this research, although this research does conclude that fifteen years on from Marel's study that the total clinical skill acquisition across the intern and PGY2 year has been likely overall reduced.

The researchers involved in this study brought their own experiences to the research, however while the data supported some previous individual assumptions, it challenged others. While

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aspects of the data were supported in previous literature, other aspects of the data were exploratory and therefore interpretation of the findings was made with caution. Despite some potential limitations with the research, the process of triangulation has strengthened and consolidated many of its key findings.

Chapter 7: Recommendations & Further Opportunities for Research

7.1 Introduction

This research has explored the contemporary clinical placement experience of junior doctors in Victorian health services and the factors within the health service environment that may be contributing to this. It is a significant piece of research into prevocational training, an area in which good quality data and evaluation has been lacking.

The chapter follows on from the Discussion chapter to consider potential recommendations to address some of the key issues and implications identified in the research. These recommendations are considered with regard to the tenets of the Situated Learning Framework – to address curriculum ambiguity, to ensure access to legitimate peripheral participation, and to re-establish communities of practice. Any reforms to prevocational training, such as those suggested in this chapter, need to be undertaken within a clear, integrated governance model, and supported by ongoing evaluation.

This chapter lastly then considers opportunities for further research in this field. Two particular research areas are noted, and include characteristics of alternative training placements, and characteristics of the emerging medical workforce. These are research opportunities to evaluate contemporary local and system-wide initiatives, to consider the benefits and limitations of these within an integrated context, and to continually enhance policy and process to support both quality training and quality healthcare delivery.

7.2 Recommendations arising from this Research

7.2.1 To Address Curriculum Ambiguity

Role of the Prevocational Period

The prevocational period, particularly internship, is a period of steep transition from student to practitioner and employee, and to working as part of a team and of sharing responsibility for patient care. It is a time when early clinical care skills are developed; in the UK prevocational period is called the 'Foundation Program', reflecting that this is the period in which

'foundation' skills are developed – such as patient assessment, initial management, professional communication and team interactions – to be built on in latter specialist training.

The AMC, in its Intern Training – Intern Outcome Statements document noted that '*internship as a foundation year of work-based learning, is a key part of the transition from medical student education to independent medical practice and career development in a specialty*'. Additionally, the prevocational period has variously been described (including by group interview participants) as important to career decision-making, and for providing 'general' clinical experience prior to entering specialty training.

However this research challenges this understanding. It suggests that while prevocational trainees are undertaking some common tasks frequently, that they lack regular opportunities to practice across the full range of their defined curriculum; moreover, their opportunities for skill development may be concentrated within particular rotations, with much of their training time over a 2-year period adding little further foundational skill development value. Further, this research has suggested that the current clinical experience of prevocational trainees while being varied is also increasingly specialised (particularly within the core surgery and non-core terms), such that the development of 'general' or 'generic' clinical skillsets during this period is likely difficult. In some ways this research has suggested that the prevocational period may be considered a period of poorly defined work experience prior to commencement of 'real' training.

The prevocational period is not the sole period of training for medical trainees to experience different disciplines and working environments – this occurs extensively in medical school. The role of the prevocational period in assisting career decision-making is unclear and would benefit from further research. Indeed the current model requiring core intern terms limits rotation choice for prevocational trainees, and there are many careers in which intern terms are generally not available currently (e.g. paediatrics, obstetrics, radiology, ophthalmology, anaesthetics etc). There is no link between the current core term requirements (medicine, surgery and emergency medicine) and postgraduate workforce requirements; alternatively there are areas in which interns remain little exposed to that have more pressing future workforce needs (HWA 2012). Given that interns apply for PGY2 positions half-way through their intern year, career decision-making for junior doctors is likely informed by a number of factors; and given the lack of evidence in relation to this, assumptions based on the role of intern rotation experiences in career planning should be made with caution.

The prevocational period is a key time of transition – from student to doctor, and undifferentiated apprentice to differentiated practitioner. However there is no progressive curriculum during this period that reflects these transitions. Likewise there is not a clear set of expectations regarding entry and exit knowledge and skill outcomes of the prevocational period. This research suggests that the role of prevocational training within the medical training continuum needs to be redefined. Due to the nature and timing of selection and entry into vocational training resulting in a lack of consistent endpoint for the prevocational period, a defined separate phase of medical training may no longer be appropriate. Prevocational training instead may be best considered as a period of transitional postgraduate training that develops initial competencies in safe patient care (particularly during internship), and develops exit clinical competencies in preparation for discipline-specific postgraduate training.

Figure 11 Redefinition of Prevocational Training
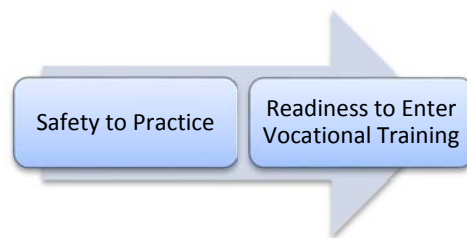
What is an appropriate prevocational curriculum? Time for a new Needs Analysis

While the ACFJD was derived following a needs assessment of junior doctors in NSW over 10 years ago, its revisions in 2009 and 2012 have not included further needs assessments. This research suggests that it is timely for a further broad-based needs analysis to review the Australian prevocational curriculum developed by the stakeholders – including medical educators and employers - across the medical training continuum. Such an analysis would potentially include some of the findings identified in this research, feedback from the vocational colleges regarding necessary pre-requisites prior to entering prevocational training, as well as health service emerging clinical priorities such as safety to practice curricula based on the National Safety and Quality in Healthcare Standards (NSQHS), outlined below:

> Std 1 Governance

> Std 2 Partnering with Consumers

> Std 3 Infection Control

> Std 4 Medication Safety

> Std 5 Patient Identification and Procedure Matching

> Std 6 Clinical handover

> Std 7 Blood Management

> Std 8 Skin integrity

> Std 9 Deteriorating patient

> Std 10 Falls

Indeed, more than one health service in the group interviews reflected that there are potential curriculum opportunities for prevocational trainees that are not necessarily being currently recognised or realised, particularly in relation to early assessment and management of patient deterioration. Given that the antecedent cause of many MET calls is hypotension, change in conscious state, or other clinical concern (Herod 2014); these may be areas for future skill development of junior doctors in particular. Given the difficulty in access to immersive participation in resuscitation for junior doctors, their participation in the management of early deterioration may be a more appropriate and still highly relevant peripheral participation.

There continue to be risks for junior doctors when they are not adequately trained in recognising and responding to issues regarding patient safety. While the junior doctors surveyed rated their exposure to prescribing activities as sufficient, health service concerns regarding their prescribing accuracy remain (Keijzers 2012, Lewis 2014). Medication safety standards may have also been a driver in reducing the exposure of junior doctors to medication administration, where medication adverse events are monitored regularly by health services and significant events are reported externally. There was anecdotal evidence in the group interviews that incidents of junior doctor medication administration errors had resulted in withdrawal of this from their scope of practice. Medication prescribing and medication safety may similarly therefore require a formal approach to training and competency assessment in the intern year or prior, or there is a risk that these activities may also become increasingly undertaken by alternative workforces (e.g. pharmacists).

Further evidence of alignment of the prevocational curriculum with the NSQHS includes hand hygiene compliance (Standard 3: Infection Control), medication safety (Standard 4), clinical handover (Standard 6), blood management (consent, administration – Standard 7) the deteriorating patient (Standard 9) and prevention and immediate management of falls (Standard 10). There are potentially opportunities for standardised training and competency assessment programs in all these areas to be developed with appropriate medical leadership to ensure attainment of these patient safety priority areas by junior doctors, particularly in their intern year.

While the intern year is generally considered a year of gaining practical experience, taking on patient responsibility and doing rather than knowing, it may be that to meet expectations regarding safe, quality care that the prevocational curriculum requires reinforcement of some of the clinical biosciences. In particular, clinically-focused pharmacology, physiology and microbiology programs could be provided over the prevocational years to underpin the practically-orientated patient safety content. This should be considered in any needs analysis.

Thus a needs analysis for the prevocational curriculum should focus on (1) skills required for the transition from student to practitioner to meet the requirements of safe practice for the granting of general registration, and (2) foundation clinical skills based on differentiated clinical learning objectives that prepare the trainee for further specialty training and practice.

Integration and Progression

It is beyond the scope of this research to discuss curriculum integration in anything more than broad terms. However there is some literature that contests that the various medical training curricula are not well integrated; that medical students are not well prepared for internship (Kelly 2011), that prevocational trainees are not well prepared for vocational training (Wakeling 2011), and that trainees may not be well prepared for independent practice (Morrow 2012, Dijkstra. I. S. 2015). A lack of integration at points of training transition is not unexpected given that the different components of medical training all have separate governances, and often *many different governances* within the one phase of medical training (e.g. multiple Colleges and Universities).

A truly integrated curriculum that incorporates the prevocational period as a time of ongoing scholarly learning and assessment, complemented by relevant clinical experience will potentially not only create more confident trainees, but has the potential to streamline the length of training.

Further, curricula within Medical Schools and Colleges clearly articulate development and progression of trainee skills, with the requirement to develop basic skills before their integration or progression to more complex skills. This element of curriculum integration and progression is currently lacking within the prevocational curriculum. The ACF articulates a set of activities and skills to be undertaken over a 2-year period, and while the AMC has developed a set of Intern Outcome Statements there is no similar document for the PGY2 year. This contrasts to the UK Foundation Programme Curriculum that identifies a year 1 level of skill development for many activities, and a year 2 level of skill development.

It is inevitable that some form of progression will naturally develop in prevocational trainees as particularly in their PGY2 year they are allowed increasing autonomy and responsibility. Nevertheless there is an opportunity for the prevocational curriculum to be revised that would identify curriculum requirements necessary for the commencement of internship to ensure safe patient care, and curriculum requirements necessary to support transition to vocational training, with developmental skill progression in between. It is likely that such an approach would improve both the intern and PGY2 understanding and experience of their training.

7.2.2 To Overcome Barriers to Legitimate Peripheral Participation

This research has identified that barriers exist within the contemporary complex health service environment to junior doctors' legitimate peripheral participation in some clinical activities, particularly those that are high risk and high acuity. A number of these are due to health service performance frameworks (clinical governance, financial and operational performance) and the service and workforce models that have developed to achieve these, such as requiring greater input from more senior staff to assess and manage patients quickly, the development of skilled specialist nursing staff to undertake procedures and assess ward emergencies, and the devolving of the lower-level administrative and communication roles to the junior doctors to 'keep the wards going.' A number of structural changes to the prevocational model may better align the skill set of the prevocational doctor with their clinical duties, including redefining appropriate clinical placements, and reconsidering the roles of other members of the healthcare team.

Strengthening Situated Learning Opportunities - Redefining Appropriate Clinical Placements

This research has identified that some clinical rotations/terms provide an experience that is more aligned with the ACFJD than others. It has also suggested that those rotations/experiences with higher patient risk and acuity may be terms where there is reduced engagement and clinical learning opportunities for prevocational trainees (particularly interns).

The concept of core and non-core terms may have little future relevance when one considers the highly specialised nature of most terms in large metropolitan health services, the variation in alignment of these with the current curriculum framework, and the lack of relationship with workforce requirements or evidence that they assist in career decision-making. Instead, terms should be selected as suitable for prevocational trainees if they provide an appropriate safe clinical learning environment where trainees can undertake activities at the peak of their scope of practice by being engaged in the healthcare team and service. Low to moderate acuity

medical and similar terms should be provided for interns, and opportunities to work (under appropriate supervision) in regional settings should be made widely available.

Priority areas for intern placements therefore should be those terms and rotations which are of low-medium risk/acuity and where interns can safely practice alongside more senior colleagues and participate in a wide range of learning opportunities, as an alternative to the core/non-core term paradigm. An experience in general or low acuity subspecialty medicine meets this requirement well, and although emergency terms also rated well in this research this will need to be monitored as the role of interns in high-acuity emergency departments may become increasingly limited due to the throughput factors identified in this research and supporting literature. Similarly, subspecialised surgical units may not provide the best learning opportunities for junior doctors who need to develop initial clinical skills and require a meaningful role within the team to do so. Other opportunities for low-moderate acuity experiences for interns include primary and community/ambulatory care settings, subacute and aged care, palliative care and well-supervised experiences (including potentially surgical) in regional and rural areas. Potential placements should be evaluated against a standardised tool that identifies specific clinical learning opportunities, mapped against prevocational clinical deliverables as defined by vocational colleges.

This approach is supported by Anderson (Anderson 2015) who published a study in February 2015 where she surveyed junior doctors regarding their prevocational general practice rotations using the Postgraduate Hospital Educational Environment Measure (PHEEM) tool, and compared these results with those of core terms in medicine, surgery and emergency medicine. This study was undertaken over a 4 year period in Canberra, in which 34 respondents participated. The results showed that in all four subscales of teaching, clinical skills, social support and role autonomy that the general practice rotation performed as well as or better than hospital rotations. She concluded that the educational value of general practice rotations for junior doctors was high and that the program should be expanded for junior doctor training. This is supported by early evaluation findings of the Prevocational General Practice Placement Program (ACRRM 2007).

The proposed career choices of Victorian interns presented in this study (General Practice 17%; General & Specialty Surgery combined 17%; and General Medicine 9%) are comparable to the first preference vocational practice intentions of 8,509 completing medical students identified from the Medical Schools Outcome Database Project (General Practice 13.3%; Surgery 18.8%; and Internal medicine 18.0%) (Kaur 2014). However estimates indicate a shortfall of 400-500

new general practitioners every year at this replacement rate (Shadbolt 2009) and the Health Workforce 2025 report indicates that General Practice will be in undersupply. Thus workforce planning considerations additionally support experience for prevocational trainees in general and community practice.

An international example in this regard is New Zealand, where the Medical Council of New Zealand in 2014 introduced a requirement for medical interns and PGY2 doctors to undertake a 13-week community-based attachment over the 2-year period. This requirement is undergoing a staged transition process, with a goal of 10 percent of interns completing a community based clinical attachment from November 2015 and working towards 100 percent compliance by November 2020 (MCNZ 2015).

Instead of the current model where interns undertake a set of very different terms where they essentially start learning from scratch every 10 weeks, a model without core and non-core terms allows junior doctors to potentially select/be allocated terms from similar disciplines, allowing graded progression of specific clinical skill development from the beginning of postgraduate training. The ability to further develop specific skills over a period, rather than constantly developing new knowledge and skills provides better opportunities for junior doctors to master skills and to operate at a higher level within their scope of practice. This is the model on which vocational training is based.

Further, it is likely that a more flexible approach to terms for prevocational trainees rather than requiring core terms, will better engage junior doctors in the terms that they undertake, may be more likely to assist in their career decision-making, and may reduce some existing barriers in expansion of intern placements.

Workforce Scope of Practice and Role Substitution

This research has already identified that role substitution has occurred by nurses in the undertaking of ward procedures, in MET teams in the undertaking of emergency management, and that more senior clinicians are increasingly taking over the care of patients in high risk and throughput areas such as surgery and emergency medicine. A rationale cited for workforce substitution (Nancarrow 2005, Leach 2012) including by a group interview participant, has been that the development of this 'second tier' workforce allows doctors to work at the 'higher end' of their scope of practice. As discussed previously, there is no clear evidence from this research that this in fact is the case.

However, there may be opportunities to further develop such a 'second tier' workforce to support junior doctors to operate at the peak of their scope of practice, particularly in their PGY2 year and beyond, where they still undertake significant administrative duties. The administration and ward management of high-throughput surgical patients may warrant review; for example there may be a role for specialist nurse consultants to oversee admission, referral and discharge planning paperwork, allowing the PGY2+ to have a greater clinical role. Such examples would provide greater efficiencies and quality of care by individuals with specific expertise.

7.2.3 To Re-establish Communities of Practice

Junior doctors are at risk of being isolated from their communities of practice due to being placed in inappropriate, high-acuity terms, and being rostered to terms for short periods of time with poor continuity of service. They are also given a lower priority for training within their clinical team due to the training and assessment requirements of vocational trainees and the absence of similarly rigorous requirements at the prevocational level. Changes to term structure and the introduction of a competency and assessment framework for prevocational doctors will assist in addressing both these issues.

Team Embedding – Rotation duration

As well as identifying the importance of appropriate clinical casemix for intern terms, this research has suggested that the current short (10 weeks or less) terms for interns together with the shift-based nature of their work is potentially detrimental to their relationships with their unit colleagues, whose trust they need to legitimately participate in the range of unit and team activities. Holmboe (Holmboe H 2011) reviewed the impact of medical transitions from the three perspectives of sociology, learning theory and quality and safety, and noted that from the perspective of improving quality and safety that there was a critical need to embed '*trainees in functional clinical microsystems as meaningful participants (pg 70)'*. He further states that '*The lack of ongoing supervision and longitudinal relationships with faculty profoundly conflict with growing evidence from the literature on the development of expertise',* and that the insights gained from these perspectives '*should guide much-needed research about how the current rotational model of medical training impacts patients and trainees and whether a major change to this approach is now indicated.'*

Short terms are common in medical school structures, where students are seeking an initial experience to a variety of specialty disciplines. However vocational training terms are generally accredited on the bases of three to six months, to meet both service and continuity of clinical

care requirements as well as supervision and assessment requirements. This is appropriate for the prevocational period also, and is supported by literature regarding the benefits of clinical learning in an environment that provides continuity of care (Young 2008). Within the longer terms, prevocational doctors should also be provided with duty rosters that allow them to participate in the range of activities of the team and to provide continuity of care.

Re-establishing Trust - Competency & Assessment Framework

Health service managers need to trust the skills and competencies of their junior doctors. This will be enhanced if junior doctors are required to be assessed regarding key patient safety curricula, and to regularly demonstrate their clinical learning throughout the year.

Formal modular training programs may be appropriate for the intern and PGY2 year such as on safe practice and prescribing. A number of health services have established training modules for the deteriorating patient and immersive simulation training. However this is not universally available and the content of such programs may vary enormously. Intern training modules should be standardised (e.g. nationally developed) and delivered by a variety of methods (e-learning, simulation, face-to-face etc). Assessment of competence in key modules regarding safe practice should be a requirement of satisfactory completion of the intern year. These are important requirements for clinical teams and health services to trust in the skill set of the incoming intern and to allow them to participate in related activities within the team.

An assessment framework requires assessment of safe practice, but also an assessment of clinical learning. Term performance assessments are an appropriate way for workplace performance to be measured where there is regular and close interaction between supervisor/assessor and trainee. Additionally to strengthen learning, assessment of learning relevant to the learning objectives/curriculum for each prevocational term is appropriate. There are a number of assessment tools used by colleges such as case-based discussions, direct observation of procedures, and mini-clinical exams, that may also be appropriate for limited use in the prevocational context (Agrez 2013). The objective of the assessment for this period is evidence of satisfactory discipline-specific learning prior to entry to vocational training.

While prevocational training needs to be given greater priority by health services, it also needs to be given greater priority within clinical teams. Regular team interaction builds team trust and effective and efficient team functioning. Allowing interns and PGY2s to undertake clinical terms that provide an optimal learning experience and that potentially align with their career preferences is likely to provide greater team engagement and functioning. And defining all

doctors as doctors-in-training, regardless of prevocational or vocational status is also likely to develop not only communities of practice but also communities of training.

7.3 Governance Model

As highlighted in the Introduction, there are a large number of stakeholders involved in medical education & training in Australia, and these all have various roles in relation to the prevocational period. Currently resources to support medical training across the continuum are dispersed via this wide range of stakeholders, who lack formal interaction structures at a national level. Many of the roles of these bodies in relation to prevocational training have evolved over time; nevertheless there is an opportunity to more clearly define a leadership entity to oversee development and review of the prevocational period into the future.

Figure 12 Stakeholders involved in prevocational training in Australia

AMC & MBA

The MBA's involvement in relation to medical training is primarily regarding medical registration. The completion of medical school signals the time of transition from student registration to provisional registration, and the completion of internship currently signals the time of transition from provisional registration to general registration. General registration is a historical construct, where following internship medical practitioners were able to practice independently, usually as general practitioners (GPs), prior to the development of vocational

training for GPs in the late 1980s. The role of general registration in relation to the current model of medical training where independent practice does not occur until completion of a vocational training program, has recently been questioned (COAG 2015). Nevertheless there seems to be general stakeholder consensus that general registration should be granted to a medical practitioner following a period of supervised practice of between 1-2 years and no earlier, as a safeguard to the public.

The AMC, in addition to its recent involvement in internship, is responsible for accreditation of medical schools and over the last decade of specialty College programs. It also provides a service to support the assessment and registration of international medical graduates. While the premise for the AMC's involvement in the prevocational space was to allow for accreditation by a single body for all education providers along the continuum of medical training, the current model does not actually achieve this as there is no accreditation of providers for PGY2+ or other non-vocational positions.

Further, the AMC has become involved to a greater extent in the prevocational area compared to its involvement with universities or Colleges. For example, while the AMC accredits Colleges in relation to their role as training providers, the Colleges then accredit the health services where vocational trainee clinical experience is undertaken. A different model has been used by the AMC for prevocational training, given the lack of oversight of this area by an independent registered training organisation. The AMC 'reviews' PMCs (or their equivalents) in relation to their accreditation functions, which then accredit health services against a broad range of standards developed by the AMC in relation to their roles as 'training providers'. These 'health service' standards are based on medical school accreditation requirements, and hence compare the roles of medical schools (for student training) with the roles of health services (for intern training).

This is an unusual model when one considers that health services are not recognised largely as training institutions in the same way that medical schools are; and that an individual health service may have 5 or 100 interns for which to develop a 'training program'. Such a devolved model of training responsibility leads to significant variation of program delivery, the potential for conflict of interest between health service employer and training provider roles, lack of oversight of aggregate prevocational trainee outcomes and exit rates, and lack of co-ordination and integration with bodies responsible for medical school and vocational training. It is recommended that this model be reconsidered going into the future.

Universities and Vocational Colleges

Universities are accredited by the AMC to prepare medical students to meet the outcomes requirements of medical graduates. Universities are involved in training later in the medical continuum, as they also provide accredited courses to supplement some specialty training programs (e.g. RACMA, RANZCP), and support the professional development of specialists (e.g. through a range of further postgraduate courses and programs). However they are currently not directly involved in the prevocational period.

There is likely a significant opportunity for Universities to work with the organisation(s) responsible for prevocational training to develop effective transition programs that support 'work-ready' medical graduates. In addition, there may be opportunities for universities to support short course-based learning in the prevocational period (e.g. standardised programs regarding safety to practice). This would reduce variation in current practice and enhance the role of Universities as being providers of life-long medical learning.

Vocational colleges' roles have evolved significantly over the last decade. Initially established and accredited as providers of specific post-graduate training programs, in response to MBA requirements for practitioners to undertake annual continuing medical education (CME), they have also evolved to provide and monitor CME activities on behalf of their members. In the last five or so years, as medical graduate numbers across Australia have increased, Colleges have also become more involved in workforce planning, with a number undertaking workforce reviews and developing policy and public statements in this area (RACS 2015). Even more recently, some Colleges have become involved in the prevocational space in attempts to better prepare junior doctors for vocational training (RACS 2014). This is a valuable initiative, but is not yet part of an integrated inter-disciplinary curriculum strategy for junior doctor training.

Vocational Colleges are well placed to understand and make recommendations regarding the curriculum entry requirements for junior doctors into their specialty; they are national organisations yet their members are practitioners that lead medical training within health services. Colleges have also established horizontal integration via inter-disciplinary committees to consider issues affecting vocational training in general. It may be appropriate for vocational colleges through these committees to have a leading role in the curriculum reform necessary to better develop and prepare prevocational doctors for vocational training, through the development and assessment of discipline-specific clinical training requirements during the prevocational period.

CPMEC & NMTAN

CPMEC was recognised as the peak body that represented prevocational training. However it's Commonwealth funding was ceased in 2014, and its current and future role is uncertain. While in its previous role it did not have a mandate to develop or lead national prevocational reform or research, its members have significant experience in prevocational training and should continue to have a voice in the finalisation and implementation of reforms which will directly affect them and their trainees.

The National Medical Training Advisory Network (NMTAN) was formed by Health Workforce Australia, and is currently the Commonwealth government's main medical workforce training advisory body. It includes representatives from the main stakeholder groups in medical education, training and employment. Its work focuses on workforce planning and co-ordination, and it is developing further published reports subsequent to the HWA 2025 report regarding future medical specialty workforce needs (Parnis 2015). While this body is more involved with workforce planning than curriculum development and delivery, it should clearly be linked with any new medical training governance structure.

Health Services

Public health services in Victoria are currently under enormous operational and financial stress. The current cost of an intern (including on-costs) is approximately $90K per annum, and it costs over $100K for a PGY2 doctor. When a large proportion of their time is undertaking administrative and communication activities, this is likely not value for money.

Executives and managers are accountable for the quality and timeliness of the care they provide to their patients and community, yet are not accountable in the same way for the quality or satisfaction of their medical trainees. Health services as the main providers of clinical experience need to be accountable for the clinical outcomes of their trainees. These need to be reflected in the Statement of Priorities that Victorian health services negotiate each year with the Department of Health and Human Services (DHHS), and be visible objectives to health services CEOs and Executive Directors. Health services need to see this as a core function, and allocate funding accordingly, as well as monitor and evaluate their own outcomes of training.

Integrated Governance Model

As discussed, this research has provided evidence for a further needs analysis to be undertaken in relation to the prevocational curriculum. Further, it is suggested that curriculum requirements are likely to be two-fold, and reflect both the transition from student to practitioner, and the practitioner embarking on a postgraduate career. It may therefore be

appropriate for future *prevocational training governance* to reflect these dual requirements with greater direct involvement by medical schools and Colleges in the prevocational space.

Figure 13 Governance of Prevocational Period

Universities
Safe Practice

Colleges
Clinical Foundations
for discipline
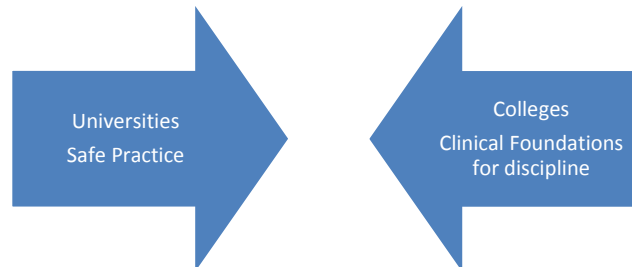
The registration of prevocational trainees with an educational body should be given serious consideration as it would support both training progression and workforce planning. A model of prevocational governance shared by medical schools and colleges could be considered for accreditation by the AMC. In such a model, trainee registration may remain with their medical school until entry to vocational training (or exit from further training), and as also suggested previously, medical schools may be involved in the development and trainee assessment of modules regarding safe practice. Medical school trainee oversight could be complemented by clinical curriculum and assessment requirements for prevocational terms determined by the relevant College and supported by College representatives within health services, as is currently the case for vocational trainees. Accreditation of prevocational terms would be by the Colleges, incorporated in their vocational accreditation processes, which are themselves accredited by the AMC.

Beyond a new model of governance for the prevocational period is a requirement for the creation of a *national integrated medical training governance structure* across all phases of medical training; from medical school to prevocational and vocational training. An overarching integrated national governance structure would define an operational structure that supports integrated training and that allows for representation of those with expertise, experience and responsibility for the various phases of medical training. Such a structure, if based on existing bodies, would allow for better pooling and sharing of limited resources to support a nationally integrated and consistent approach. It would also:

- Set and review objectives of each of the phases of medical training, in particular to support integration of training across the continuum
- Evaluate the outcomes of training at each phase

- Support workforce and training planning across the training continuum

Figure 14 Integrated Medical Training Governance Structure
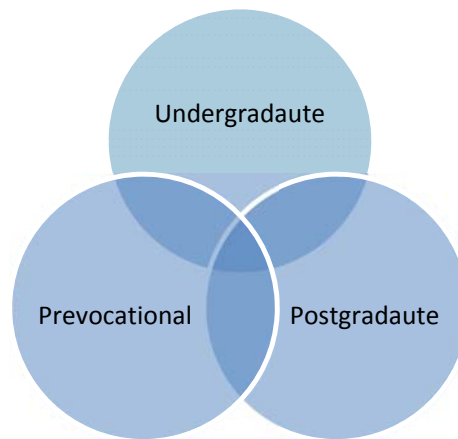
7.4 Program Evaluation

7.4.1 COAG National Intern Review

Despite the existence of a prevocational program in Australia for at least 20 years, there has not been a formal evaluation of this during this time. In 2014, the Council of Australian Governments (COAG) announced a Medical Intern Review led by Professor Andrew Wilson. A discussion paper was circulated to key stakeholders in April 2015, followed by an Options paper in June 2015 (COAG 2015). The review's final recommendations are expected in early 2016. The reviewers have noted a lack of evidence in relation to the objectives and outcomes of prevocational training; that there are widely-held assumptions; and that there are varying views from different stakeholders. Feedback to the initial discussion paper indicated a majority view that there were sufficient issues regarding the effectiveness and efficiency of the prevocational period that reform (whether incremental or more substantial) was recommended. In this context the research findings from this study are even more relevant, and draft findings from this research have been submitted to the reviewers and incorporated into some of the reform recommendations.

The review has already raised awareness of the limitations of the current internship model, and recommendations for regular systemic evaluation of the prevocational program going forward (COAG 2015) have been made. While this is useful, any ongoing evaluation, and indeed any implementation of recommendations arising from the Intern Review will need to

be led by a national organisation with the appropriate expertise and standing. As noted previously, the lack of a jurisdictional or national governance structure for prevocational training makes setting training objectives and program evaluation extremely difficult. While the AMC has developed standards related to outcomes of intern training within its NITF, it does not have the infrastructure to enable it to undertake regular and ongoing program evaluation or development. Additionally, it does not currently have any governance over the PGY2 period of training or beyond.

7.5 Future Opportunities for Research in this Field

This research has created a rich dataset which has not yet been explored in its entirety. It would be useful to review this data further; for example to consider other individual terms to assess their strengths and weaknesses in providing clinical learning according to the ACFJD – such as general practice, psychiatry and community intern terms that have been introduced progressively in Victoria over the last five years, but not evaluated as a cohort.

Similarly, it would be useful to further refine the Intern Survey to form a validated tool that can be used for ongoing periodic evaluation of individual clinical placements, to allow for the further accumulation of evidence regarding appropriate clinical training experiences. This will provide much-needed evidence for further periodic program review and revision. There is also an opportunity to review in further detail how individual and demographic factors may impact on an individual's clinical placement experience, and to use this to inform the development of programs accordingly.

7.5.1 Characteristics of Alternative Training Placements

As noted, there has been significant expansion of intern (and some PGY2) clinical placements in Victorian health services over the period 2008-2015. Most of these have been within existing units in existing health services, however in Victoria there has also been the placement of interns into new units in previously accredited health services; the creation of twelve-month regional placements (that were previously sites for trainee rotation from metropolitan health services), the development of community-based rural intern programs, and the development of intern and PGY2 programs within the private sector.

While there has been some review of aspects of these programs (Best 2015), there has been no formal evaluation of the clinical experience within these different settings. While these

settings all have potential benefits (such as close contact with senior medical staff) they may also have limitations (such as clinical casemix) which need to be evaluated to ensure that trainees have exposure to the range of necessary clinical experiences required throughout their training. A validated tool based on the intern survey used in this research could assist in building a profile of clinical experiences relevant for a range of different vocational training pathways.

7.5.2 Characteristics of Emerging Medical Workforce

The medical workforce of the future is changing from the medical workforce of the past. There are a greater proportion of women graduating from medicine, and medical graduates are seeking careers with overall reduced hours and flexibility; procedural specialties remain in high demand, as do specialties providing the opportunity for continuity of care (Walton 2015). There may also be increasing opportunities for medical graduates to remain working for periods as 'hospital specialists' or 'hospitalists/career medical officers', as competition for vocational training and limited training places create opportunities for alternative workforce roles. The initial training and ongoing professional development needs of all these medical graduates will need to be met in the future. A role for Universities and/or specialist Colleges in supporting the educational needs of doctors who are not in vocational training will become increasingly important. Additionally, registration of this currently 'invisible' workforce with an education provider such as a medical school will strengthen medical workforce data for workforce planning purposes.

In the future there is likely to be the development of new clinical roles as workforce substitution continues to allow other professional groups to undertake tasks previously the sole domain of doctors; a training model needs to be established to provide a sustainable solution to rural medical workforce needs; and medical training needs to have the flexibility and adaptability to be able to respond in changes to community and health policy demands. This can only be practically achieved with integrated medical training governance that is properly informed about its current medical workforce and is prepared to work with government, employers, education providers and the doctors themselves to drive high quality healthcare delivery through the innovative models of the future.

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Definitions

ACFJD – the Australian Curriculum Framework for Junior Doctors; a national prevocational curriculum co-ordinated by CPMEC and launched in October 2006; it has since been revised in 2009 and 2012.

AMC – Australian Medical Council

Clinical Placement Experience - refers to a specified set of clinical activities undertaken within the health service/practice environment, as compared with the ACFJD

COAG – Council of Australian Governments (Commonwealth)

Colleges – training organisations accredited by the Australian Medical Council to provide a program of training and assessment leading to the qualification of a medical specialty recognised by the AMC

CPMEC – Confederation of Postgraduate Medical Education Councils

DHHS – Department of Health and Human Services (Victorian Government)

EPA – Entrustable Professional Attributes

EWTD – European Working Time Directive

FP – Foundation Program (United Kingdom)

FPC – Foundation Program Curriculum

Intern – a junior doctor undertaking the first year of postgraduate medical training

Internship – a 12-month period of employment and training for a medical intern

Jurisdictional – state/territory

MBA – Medical Board of Australia

NITF – National Intern Training Framework

PGY2 – a junior doctor undertaking the second (or subsequent) year of (non-vocational) postgraduate medical training

PMCs – Postgraduate Medical Councils

Vocational Training – training of a junior doctor registered with a discipline-specific vocational training College training

Appendices

1. Australian Curriculum Framework for Junior Doctors - Mapping Tool

2. Intern Clinical Placement Experience Survey

3. PGY2 Clinical Placement Experience Survey

4. Health Service Reports (example – Health Service B)

5. Supervisor Group Interview Questions

Appendix 1 Australian Curriculum Framework for Junior Doctors - Mapping Tool

Australian Curriculum Framework for Junior Doctors	UK Foundation Programme Curriculum July 2012
CLINICAL MANAGEMENT (Learning Area)	
SAFE PATIENT CARE (Category) **Systems (Subcategory)** • Undertakes their work in ways which acknowledge the complex interaction between the healthcare environment, doctor & patient • Uses mechanisms that minimise error e.g. checklists, clinical pathways • Participates in continuous quality improvement e.g. clinical audit **Risk & prevention** • Identifies the main sources of error & risk in the workplace • Recognises and acts on personal factors which may contribute to risk to patients and staff • Recognises potential risks to patients & staff **Adverse events & near misses** • Understand the harm caused by errors & system failures • Document & report adverse events in accordance with local incident reporting systems • Recognise & manage adverse events & near misses (ADVANCED) **Public health** • Identifies the determinants of the key health issues of the local community • Informs authorities of each case of a 'notifiable disease' • Acts in accordance with the management plan for a disease outbreak (ADVANCED) **Infection control** • Rationally prescribes antibiotic/antiviral therapy for common conditions • Practices correct handwashing and aseptic techniques • Always uses methods to minimise transmission of infection between patients **Radiation safety** • Describes the risks associated with exposure to radiological investigations or procedures • Rationally orders radiological investigations and procedures • Regularly evaluate their ordering of radiological investigations and procedures (ADVANCED) **Medication safety** • Identifies the medications most commonly involved in prescribing & administration errors • Prescribes & administer medications safely	**3.2 Quality and safety improvement** F1 outcomes • Delivers high quality care in accordance with local/national guidelines F2 outcomes (in addition to F1) • Manages, analyses and presents at least one quality improvement project and uses the results to improve patient care **7.1 Makes patient safety a priority in clinical practice** F1 outcome • Delivers high-quality reliable care in accordance with clinical care pathways, care bundles, protocols and consultant prescription • Recognises and works within limits of competency requesting appropriate assistance/senior guidance to ensure patient safety F2 outcomes (in addition to F1) • Recognises when patient safety is at risk and institutes changes to reduce risk **7.7 Infection control and hygiene** F1 and F2 outcomes • Demonstrates continuously high standard of practice in infection control techniques • Complies with local requirements for learning related to infection control • Complies with local requirements for immunisation against communicable disease

• Routinely reports medication errors & near misses in accordance with local requirements	
	7.6 Safe use of medical devices F1 and F2 outcomes • Demonstrates correct use of relevant medical devices and interpretation of non-invasive monitoring
PATIENT ASSESSMENT **Patient identification** • Follows the stages of a verification process to ensure the correct identification of a patient • Complies with the organisation's procedures for avoiding patient misidentification • Always confirms with others the correct identification of a patient	
History & Examination • Recognises how patients present for common problems and conditions • Elicit s symptoms & signs relevant to the presenting problem or condition • Undertakes and can justify clinically relevant patient assessment	**7.2 History and examination** F1 outcomes • Obtains accurate patient history and examination utilising all relevant sources of information • Performs accurate physical examination and elicits physical signs • Presents patient history and findings succinctly and accurately F2 outcomes (in addition to F1) • Rapidly makes a focused clinical assessment in different settings and with uncooperative patients
Problem formulation • Discriminates between the possible differential diagnoses relevant to a patient's presenting problems or conditions • Synthesises information gained from assessment to generate a ranked problem list & provisional diagnosis • Regularly re-evaluates the patient problem list as part of the clinical reasoning process	**7.3 Diagnosis and clinical decision making** F1 outcomes • Makes appropriate differential diagnosis and formulates a management plan F2 outcomes (in addition to F1) • Reviews initial diagnosis (with F1), refines problem lists and plans appropriate strategies for investigation and management **7.4 Undertakes regular patient review** F1 outcomes • Takes responsibility for regular reviews and expedites patient investigation and management F2 outcomes (in addition to F1) • Refines appropriate strategies for investigation and management and leads regular reviews of treatment response to oversee patients' progress along treatment plan
Investigations • Selects, conducts and can justify investigations in the context of particular patient presentations • Follows up and interprets investigation results appropriately to guide patient management • Identifies and provides relevant and succinct information when ordering investigations	**11. Investigations** F1 outcomes • Requests/arranges/interprets appropriate ECG, laboratory tests and other investigations to aid diagnosis • Interprets basic radiographs (chest, abdomen and bones) and identifies correct and incorrect positions of nasogastric tubes F2 outcomes (in addition to F1) • Maintains and improves their interpretive skills across an increasing range of investigations and clinical outcomes The following investigations are commonly requested or required during a hospital admission or as an outpatient or in general practice. Laboratory tests • Haematological

	o Full blood count
	o Coagulation studies
	o Inflammatory markers
	• Biochemical
	o Urea and electrolytes
	o Blood glucose
	o Cardiac markers
	o Liver function tests
	o Amylase
	o Calcium and phosphate
	o Lactate
	o Arterial blood gases
	• Pathological
	o Histopathological/cytopathological, microbiological sampling including blood
	cultures (obtained by correct aseptic technique), tissue (including biopsies and
	surgical specimens) and pus
	o Post mortem examination
	• Bedside tests (tests performed in proximity to the patient)
	o 12 lead ECG
	o Tests of respiratory function: peak flow, spirometry
	o Urinalysis
	• Imaging tests
	o Plain radiographs e.g. chest X-ray, abdominal X-ray
	o Trauma radiography
	o Cross sectional imaging e.g. ultrasound, CT and MRI
Referral & consultation	**7.9 Interface with different specialties and with other professionals**
• Applies the criteria for referral or consultation relevant to a particular problem or condition	F1 outcomes
• Identifies & provides relevant & succinct information	• Makes appropriate referrals within the hospital
• Makes appropriate use of other health professionals in patient assessment	F2 outcomes (in addition to F1)
	• Takes part in the process of referral from primary to secondary and/or tertiary care
	and vice versa
	• Able to make referrals across boundaries and through networks of care
EMERGENCIES	
Assessment	**8.1 Promptly assesses the acutely ill, collapsed or unconscious patient**
• Recognises the abnormal physiology & patient manifestations of critical illness	Competences are context-dependent and so will not necessarily be at the same level in all acute situations. For example, foundation doctors will not be expected to have the same level of competence to manage seriously ill children as that expected with adults. All foundation doctors should always work within their own level of competence and seek senior assistance and support when appropriate in a timely manner.
• Recognises & effectively assesses acutely ill, deteriorating or dying patients	
• Initiates resuscitation when clinically indicated prior to full assessment of the patient	F1 outcomes
	• Uses an Airway, Breathing, Circulation, Disability, Exposure (ABCDE) approach
	to assessing acutely unwell or collapsed patients
	• Recognises patients with acute illness requiring urgent/emergency treatment
	and initiates early management
Prioritisation	F2 outcomes (in addition to F1)
• Describes the principles of triage	• Rapidly performs primary assessment, evaluates and recognises the severity of illness in acutely ill or collapsed patients
• Identifies patients who require immediate resuscitation & when to call for help e.g. Code Blue /MET	• Recognises the different prognostic significance of the component elements of Glasgow Coma Scale (GCS) and takes appropriate action
• Provides clinical care in order of medical priority	**8.2 Responds to acutely abnormal physiology**

	<u>F1 outcomes</u> • Takes appropriate timely action to treat a patient with abnormal physiology <u>F2 outcomes</u> (in addition to F1) • Anticipates and plans appropriate action to prevent deterioration in vital signs
Basic Life Support • Explains the elements of basic airway management, ventilatory & circulatory support • Implements basic airway management, ventilatory & circulatory support • Effectively uses semi-automatic or automatic defibrillators **Advanced Life Support** • Identifies the indications for advanced airway management • Recognises malignant arrhythmias, use resuscitation/drug protocols & manual defibrillation • Participates in decision-making about & debriefing after cessation of resuscitation **Acute patient transfer** • Identifies factors that need to be addressed for patient transfer • Identifies and manages risks prior to patient transfer (ADV)	**9.1 Resuscitation** <u>F1 outcomes</u> • Is trained in immediate life support (ILS or equivalent) and paediatric life support if working with children • Knows how to initiate and respond to a crash call <u>F2 outcomes</u> (in addition to F1) • Is trained in advanced life support (ALS or equivalent) • Initiates ALS resuscitation and leads the team where necessary
PATIENT MANAGEMENT **Management options** • Identifies and can justify the possible patient management options for common problems and conditions • Implements and evaluates a management plan relevant to the patient	**8.3 Manages patients with impaired consciousness, including seizures** <u>F1 outcomes</u> • Investigates causes of impaired/deteriorating consciousness and seizures and commences treatment to correct them <u>F2 outcomes</u> (in addition to F1) • Manages / treats the unconscious or convulsing patient • Understands the impact on the activities of daily living of convulsions and communicates these to patients and their carers/relatives **8.5 Manages sepsis** <u>F1 outcomes</u> • Identifies and manages sepsis early in accordance with local protocols <u>F2 outcomes</u> (in addition to F1) • Identifies and treats the focus of infection in accordance with sepsis resuscitation bundle e.g. http://www.survivingsepsis.org **8.6 Manages acute mental disorder and self-harm** <u>F1 outcomes</u> • Assesses and manages patients' mental health including the risk of harm to self and others <u>F2 outcomes</u> (in addition to F1) • Describes when and how to apply the relevant mental health and capacity legislation **10.1 Manages patients with long-term conditions** <u>F1 outcomes</u> • Accurately re-prescribes long-term medications checking for side effects and significant interactions in the context of

	the current illness (see Good Clinical Care: Safe Prescribing, 2008) F2 outcomes (in addition to F1) • Manages long-term conditions during episodes of acute care
Therapeutics • When prescribing, takes account of the actions, indications, contraindications & potential adverse effects of each medication used • Involves nurses, pharmacists & allied health professionals appropriately in medication management • Evaluates the outcomes of medication therapy (ADVANCED)	**7.5 Safe prescribing** F1 outcomes • Prescribes medicines, blood products and fluids accurately and unambiguously and regularly reviews drug chart • Prescribes appropriately for common important presentations e.g. exacerbation of • chronic obstructive pulmonary disease, congestive cardiac failure, pain F2 outcomes (in addition to F1) • Anticipates changes in medication required on admission, during stay, at discharge and in outpatients • Use strategies other than prescribing to manage patients' symptoms
Pain management • Specifies and can justify the hierarchy of therapies & options for pain control • Prescribes pain therapies to match the patient's analgesia requirements (ADV) • Evaluates the pain management plan to ensure it is clinically relevant (ADV)	**8.4 Manages pain** F1 outcomes • Safely prescribes and administers common analgesic drugs including patient controlled analgesia F2 outcomes (in addition to F1) • Anticipates and prevents pain whenever possible • Ensures safe prescribing tailoring to changing requirements throughout patients' care journey
Fluid & electrolyte management • Identifies the indications for and risks of fluid & electrolyte therapy and use of blood products • Recognises the clinical consequences of gross fluid & electrolyte imbalance in a patient • Develops, implements & evaluates an individualised patient management plan of fluid, electrolyte and blood product use • Maintains a clinically relevant patient management plan of fluid, electrolyte and blood product use (ADV)	
Subacute care • Identifies appropriate subacute care services for a patient • Identifies patients suitable for aged care & rehabilitation programs	
Ambulatory & community care • Identifies the services available to patients outside of the inpatient setting • Arranges for ambulatory & community care programs appropriate for each patient	
Discharge planning • Identifies the elements of effective discharge planning e.g. early, continuous, multidisciplinary • Follows organisational guidelines to ensure smooth discharge • Identifies and refers patients to residential care consistent with clinical indications and regulatory	**10.4 Discharge planning** F1 outcomes • Recognises and records when patients are medically fit for discharge F2 outcomes (in addition to F1) • Produces a competent, legible discharge summary that identifies principle diagnoses, key treatments/interventions, discharge medication and follow-up arrangements in a

requirements (ADV)	timely manner **10.3 Nutrition** <u>F1 outcomes</u> • Takes a basic nutrition history and considers this in planning care <u>F2 outcomes</u> (in addition to F1) • Ensures adequate nutrition (including nutritional supplements) for patients with acute illness and long-term conditions **9.2 End of life care and appropriate use of Do Not Attempt Resuscitation (DNAR) orders/advance decisions** <u>F1 outcomes</u> • Understands the principles of providing high quality end of life care including the use of DNAR orders as outlined in Treatment and care towards the end of life: good practice in decision making (GMC, 2010) <u>F2 outcomes</u> (in addition to F1) • Takes part in discussions regarding end of life care and DNAR orders • Uses the local protocol for deciding when not to resuscitate patients
SKILLS & PROCEDURES **Decision-making** • Explains the indications & contraindications for common procedures • Selects procedures appropriately for patients • Provide a full explanation of the proposed procedure to the patient **Informed consent** • Describes the principles of informed consent • Always applies the principles of informed consent in day to day clinical practice • Recognises and communicates the circumstances that require informed consent to be obtained by a more senior clinician. **Preparation & anaesthesia** • Provides appropriate analgesia and/or premedication • Prepares & positions the patient appropriately • Recognises the indications for local, regional or general anaesthesia (ADV) **Procedures** • Arranges appropriate equipment & describes its use • Arranges appropriate support staff & defines their roles **Post-procedure** • Monitors the patient & provides appropriate analgesia & aftercare • Identify & manage common complications • Interprets results & evaluates outcomes of treatment	**2.1 & 2.2 (see also under ACFJD Communication)** **2.5 Consent** <u>F1 outcomes</u> • Obtains consent as appropriate in accordance with Consent: patients and doctors making decisions together (2008) including for core procedures <u>F2 outcomes</u> (in addition to F1) • Increases the breadth of procedures for which consent is taken in accordance with GMC Guidance
LIST OF SKILLS & PROCEDURES (BY SYSTEM)	**12. Procedures** <u>F1 outcomes</u> • Competently performs and, when sanctioned by a supervisor, teaches medical students in the core procedures listed (see Table 2) either in the workplace or on simulated patients

	F2 outcomes (in addition to F1) • Maintains and improves skills in the core procedures e.g. reliably able to perform venous cannulation in the majority of patients in more challenging circumstances such as during resuscitation • Demonstrates extension of the range of procedures they can perform **Table 2. Core procedures mandated by the GMC for F1**
General **Measurement** Blood pressure measurement Pulse oximetry reading Temperature measurement **Intravenous** Venepuncture IV cannulation IV infusion set up Intravenous drug administration IV fluid & electrolyte therapy	Venepuncture IV cannulation Preparation and administration of IV medication and injections and fluids IV infusion including the prescription of fluids IV infusion of blood and blood products
Diagnostic Blood sugar estimation Blood culture Wound swab **Respiratory** Oxygen therapy Nebuliser/inhaler **Therapeutics** Anticoagulant prescription/monitoring Antibiotic prescription/monitoring Insulin prescription/monitoring **Injections** Intramuscular injections Subcutaneous injections Joint aspiration or injection (ADVANCED) **Cardiopulmonary** 12 lead electrocardiogram Arterial blood gas sampling Peak flow measurement Spirometry Pleural effusion/pneumothorax aspiration Central venous line insertion (ADVANCED) **Gastrointestinal** Nasogastric tube insertion Rectal examination Faecal occult blood analysis Anoscopy/proctoscopy (ADVANCED) Abdominal paracentesis (ADVANCED) **Neurological** Glasgow Coma Score estimation Neck stiffness testing Focal neurological sign identification Papilloedema identification (ADVANCED) Lumbar puncture (ADVANCED) **Mental Health** Mini-mental state examination Psychiatric Mental State Examination Suicide risk assessment Alcohol withdrawal scale use Application of Mental Health Schedule **Women's Health**	Blood culture (peripheral) Intramuscular injection Subcutaneous injection Perform and interpret an ECG Arterial puncture in an adult Perform and interpret peak flow

Fundal height assessment	
Foetal heart sound detection	
Urine pregnancy testing	
Speculum examination	
Endocervical swab / PAP smear (ADVANCED)	
Gynaecological pelvic examination (ADVANCED)	
Child Health	
Infant respiratory distress assessment	
Infant/child dehydration assessment	
Apgar score estimation	
Newborn examination (ADVANCED)	
Neonatal CPR (ADVANCED)	
Surgical	
Scrub, gown & glove	
Assisting in the operating theatre	
Surgical knots & simple wound suturing	Injection of local anaesthetic to skin
Local anaesthesia	
Simple skin lesion excision	
Suture removal	
Complex wound suturing (ADV)	
Ear Nose & Throat	
Throat swab	
Anterior rhinoscopy	
Anterior nasal pack insertion	
Auroscopy/otoscopy	
External auditory canal irrigation	
Ext. aud. canal ear wick insertion (ADVANCED)	
Ophthalmic	
Visual field assessment	
Visual acuity assessment	
Direct ophthalmoscopy	
Eye drop administration	
Eye bandage application	
Eye irrigation	
Eyelid eversion	
Corneal foreign body removal	
Slit lamp examination (ADVANCED)	
Intraocular pressure estimation (ADVANCED)	
Urogenital	Urethral catheterisation in adult females and males
Bladder catheterisation (M&F)	
Urine dipstick testing	
Urethral swab	
Trauma	
Primary trauma survey	
In-line immobilisation of cervical spine	
Cervical collar application	
Pressure haemostasis	
Volume resuscitation	
Peripheral neurovascular assessment	
Plaster cast/splint limb immobilisation	
Joint relocation	
Secondary trauma survey (ADVANCED)	
Intercostal catheter insertion (ADV)	Airway care including simple adjuncts (Especially suited for simulated models/manikins)
COMMON PROBLEMS & CONDITIONS	
Abdominal pain	
Asthma	
Cough	
Addiction (smoking, alcohol, drug)	
Anaphylaxis	
Bleeding in 1st trimester	
Breathlessness	
Cardiac arrhythmias	
Chest pain	
Child abuse	
COPD	

Coma Cognitive or physical disability Constipation Deliberate self-harm Delirium Dementia Depression and anxiety Diabetes: new cases/complications Diarrhoea Disturbed or aggressive patient Domestic violence Dysuria &/or frequent micturition Elder abuse Envenomation Falls, esp. in the elderly Functional decline/impairment Gastrointestinal bleeding Genetically determined conditions Headache Heart failure Ischaemic heart disease Injury Joint disorders Leg ulcers Limb ischaemia Liver disease Loss of consciousness Minor trauma Multiple trauma Neoplasia Non-accidental injury Non-specific febrile illness Pneumonia/resp infection Poisoning Post-operative care Psychosis Pyelonephritis and UTIs Reduce urinary output Renal failure Septicaemia STIs Seizure disorders Spinal disorders Stroke/TIAs SAH Substance abuse Tiredness/Anaemia Upper airway obstruction Urinary Incontinence Weight gain Weight loss	

COMMUNICATION	

PATIENT INTERACTION **Context** • Arranges an appropriate environment for communication, e.g. private, no interruptions • Uses good communication to ensure effective healthcare relationships • Uses effective strategies to deal with the difficult or vulnerable patient **Respect** • Treats patients courteously & respectfully,	**See also 2.2** **2.1 Treats the patient as the centre of care within a consultation**

showing awareness & sensitivity to different backgrounds • Maintains privacy & confidentiality • Provides clear & honest information to patients & respects their treatment choices	F1 outcomes • Prioritises the needs of patients above personal convenience without compromising personal safety or safety of others • Works in partnership with patients in an open and transparent manner, treats patients as individuals and respects their perspective/views on their own treatment F2 outcomes (in addition to F1) • Works with patients and colleagues to develop sustainable individual care plans to manage patients' acute and long-term conditions
Providing information • Applies the principles of good communication and communicates with patients & carers in ways they understand • Involves patients in discussions and decisions about their care **Meetings with families or carers** • Identifies the impact of family dynamics on effective communication • Ensures relevant family/carers are included appropriately in meetings and decision making • Respects the role of families in patient health care	**2.2 Communication with patients** F1 outcomes • Communicates effectively and with understanding and empathy in straightforward consultations F2 outcomes (in addition to F1) • Demonstrates increasing ability and effectiveness in communicating more complicated information in increasingly challenging circumstances e.g. time limited consultations (outpatients and GP clinics) and as outlined (2.3 - 2.5) • Deals increasingly independently with queries from patients and relatives **10.2 Supporting patient decision making** F1 outcomes • Encourages and assists patients to make decisions about their care F2 outcomes (in addition to F1) • Works with the MDT to plan care for those with long-term illness • Encourages and ensures evaluation of patients' capacity to self-care
Breaking bad news • Participates in breaking bad news to patients & carers • Shows empathy & compassion **Open disclosure** • Explains and participates in implementing the principles of 'open disclosure' • Ensure patients and carers are supported & cared for after an adverse event	**2.3 Communication in difficult circumstances** F1 outcomes • Breaks bad news to patients or carer/relative effectively and compassionately, and provides support, where appropriate F2 outcomes (in addition to F1) • • Recognises where patient's capacity is impaired and takes appropriate action
Complaints • Understand the factors likely to lead to and prevent complaints • Uses local procedures to respond to complaints • Adopts behaviours designed to prevent complaints	**2.4 Complaints** F1 and F2 outcomes • Recognises situations which might lead to complaint or dissatisfaction • Apologises for errors and takes steps to prevent/minimise impact
MANAGING INFORMATION **Written** • Describes & complies with organisational policies regarding timely and accurate documentation • Demonstrates high quality written skills e.g. writes legible, concise & informative discharge summaries • Describes and uses appropriate structure & content for specific correspondence e.g.	**7.8 Medical record-keeping and correspondence** F1 outcomes • Maintains accurate, contemporaneous notes • Seeks out and records results of investigations and tests in a timely manner F2 outcomes (in addition to F1) • Formulates accurate and succinct clinic letters and discharge summaries

referrals, investigation requests, GP letters **Electronic** • Uses electronic patient information & decision-support systems recognizing their strengths and limitations • Use electronic resources in patient care e.g. to obtain results, discharge summaries, pharmacopoeia • Describes & complies with policies regarding information technology e.g. passwords, e-mail & internet **Health records** • Describes and complies with legal/institutional requirements for health records • Uses the health record to ensure continuity of care • Facilitates appropriate coding & classification by accurate documentation	
Evidence-based practice • Describes the principles of evidence-based practice & hierarchy of evidence • Uses best available evidence in clinical decision-making • Critically appraises evidence & information (ADVANCED)	**6.2 Evidence, guidelines, care protocols and research** <u>F1 outcome</u> • Recognises, understands and follows appropriate guidelines <u>F2 outcomes</u> (in addition to F1) • Finds and interprets evidence relating to clinical questions • Demonstrates the use of literature, guidelines and experience in the development of clinical skills over the previous year
Handover • Describes the importance and features of handover that ensure patient safety & continuity of care • Performs effective handover e.g. team-member to team-member, hospital to GP to ensure patient safety and continuity of care	**1.3 Continuity of Care** <u>F1 outcomes</u> • Brings accurate information to handover and indicates priorities appropriately <u>F2 outcomes</u> (in addition to F1) • Organises handover and task allocation, anticipating problems for the next clinical team/shift and takes pre-emptive action where required
WORKING IN TEAMS	
Team structure • Identifies the healthcare team e.g. medical team, multidisciplinary stroke team, which is appropriate for a patient • Includes the patient & carers in the team where possible • Identifies that team leaders can be from different health professions and respects their roles • Uses graded assertiveness when appropriate • Respects the roles and responsibilities of team members **Team dynamics** • Contributes to teamwork by behaving in ways that maximises the teams' effectiveness including teams which extend outside the hospital • Demonstrate an ability to work with others and resolve conflicts when they arise • Demonstrate flexibility & preparedness to change **Teams in action** • Identifies and adopts a variety of roles within a team (ADVANCED) **Case presentation** • Presents cases effectively in a variety of ways to senior medical staff and other health	**1.4 Team-working** <u>F1 outcomes</u> • Displays understanding of personal role within their team including supporting the team leader and listening to the views of other healthcare professionals <u>F2 outcomes</u> (in addition to F1) • Organises and allocates work within their clinical team to optimise effectiveness

professionals	
PROFESSIONALISM	
DOCTOR & SOCIETY **Access to healthcare** • Identifies how physical or cognitive disability can limit patients' access to healthcare services • Provides access to culturally appropriate healthcare • Adopts a non-discriminatory approach to patient care **Culture, society & healthcare** • Behaves in ways which acknowledge the social, economic & political factors in patient illness • Behaves in ways which acknowledge the impact of culture, ethnicity & spirituality on health • Identifies one's own cultural values that may impact on one's role as a doctor **Indigenous patients** • Behaves in ways which acknowledge the impact of history & the experience of Indigenous Australians on presentations • Behaves in ways which acknowledge Indigenous Australians' spirituality & relationship to the land • Behaves in ways which acknowledge the diversity of indigenous cultures, experiences & communities **Professional standards** • Complies with the legal requirements of being a doctor e.g. maintaining registration • Adheres to professional standards • Respects patient privacy & confidentiality **Medicine & the law** • Complies with the legal requirements in patient care e.g. Mental Health Act, death certification • Completes medico-legal documentation appropriately • Liaise with legal & statutory authorities, including mandatory reporting where applicable (ADV) **Health promotion** • Advocates for healthy lifestyles and explains environmental & lifestyle risks to health • Uses a non-judgemental approach to patients & their lifestyle choices • Evaluates the positive & negative aspects of health screening & prevention (ADVANCED) **Healthcare resources** • Use finite healthcare resources wisely to achieve the best outcomes • Behaves in ways which acknowledge the complexities and competing demands the healthcare system (ADVANCED)	**4.1 Medical ethical principles and confidentiality** <u>F1 and F2 outcomes</u> • Practises in accordance with the principles of Good Medical Practice (2006), The Trainee Doctor (2011) and Confidentiality (2009) **4.3 Comprehension of relevance of outside bodies to professional life** <u>F1 and F2 outcomes</u> • Recognises many organisations and bodies that are involved in medical education and regulation of medical practice **10.5 Health promotion, patient education and public health** <u>F1 outcomes</u> • Explains to patients the possible effects of lifestyle, including the effects of diet, nutrition, smoking, alcohol and drugs (separately and in combination) <u>F2 outcomes</u> (in addition to F1) • Recognises and uses opportunities to prevent diseases and promote health
PROFESSIONAL BEHAVIOUR **Professional responsibility** • Behaves in ways which acknowledge the professional responsibilities relevant to their	**1.1 Behaviour in the workplace** <u>F1 and F2 outcomes</u> • Acts with professionalism in the workplace and in

position in the healthcare system • Maintains an appropriate standard of professional practice & works within personal capabilities • Reflects on personal experiences, actions & decision-making • Explores and is open to a variety of career options	interactions with patients and colleagues • Acts as a role model and where appropriate a leader for medical students and other junior doctors, and assists and educates other staff
Time Management • Prioritises daily workload & multiple demands to maximise patient outcomes and health service function	**1.2 Time management** <u>F1 outcomes</u> • Is punctual and organised <u>F2 outcomes</u> (in addition to F1) • Delegates tasks and ensures that they are completed
Personal well-being • Is aware of & optimises personal health & well-being • Behaves in ways to mitigate against the personal health risks of medical practice e.g. fatigue, stress • Behaves in ways which mitigate against the potential risk to others from your own health status e.g. infection	**3.1 Risks of fatigue, ill health and stress** <u>F1 outcomes</u> • Recognises that fatigue and health problems in healthcare workers (including self) can compromise patient care and where appropriate, must be urgently addressed <u>F2 outcomes</u> (in addition to F1) • If applicable recognises fatigue/stress/illness in members of the clinical team and seeks senior guidance to reduce this
Ethical practice • Behaves in ways which acknowledge the ethical complexity of practice & follow professional & ethical codes • Consult colleagues about ethical concerns • Accept responsibility for ethical decisions **Practitioner in difficulty** • Identifies the support services available • Recognises the signs of a practitioner in difficulty • Refers appropriately & responds with empathy	**4.2 Legal framework of medical practice** <u>F1 and F2 outcomes</u> • Takes personal responsibility for and is able to justify decisions and actions
Doctors as leaders • Shows an ability to work well with and lead others • Exhibits the qualities of a good leader and takes the leadership role when required (ADV)	**1.5 Leadership** <u>F1 outcomes</u> • Demonstrates a leadership role within the team in certain clinical situations, e.g. when supporting medical students during student assistantships <u>F2 outcomes</u> (in addition to F1) • Demonstrates extended leadership role within the team by making decisions and dealing with complex situations across a greater range of clinical and non-clinical situations, e.g. supervising F1 doctors, leading resuscitation, directing ward rounds, organising handover, etc.
TEACHING & LEARNING	
Self-directed learning • Identifies & addresses personal learning needs • Establishes and uses a system of easily available resources to support own learning • Seeks opportunities to reflect and learn from clinical practice • Seeks and responds to feedback on learning	**6.1 Lifelong learning** <u>F1 outcome</u> • Maintains personal development e-portfolio by recording learning needs and personal reflection including career development and planning <u>F2 outcomes</u> (in addition to F1) • Recognises personal learning needs, addresses these proactively and sets SMART* goals *Specific, Measurable, Achievable, Realistic, Time limited F1 and F2 outcomes
Teaching • Plans, develops and conducts teaching sessions for peers and juniors	**5. Teaching and training** <u>F1 & F2 Outcomes</u> • Delivers presentations and teaching sessions which support learning

• Uses varied approaches to teaching small and large groups • Incorporates teaching into clinical work • Evaluates and responds to feedback on teaching **Supervision** • Provides good supervision e.g. by offering an orientation, learning opportunities is available and by being a role model • Adapts level of supervision to the learner's competence and confidence • Provides constructive, timely and specific feedback based on observation of performance • Participates in feedback and assessment processes • Provides constructive guidance or refers to an appropriate support to address problems (ADV)	• Participates in the assessment of medical students and other healthcare professionals and provides constructive feedback • Reflects on feedback from learners and supervisors to improve own teaching and training skills

Intern Clinical Placement Experience Survey

December 2012

Demographic Questions
Date of completion of Survey: /   /12
1. What is your 2012 employing health service?
☐ A   ☐ B   ☐ C   ☐ D
☐ E   ☐ F   ☐ G
2. What type of degree is your medical degree?
☐ Undergraduate degree   ☐ Graduate degree
3. Where did you undertake your medical degree?
☐ University of Melbourne   ☐ Monash University   ☐ Deakin University
☐ Notre Dame University   ☐ Interstate University   ☐ Overseas University
4. What is your proposed specialty of medical career?
5. What is your Gender?   ☐ Male   ☐ Female
6. What is your current Age? (Optional)

Clinical Placement Questions	Response
<u>Interns</u>: What are the specialties of your 2012 non-core rotations? *please refer to these rotations in this order for the relevant question throughout the survey	Non-core #1 [ ] Non-core #2 [ ]

Survey Question					
I believe that my clinical experience this year has enabled me to meet intern curriculum objectives as defined by the Australian Curriculum Framework for Junior Doctors? (tick one)	Strongly disagree ☐	Disagree ☐	Neutral ☐	Agree ☐	Strongly agree ☐

For how many of your patient encounters did you undertake the following activities in each rotation?		None	A few	Some	Most	All	Overall, do you believe your experience in this activity has been sufficient?
CLINICAL MANAGEMENT							
Patient Assessment							
1. Make focussed clinical patient assessments.	Core Emergency	1	2	3	4	5	☐ Yes
	Core Medicine	1	2	3	4	5	☐ No
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
2. Develop a patient problem list.	Core Emergency	1	2	3	4	5	☐ Yes
	Core Medicine	1	2	3	4	5	☐ No
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
3. Regularly review patient problem list.	Core Emergency	1	2	3	4	5	☐ Yes
	Core Medicine	1	2	3	4	5	☐ No
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
4. Interpret a variety of investigations.	Core Emergency	1	2	3	4	5	☐ Yes
	Core Medicine	1	2	3	4	5	☐ No
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
5. Participate in referral to other care providers (medical/allied health etc).	Core Emergency	1	2	3	4	5	☐ Yes
	Core Medicine	1	2	3	4	5	☐ No
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	

For how many of your <u>patient encounters</u> did you undertake the following activities in each rotation?		None	A few	Some	Most	All	Overall, do you believe your experience in this activity has been sufficient?
Safe Patient Care							
6. Participate in a quality improvement activity (e.g. audit).	Core Emergency	1	2	3	4	5	☐ Yes
	Core Medicine	1	2	3	4	5	☐ No
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
7. Recognise a potential risk to patient safety.	Core Emergency	1	2	3	4	5	☐ Yes
	Core Medicine	1	2	3	4	5	☐ No
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
8. Practise minimising transmission of infection between patients (e.g. handwashing).	Core Emergency	1	2	3	4	5	☐ Yes
	Core Medicine	1	2	3	4	5	☐ No
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
Emergencies							
9. Assess an acutely unwell patient.	Core Emergency	1	2	3	4	5	☐ Yes
	Core Medicine	1	2	3	4	5	☐ No
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
10. Recognise a deteriorating patient.	Core Emergency	1	2	3	4	5	☐ Yes
	Core Medicine	1	2	3	4	5	☐ No
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
11. Implement basic airway management, ventilatory & circulatory support (BLS).	Core Emergency	1	2	3	4	5	☐ Yes
	Core Medicine	1	2	3	4	5	☐ No
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
12. Participate in Advanced Life Support (ALS) resuscitation.	Core Emergency	1	2	3	4	5	☐ Yes
	Core Medicine	1	2	3	4	5	☐ No
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	

For how many of your <u>patient encounters</u> did you undertake the following activities in each rotation?		None	A few	Some	Most	All	Overall, do you believe your experience in this activity has been sufficient?
Patient Management							
13. Implement a patient management plan.	Core Emergency	1	2	3	4	5	☐Yes ☐No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
14. Manage a patient's medication throughout their stay.	Core Emergency	1	2	3	4	5	☐Yes ☐No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
15. Prescribe pain therapies.	Core Emergency	1	2	3	4	5	☐Yes ☐No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
16. Prescribe medicines, blood products or fluids.	Core Emergency	1	2	3	4	5	☐Yes ☐No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
17. Participate in patient discharge planning.	Core Emergency	1	2	3	4	5	☐Yes ☐No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
18. Take part in discussions regarding end of life care (e.g. resuscitation orders).	Core Emergency	1	2	3	4	5	☐Yes ☐No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	

For how many of your <u>patient encounters</u> did you undertake the following activities in each rotation?		None	A few	Some	Most	All	Overall, do you believe your experience in this activity has been sufficient?
Skills & Procedures							
19. Explain to a patient the process of informed consent.	Core Emergency	1	2	3	4	5	☐ Yes ☐ No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
20. Perform venepuncture.	Core Emergency	1	2	3	4	5	☐ Yes ☐ No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
21. Perform IV cannulation.	Core Emergency	1	2	3	4	5	☐ Yes ☐ No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
22. Administer IV medication.	Core Emergency	1	2	3	4	5	☐ Yes ☐ No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
23. Administer IV infusions of fluids.	Core Emergency	1	2	3	4	5	☐ Yes ☐ No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
24. Administer IV infusion of blood/products.	Core Emergency	1	2	3	4	5	☐ Yes ☐ No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
25. Perform peripheral blood culture.	Core Emergency	1	2	3	4	5	☐ Yes ☐ No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	

For how many of your <u>patient encounters</u> did you undertake the following activities in each rotation?		None	A few	Some	Most	All	Overall, do you believe your experience in this activity has been sufficient?
26. Perform intramuscular (IM) injection.	Core Emergency	1	2	3	4	5	☐ Yes ☐ No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
27. Perform subcutaneous (SCT) injection.	Core Emergency	1	2	3	4	5	☐ Yes ☐ No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
28. Perform an electrocardiograph (ECG).	Core Emergency	1	2	3	4	5	☐ Yes ☐ No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
29. Interpret an electrocardiograph (ECG).	Core Emergency	1	2	3	4	5	☐ Yes ☐ No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
30. Perform arterial puncture (ABGs).	Core Emergency	1	2	3	4	5	☐ Yes ☐ No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
31. Perform & interpret peak flow measurement.	Core Emergency	1	2	3	4	5	☐ Yes ☐ No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
32. Perform injection of local anaesthetic (LA) to skin.	Core Emergency	1	2	3	4	5	☐ Yes ☐ No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	

For how many of your <u>patient encounters</u> did you undertake the following activities in each rotation?		None	A few	Some	Most	All	Overall, do you believe your experience in this activity has been sufficient?
33. Perform urethral catheterisation.	Core Emergency	1	2	3	4	5	☐ Yes ☐ No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
34. Perform simple airway care including the use of simple adjuncts (e.g. Lardel airway).	Core Emergency	1	2	3	4	5	☐ Yes ☐ No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
COMMUNICATION							
Patient Interaction							
35. Involve patients in discussions regarding their care.	Core Emergency	1	2	3	4	5	☐ Yes ☐ No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
36. Include families/carers in decision-making process.	Core Emergency	1	2	3	4	5	☐ Yes ☐ No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
37. Break bad news to patients or relatives.	Core Emergency	1	2	3	4	5	☐ Yes ☐ No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
38. Apologise for an error (open disclosure).	Core Emergency	1	2	3	4	5	☐ Yes ☐ No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
39. Take steps to minimise impact of an error.	Core Emergency	1	2	3	4	5	☐ Yes ☐ No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	

For how many of your <u>patient encounters</u> did you undertake the following activities in each rotation?		None	A few	Some	Most	All	Overall, do you believe your experience in this activity has been sufficient?
40. Identify a potential patient complaint.	Core Emergency	1	2	3	4	5	☐Yes ☐No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
Managing Information							
41. Prepare correspondence e.g. letters/discharge summaries.	Core Emergency	1	2	3	4	5	☐Yes ☐No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
42. Use best available evidence in decision-making.	Core Emergency	1	2	3	4	5	☐Yes ☐No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
43. Perform clinical handover.	Core Emergency	1	2	3	4	5	☐Yes ☐No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
PROFESSIONALISM							
Doctor & Society							
44. Recognise specific legal requirements in the clinical setting.	Core Emergency	1	2	3	4	5	☐Yes ☐No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
45. Undertake health promotion in the clinical setting.	Core Emergency	1	2	3	4	5	☐Yes ☐No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	

For how many of your <u>patient encounters</u> did you undertake the following activities in each rotation?		None	A few	Some	Most	All	Overall, do you believe your experience in this activity has been sufficient?
Professional Behaviour							
46. Prioritise daily tasks.	Core Emergency	1	2	3	4	5	☐ Yes
	Core Medicine	1	2	3	4	5	☐ No
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
47. Justify your clinical decisions.	Core Emergency	1	2	3	4	5	☐ Yes
	Core Medicine	1	2	3	4	5	☐ No
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
48. Take on a leadership role.	Core Emergency	1	2	3	4	5	☐ Yes
	Core Medicine	1	2	3	4	5	☐ No
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
Working in Teams							
49. Understand own role within a team.	Core Emergency	1	2	3	4	5	☐ Yes
	Core Medicine	1	2	3	4	5	☐ No
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	

How often were you able to undertake the following in each rotation?		Never	Rarely	Sometimes	Often	Consistently	Overall, do you believe your experience in this activity has been sufficient?
50. Plan your learning needs.	Core Emergency	1	2	3	4	5	☐ Yes ☐ No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
51. Reflect on own clinical practice.	Core Emergency	1	2	3	4	5	☐ Yes ☐ No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
52. Participate in teaching of others.	Core Emergency	1	2	3	4	5	☐ Yes ☐ No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	
53. Receive feedback on your teaching.	Core Emergency	1	2	3	4	5	☐ Yes ☐ No
	Core Medicine	1	2	3	4	5	
	Core Surgery	1	2	3	4	5	
	Non-core #1	1	2	3	4	5	
	Non-core #2	1	2	3	4	5	

Do you have any further comments you would like to make regarding the strengths of the clinical experience in your intern year?

_____

_____

Do you have any further comments you would like to make regarding the weaknesses of the clinical experience in your intern year?

_____

_____

Thank you very much for completing this survey. The results will be analysed to make recommendations to improve junior doctor clinical placement experience.

PGY2 Clinical Placement Experience Survey

December 2013

Demographic Questions
Date of completion of Survey: /   /13
1. What is your 2013 employing health service?
☐ A   ☐ B   ☐ C   ☐ D ☐ E   ☐ F   ☐ G
2. What type of degree is your medical degree?
☐ Undergraduate degree   ☐ Graduate degree
3. Where did you undertake your medical degree?
☐ University of Melbourne   ☐ Monash University   ☐ Deakin University ☐ Notre Dame University   ☐ Interstate University   ☐ Overseas University
4. What is your proposed specialty of medical career?
5. What is your Gender?   ☐ Male   ☐ Female
6. What is your current Age? (Optional)

Clinical PGY2 Stream	Vocational Training
In what Clinical Stream is your PGY2 year? Medical ☐ Surgical ☐ General ☐ Critical care ☐ Not applicable ☐ Other (please specify)	Are you registered with a Specialty College for vocational training? Yes ☐ No ☐ If so, please tick which College: Royal Australasian College of Physicians ☐ Other College (please specify)

Survey Question					
I believe that my clinical experience this year has enabled me to meet prevocational curriculum objectives as defined by the Australian Curriculum Framework for Junior Doctors? (tick one)	Strongly disagree ☐	Disagree ☐	Neutral ☐	Agree ☐	Strongly agree ☐

Clinical Activity	Overall, do you believe your experience in this activity has been sufficient?	
1. Participate in a quality improvement activity (e.g. audit).	☐ Yes	☐ No
2. Recognise a potential risk to patient safety.	☐ Yes	☐ No
3. Assess an acutely unwell patient.	☐ Yes	☐ No
4. Recognise a deteriorating patient.	☐ Yes	☐ No
5. Implement basic airway management, ventilatory & circulatory support (BLS).	☐ Yes	☐ No
6. Participate in Advanced Life Support (ALS) resuscitation.	☐ Yes	☐ No
7. Take part in discussions regarding end of life care (e.g. resuscitation orders).	☐ Yes	☐ No
8. Explain to a patient the process of informed consent.	☐ Yes	☐ No
9. Administer IV medication.	☐ Yes	☐ No
10. Administer IV infusions of fluids.	☐ Yes	☐ No
11. Administer IV infusion of blood/products.	☐ Yes	☐ No
12. Perform intramuscular (IM) injection.	☐ Yes	☐ No
13. Perform subcutaneous (SCT) injection.	☐ Yes	☐ No
14. Perform an electrocardiograph (ECG).	☐ Yes	☐ No
15. Interpret an electrocardiograph (ECG).	☐ Yes	☐ No
16. Perform arterial puncture (ABGs).	☐ Yes	☐ No
17. Perform & interpret peak flow measurement.	☐ Yes	☐ No
18. Perform injection of local anaesthetic (LA) to skin.	☐ Yes	☐ No
19. Perform urethral catheterisation.	☐ Yes	☐ No
20. Perform simple airway care including the use of simple adjuncts (e.g. Lardel airway).	☐ Yes	☐ No
21. Break bad news to patients or relatives.	☐ Yes	☐ No
22. Apologise for an error (open disclosure).	☐ Yes	☐ No
23. Take steps to minimise impact of an error.	☐ Yes	☐ No
24. Identify a potential patient complaint.	☐ Yes	☐ No
25. Use best available evidence in decision-making.	☐ Yes	☐ No
26. Recognise specific legal requirements in the clinical setting.	☐ Yes	☐ No
27. Undertake health promotion in the clinical setting.	☐ Yes	☐ No
28. Take on a leadership role.	☐ Yes	☐ No
29. Plan your learning needs.	☐ Yes	☐ No
30. Reflect on own clinical practice.	☐ Yes	☐ No
31. Participate in teaching of others.	☐ Yes	☐ No
32. Receive feedback on your teaching.	☐ Yes	☐ No

Do you have any further comments you would like to make regarding the <u>strengths</u> of the clinical experience in your PGY2 year?

_____

_____

_____

Do you have any further comments you would like to make regarding the <u>weaknesses</u> of the clinical experience in your PGY2 year?

_____

_____

_____

Thank you very much for completing this survey. The results will be analysed to make recommendations to improve junior doctor clinical placement experience.

Dr Susannah Ahern

University of Melbourne

INTERN CLINICAL PLACEMENT EXPERIENCE SURVEY

Health Service B

This research study aims to investigate the current clinical placement experience of prevocational trainees within Victorian health services through a comparison with a generic prevocational curriculum derived from the Australian Curriculum Framework for Junior Doctors (ACFJD). This part of the research follows an initial survey that has been completed by participating interns at 7 Victorian health services in December 2012. These survey results have been analysed in terms of overall respondent data and individual health service data. Directors and Supervisors of Training are invited to participate in a focus group to review the 2012 survey results from interns in their participating health service, as well as a review of some of the aggregate (respondent) findings.

19/7/2013

Methodology

- A 10 page, paper-based survey was developed consisting of 1 global question, 53 questions derived from the Australian Curriculum Framework for Junior Doctors (ACF), and some demographic questions. The survey was distributed to interns from 7 Victorian health services in December 2012.
- Demographic information collected on page 1 of the survey included:
  - Employing health service
  - Type of medical degree (undergraduate/postgraduate)
  - University where undertook medical degree
  - Proposed specialty of medical career
  - Gender
  - Age
  - Non-core terms x 2
- Following the 53 survey questions, interns were invited to provide comments regarding the strengths and weaknesses of their clinical experience in the intern year.
- The results were analysed using SPSS statistics software.

This is an exploratory study, and given the relatively small sample size, particularly at a health service level, interpretation of results should be made with caution. However, given the relevance of the study to contemporary issues in relation to prevocational training, it is considered that the data is worth interpreting despite the above qualifications.

Results – Survey Response Rates

- The total number of interns surveyed across the 7 Health Services was 111.
- As a proportion of the total available number of 374 interns[1] across those 7 health services, the response rate was 111/374 = **30%.**
- There were a total of 699 Victorian interns in 2012[2], providing an overall response rate of 111/699 = **16%**.

Table 1: Responses based on distribution of Health Services:

Health Service distribution	No. Completed survey	Proportion of completed surveys	Proportion of total Intern Cohort (699)
Inner Metro (2 HSs)	31	28%	34%
Outer Metro (2 HSs)	39	35%	45%
Regional (3 HSs)	41	37%	21%
Total	**111**	**100%**	**100%**

Compared to the total intern cohort in Victoria, regional interns are somewhat over-represented in the survey sample, and metropolitan interns are somewhat under-represented. However the sample is reasonably representative of the total population of interns.

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[1] Postgraduate Medical Council of Victoria (PMCV) 2012 Annual Report
[2] PMCV 2012 Annual Report

A. Health Service B Results

The Health Service B response rate was 17/36 = **47%**.

Demographic Results

- The Health Service B respondents had a higher proportion of <u>graduate</u> (71%) compared to undergraduate (29%) medical students, the opposite to the overall average (54% undergraduate vs 46% graduate respectively). Of the 7 surveyed health services, 5 had a majority of undergraduate students, with 2 regional health services having a majority of postgraduate students. These results reflect likely existing clinical school relationships.
- Ten (59%) of the Health Service B respondents had medical degrees from <u>Deakin University</u>, with the remainder from the University of Melbourne, Monash University, and interstate and overseas universities. The highest proportion of overall survey respondents came from the University of Melbourne (45% of total respondents).
- 53% of Health Service B respondents were <u>male</u>; this compared to an average of 41% of respondents being male for the total respondent cohort.
- Regarding <u>proposed specialty of career</u>, of the 17 Health Service B respondents, 8 (47%) were not sure, 3 (18%) proposed general practice, 3 proposed general/specialty surgery, 1 proposed critical care, 1 proposed general medicine, and 1 proposed 'other'. This is similar to the overall findings for the respondent cohort where overall 29% were not sure and 22% proposed general practice. This compares with only 6% proposing general practice as a career from the inner metro cohort.

Survey Question Results

Overall Survey Question

- Respondents were asked to rate an overall survey question via a Likert scale (strongly disagree = 1, strongly agree = 5); '***I believe that my clinical experience this year has enabled me to meet intern curriculum objectives as defined by the Australian Curriculum Framework for Junior Doctors'***.
- The Health Service B response for the Overall Survey Question was a mean score of <u>4.38</u>, above the mean score of <u>4.08</u> for all health services.

Results of Survey Questions 1 to 53 – grouped by Australian Curriculum Framework Topics

- An analysis was undertaken of the mean score of each of the questions 1 to 53, and within each question, for each term/rotation (core emergency/core medicine/core surgery/non-core 1 & 2). Interns were asked to rate their exposure to specific clinical activities (derived from the ACF); ***"For how many of your <u>patient encounters</u> did you undertake the following activities in each rotation?"*** (Rating 1 = None, 2 = A few, 3 = Some, 4 = Most, 5 = All). These responses were requested for each of the 5 intern rotations. The aim of this analysis was to:

o Determine the exposure of interns to each activity *for each term/rotation*.

o Determine the exposure of interns to each activity *for an average term* (determined as the mean of the term/rotation scores)

The results are as follows, grouped according to the 3 ACF domains, and to 11 ACF topics.

Table 2 – Health Service B ACF topic ratings compared with mean Health Service topic ratings

TOPIC	Health Service B ACF Topic Ratings	TOPIC	Mean HS
Teamwork	4.71	Teamwork	4.41
Managing Information	4.33	Managing Information	4.15
Patient Management	4	Patient Management	3.86
Patient Assessment	3.98	Professional Behaviour	3.84
Professional Behaviour	3.96	Patient Assessment	3.83
Safe Patient Care	3.24	Safe Patient Care	3.36
Teaching & Learning	3.2	Dr & Society	3.15
Dr & Society	3.15	Patient Interaction	3.10
Patient Interaction	3.12	Teaching & Learning	3.09
Emergencies	2.88	Emergencies	2.81
Skills & Procedures	2.52	Skills & Procedures	2.54

The ACF topic with the highest exposure for Health Service B interns was Teamwork, and the ACF topics with the lowest exposure for Health Service B interns were Emergencies and Skills and Procedures. There was variation in score between ACF topics, with scores ranging from between 4.71 (the activities in topic Teamwork were undertaken for most patient encounters) to 2.52 (the activities in topic Skills & Procedures were undertaken for a few/no patient encounters). The general pattern of scoring of topics for Health Service B interns was similar to the overall intern respondent cohort.

Results of Individual Question ratings

Health Service B interns rated exposure to the following 9 activities the highest compared with respondents from the other health service;

- *4 activities from the topic Patient Assessment*
  - *Q1 Make focussed clinical patient assessments*
  - *Q2 Develop a patient problem list*
  - *Q4 Interpret a variety of investigations*
  - *Q5 Participate in referral to other care providers*
- *2 activities from the topic Patient Management*
  - *Q14 Manage a patient's medication throughout their stay*
  - *Q15 Prescribe pain therapies*
- *2 activities from the topic Professional Behaviour*
  - *Q46 Prioritise daily tasks*

- o *Q47 Justify clinical decisions*
- 1 activity from the topic Managing Information
  - o *Q43 Perform clinical handover*

Health Service B interns did not rate exposure any activities the <u>lowest</u> compared with respondents from the other health services.

B. ACF Topic Results by Health Service Region

The results for exposure to ACF topics according to Health Services regional groupings provide the following pattern (*where green = highest score, red = lowest score*):

Table 3 & Graph 2: ACF ratings according to Health Service grouping

TOPIC	InnerMetro	OuterMetro	Regional
Teamwork	4.18	4.37	4.59
Managing Information	4.06	4.15	4.22
Professional Behaviour	3.78	3.80	3.90
Patient Assessment	3.80	3.84	3.85
Patient Management	3.67	3.85	3.99
Safe Patient Care	3.32	3.34	3.41
Teaching & Learning	3.13	3.00	3.13
Dr & Society	3.12	3.03	3.24
Patient Interaction	2.98	3.07	3.19
Emergencies	2.88	2.72	2.82
Skills & Procedures	2.66	2.54	2.47
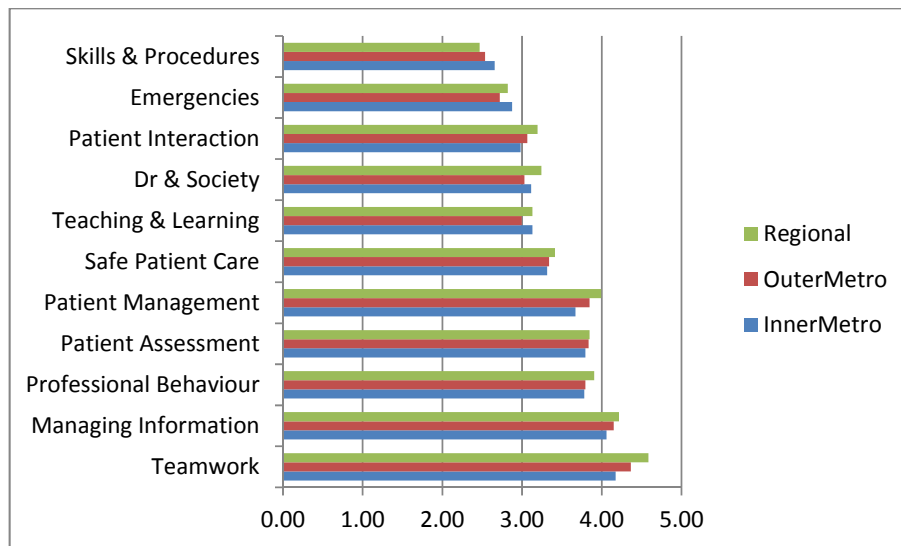
These results show:

1. *Overall, a similar pattern of scoring of ACF topics, regardless of the intern's health service* i.e. Teamwork/Managing Information score highest for interns from all health service groups, and Skills & Procedures/Emergencies score lowest for interns from all health service groups.
2. *There is some minor variation in exposure depending on Health Service groupings*, with:
   - Regional health services having a slightly higher score for a majority of ACF topics, and the lowest score for Skills & Procedures.
   - Inner metro health services having a slightly higher score for the ACF topics Skills & Procedures, Emergencies & Teaching & Learning which are topics that are rated lowest overall, and a lower score for the 6 ACF topics that are rated highest overall.
   - Outer metro health services have the lowest scores for Teaching & Learning, Dr & Society and Emergencies.
   - These results suggest that there may be some difference in exposure to ACF activities between health service groups, and an opportunity for interns to experience different health service environments may be useful.

C. Overall Intern Cohort Survey Results

Insufficiency ratings

As well as providing a rating of exposure to each of the 53 activities, interns were asked to indicate whether they thought their exposure to each activity was sufficient*, "Overall, do you believe your experience in this activity has been sufficient?"*

Sufficiency ratings for each activity were determined and then individual activities were assigned to one of 3 groups:

1. Activities with <u>high</u> levels of insufficiency ratings (>25% of intern cohort considered activity exposure was insufficient); there were 19 activities (35% of activities) in this group.
2. Activities with <u>moderate</u> levels of insufficiency ratings (>10%, <25% of intern cohort considered activity exposure was insufficient); there were 13 activities (25% of activities) in this group.
3. Activities with <u>low</u> levels of insufficiency ratings (<10% of intern cohort considered activity exposure was insufficient); there were 21 activities (40% of activities) in this group.

The results indicated the corollary of the activity ratings, i.e. those activities that had high exposure ratings generally had low insufficiency ratings, and vice versa. Approximately 70% of activities that had high insufficiency ratings were in the ACF domains of Emergencies, Skills & Procedures and also Teaching and Learning. These insufficiency ratings were high across all health services, including inner metro health services where exposure to these activities had been identified as slightly higher.

These results confirm earlier literature that states that interns and junior doctors do not feel confident and may not be competent at specific procedural skills and in early management of emergencies (Duns 2008; Boots 2009). In this survey, interns also reported needing more experience in planning their learning needs, teaching others and receiving feedback on their teaching (teaching and learning domain).

Analysis by Core Terms

Value of core terms

52 of the 53 questions had a core term being the highest scoring term. The only activity for which a Non-core term scored highest was '*Plan your learning needs*'. It is recognised that the Non-core terms include a wide variety of different terms and that they have a higher standard deviation in mean score, indicating significant variation in term ranking. Nevertheless, the results suggest that core terms do provide on average more experience across the ACF than Non-core terms.

Value of individual terms/rotations

Core Emergency had the greatest number of high scoring means for curriculum activities (**29 of the 53 activities**, including 3 equal highest scoring with other core term(s)). These occurred in all ACF domains and topics (with the exception of Working in Teams). In particular, of the ACF Domains/Topics with high insufficiency ratings (Emergencies, and Skills & Procedures), exposure to these activities was highest in the Core Emergency terms.

Core Medicine had the highest scoring means for **20 of 53 curriculum activities**, including 3 equal highest scores with other core term(s)). These occurred in all ACF domains and topics. This suggests that Core Medicine terms provide a valuable experience for interns that is highly relevant to the ACF.

Core Surgery had the highest scoring means for **7 of the 53 activities** (including 2 equal highest scores). These were in the ACF domains of Clinical Management, Topics – Safe Patient Care, Patient Management and Skills & Procedures, and the domain of Communication, Topic – Managing Information. The 5 activities for which Core Surgery was alone rated highest were:

- Participate in a quality improvement activity.
- Prescribe pain therapies
- Explain process of informed consent.
- Perform urethral catheterisation
- Prepare correspondence e.g. discharge summaries

These are all activities that are undertaken to some degree within other terms, but may have a greater applicability to surgical terms. The preparation of discharge summaries may reflect the high patient turnover of surgical units. However the small number of ACF activities for which surgical terms achieved the highest score may suggest that surgical terms do not align as closely with the ACF as do the emergency and medical terms, and that the additional benefit gained from a surgical term for an intern is relatively minor.

Core Surgery had the lowest scoring means of 18 activities, significantly higher than for the Core Emergency or Medicine terms, however slightly lower than for Non-Core terms which had the lowest scoring means of 26 activities. This suggests that for approximately one third of the activities surveyed across a range of ACF topics, that core surgery provided the least valuable experience for interns compared to any other term. Core Surgery scored lowest for activities across all three ACF domains, and for activities within many topics.

D. Summary/Conclusions

Overall Intern Survey

o The respondent demographic characteristics indicated that a majority had an undergraduate medical degree from Melbourne University, were female, and were unsure regarding their proposed career specialty.

o The overall response to the global question was 'Agree' (4.07).

o There was similar variation in exposure to activities within the different ACF topics by interns from all health services, with ACF topics of Managing Information and Teamwork scoring highest overall, and ACF topics of Emergencies, Skills & Procedures scoring lowest overall.

o There was some regional variation in scoring of ACF topics.

o The insufficiency ratings were the corollary of the activity ratings – with topics Emergencies, Skills & Procedures & Teaching and Learning having the highest insufficiency ratings.

o Core terms had the highest rating for 52 of the 53 activities, compared with non-core terms.

o Emergency medicine was the term with the highest rating overall, and Core Medicine also had rated the highest for a large number of activities.

o Core Surgery rated the highest for a small number of activities and rated lowest for approximately one third of the activities.

Health Service B

o Respondents from Health Service B had predominantly postgraduate degrees, primarily were from Deakin University, and were primarily male, which was a different demographic compared to the overall cohort. They had a high proportion (approx. 50%) who were unsure regarding their propose career, and approximately 20% were interested in general practice (similar to the overall cohort).

o Health Service B respondents' rating for the Global question was 'Agree', with a rating of 4.38.

o Health Service B respondents had similar variation in rating to ACF topics/activities compared with the overall respondents, with Teamwork having the highest topic rating and Skills & Procedures having the lowest topic rating.

o Health Service B interns reported exposure to activities within the various ACF topics from highest to lowest as follows; Teamwork, Managing Information, Patient Management, Patient Assessment, Professional Behaviour, Safe Patient Care, Teaching & Learning, Dr & Society, Patient Interaction, Emergencies and Skills & Procedures.

o The Regional health services scored highest overall for the majority of ACF topics, and lowest overall for the ACF topic Skills & Procedures.

o Health Service B had the highest rating of all the health services for 9 activities (particularly in the Patient Assessment and Patient Management topics), and no lowest rating of the health services for any activities.

References

Boots, R. J. (2009). "They just don't get enough! Variable intern experience in bedside procedural skills." <u>INTERNAL MEDICINE JOURNAL</u> 39(4): 222-227.

Duns, G. (2008). "Self-rated preparedness of Australian prevocational hospital doctors for emergencies." <u>EMERGENCY MEDICINE AUSTRALASIA</u> 20(2): 144-148.

Summary Data

OVERALL COHORT SUMMARY – ACTIVITY RANKING

Individual activities were ranked in relation to their mean score for an average term, from highest mean score to lowest mean score.

These activities were then:

(a) Considered in relation to their curriculum domain/topic
(b) Compared with the activity insufficiency ratings

Table - Mean Activity Score Rating (Highest-Lowest)

Mean Activity Score Ranking	Qn	Activity	ACF Domain	ACF Topic	Insufficiency Rating (%)	Assigned *Insufficiency* Level
Interns undertook the following activities for ***most*** patients						
4.69	41	Prepare correspondence e.g. letters/discharge summaries	C	Mx Info	0.0	Low
4.51	46	Prioritise daily tasks	P	P behaviour	1.0	Low
4.40	49	Understand own role within a team	P	Teams	1.0	Low
4.34	8	Practice minimising transmission of infection	CM	SPC	4.7	Low
4.32	17	Participate in patient discharge planning	CM	P Mgt	1.9	Low
4.18	35	Involve patients in discussions regarding care	C	P I/action	2.8	Low
4.17	16	Prescribe medicines, blood products or fluids	CM	P Mgt	2.8	Low
4.13	15	Prescribe pain therapies	CM	P Mgt	5.5	Low
4.07	21	Perform IV cannulation	CM	S & P	0.0	Low
4.06	4	Interpret a variety of investigations	CM	P Axmt	7.3	Low
4.03	43	Perform clinical handover	C	Mx Info	5.7	Low
Interns undertook the following activities for ***some*** patients						
3.99	5	Participate in referral to others	CM	P Axmt	1.9	Low
3.94	14	Manage patient's medication	CM	P Mgt	6.5	Low
3.93	47	Justify clinical decisions	P	P Behav	5.8	Low
3.91	20	Perform venepuncture	CM	S & P	2.8	Low
3.84	13	Implement patient management plan	CM	P Mgt	8.4	Low
3.80	2	Develop patient problem list	CM	P Axmt	8.3	Low
3.79	36	Include families in decision-making	C	P I/action	2.8	Low
3.73	42	Use evidence in decision-making	C	M Info	12.3	Moderate

3.68	1	Make focused patient assessments	CM	P Axmt	8.2	Low
3.68	51	Reflect on clinical practice	P	T & L	15.0	Moderate
3.65	3	Regularly review patient problem list	CM	P Axmt	5.5	Low
3.60	10	Recognise a deteriorating patient	CM	Emerg	11.1	Moderate
3.58	29	Interpret an ECG	CM	S & P	10.5	Moderate
3.49	9	Assess an acutely unwell patient	CM	Emerg	17.4	Moderate
3.46	7	Recognise potential risk to patient safety	CM	SPC	10.3	Moderate
3.22	50	Plan learning needs	P	T & L	30.0	High
3.21	44	Recognise specific legal requirements	P	Dr in Soc	26.2	High
3.13	25	Perform blood culture	CM	S & P	8.7	Low
3.08	19	Explain the process of informed consent	CM	S & P	17.6	Moderate
3.05	48	Take on a leadership role	P	P Behv	28.8	High
3.04	45	Undertake health promotion	P	Dr in Soc	15.5	Moderate
Interns undertook the following activities for *a few* patients						
2.99	37	Break bad news to patients/relatives	C	P I/action	17.0	Moderate
2.92	52	Participate in teaching	P	T & L	29.6	High
2.87	39	Take steps to minimise impact of an error	C	P I/action	20.0	Moderate
2.76	30	Perform ABGs	CM	S & P	14.3	Moderate
2.73	18	Take part in discussions regarding end of life care	CM	P Mgt	27.8	High
2.63	33	Perform urethral catheterisation	CM	S & P	12.4	Moderate
2.59	40	Identify potential patient complaint	C	P I/action	19.8	Moderate
2.49	53	Receive feedback on teaching	P	T & L	44.7	High
2.27	6	Participate in QA activity	CM	SPC	38.9	High
2.24	32	Perform LA injection	CM	S & P	26.0	High
2.24	11	Implement BLS	CM	Emerg	51.9	High
2.23	22	Administer IV medication	CM	S & P	49.1	High
2.22	23	Administer IV infusion of fluids	CM	S & P	51.4	High
2.10	38	Apologise for an error	C	P I/action	26.9	High
Interns undertook the following activities for *less than a few/no* patients						
1.89	24	Administer IV infusion of blood/product	CM	S & P	52.3	High
1.88	28	Perform an ECG	CM	S & P	39.0	High
1.80	26	Perform IM injections	CM	S & P	31.1	High
1.71	12	Participate in ALS resuscitation	CM	Emerg	75.0	High
1.61	34	Perform simple airway care	CM	S & P	70.5	High
1.50	27	Perform SCT injection	CM	S & P	49.0	High
1.43	31	Perform & interpret peak flow	CM	S & P	55.2	High

Table 5: Health Service B mean ranking (highest to lowest) of exposure to 53 clinical activities, compared to mean ranking of 7 health services

Also includes Insufficiency ranking for individual activities (Health Service B compared to % of 7 HSs)

Topic (Activity)	Health Service B Activity Ranking	Mean Activity Ranking	Health Service B % Insufficient Exposure	Mean % Insufficient Exposure
1. Teamwork	**4.71**	**4.40**		
Q49 Understand role in team	4.71	4.40	0%	1%
2. Managing Information	**4.33**	**4.15**		
Q41 Prepare correspondence e.g. discharge summary	4.76	4.69	0%	0%
Q42 Use evidence in decision-making	3.96	3.73	12%	12%
Q43 Perform clinical handover	4.27	4.03	0%	6%
3. Patient Management	**4.00**	**3.86**		
Q13 Implement patient management plan	3.84	3.84	6%	8%
Q14 Manage patient's medication during stay	4.12	3.94	6%	7%
Q15 Prescribe pain therapies	4.52	4.13	0%	6%
Q16 Prescribe medicines, bloods, fluids	4.42	4.17	0%	3%
Q17 Participate in discharge planning	4.44	4.32	0%	2%
Q18 Take part in end of life care discussions	2.69	2.73	24%	28%
4. Patient Assessment	**3.98**	**3.83**		
Q1 Make focused patient assessments	3.79	3.68	6%	8%
Q2 Develop patient problem list	3.98	3.79	12%	8%
Q3 Review patient problem list	3.78	3.65	6%	6%
Q4 Interpret variety of investigations	4.25	4.06	0%	7%
Q5 Refer to other care providers	4.11	3.99	0%	2%
5. Professional Behaviour	**3.96**	**3.84**		
Q46 Prioritise daily tasks	4.72	4.51	6%	1%
Q47 Justify clinical decisions	4.14	3.93	6%	6%
Q48 Take on leadership role	3.04	3.05	41%	29%
6. Safe Patient Care	**3.24**	**3.36**		
Q6 Participate in QA activity (e.g. audit)	1.92	2.27	59%	39%
Q7 Recognise risk to patient safety	3.33	3.45	13%	10%
Q8 Practise minimising infection	4.48	4.34	6%	5%
7. Teaching & Learning	**3.20**	**3.09**		
Q50 Plan learning needs	3.19	3.22	40%	30%
Q51 Reflect on clinical practice	3.89	3.68	13%	15%
Q52 Participate in teaching others	3.05	2.92	13%	30%
Q53 Receive feedback on teaching	2.65	2.48	47%	45%
8. Patient Interaction	**3.12**	**3.10**		
Q35 Involve patients in discussions re care	4.38	4.17	0%	3%
Q36 Involve families in decision-making	3.79	3.79	0%	3%

Q37 Break bad news		2.88	2.99	12%	17%
Q38 Apologise for an error		2.04	2.10	29%	27%
Q39 Take steps to minimise an error		2.87	2.87	18%	20%
Q40 Identify potential patient complaint		2.76	2.59	6%	20%
9. Dr & Society	**3.15**		**3.15**		
Q44 Recognise legal requirements		3.20	3.21	29%	26%
Q45 Undertake health promotion		3.10	3.04	0%	16%
10. Emergencies	**2.88**		**2.81**		
Q9 Assess acutely unwell patient		3.71	3.49	12%	17%
Q10 Recognise a deteriorating patient		3.72	3.60	12%	11%
Q11 Implement BLS		2.28	2.23	44%	52%
Q12 Participate in ALS resuscitation		1.82	1.71	81%	75%
11. Skills & Procedures	**2.52**		**2.54**		
Q19 Explain process of informed consent		2.89	3.08	21%	18%
Q20 Perform venepuncture		4.20	3.91	0%	3%
Q21 Perform IV cannulation		4.36	4.07	0%	0%
Q22 Administer IV medication		2.27	2.23	47%	49%
Q23 Administer IV fluids		2.32	2.22	53%	51%
Q24 Administer IV blood		1.94	1.89	53%	52%
Q25 Perform blood culture		3.18	3.13	0%	9%
Q26 Perform IM injection		1.65	1.80	29%	31%
Q27 Perform SCT injection		1.46	1.50	47%	49%
Q28 Perform an ECG		2.18	1.89	24%	39%
Q29 Interpret an ECG		3.51	3.58	19%	11%
Q30 Perform ABGs		2.73	2.76	19%	14%
Q31 Perform & interpret Peak Flow		1.29	1.44	69%	55%
Q32 Perform injection of LA to skin		2.12	2.24	31%	26%
Q33 Perform urethral catheterisation		2.61	2.63	0%	12%
Q34 Perform simple airway care		1.66	1.61	63%	71%

Group Interviews (2013)

Interview Questions

Aggregate and individual health service 2012 Intern Survey results will be presented to health service Supervisors and key findings will be discussed, including:

- Activities in which interns have regular experience/exposure to, and those to which they do not.
- Activities to which interns consider they have insufficient exposure
- Exposure to activities in core terms

Guided discussion will then be undertaken to explore issues arising from the findings including:

1. Were you surprised by the findings? What findings were expected, and what findings were not expected?
2. Do you think these survey findings are representative of intern clinical experience at your health service, or not? If not, how do you think these survey findings could be explained?
3. What do you think may be barriers to accessing these activities for prevocational trainees? In particular, do you think that these service factors may be relevant, and for which activities?
    a. Efficiency measures
    b. Safety and quality measures
    c. Training capacity issues
    d. Innovation/role relegation
4. For the barriers you have identified, what might be solutions to overcome these barriers to accessing these activities?
5. Do you think that it is important that prevocational trainees undertake activities to which they have limited exposure? Why or why not?
6. Are there any implications from these findings for medical training across the continuum?
7. Are there any implications from these findings for prevocational curriculum and prevocational training policy?

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Title:
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