Development and piloting of patient safety education modules for junior medical officers – an MTRP funded project

Final Report

March, 2009

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Executive Summary

This project was a collaborative initiative of the Postgraduate Medical Councils of Victoria and Tasmania to develop two educational modules on topics related to patient safety.

The project aimed to:
i)   Develop a sustainable junior medical officer patient safety education program, incorporating the principles of flexible delivery, vertical and horizontal integration.
ii)   Improve junior medical officers' understanding of the complex nature of health care systems and the theoretical aspects of medical errors, adverse events and patient safety.
iii) Develop an understanding of the complex nature of human errors, the critical role of system factors in error causation and the role of incident reporting
iv)   Empower junior medical officers to suggest and consider system solutions, especially information technology solutions to improve patient safety.
v)   Foster the no-blame culture through encouragement of feedback and discussion about medical errors and patient safety among junior doctors.

In accordance with the project agreement, the project was steered by a Project Team comprising a Project Officer, Clinician Presenter and advisors from both States. A National Advisory Committee (NAC) was established.

<u>Methodology</u>
The process used to achieve the aims of the project included the following activities:

Literature Review

An extensive review of the literature was undertaken to gain an overview of patient safety education; junior doctors and education; and patient safety curricula.

Development of the modules

The format and content of the two modules were designed to accommodate flexible delivery and vertical and horizontal integration. The modules are an introduction to patient safety topics for postgraduate year 1 (PGY1) doctors, and designed to be part of an intern education session of one hour duration. The modules are also relevant for final year medical students, postgraduate years 2 (PGY2) and 3 (PGY3), International Medical Graduates (IMG)s, and other health care personnel.
Themes of Module 1 content:
*   Interaction between the health care environment, doctor and patient
*   Mechanisms that minimise healthcare associated harm
*   Main sources of risk and error in the JMO environment
Themes of Module 2 content
*   Harm caused by adverse events
*   Recognising, managing and reporting potential risks, adverse events
*   Errors, violations and system failures

Piloting the modules

The modules were initially piloted at two hospitals in Victoria and Tasmania in October 2008, and were evaluated by junior medical officers and Clinician Presenters. The Project Team and the NAC reviewed the evaluations and made amendments as deemed necessary. The modules were piloted again in both states in January 2009.

Module 1 – The Inevitability of error
Overall, the participants' awareness of the inevitability and the causes of medical error increased, and participants recognised the possible implications of personal factors in medical errors.

Module 2 – Managing a clinical incident
Overall, participants' awareness of the importance of reporting increased, and that medical errors are common. The value of talking to peers and sharing of personal experiences was reported as useful.

Recommendations

1. That additional work be undertaken on both modules to extend into more comprehensive educational resources.

2. That extension of the modules should include, where possible, training in a simulated environment.

3. That additional educational modules be developed on topics related to patient safety.

National Advisory Committee
List of Members

Name	Position
Prof Merrilyn Walton (Chair) New South Wales	Faculty of Medicine, Office of Post Graduate Medical Education Faculty of Medicine, The University of Sydney, National Patient Safety Education Framework (Project Director & Content Author); Australian Curriculum Framework for Junior Doctors (Member of curriculum writing group)
Mr Martin Basedow South Australia	Lecturer, Department of Health Management, Flinders University
A/P Brendan Flanagan Victoria	Director, Southern Health Simulation Centre Associate Professor Patient Safety Education Monash University
Dr Simon Hendel Victoria	Junior Medical Officer Western Health
Dr Fiona Lake Western Australia	Head of School School of Medicine and Pharmacology University of Western Australia
Prof William Runciman South Australia	Professor, Patient Safety & Healthcare Human Factors University of South Australia & Joanna Briggs Institute Visiting Professor, Institute of Health Innovation, UNSW Australian Patient Safety Foundation (President)
Dr Paul Scott Tasmania	Junior Medical Officer Royal Hobart Hospital
Dr Jagdishwar Singh	General Manager Confederation of Post Graduate Medical Councils
Dr John Wakefield Queensland	Senior Director, Patient Safety Queensland Health
Dr Kwang Chien Yee Tasmania	Senior research fellow, School of Computing and Information Systems, University of Tasmania; Clinical medicine 3 & 4 Unit co-ordinator, School of Medicine, University of Tasmania. Senior registrar in Gastroenterology, Royal Hobart Hospital

The project was steered by a Project Team comprising representatives from Victoria and Tasmania.

Victoria	Project personnel	Local advisors
	Dr Stuart Marshall - Clinician Presenter	Dr Yi Yang
	Ms Katrina Alsop - Project Manager (May - Aug 08)	Dr Simon Hendel
	Ms Marilyn Bullen - Project Manager (Aug 08 – Mar 09)	Dr Brendan Flanagan
	Ms Carol Jordon - Executive Officer PMCV	Dr Robert O'Brien
		Mr Julian Van Dijk
Tasmania	**Project personnel**	**Local advisors**
	Dr Terry Brown - Clinician Presenter	Dr Kwang Chien Yee
	Ms Karen Molhuysen - Project Officer (Mar-Oct 08)	Dr Paul Scott
	Ms Glen Paley- Project Officer (Oct 08-Mar 09)	
	Dr Lynn Hemmings – Deputy Director PMCT	

POSTGRADUATE MEDICAL COUNCIL OF VICTORIA

FINAL REPORT
TO
DEPARTMENT OF HEALTH AND AGEING

Project: Development and piloting of patient safety education modules for junior medical officers (MTRP Project 18)

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1. INTRODUCTION

A report commissioned by the Medical Training Review Panel (MTRP) in 2005 found significant deficiencies in patient safety education for junior medical officers (JMOs) in Australia and internationally[1]. Of the 67 Medical Education Officers (MEOs) and Directors of Clinical Training (DCTs) who took part in the study, more than 50% reported that their JMOs received less than 2 hours per year of explicit patient safety education. Most respondents also reported that patient safety education resources for JMOs were sparse or non-existent in their organisation.

This study also involved surveying and interviewing 93 JMOs about their experience of medical error and patient safety education. Most could not recall receiving any education regarding the prevention and management of incidents. When given a hypothetical patient safety scenario, only 10% stated that they would complete an incident report.

The Australian Curriculum Framework for Junior Doctors includes 'Safe Patient Care' as one of the key categories in the Clinical Management learning area.[2] This incorporates elements of the National Patient Safety Education Framework, and lists the understanding, recognition, management and reporting of medical errors as key components. However, while the Curriculum Framework identifies capabilities (skills, knowledge and behaviours) required by junior doctors for safe practice, it does not describe the steps involved in developing and building these capabilities. There are few nationally available education programs which address this area of postgraduate medical education.

This proposal builds on the previous MTRP funded study of patient safety and aims to address a key recommendation to develop a robust and effective medical error educational program for JMOs in Australia

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[1] Postgraduate Medical Institute of Tasmania, "Junior medical officers and medical errors": Final report commissioned by the MTRP, 2007.

[2] Australian Curriculum Framework for Junior Doctors Ian S Graham, Andrew J Gleason, Gregory W Keogh, Deborah Paltridge, Ian R Rogers, Merrilyn Walton, Caroline De Paola, Jagdishwar Singh and Barry P McGrath — *Med J Aust* 2007; 186 (7): S14-S19.

2.   PROJECT AIMS

As set out in the project proposal, the project has the capacity to:

i)   Develop a sustainable junior medical officer patient safety education program, incorporating the principles of flexible delivery, vertical and horizontal integration.

ii)   Improve junior medical officers' understanding of the complex nature of health care systems and the theoretical aspects of medical errors, adverse events and patient safety.

iii) Develop an understanding of the complex nature of human errors, the critical role of system factors in error causation and the role of incident reporting

iv)   Empower junior medical officers to suggest and consider system solutions, especially information technology solutions to improve patient safety.

v)   Foster the no-blame culture through encouragement of feedback and discussion about medical errors and patient safety among junior medical officers.

3.   ACHIEVEMENT OF PROJECT MILESTONES

3.1   Stage 1

3.1.1   Appointment of personnel to key positions

A Project Officer was appointed in March 2008 (Postgraduate Medical Council of Tasmania) and a Project Manager in May 2008 (Postgraduate Medical Council of Victoria). Clinician Presenters were appointed in both States in June 2008.

3.1.2   Establishment of National Advisory Committee (NAC) and Local Project Teams

The National Advisory Committee (NAC) was established in April 2008 and is chaired by Professor Merrilyn Walton. The membership of the National Advisory Committee is listed on page 4. The NAC met by teleconference on June 24, August 11, and October 13, 2008. Consultation of NAC members was invited by email on November 17, 2008 and March 2, 2009.

The Project Steering Team, comprising Victorian and Tasmanian representatives is listed on page 4. The Project Steering Team met by teleconference on six occasions, July 29, August 26, September 30, December 16, 2008, and January 20, 2009. A face to face meeting was held on November 9, 2008 in Hobart.

The respective State Postgraduate Medical Councils have oversight of the development of designated educational modules. In Victoria, the Education subcommittee of the Postgraduate Medical Council of Victoria (PMCV) had oversight of this project, and a local project team comprising project personnel and local advisors was formed to oversee the content and development of Module 1 (The inevitability of Error). In Tasmania, the

Postgraduate Medical Council of Tasmania formed a local project team comprising education staff from PMCT with representatives from the University of Tasmania and a junior medical officer from the Royal Hobart Hospital to provide advice for the development of Module 2 (Managing a clinical incident).

3.2   Stage 2

3.2.1   Literature Review

INTRODUCTION

The patient safety movement has gained momentum since the publication of seminal works including The Institute of Medicine's (IOM) 1999 report *To Err is Human*[1], *The Quality in Australian Healthcare Study*[2] and *The National Patient Safety Education Framework*[3]. Focus on patient safety has increased in the clinical, academic and public domains. Improving safety and quality in health care requires competent professionals who deliver patient centred care in organisations with a strong patient safety culture. However, there remains a scarcity of specific patient safety education both at undergraduate and postgraduate level. The report *Junior Medical Officers and Medical Error 2007*[4] made eight recommendations for a training program in medical error for Junior Medical Officers (JMOs):

1. *An explicit approach to the topic of medical error*
2. *A clear definition of what is meant by the term " medical error"*
3. *Improved education about the processes and consequences of completing an incident form*
4. *A concisely written information sheet detailing the process/expectations of error management*
5. *Improved training in the prevention, recognition and reporting of medical error*
6. *Greater information about the theoretical aspects of medical error*
7. *An opportunity for JMOs to discuss, debate and share their experiences of and attitudes to medical error*
8. *Ongoing education in medical error for Registrars so that they can appropriately support JMOs.*

Following these recommendations, the Medical Training Review Panel commissioned the Patient Safety Education Project. This review gives an overview of what is already known about patient safety, patient safety education and best practice in patient safety education delivery, with the intention of developing a sustainable education program for JMOs that will improve their understanding of complex health care systems, particularly with regard to human error, system factors and the role of incident reporting. It is anticipated that the program will facilitate junior medical staff to be involved in system solutions, and foster a culture of 'no-blame' through encouragement of feedback and discussion about patient safety.

OBJECTIVES

To review what is already known about patient safety education.
It was agreed to focus on three themes:
1. Patient safety: an overview
2. Junior doctors and education
3. Patient safety curricula

METHOD

The databases PubMed, ProQuest and Medline were searched for English language articles dated from 1995 – 2008 by using the terms, *patient safety* or *medical error* alone or in combination with *medical education, postgraduate medical education, curriculum, junior medical officers, junior doctors, residents, house officers, quality improvement*. The references from key articles and reports from the electronic search were hand searched. Literature was also sourced from websites and reports published by Postgraduate Medical Councils & Institutes of Australia.

RESULTS

Patient safety: an overview

'Patient Safety' is defined as "the reduction of risk of unnecessary harm associated with healthcare to an expectable minimum."[11] Clinical risk management is a process by which an organisation makes patient care safer through the identification and management of patient related risks, reporting and analysis of incidents, and the implementation of solutions to minimise the risk of recurrence[3].

The increased focus on patient safety can largely be attributed to the changing nature of healthcare delivery – reflected in the increasing complexity of patient care, expansion of technological advances, and the increasing potential for information overload - and the realisation of the scale of healthcare associated harm.[5] This realisation came about when systematic efforts were made, using medical record review, to identify all the instances in which patient harm resulted from the healthcare process itself, rather than an underlying disease or injury. These incidents had previously been given innocuous labels such as complication, sequela, or misadventure. Adverse events are a leading cause of death in North America with between 44 000 and 98 000 patients estimated to die each year in the USA as a result of medical errors[1]. It is reported that in the Australian healthcare system up to 16% of hospitalised patients will suffer an adverse event; 50% of these events are preventable and 1 in 5 of these preventable events lead to serious or permanent disability or death.[2]

> "The issue of patient safety plays a prominent role in health care. Its prominence is fuelled by an expanding body of literature that shows a high incidence of error in medicine, coupled with well publicised medical error cases that have raised public concern about the safety of health care delivery. As empirical literature on medical error expands, medicines vulnerability to error is becoming apparent".[6]

A significant reason preventing health care professionals from developing more effective methods of error prevention, despite overwhelming evidence of its importance, resides within the medical culture[7]. Doctors are socialised to practise without error, to be independent thinkers, to take sole responsibility for the health of their patient, and have infallible knowledge.[7] [8] [9] When these attributes are coupled with a tradition of deference to a medical hierarchy of clinical teachers and mentors who young doctors think are error free, the culture is sustained.[7]
There is a growing acceptance among healthcare professionals that medical error is a fact of medicine and that the culture of silence, shame and blame has no place in modern health care.[10] "Errors represent opportunities for education and constructive changes in health care delivery. Ultimately we may regard them as 'beacons of safety'"[6].

Patient safety and error causation

According to the International Patient Safety Classification (ICPS), error is defined as "failure to carry out a planned action as intended or application of an incorrect plan"[11] which is restated simply by Runciman et al as "doing the wrong thing when meaning to do the right thing."[5]

The definition highlights the unintentional nature of error and therefore, the inappropriateness of attributing blame. Error and outcome are independent, even though error is commonly associated with something that has gone wrong[5].

The person approach

The person approach, which focuses on identifying unsafe acts, uses naming, blaming and shaming of an individual in an attempt to change their behaviour. This approach remains a dominant tradition in medical culture.[12] It is based on the belief that errors happen as a result of factors such as inattention, lack of motivation and carelessness. The person approach separates the error from its context, thereby discounting two important aspects of human error; firstly, that medical error does not occur only with poor practitioners; and secondly, that medical error often falls into recurrent patterns.[12] Blaming an individual is a common response to error because it is easier than dealing with problems in the system[5,12]. While human error may play a role in 70 – 80 % of errors, it is usually a link in a chain of events.[12]

The systems approach

The systems approach recognises that medical errors typically occur as a result of varying combinations of factors which may arise from the environment, team, individual, task, and patient. The systems approach recognises that errors will occur so builds in defences, barriers and safeguards that act to prevent errors from occurring. Reason[12] depicts this approach to human error as the "Swiss cheese model", highlighting that defensive layers are ideally intact, but in reality the layers, like Swiss cheese, have many holes. This in itself is not a problem as there are other layers of defence, however the holes in the defences are continually opening, shutting and shifting position. If temporarily the holes in the layers momentarily line up then a "trajectory of accident opportunity" occurs and an incident or adverse event may result[12]. Reason describes two key factors responsible for the breakdown of defences; 'active failures' which are unsafe acts due to slips, lapses and procedural breaches; and 'latent conditions' which are the inherent weaknesses in a system related to design, work processes and management. These can include system factors such as inadequate equipment, fatigue and understaffing.[12]
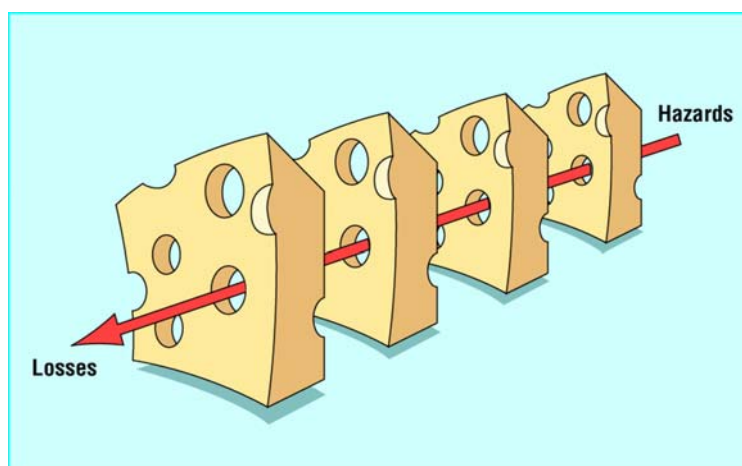
Reason 2000

The use of a systems approach is routinely applied in other industries notably aviation, engineering, and the military. In contrast to the person approach, assigning blame to an individual in isolation is not a priority. The systems approach is built on the premise that "all participants intend for a good outcome and act accordingly in terms of effort and due care."[13] Leape[7] suggests that when errors are accepted as an inevitable accompaniment of the human condition, even among professionals with the highest standards, it will be possible to "shift from a punitive to a creative frame of mind that seeks out and identifies the underlying failures." Leape and Berwick[10] state that we need a culture of "learning, trust, curiosity, systems thinking and executive responsibility."

In working toward changing the culture and aiming to improve patient safety, Australia has been at the forefront with the development of a comprehensive national program of action, underpinned by the NPSEF.[3]

When things go wrong

<u>Reporting</u>

Reporting medical error, adverse events and near misses is integral to improving patient safety through identification of faulty systems, faulty equipment, and unsafe working conditions[14]. An adverse event is an incident that results in harm to a patient, and a near-miss is an incident that did not reach the patient[11]. Management of both types of incident must include appropriate reporting, and in the case of an adverse event, this should be preceded by caring for the people involved including the patient, colleagues and self[5].

Unfortunately, there are many barriers to reporting, and underreporting is believed to be widespread.[14] Factors that act as barriers to reporting include fear of individual or organisational repercussions, fear that medical error will be viewed negatively in relation to competence, concerns related to lack of confidentiality, and uncertainty about how to report.[14] In the study, *Junior Medical Officers and Medical Error,*[4] five key barriers to reporting were identified: apprehension and uncertainty; blame; time constraints; lack of follow-up and feedback after a report is made; and the cultural context in which medicine is practiced.

Reporting relies on practitioners feeling safe to do so, and it becoming a culturally accepted activity within the healthcare community.[15] Making a tangible connection between patient safety and reporting through provision of feedback, demonstrates that reporting is taken seriously and this will promote a professional culture that views error as an opportunity for learning and quality improvement.[14]

Cohen[15] highlights the importance of voluntary reporting systems that are non-punitive and confidential as these provide the most useful information about error causation, as the motivation to report stems from a desire to resolve identified problems rather than to punish individual practitioners. Voluntary reporting gives practitioners an opportunity to tell the complete story without fear of retribution. "The depth of information in these stories is the key to understanding the error".[15] Efforts to improve reporting of incidents through system solutions using available technology appear to be making a positive impact. In Australia, work has been undertaken to develop reporting systems that increase the motivation of health workers to report.[16],[17] Another Australian study by Evans et al[18] highlights that the reporting process needs to be simple and feedback given to reporters.

The effects/feelings

"Doctors are wounded by the same errors, they are the second victims." [9]

Aasland and Ford report that one in three doctors have at least once been responsible for serious patient injury.[19] The emotional impact for a physician can be profound. Feelings of guilt, remorse, fear, anger, embarrassment and humiliation are common.[19][9] For many the experience has had a negative impact on their professional and private life.[19][7] To compound the destructive consequences, physicians are typically isolated by their emotional responses. "The individual response has often been maladaptive, involving excessive self recrimination and the use of inappropriate and counterproductive self defence mechanisms".[20]. Wu[8] advocates that support mechanisms for doctors in the aftermath of a medical error should include the opportunity to discuss the incident without judgement. Disclosure of personal experience of error, by peers and supervisors, also helps to reduce the isolation felt by doctors involved in a medical error[8]. Aasland & Ford[20] suggest the impact may be lighter if the acceptance for mutual criticism and constructive feedback at the workplace is high.

Discussion among colleagues, criticism & feedback

"Most would like to examine their mistakes and learn from them; from an emotional standpoint they need the support and understanding of their colleagues and patients when they make mistakes"[7].

Discussion with colleagues after being involved in a serious adverse event is vital to understanding what went wrong and is thus an important factor in quality improvement.[19] Discussion gives the clinician an opportunity to examine the incident, identify strategies or changes to help prevent similar events, gain insights into how other doctors have coped and minimised the impact, and reduces the sense of isolation.[8,,21] Acceptance of criticism among colleagues reduces the negative impact of adverse events in the clinician, thereby highlighting the importance of feedback in learning from errors[19]. As Croskerry, Wears & Binder convincingly argue: "Importantly for this discussion we learn more from our mistakes than from our successes. Errors are a rich source of learning".[20]

Talking with patients/relatives, disclosure

Open disclosure now forms part of health policy reforms across Australia, USA, Canada, New Zealand and the UK.[22] The Australian National Open Disclosure Standard [23] outlines four steps to promote open communication following an adverse event: (1) expression of regret; (2) a factual explanation of what happened; (3) outlining the consequences of the event; and (4) listing the steps taken to manage the event and prevent a recurrence.

Meeting with the patient is probably one important way of reducing the negative impact of the event for the doctor, the other being able to speak openly about it with colleagues.[19] Disclosure of error to patients, families and hospital colleagues is a difficult and/or threatening process for most physicians.[24] The literature reports an important aspect of medical error education is to design educational systems that support physicians who have committed errors and teach the techniques of delivering difficult news to patients.[24][29][32][35]

> "Resident physicians are an important and vulnerable population whose early experiences with medical errors may shape their future behaviours and coping behaviours".[21]

JMO responses to making errors mirror those found in other clinicians. Feelings after an adverse event include remorse, anger, guilt, inadequacy, distress, guilt/self doubt, frustration and anger and fear of negative repercussions.[21] [7] Engel et al[21] found that the most common mechanism for coping was talking with either medical colleagues or family/non medical friends (96%). Other mechanisms include learning/changing their practice, taking action, physical activity and withdrawal/denial. The ability to cope is dependant on a combination of reassurance and opportunities for learning.[21]

Patient safety curricula

An overview of existing curricula, frameworks and recommendations for patient safety education were reviewed and are shown in Appendix 1. The impetus to integrate patient safety education vertically and horizontally into education programs is evidenced in the extensive list, indicating that this is thought to be a topic of great relevance for health care practitioners at all levels. Vertical and horizontal Integration is outlined by Bradley & Mattick[25] as: learning that transcends traditional divides between different levels of expertise (vertical integration); and learning that brings together various topics, subjects and disciplines by making explicit connections and interrelationships (horizontal integration). General Practice Education and Training (GPET), the Commonwealth body which delivers vocational general practice training in Australia defines vertical integration (of GP education and training) as "the coordinated, purposeful, planned system of linkages and activities in the delivery of education and training throughout the continuum of the learner's stages of medical education".[26]

The advantages of an integrated approach to teaching and learning include creation of an environment for learners to share learning activities; increased collegiality between doctors at different levels of their career; enhanced experience enthusiasm and satisfaction [27]; and improved interdisciplinary teamwork which can assist in reducing error in the workplace.[28]

Reviewed curricula are outlined at Appendix 1.

The literature review showed that while all curricula were evaluated for increases in knowledge of patient safety issues, increases in confidence, awareness or attitudes about patient safety, only Madigoskyet al[33] evaluated students behaviour and skill changes. Madigosky et al evaluated assessment of students' knowledge, skills and attitudes immediately after the curriculum and at one year after. Four skill items improved immediately after the curriculum and at one year: supporting a peer in an error; analysing root causes of error; accurately entering a safety report; and disclosing an error to a patient. Madigosky et al also found responses at one year with change in an undesired direction. These included that students agreed less that the culture of medicine makes it easy to deal constructively with errors; were less likely to be open about errors they witnessed; and were more likely to believe that no-harm incidents did not require disclosure.[33] All curricula evaluated showed positive effects in improving student's confidence, knowledge and positive attitudes. All evaluations showed that students rated the teaching processes highly and found the modules valuable. [29] [30] [32] [33]

<u>Medical education</u>

> "Improving safety and quality of health care requires competent health professionals who deliver patient centred care as members of multidisciplinary teams, and use evidence based practice, quality improvement approaches and information technology. These health professionals know about organisational complexity, systems theory, human factors, professionalism, error recognition, management and prevention."[30]

While there is limited undergraduate education in patient safety, postgraduate education is vital in not only educating physicians about medical error and giving them a forum for discussion and sharing of experiences, but also working towards reforming the "aspects of medical education and socialisation that help to create and perpetuate the existence of avoidable error and reinforce medical collusion about error".[31] Dealing well with things that go wrong will impact on the future of JMOs and that of the health care system.[21] Both JMOs and Medical Education Officers (MEOs) involved in the project *Junior Medical Officers and Medical Error*, believe that education programs need to try to create a culture of learning from errors.[4]

<u>How it could be taught</u>

The literature suggests that patient safety curricula should not be taught through lecture sessions and large group formats alone. Methods used should facilitate self reflection and mindfulness, open discussion, improvement in communication skills not only with patients but with other health care professionals throughout the hierarchy, and discussion of feelings.[21][32][33]

Strategies used successfully in existing curricula include case studies, role plays, high - and low-tech simulation hypothetical scenarios, seminars, videos, small discussion groups, teaching by patients (real, standardised and simulated), peer review, objective structured clinical examinations (OSCE's) and case based interactive or narrative sessions.[30][33] Several authors[32][34][35] stress the importance of a multidisciplinary approach. "An essential aspect of this training is its inter professional approach and the development of effective communication between different professional groups".[35] At the International Association for Medical Education International Symposium on Patient Safety 2006, the importance of inter professional education was highlighted with over 95% of participants recommending joint learning opportunities with nurses and pharmacists.[35] It was also noted that vital to the success of a curricula was the participation of experienced physicians who were willing to disclose their own experiences with medical errors in practice and openly and frankly discuss the issues with medical students.[32][36]

<u>JMO suggestions when asked what they wanted from a medical error education program</u>

When asked what further teaching they would like, JMOs suggested activities such as; chart reviews, clear protocol of what to do when an incident occurred, improved education about the processes and consequences of completing an incident form, greater information about the theoretical aspects of patient safety, an opportunity to discuss, debate and share their experiences of and attitudes to medical error, small group discussions focussing on "real errors" and that they be presented by senior physicians who had committed them.[35][36]

3.2.2 Development of Educational Modules

PROCESS FOR DEVELOPMENT OF THE MODULES

Two educational modules were developed as part of a patient safety and error educational program for JMOs in Australia. The format and content of the two modules were designed to accommodate flexible delivery and vertical and horizontal integration; a method of educational learning that is widely used and recommended [25] [26]. Flexible delivery provides a range of modes of learning and assessment opportunities for students and encourages students to take significant responsibility for their own learning.[37]

The modules were developed to ensure flexibility and integration with other patient safety education. The modules are an introduction to patient safety topics for postgraduate year 1 (PGY1) hospital doctors, but are also relevant for final year medical students, postgraduate years 2 (PGY2) and 3 (PGY3), International Medical Graduates (IMG)s, and other health care personnel. Permission was sought from appropriate personnel at the pilot hospitals to conduct the pilot programs.

CONTENT OF THE EDUCATION PROGRAM

The educational program was designed to address the aims of the project and serves to provide an introduction to patient safety to JMOs. The content of the modules has been informed by:
- The Safe Patient Care guidelines of the Australian Curriculum Framework for Junior Doctors (ACFJD);
- A review of current literature relating to patient safety, medical error and junior doctor education;
- A review of national and international education programs for junior doctors in patient safety: and
- The NAC and local project teams in Victoria and Tasmania.

The modules were developed collaboratively by the PMCV and PMCT. Module 1 focuses on: the causes of adverse events; issues relating to error; the nature of error; and prevention. Module 2 focuses on: managing adverse events; what happens after an adverse event; and learning from adverse events. The themes of the modules are outlined below:

Themes of Module 1 content:
- Interaction between the health care environment, doctor and patient
- Mechanisms that minimise healthcare associated harm
- Main sources of risk and error in the JMO environment

Themes of Module 2 content
- Harm caused by adverse events
- Recognising, managing and reporting potential risks, adverse events
- Errors, violations and system failures

Each module is of one hour duration and designed to be part of an intern education session. In Australia, teaching sessions in the curriculum framework for JMOs are generally one hour sessions. For the opportunity to deliver the information to this target group, the modules were specifically developed to be integrated in this learning time frame. Each module is intended to be practical, reflect topics in the 'Safe Patient Care' component of the ACFJD, and complement existing initiatives of the Australian Commission on Quality and Safety in Healthcare.

DELIVERY OF THE EDUCATIONAL PROGRAM

Two clinician presenters were appointed to conduct the pilot educational program in Victoria and Tasmania. The clinician presenters are experienced medical doctors and have extensive experience in teaching - including patient safety topics- to undergraduate and postgraduate doctors, and both are currently teaching in hospitals.

The literature suggests education about error and patient safety delivery should use a multidisciplinary approach, utilising a variety of methods including: facilitation of self reflection; small group discussions; case studies; audiovisual tools; and seminars. Participation of experienced clinicians willing to disclose their own experiences and discuss issues with JMOs is also deemed a successful teaching strategy.

The modules delivery reflect JMO learning needs, as outlined in the literature review, and incorporate the following teaching methods:
- Lecture style using presentation slides;
- Facilitated group discussion;
- Small group discussions;
- DVD case study on systems error and communication breakdown ("Faultlines", 2002, Sydney Medical Simulation Centre)[38];
- Discussion of actual case studies;
- Disclosure of the clinician presenters' own experiences; and
- JMO self reflection and discussion of JMOs' own experiences of medical error.

Both modules can be delivered independently, although they are more contextually relevant when Module 1 precedes Module 2. A summary of the content of each module is included in the other, that is, a summary of the content of Module 1 is included in Module 2 and vice versa. This assists with continuity of information

Teaching materials for presenters have been developed and trialled by the project clinician presenters. The materials can be viewed (Appendix 2) and include:
- Background information about the project;
- Lesson guides for presenters;
- PowerPoint presentations with speaker notes;
- Resource list of relevant reading material; and
- Evaluation forms to complete and return after module presentation.

Resources for participants have also been compiled. These can be viewed (Appendix 3) and include:
- Selected readings on patient safety;
- List of references and resources; and
- PowerPoint presentation handouts.

3.2.3   Piloting of Individual Modules

Pilot sites to conduct the modules in Victoria and Tasmania were identified, reflecting the diversity of hospitals in each state (eg size, location and mix of prevocational trainees). In Victoria, one large metropolitan and one regional hospital were chosen, both employing JMOs in their first, second and third postgraduate years, and international medical graduates (IMGs). In Tasmania, the two largest hospitals were chosen, one in northern Tasmania, the other in southern Tasmania, also employing JMOs in their first, second and third postgraduate years, and IMGs. The piloting of the modules was carried out in four hospitals in October 2008:
- Launceston General Hospital (Launceston, Tasmania);
- Royal Hobart Hospital (Hobart, Tasmania);

- Ballarat Base Hospital (Ballarat, Victoria); and
- The Alfred Hospital (Melbourne, Victoria).

The Launceston General Hospital (LGH) provides acute care facilities for residents of Launceston and the Northern Region of Tasmania, Australia. It is one of three hospitals in the Acute Health Services Group of the Department of Health and Human Services, Tasmania. The Royal Hobart Hospital (RHH) is Tasmania's largest hospital; the major referral centre and the major centre of clinical teaching and research. It provides services to a population of approximately 240,000 people in the Southern Region. The two Tasmanian hospitals have the majority of JMOs and IMGs in the state.

Ballarat Health Services (BHS) is the largest regional hospital in the Grampians region and is the principal referral hospital for the entire region; an area of 48,000 square kilometres. The Alfred Hospital (TAH) is a major tertiary referral teaching hospital in Melbourne. It has a major role in the provision of specialist services on a state wide and national basis.

3.2.4   Evaluation of the Modules

EVALUATION TOOLS and METHODOLOGY

The following evaluation tools were developed by the NAC in conjunction with the local project teams and can be viewed at Appendix 2.
- Pre-survey tool
- Module 1 evaluation tool
- Module 2 evaluation tool
- Clinician presenter Module 1 evaluation tool
- Clinician presenter Module 2 evaluation tool

The pre-survey tool collected both quantitative and qualitative data and was used to gather demographic data and pre-module knowledge. It was administered at the pilot sites immediately prior to Module 1 presentations. Both Module 1 and Module 2 evaluation tools collected quantitative and qualitative data and questions reflected the different content of the modules. These were administered to the participants immediately after the module presentations.

In order to further evaluate the program, an opportunity arose to present the program to Directors of Clinical Training (DCTs) at a forum held during a prevocational educational conference in Hobart, Tasmania (November 2008). There was an overwhelming and pleasing response from DCTs to the invitation to pilot the modules with their own JMOs. Two medical education staff also requested the modules, which they passed on to the DCT in their workplace.

A total of 19 DCTs from various locations in Australia (including one in New Zealand) expressed interest in piloting the modules. Ten USB flash drives were given out at the DCT Forum. A further nine USB flash drives were posted to the remaining DCTs in the following week (20 November 2008). The USB flash drives contained all of the teaching materials previously outlined on page 15.

An accompanying letter/email asked the clinicians to complete the piloting of the two modules by the 30th January 2009. A reminder email was sent to all DCTs early January 2009.

RESULTS and DISCUSSION

Demographic data

PRE-SURVEY

A total of 68 participants (Tasmania: 39; Victoria: 29) completed the pre-survey modules at the pilot sites in October 2008. There were more female (n=37) than male (29) participants, and most were PGY 1 (n=41). Some medical students also participated (n=13). A large number of participants completed their medical education in local universities (n=50) or other Australian universities (n=6) (Table A)

Table A: Demographic Data: Pilot sites, October 2008

State: total n	Gender: n (%)	PGY: n (%)	University: n (%)
Tasmania	Male: 22 (56%) Female: 17 (44%)	PGY 1: 26 (67%) Medical student: 13 (33%)	University of Tasmania: 30 (77%) Other Australian universities: 3 (8%) International universities: 6 (15%)
Total	39		
Victoria	Male: 7 (24%) Female: 20 (69%) Not stated: 2 (7%)	PGY 1: 15 (52%) PGY 2: 8 (27%) Other: 6 (21%)	Monash University: 11 (38%) University of Melbourne: 9 (31%) Australian National University: 3 (10%) Other: 6 (21%)
Total	29		

Modules

Modules were piloted with JMOs both in Victoria and Tasmania. One hundred and fifteen participants were involved in the module pilots in October 2008 (Table B).

Table B: Number of participants: Modules 1 and 2 by hospital location: October 2008

State: total n	Module 1 (October 2008) Location: n (%)	Module 2 (October 2008) Location: n (%)
Tasmania: 73	LGH: 27 (67%) RHH: 13 (33%) *Total: 40 (100%)*	LGH: 16 (49%) RHH: 17 (51%) *Total: 33 (100%)*
Victoria: 42	BHS: 6 (24%) TAH: 19 (76%) *Total: 25 (100%)*	BHS: 6 (35%) TAH: 11 (65%) *Total: 17 (100%)*
Total	65	50

Evaluation of modules by JMOs

Module 1

Results are for Module 1 evaluation carried out in both Tasmania and Victoria in October 2008, a total of 65 participants.

Key messages

Participants were asked to list the three most important messages for them after the Module 1 presentation. Common themes arose from the responses and these are shown

in Table C. These included: personal factors causing errors (number of responses=51); error prone circumstances (number of responses=31); and error is inevitable (number of responses=24). Examples of the responses are shown below.

Personal factors

> *"Need to put in personal checks to minimise personal errors"* (participant 8, Victoria)

> *"Taking good care of oneself and other colleagues"* (participant 60, Tasmania)

> *"Self-care, eat, sleep, stress reduction"* (participant 61, Tasmania)

Error prone circumstances

> *"Many errors are due to multiple failures (system and human)"* (participant 9, Victoria)

> *"Errors happen when distracted"* (participant 62, Tasmania)

Error is inevitable

> *"It's normal to make mistakes"* (participant 21, Victoria)

> *"Be aware that human errors are inevitable"* (participant 40, Tasmania)

Table C: Key messages learnt from Module 1: total n=64

Key message	Number of responses
Personal factors causing error	51
Error prone circumstances	31
Other	25
Error is inevitable	24
Communication/handover	16
Error is multifactorial	13
Systems/culture contribution	11
Theories/models of error causation	5

Usefulness of session/session elements

Over half of the participants rated the Module 1 session as 'very useful' (52%), and many rated the session 'moderately useful' (48%), while none thought the session 'not at all useful'.

Of those participants who responded, 41 reported the "Faultlines" visual presentation was the 'most useful' compared to the PowerPoint presentation (number of responses=28) and the small group discussion (number of responses=23). Discussion surrounding the "Faultlines" presentation focused on learning aspects of medical error causation and reduction.

Understanding of medical error

Over half of the participants believed that their understanding of medical error changed as a result of the session (57%). The participants were asked to explain how their understanding changed. Common themes arose from the responses and these are

illustrated in Table D. These included: increased knowledge regarding error (number of responses=28); similar to previous education (number of responses=12); and reinforced existing knowledge (number of responses=10). Examples of these are shown below.

Increased knowledge regarding errors

"*More thorough understanding of the whole concept*" (participant 33, Victoria)

"*I agreed with the definitions and understood the issues with errors more clearly*" (participant 49, Tasmania)

Similar to previous education

"*We have had sessions on this topic in the past; however, it helps to have the messages reiterated*" (participant 58, Tasmania)

Reinforced existing knowledge

"*More understanding of the whole concept*" (participant 33, Victoria)

"*Everyone knows it's (error) an issue. People may just need reminding every so often to take time, slow down and take time out…*" (participant 41, Tasmania)

Table D: How understanding of medical error changed due to Module 1: total n=52

	Number of responses
Increased knowledge regarding error	28
Similar to previous education	12
Reinforced existing knowledge	10
Culture eg openness	3
Other	3

General Comments

While most participants felt the session was relevant, well presented and interactive, they also felt more practical examples were needed in addition to a longer session. Similar sessions appear to have been conducted by other teaching institutions. Despite this the module reinforced key ideas and gave a more clinically based focus than previously.

Overall, the participants' awareness of the inevitability and the causes of medical error increased, and participants recognised the possible implications of personal factors in medical errors. The "Faultlines" visual presentation seemed to reinforce these themes.

Module 2

Results are of the Module 2 evaluation carried out in both Tasmania and Victoria in October 2008, a total of 50 participants.

<u>Key messages</u>

The three most important messages for participants were determined after Module 2 presentation. Common themes arose from the responses and these are shown in Table E. These included: importance of reporting (number of responses=33); talking to peers/support (number of responses=27); and medical error is common (number of responses=23). Examples of these are shown below.

Importance of reporting

> "*Need to report medical errors to reduce chance of reoccurance*" (participant 19, Tasmania)

> "*Reporting is important to allow quality and safety development*" (participant 33, Tasmania)

> "*Need to report medical errors for patient safety*" (participant 44, Victoria)

Talking to peers/support

> "*Talk to someone if you see an error*" (participant 13, Tasmania)

> "*Junior medical staff are not alone*" (participant 47, Victoria)

Medical error is common

> "*We are all human and can make mistakes*" (participant 5, Tasmania)

> "*Medical errors are common in practice*" (participant 45, Victoria)

Table E: Key messages learnt from Module 2: total n=49

Key message	Number of responses
Importance of reporting	33
Talking to peers/support	27
Medical error is common	23
Other	12
(Open) disclosure	11
Learning from your mistakes	8
Methods of reporting	7
Low incidence of reporting	4

<u>Usefulness of session/session elements</u>

All the participants responded to the question asking how useful the Module 2 session was to them. There was little difference between the proportion of participants who rated the session as 'very useful' (52%), and 'moderately useful' (48%), while none thought the session 'not at all useful'.

Participants were asked to rate the usefulness of elements of the session on a scale of 1 to 3 where 1 being the 'most useful' and 5 being the 'least useful'. Of those participants who responded, 31 reported the presenters' experiences was the 'most useful' session element compared to: the PowerPoint presentation (number of responses=14); the small group discussion (number of responses=6); the brief version of the 'Faultlines' visual presentation (number of responses=4); and the opportunity to feedback their own experiences (number of responses=4). The presenters' experience was clearly the most valuable aspect. It was felt to 'normalise' error and remove the taboo of discussing it.

<u>Confidence with knowledge</u>

Participants were asked if they felt more confident with their knowledge about: how to report; the importance of responding; and coping strategies, as a result of the session. Table F illustrates the number of responses to those questions. Participants felt more confident with their knowledge about the importance of reporting (number of responses=45), then reported more confidence with knowledge about coping strategies (number of responses=43) and less confident with their knowledge about how to report (number of responses=34).

Table F: Do you feel more confident with your knowledge about: total n=50

	Number of responses
Importance of reporting?	45
Coping strategies?	43
How to report?	34

<u>Likelihood of reporting a medical error</u>

Most participants reported they would be more likely to report a medical error/adverse event as a result of the session. Of those who responded (n=49), 65% of participants would be more likely to report a medical error, 31% were unsure and only 4% would be more likely not to do so. Explanations as to why they would be more likely to report a medical error include:

> *"I now feel that errors are part of being a doctor. They will happen. The important thing is how we react to prevent them happening again"*(participant 16, Tasmania)

> *"Even though it's difficult I want positive outcomes to come from my medical error"* (participant 36, Victoria)

Comments from those who were unsure highlighted barriers such as: not enough time; perception of importance of error; concern about others involved; perceived barriers to reporting; and the culture of blame. Comments included:

> *"I would like to but am always so busy that I forget to do it and it takes so long"* (participant 5, Tasmania)

> *"Depends on magnitude of the error, the cause, time"* (participant 25, Tasmania)

> *"Factors hindering reporting still remain"* (participant 44, Victoria)

> *"Negative culture of blame still persists"* (participant 49, Victoria)

Unfortunately, those who responded 'no' did not explain why they would not report a medical error.

<u>General comments</u>

Many participants appreciated the information and found the Module 2 session useful and important, especially for "new" doctors. Two participants mentioned that ongoing feedback was important, both for improved doctor performance and to communicate the existence of errors made and their importance. One Tasmanian participant appreciated that learning occurred in *"… a safe environment to discuss some personal errors"*.

Overall, participants reported increased awareness of the importance of reporting and that medical errors are common. Furthermore, participants reported the value of talking to peers if involved in medical errors. As the participants felt that the clinician presenters' sharing of their own personal experiences was useful, perhaps this contributed to the willingness to seek peer support.

The majority of participants felt more confident with their knowledge about the importance of reporting due to the session which may have led them to state they are more likely to report a medical error in the future.

Evaluation of modules by clinician presenters

Despite 19 DCTs requesting and receiving the patient safety program to pilot with their JMOs, to date, only two DCTs returned completed evaluation forms. Reasons for non-participation include the fact the DCTs found the time frame for piloting very limiting and reasons for lack of time include: the festive season holiday break; extended holiday periods; the beginning of the new working year starting early January which includes commitments such as orientation of JMOs and teaching.

As many DCTs were unable to pilot the modules in the given timeframe, they were encouraged to pilot the modules at a time which suited them and it was reinforced that their feedback is important to develop and improve the modules.

Both DCTs who responded presented both Module 1 and Module 2. Their feedback is discussed below, according to the survey questions.

<u>How easy were the modules to deliver?</u>

This question required a numerical answer on a Likert scale of 1 to 5 where 1 is 'not at all easy' and 5 is 'extremely easy':
- Module 1: Both DCTs considered Module 1 easy to deliver, nominating 4 on the scale.
- Module 2: One DCT found this module easy to deliver (4) and one DCT found it moderately easy to deliver (3).

Reasons for easy delivery included: simple structure; clear sequence; useful slides; self-explanatory slides; and clear instructions. Reasons for difficult delivery included: sequence needs to be tailored to suit own thinking processes and local situation: and slides could be made more exciting and attractive.

<u>How useful were the guides to presenters?</u>

Likert responses from options 1 to 5 where 1 is 'not at all useful' and 5 is 'extremely useful', the DCTs had differing opinions.
- Guide for Module 1: One DCT found it extremely useful (5) and one DCT found it moderately useful (3).
- Guide for Module 2: One DCT found it extremely useful (5) and one DCT found it moderately useful (3).

Additional information and resources

Suggestions for module improvement included:

"Maybe some more examples of potential causes of error for each of the self, context and task areas" (DCT 1)

"More visual examples of sources of error eg poorly designed equipment" (DCT 1)

"Recording of an audio of the module presentation to go along with the slides with someone speaking as if they were presenting… that would be really useful for the deliverer" (DCT 2)

General comments/suggestions

Overall, the DCTs viewed the modules very positively. Further suggestions and comments included:

"In both sessions, there is an opportunity to work more interactively with small group activities and more discussion. While this may lengthen the course… it can give greater opportunity to give ownership to JMOs and allow them to air their concerns and ideas." (DCT 1)

"Some other support to presenters in how to encourage JMOs to report, and how to encourage Quality and Safety Units to give feedback to those making reports." (DCT 1)

"The verbal feedback from the group was that they found it really useful and enjoyed it. Our department would be keen with your permission to use it with future groups with our local modifications." (DCT 2)

Both DCTs provided modified module presentations to suit their local situations, and are keen to continue delivering the modules.

3.3   Stage 3

3.3.1   Review and amendment of the modules

The NAC met to review the modules. Both modules were subsequently revised by the Project Steering Team at a meeting on 16 December and the following amendments made:

- o Incorporation of epidemiological information so that it is clear to JMOs why the topic of patient safety is important;
- o Inclusion of resource materials for clinician presenters who have limited experience of teaching patient safety topics to health care workers. This would complement other educational resources for delivery of the modules including PowerPoint presentations with facilitator notes, teaching plans, and a resources handout;
- o Inclusion of site-specific information in Module 2 as this would have greater impact on the participants than data gathered from other sites/countries;
- o Inclusion of a list of definitions pertinent to patient safety topics;
- o Increasing the emphasis of patient safety on the goal of harm reduction;
- o Making more explicit how junior doctors contribute to patient safety and how incident reporting can lead to safer patient care; and
- o Timing delivery of the modules to when JMOs have become established in their positions and feel comfortable to disclose their experience of medical error.

The NAC also reviewed the forms developed to accompany the modules, including the pre-education survey, and the evaluation questionnaires for both modules. It was agreed that the forms required no further modification or revision. The educational materials were also reviewed by the NAC and revised during December 2008.

3.3.2 Piloting of the full program

The two modules piloted in October 2008 were evaluated, reviewed and amended after feedback from the first groups of JMOs, the clinician presenters, NAC and local project teams. The revised modules were presented to a new group of JMOs, both in Tasmania and Victoria in January 2009, at the beginning of the new working year.

3.3.3 Evaluation of the full program

The evaluation of the full program involved a total of 57 JMOs who participated: RHH (n=43) and TAH (n=14) (Table G).

Table G: Number of participants: Modules 1 and 2 by hospital location: January 2009

State: total n	Module 1 (January 2009) Location: n (%)	Module 2 (January 2009) Location: n (%)
Tasmania: 43		
	RHH: 23 (100%)	RHH: 20 (100%)
	Total: 23 (100%)	*Total: 20 (100%)*
Victoria: 14		
	TAH: 9 (100%)	TAH: 5 (100%)
	Total: 9 (100%)	*Total: 5 (100%)*
Total	32	25

Module 1

Results are for Module 1 evaluation carried out in both Tasmania and Victoria in January 2009, a total of 32 participants.

Key messages

Participants were asked to list the three most important messages for them after Module 1 presentation. Common themes arose from the results and these are shown in Table H. These included: personal factors causing errors (number of responses=16); error prone circumstances (number of responses=6); and communication and handover (number of responses=9). Examples are shown below.

Personal factors

"Being aware of when you are most likely to cause error" (participant 80, Tasmania)

"Don't let yourself get stressed" (participant 93, Victoria)

"Ask direct questions and think" (participant 111, Tasmania)

Error prone circumstances

"*Mistakes are usually reflections of systemic failures*" (participant 95, Victoria)

"*Errors happen when distracted*" (participant 119, Tasmania)

Communication and handover

"*Proper handover*" (participant 93, Victoria)

"*Need for communication*" (participant 101, Tasmania)

Table H: Key messages learnt from Module 1: total n=32

Key message	Number of responses
Personal factors causing error	16
Other	9
Error prone circumstances	6
Communication/handover	6
Error is inevitable	5
Theories/models of error causation	4
Error is multifactorial	1
Systems/culture contribution	1

Usefulness of session/session elements

Over half of the participants rated the Module 1 session as 'very useful' (56%), and many rated the session 'moderately useful' (44%), while none thought the session 'not at all useful'.

Participants were asked to rate the usefulness of elements of the session on a scale of 1 to 3 where 1 being the 'most useful' and 3 being the 'least useful'. Of those participants who responded, 13 reported the small group discussion was the 'most useful' element of the session, compared to the "Faultlines" visual presentation (number of responses=9) and compared to the PowerPoint presentation (number of responses=9). Two participants did not use the scale and marked more than one element as 'most useful'.

Understanding of medical error

Of the participants who responded (n=27), the majority believed their understanding of medical error changed as a result of the session (81%). Common themes arose from the explanations and these are illustrated in Table I. These included: increased knowledge regarding error (number of responses=4); similar to previous education (number of responses=3); and reinforced existing knowledge (number of responses=2). Examples of these are shown below.

Increased knowledge regarding errors

"*Not so much incompetence but rather about human error/systems error*" (participant 93, Victoria)

"*More aware of potential pitfalls*" (participant 103, Tasmania)

Similar to previous education

"*We have had similar sessions before*" (participant 106, Tasmania)

Reinforced existing knowledge

"*Revision of previously taught material at med school*" (participant 97, Victoria)

Table I: How understanding of medical error changed due to Module 1: total n=10

	Number of responses
Increased knowledge regarding error	4
Similar to previous education	3
Reinforced existing knowledge	4
Other	3

General Comments

The only additional comments this group made concerned the fact that the topic was covered in another Australian University. Despite that, it was felt that the information was essential.

The Module 1 findings from this second group reflect the findings of the first group, particularly the participants' increased awareness of the inevitability and the causes of medical error and the recognition of the possible implications of personal factors in medical errors. However, small group discussion seemed to be the session element which was the most useful for these participants' learning.

Module 2

Results are for Module 2 evaluation carried out in both Tasmania (RHH) and Victoria (TAH), in January 2009, a total of 25 participants.

Key messages

The three most important messages for participants were determined after Module 2 presentation. Common themes from the responses are illustrated in Table J. These included: methods of reporting (number of responses=8); importance of reporting (number of responses=6); and medical error is common (number of responses=6). Examples of these are shown below.

Methods of reporting

"*Who to contact if there is an incident*" (participant 54, Victoria)

"*Reporting of errors and how to do it*" (participant 56, Tasmania)

Importance of reporting

"*It's OK and good to report incidents*" (participant 51, Victoria)

"*It's beneficial to report for the future, incidence avoidance*" (participant 66, Tasmania)

Medical error is common

"*Everyone makes mistakes*" (participant 52, Victoria)

A common theme in the 'Other' category was the learning of practical approaches to patient management, which appears to be a result of the 'Faultlines' visual presentation:

"*Practical approach to unconscious patient*" (participant 71, Tasmania)

Table J: Key messages learnt from Module 2: total n=18

Key message	Number of responses
Other	16
Methods of reporting	8
Importance of reporting	6
Medical error is common	6
Talking to peers/support	2
Low incidence of reporting	1

Usefulness of session/session elements

Of the participants who responded (n=23), most rated the Module 2 session as 'very useful' (65%), and many rated the session 'moderately useful' (35%), while none thought the session 'not at all useful'.

Participants were asked to rate the usefulness of elements of the session on a scale of 1 to 5 where 1 being the 'most useful' and 5 being the 'least useful'. The presenters' experiences was the 'most useful' session element (number of responses=10) compared to the "Faultlines" visual presentation (number of responses=7) along with the lecture/PowerPoint presentation (number of responses=7), compared to the small group discussion (number of responses=5) and the opportunity to feedback own experience (number of responses=4). Some participants did not use the scale and marked more than one element as 'most useful'. The presenters' experience was, once again, clearly the most valuable aspect of Module 2.

Confidence with knowledge

Participants were asked if they felt more confident with their knowledge about: how to report; the importance of responding; and coping strategies, as a result of the session. Table K illustrates the number of responses to those questions. Participants felt equally more confident with their knowledge about both importance of reporting (number of responses=15) and coping strategies (number of responses=15).

Table K: Do you feel more confident with your knowledge about: total n=17

	Number of responses
Importance of reporting?	15
Coping strategies?	15
How to report?	14

<u>Likelihood of reporting a medical error</u>

Most participants reported they would be more likely to report a medical error/adverse event as a result of the session. Of those who responded (n=15), 60% of participants would be more likely to report a medical error and 40% were unsure. None indicated they would be more likely not to report an error. Explanations as to why they would be more likely to report a medical error include:

> "*More confident*" (participant 51, Victoria)

> "*So that analysis may reveal where errors occur repeatedly*" (participant 65, Tasmania)

Overall, the findings of Module 2 reflect the findings of the first group. Participants found Module 2 very useful and relevant and felt the presenters' sharing of own medical error experiences contributed to the usefulness of the session. Understanding the causes of medical error and how to report plus the importance of reporting contributed to the participants' acknowledgment they would be more likely to report a medical error in the future.

3.4   <u>Stage 4</u>

3.4.1   Review of evaluation and reporting

The Project Steering Team reviewed the evaluation data and draft evaluation results for both module presentations and feedback from DCTs. State representatives met on January 29, 2009 to make preparations for developing a draft report. Based on the project plan milestones and evaluation, the Project Steering Team was responsible for drafting the final report for review by the NAC. The final report to the Department of Health and Ageing (DoHA) is due March 31, 2009.

4.   ACHIEVEMENT OF PROJECT AIMS

Aim i)   Develop a sustainable junior medical officer patient safety education program, incorporating the principles of flexible delivery, vertical and horizontal integration

Sustainability
Strategies to ensure the sustainability of this modular education program have been considered carefully. A two-pronged approach has been taken that includes (1) the accessibility and usability of the teaching and learning resources; and (2) the potential for modification of the resources.

The teaching and learning resources are available on CD and DVD. PowerPoint presentations have embedded video content to ensure ease of use and flexibility for facilitators. Written materials are included for clinician presenters (facilitators) and participants. For clinician presenters these include: background information about patient safety; lesson guides for both modules; facilitator notes to accompany the PowerPoint presentations; and evaluation forms. For participants, a manual has been compiled which includes selected readings on patient safety, references and resources, and PowerPoint presentation handouts. A link on the Confederation of Postgraduate Medical Education Councils website can direct enquiries about accessing the teaching and learning resources.

The modules have the potential to be modified to accommodate local requirements, processes and systems. This function also allows updating information and materials when required.

Flexible delivery
The modules can be delivered separately or consecutively. Each can be a stand-alone education session which takes approximately one hour to complete. Various educational methods are incorporated to promote interest and optimal engagement of participants and facilitators. Educational methods used include: lecture; small group discussion; videos; and problem solving activities.

Vertical and horizontal integration
The pilot programs attracted medical students and JMOs in their first, second, third and fourth postgraduate year. The modules were designed as an introduction to patient safety issues that provided appropriate revision for the more senior participants. IMGs were involved in the pilot programs, allowing links to any previous education on this topic. The modules are suitable for use with other health care professionals such as nurses and allied health workers.

Feedback indicates that the design of the program will assist its sustainability. The clear guidelines and sequencing of information make it easy to deliver; the flexibility to include local information and processes ensure relevance.

Aim ii)   Improve junior medical officers' understanding of the complex nature of health care systems and the theoretical aspects of medical errors, adverse events and patient safety.

The complexity of health care systems
Module 1 provides epidemiological information about patient safety issues and perspective in regard to errors and adverse events in Australian hospitals. It addresses basic principles about error, different types of error, and the various components of error in regard to error causation; outlined by Reason as 'self', 'context' and 'task'.[39] Reason's 'Swiss cheese' model of systems error is introduced, highlighting that errors are usually part of a chain of events, and although numerous safeguards and barriers exist to prevent error, errors will still occur if *holes* in the system fail.

The participants are actively engaged in learning about complex health care systems, through large and small group discussion, of various types of errors that they have committed/witnessed, both in the clinical environment and in other settings, and how outcomes can differ widely depending on the environment and context in which the error occurs. The 'Faultlines' video depicts the complexity of the health care system and how *holes* in a system can have a significant impact.

Theoretical underpinning
The modules contain definitions of commonly used terms related to patient safety, to aid understanding of patient safety concepts. The amount of theoretical information on patient safety that can be provided in the education session is constrained by time (one hour sessions), so additional theoretical information is provided to participants in the selected readings and resource list.

Feedback from JMOs indicates that the program does raise awareness and understanding about complex systems that contribute to error and adverse events.

Aim iii)   Develop an understanding of the complex nature of human errors, the critical role of system factors in error causation and the role of incident reporting

Human errors
Different types of human error are presented (slips, lapses and mistakes), and are linked to the 'self', 'context' and 'task' concept[39]. 'Self' (human) factors presented include: stress, fatigue, inexperience, and illness. The impact of 'context' and 'task' factors in relation to human error are also presented.

Large group discussion is used to reinforce how performance shaping factors contribute to error. The modules provide many opportunities for participants to discuss human factors as part of a systems approach to prevent error. The point is made that error and outcome are not the same; many errors occur that have no consequence for the patient, and conversely, harm can occur without an error being made.

Incident reporting
Module 2 presents information about the role of incident reporting in reducing the risk of an adverse event, how to report an incident and reviews the potential barriers to reporting. Support and coping strategies, and the concept of 'the second victim' are a key component of this module. The national standard for Open Disclosure is presented.

Small group discussion is used to promote understanding of incident reporting, how it happens at the local level and the role of incident reporting in minimising harm.

Feedback from JMOs indicates that the program does provide increased awareness and understanding of personal factors that increase the risk of error, and that clinical environments are complex, error prone systems.

Feedback also indicates that the program raises awareness of the importance of incident reporting and that this could lead to a higher rate of reporting by JMOs.

Aim iv)   Empower junior medical officers to suggest and consider system solutions, especially information technology solutions to improve patient safety

Empowering junior medical officers
The information contained in the two modules is a vital first step in empowering JMOs to consider patient safety issues, particularly from a systems perspective. Information on epidemiology and the theoretical aspects of patient safety are key to increasing understanding of this topic. When combined with practical examples and coping and support strategies, this information promotes greater commitment to developing systems solutions that minimise the threat of harm to patients.

Module 1 encourages participants to consider how technology has had an impact on the way they work and the potential for new situations that can lead to error. Module 2 includes presentation of situations in which *holes* in the system have resulted in adverse outcomes for the patient. These situations provide the opportunity for participants to consider how system solutions could be used to minimise the risk of error and adverse outcomes, however, consideration of system solutions based on information technology was not addressed directly.

Feedback indicates that the program can provide JMOs with a sense of 'ownership' which will encourage incident reporting and discussion of patient safety issues. These are a vital part of system solutions.

Aim v)   Foster the no-blame culture through encouragement of feedback and discussion about medical errors and patient safety among junior doctors.

No-blame culture
The modules view patient safety and error from a systems perspective rather than focusing on errors committed by individuals in their day to day work. This assists in fostering a 'just culture' as described by Marx[40] through encouragement of feedback and discussion about patient safety.

The modules provide explicit information about what should happen following an incident including guidelines for open disclosure to patients; how to report an incident; perceived barriers to reporting; the concept of the 'second victim'; doctors feelings and reactions to error; and where to go for support.

In both modules participants are asked to consider their experience of error. In Module 2, participants discuss, in small and large groups, errors that they have committed/witnessed; how the errors were managed; and how they could be better managed. The participants are asked to discuss the local incident reporting system; the circumstances that would encourage them to report; and when they did report, how the outcome affected future reporting behaviour. This facilitates discussion about incident reporting systems that encourage reporting.

> Feedback indicates that the program does provide JMOs with increased confidence to report incidents, and have a greater appreciation for the importance of discussing issues related to patient safety. Discussion by the presenters, which 'normalises' error is an important initial step in changing attitudes to error and the culture of blame.

5.   LIMITATIONS

Two factors were identified as limitations of this project.

1.   The subject area is very extensive and therefore the information that can be included in modules which are designed to be delivered in a one hour training session is of an introductory nature only. This situation could be addressed by increasing the number of modules developed, and by expanding the time frame for each module so that more in-depth information could be included. These suggestions are further outlined in 'Recommendations'.

2.   Larger sample sizes of JMOs in each state would have generated more extensive data. This would have required piloting the project in more hospitals.

6.   DISSEMINATION OF PROJECT FINDINGS

A report on the project will be accessible via the Confederation of Postgraduate Medical Education Councils (CPMEC) website http://www.cpmec.org.au/ This website will also provide access to the educational resources for both modules.

It is anticipated that the national launch of the patient safety education modules will take place at the 14th National Prevocational Medical Education Forum, which will be held in Queensland in November 2009.

7. RECOMMENDATIONS

As an outcome of this project, recommendations have been identified and are outlined below.

4. **That additional work be undertaken on both modules to extend into more comprehensive educational resources.**
Currently, the modules provide an introduction to patient safety topics but could be extended to include more in-depth training using additional delivery methods and resources.

5. **That extension of the modules should include, where possible, training in a simulated environment.**
Simulation provides a more hands-on, real-life experience of patient safety issues which assists with the application of knowledge to clinical situations. An extended module that includes simulation would require a four hour program.

6. **That additional educational modules be developed on topics related to patient safety.**
Additional educational modules on associated patient safety topics would further support the education and training of JMOs, and provide additional resources for educators/clinical supervisors. Based on the findings of the review of patient safety curricula, there are opportunities to develop new materials or to integrate with other stakeholders and thus prevent duplication of resources.

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9. APPENDICES

APPENDIX 1   Reviewed curricula

Curriculum	Modules / Themes
The National Patient Safety Education Framework 2005 The Australian Council for Safety and Quality in Healthcare	o Communicating effectively o Identifying, preventing and managing adverse events and near misses o Using evidence and information o Working safely o Being ethical o Continuing learning o Specific issues

Curriculum	Modules / Themes
Recommendations for patient safety education 2006 Patient Safety Symposium Genoa, Italy International Association for Medical Education	**Main** o Increase knowledge of patient safety, including the causes and frequency o Develop willingness to take responsibility o Develop self awareness of the situations when patient safety is compromised o Develop communication skills, especially interpersonal o Develop team working skills **Lesser** o Develop skills in root cause analysis o Develop skills in safe prescribing and procedures o Develop skills to empower patients to have involvement in patient safety o Develop skills in dealing with the aftermath of errors, in both doctors and patients

Curriculum	Modules	Teaching methods
A curriculum for teaching patient safety in emergency medicine 2003 Taskforce for the Society for Academic Emergency Medicine	o Awareness of medical error: bringing a safety conscious culture to medicine o Definitions and models of error o Cognitive error and medical decision making o learning from the experiences of others o complications from invasive procedures o medical error from a systems perspective o living with the reality of medical error	o Lecture o Small group discussion o Video o Recommended readings o "walk through" real cases in real time o Story telling o Mortality & morbidity conferences o Simulations o General group discussion o Expanding audience to include other specialties

Curriculum	Modules / Themes
Patient safety objectives addressed through US Accreditation Council for Graduate Medical Education(ACGME)	Competencies and their corresponding objectives **Patient care** o Recognise and understand team behaviours that strengthen/weaken patient safety o Incorporate effective team behaviours onto their practices **Medical knowledge** o Recognise and analyse inappropriate prescribing in elderly patients o Practice appropriate prescribing in elderly patients **Practice based learning** o Identify errors in their practice, analyse them and learn from them o Develop system based strategies to prevent recurrence of errors
	Communication o Recognise and understand communication behaviours that strengthen/weaken patient safety o Incorporate effective communication behaviours into their practices **Professionalism** o Understand ethical and legal issues surrounding error disclosure o Provide appropriate disclosure to patients when error occur **System based practice** o Identify and prioritise vulnerabilities in their practice systems develop and implement systems based solutions to the identified vulnerabilities

Curriculum	Modules	Teaching methods
Patient Safety & Quality outcomes **2007** 10 x 3 hours Final year Medical School elective University of Illinois at Chicago **Gunderson A, Mayer D , Tekian A**	o Error and safety science o Ethics and disclosure o Continuous quality improvement o Safety and regulatory accreditation initiatives o Microsystems o Simulation training o Communication skills o Interdisciplinary teamwork	o Live videoconferencing o Online instruction o Pod cast materials o Virtual reality simulation o Engaging in a root cause analysis of a real patient case o Practice of admitting a real error and making full disclosure to patient

Curriculum	Modules	Teaching methods
Patient safety medical fallibility curriculum content **2003 -2004** 10.5 hours 2nd year Medical School University of Missouri Columbia school of medicine **Madigosky W, Headrick L, Nelson K, Cox K & Anderson T**	**Patient Safety Overview** o Epidemiology of medical errors o "To Err is Human" and its recommendations o Definitions of error, adverse events, close call/near miss and sentinel events o Ethical, educational and policy aspects of patient safety **Error reporting** o How reporting can lead to improvement o Characteristics of a successful reporting systems o How second year medical students would report errors at MU **System VS Human approach** o "Blame & shame" culture o Socialisation of perfection in medicine o Safety culture in other high risk industries o Human factors engineering **Safety tools** o Interdisciplinary root cause analysis o System solutions that minimise reliance on human cognition and memory **Ethics disclosure** o Ethical obligations surrounding medical fallibility and patient safety o Constructive responses to errors o Disclosure techniques	o Lecture o Panel discussion demonstration o Interactive forum o Modified root cause analysis o Role playing

Curriculum	Modules	Teaching methods
Patient safety: understanding human error in healthcare **2004 – 2005** 5 hours Final Year Medical Students University of Aberdeen **Patey R, Flin R, Cuthbertson B, MacDonald L, Mearns K, Cleland J & Williams D**	o Ubiquitous nature of error o Nature of the problem in healthcare o Situation in other high risk domains o Learning from the experience of others o What happens after healthcare errors o Disclosure of errors	o Whole class presentation & discussion o Small group discussions with student presentations o Video & audio case studies o Role play o Website for further student enquiry

Curriculum	Modules	Teaching methods
Medical errors and patient safety **2005** 4 hours 3rd year Medical Students &Family Practice Residents New York Medical College **Halbach J & Sullivan L**	o Ethical, legal, professional issues and the "culture" of medicine o Recommended management of medical errors: overview o Recommended management of errors: disclosure o Effects of making an error on the physician and the importance of personal awareness o Prevention of medical errors: overview o Prevention of medical errors: medication errors	o Lectures o Brief required readings o Videos o Videotaped simulation with standardised patient o Written &verbal feedback on role plays o Small group sessions o Faculty members discussing own experiences

Curriculum	Modules	Teaching methods
Interdisciplinary patient safety curriculum **2005** PGY 1: 8 x 1 hour PGY 2: 4 x 1 hour PGY 3: 4 x 1 hour Family Medicine Residents State University of New York at Buffalo **Singh R, Naughton B, Taylor J, Koenigsberg M, Anderson D, McCausland L, Wahler R, Robinson A& Singh G**	**PGY1 Behavioural skills for patient safety** o Clinician-patient communication o Health behaviour change techniques o Teamwork **PGY2 Medication safety** o Causes and impacts of polypharmacy o Methods to assess inappropriate prescribing **PGY 3 systems approach to patient safety** o Root cause analysis o Failure modes & effects analysis o Established strategies & principles for safety enhancement	o Journals o Case presentations o Palm based drug formulary software o Chart audits o Staff survey o Video o Standardised patient interviews o Simulated charts

Curriculum	Modules	Teaching methods
Patient Safety Workshop 1.5 day workshop Flinders University Graduate Entry Medical program	*Day 1:* o *Fault lines* Video o Discussion of Issues from video o Human Errors and Complex systems (e.g. human error, systems error, blame cultures and incident reporting) o Root-cause analysis and outcomes o Overview of the healthcare system o Individual responsibility. *Day 2:* o Sorry - what to do after an adverse event, patient expectations, why do patients make a claim or complaint, effective communication o Responding to adverse events (e.g. regret, responsibility, redesign) o Case studies o Assessment Exercise Ethical and professional issues are included elsewhere in the program.	o Video and case discussion o Case studies/group work

Curriculum	Modules
QS06 "If the dead could speak" (Patient Safety) Module within a Course developed by MedEServ **"Developing Clinicians as Leaders"**	Improving patient safety is of significance for all clinicians. Understanding the types of healthcare errors that occur, and learning how to use a framework to assess risk and practice safely is paramount. In this course, the role of human factors and organisational complexity towards errors are both explored. The clinician will also learn about managing clinical risk and adverse events, as well as models that can be implemented to lead healthcare teams towards better patient safety outcomes. **Modules** The topics covered in this short course include: • Healthcare errors and a framework for assessing risk • Understanding human factors and errors • Understanding organisational complexity • Introduction to risk management • Introduction to adverse event management • Leading patient safety

Curriculum	Modules	Teaching methods
Monash University Final year undergraduate program 140 hours including 5 contact days	Topics covered include: • Introduction to patient safety • Introduction to Human Factors • Safe transfusion practice • Correct patient identification • Consent – practical aspects • Interprofessional communication • Teamwork • 8 Ps for procedural safety • Equipment tricks and traps • Approach to the critically ill patient • ACLS workshops • Medication safety • Diagnostic error • When things go wrong • OSCE workshops	o Interactive tutorial format o Case studies o Procedural skills workshops o Simulation training o On-line discussion forum

Curriculum	Modules	Teaching methods
University of Tasmania Vertically integrated program over the 5 year MBBS program	Topics covered include: • Introduction to patient safety, medical errors and quality improvement (Year 2). • Introduction to models of medical errors, system factors, human factors, human performance factors, organisational complexity and resilient concept (Year 3). • Self care, fatigue and human performance issues (All years) • Prescribing errors and medication safety (Year 3 & 4) • Introduction to communication problems (Year 4 & 5) • Incident reporting (Year 4) • Clinical handover and standardised communication module(Year 4) • Introduction to consent (Year 5) • Introduction to risk management and medico-legal issues (Year 5) • Team work communication, CRM and escalation of patient care, eg. MET call (Year 5)	o Case-based learning with case studies o Simulation o Video-reflective learning o Interactive tutorial o Written assignment

APPENDIX 2   Resource materials for Presenters

Background information about the project

Lesson Guides

Teaching Plans

Speaker Notes

Resources and Recommended readings

Introduction to Patient Safety

Background information for clinician presenters

As in many other countries, errors are common in Australian hospitals. The Australian Quality in Healthcare study estimated that 16.6% of hospital admissions and 18,000 preventable deaths each year are associated with medical errors[1]. Similar studies have found that the rate of medical errors is highest in the first postgraduate year[2]. It is crucial, therefore, that Junior Medical Officers (JMOs) are aware of how to reduce the incidence of medical error and that they are given strategies to enhance the management and reporting of medical errors that do occur.

A report commissioned by the Medical Training and Review Panel (MTRP) in 2005 found significant deficiencies in medical error education for Junior Medical Officers (JMOs) in Australia[3]. Of the 67 Medical Education Officers (MEOs) and Directors of Clinical Training (DCTs) who took part in the study, more than 50% reported that their JMOs received less than 2 hours per year of explicit medical error education. Most respondents also reported that medical error education resources for JMOs were sparse or non-existent in their organisation.

This study also involved surveying and interviewing 93 JMOs about their experience of medical error and medical error education. Most could not recall receiving any education regarding the prevention and management of medical error. When given a hypothetical medical error scenario, only 10% stated that they would complete an incident report.

The authors concluded that there needs to be a more explicit and robust approach to medical error education for JMOs in Australia. They recommended that such education should focus on the theoretical understanding of medical errors, the prevention, recognition and management of medical errors, and incident reporting. These recommendations are supported by the Australian Quality and Safety Council. The importance of providing such education is highlighted by the Australian Institute of Health and Welfare report which indicates that effective systems management of medical error and identification and reporting of adverse events require further sustained efforts to increase the knowledge and understanding of healthcare providers[4].

This project builds on the previous MTRP funded study and addresses its recommendations to develop a robust and effective medical error educational program for JMOs in Australia.

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Introduction to Patient Safety

Lesson guide for presenters   Module 1 - *The inevitability of error*

Background

This module is intended as an introduction to medical error and patient safety.
It is important to note that these two concepts are NOT interchangeable. Medical error deals with (usually unintentional) mistakes in the clinical environment, whereas patient safety deals with the reduction in harm. Whilst there is undoubtedly an association, errors do not always cause harm and harm from care may occur in the absence of an error.

In particular this first module acts as a primer to "Human Factors" in the workplace. Human Factors (or "Ergonomics") is a discipline which draws from diverse areas such as psychology, engineering and anthropometry to more efficiently and safely redesign the workplace. The module focuses on cognitive theories of error production.

The presenter should be familiar with the concepts contained in the additional material from the resources list by Reason (1990) and Bogner (2004) relating to medical error before embarking on teaching this module.

Any material dealing with error has the potential to scare junior clinicians. In order to prevent this and give a positive view of patient safety the first few slides are deliberately free of medical context, and the slides are designed to give the participants strategies in reducing and managing errors.
Presenters should try to engage the participants by asking them to provide their own examples where possible.

The second module builds on many of the concepts developed in this module and should therefore be undertaken in order.

Introduction to Patient Safety

Teaching Plan   Module 1 - *The inevitability of error*

Teacher Activity	Learner Activity	Time	Comments
Introduces Self and topic. Establishes environment (pagers, confidentiality etc)	Gather in groups of 4-6	2-3 min	
Viewing of first (ice-scraper) video		2 min	
Ask learners to think about an error outside of work they have committed	In pairs	5 min	
Discussion of errors and types of error	Large group discussion facilitated by teacher	5 min	
Discussion of Mental shortcuts/optical illusions	As above	7 min	Ask learners to shout out what the answers are
Discussion of environmental factors and 3 bucket model	As above	5 min	If there's time ask the learners if they've seen any equipment which is poorly designed in the clinical environment
Watch 'Faultlines' video	As above	10 mins	It's important to set up the reason for watching the video – to examine how the errors occurred
Discussion of the errors in the case using 3 bucket model	Small groups then reporting to whole group	5 min	Ask the learners to give the reasons – if there is a whiteboard you may wish to write these down.
Performance shaping factors	Facilitated discussion	3 mins	Each of these slides could be a talk in themselves These are only an introduction
Team and organisational factors		3 min	
Summarise and close	Facilitated discussion	3 min	
TOTAL		**50 min**	

Introduction to Patient Safety

Presenter notes Module 1 - *The inevitability of error*
To be used in conjunction with accompanying PowerPoint presentation

Slide 3
Patient Safety and the Australian Curriculum Framework for Junior Doctors
Link the session to the Safe Patient Care components of the Australian Curriculum Framework for Junior Doctors.

Slide 6
We all make silly mistakes
Give the learners a couple of minutes to think of a silly mistake they've made outside of the work environment.
eg. Taking the milk out to the car, and leaving the car keys in the fridge!

Slides 7 & 8
What is an "error"?
Ask learners to give a definition. Importantly error is NOT related to consequences or outcomes.

Slide10
Hospitals are not quite so forgiving
The only difference between silly mistakes and medical error is often the context that errors are made in – hospitals by their nature are dangerous with even the most minor of mistakes – The cleaner who forgets not to take the floor polisher to the MRI scan room…

Slide 11
Outcome definitions
International classifications for some key patient safety terms.

The terms we use in health usually have connotations as to outcome (and often blame)
Ask the participants what they understand by these terms then explain them as below:

Clinical incident - event which compromised the safety of patient(s) or staff
Near miss - incident where no harm came to the patient through chance or an
            intervention
Adverse event - incident which harmed the patient
Harm - physical or psychological injury to the patient or staff
Sentinel event - has an element of blame attached. Refers to a serious or reportable
            incident (eg suicide whilst in hospital / wrong side/site surgery)

Slide 12
Types of errors
Reason has classified types of error

Slide 13
We can classify errors depending on where in our sequence of events from analysing the situation to carrying out a plan the error occurs.

Slides 14 - 16
Explain you're now going to show them a few unrelated slides –
Show Slide 15 briefly … What does this say. UNTIED? Go to Slide 15, then to Slide 16. It says UNTIED.

Slides 17 - 20
Slide 17 Are these lines straight?
Slide 18 What is this Man / Mouse. Why does nobody ever say "a bunch of squiggly lines?"!
Slide 19 Which is darker A or B?
Slide 20 They are exactly the same shade (switch back and forth if needed)

Slide 22
This photo is of 2 flowmeters – look how easy it is to resuscitate someone with air instead of oxygen (The black air flowmeters have been removed from most areas because of this potential problem.)

Slide 23
The Three Bucket Model
This is one way of looking at situations predisposing to error.
Example: Putting in a central line:
SELF – have you done it before? Recently? Are you too tired?
CONTEXT – Are you likely to be distracted? Are you in an appropriate place with all the support you need (including staff)?
TASK – What's unusual about this time? Should I be cutting this corner (eg. Checking the coagulation tests first)?

Slide 24 & 25
Introduce the Faultlines video – take notes if needed

Slide 28
Performance is related to the degree of arousal or stress. The left side of the graph shows boredom or relaxation, the right side extreme stress or anxiety. Optimal performance exists somewhere between these extremes

Slide 29
This shows a graph of sleepiness in medical staff (residents) in comparison to pathological states. In this study of US residents their sleepiness was between Sleep apnoea and Narcolepsy!
Sleepiness is directly related to number of errors – clearly this is a big problem in junior doctors.

Slide 31
Another checklist that we all as individuals can use to decrease errors

Slide 32
We also work as part of a wider system. Often we are unable to change this but we need to be aware of the likely problems.

Slides 33 and 34
We often work as a team and communication is vital – how can we prevent misunderstandings and assumptions?

Slide 36-37
It's often tempting to look to technology as the answer to preventing or mitigating the effects of errors. Technology usually just changes the nature or consequences of the error but doesn't eliminate it!

Slide 38
Summary
Ask participants to complete a workshop evaluation before leaving. Provide participants with handouts including a list of resources.

Introduction to Patient Safety

Evaluation form   Module 1 - *The inevitability of error*

1. List the three most important messages for you from today

a) ....

b) ....

c) ....

2. How useful do you rate today's session?

    Very useful   ☐

    Moderately   ☐

    Not at all   ☐

3. Which elements of today's session were most useful to you? Please rank in order of usefulness 1 – 3, with 1 being most useful and 3 being least useful. (e.g. if you found small group discussions most useful then rank 1 and the video least useful rank as 3)

Faultlines video   ☐

Small group discussions   ☐

PowerPoint presentation   ☐

4. Has your understanding of medical error changed as a result of this education session?

    ☐ Yes   ☐   No

Please explain

....

....

....

5. Did the session make any of the discussed topics clearer? If so what?

…………………………………………………………………………………

…………………………………………………………………………………

…………………………………………………………………………………

6. Were there topics discussed that you didn't understand?

…………………………………………………………………………………

…………………………………………………………………………………

…………………………………………………………………………………

7. Are there aspects of the module that you think can be changed to improve the session?

☐   more/less variety of teaching methods   ☐   time

☐   more practical examples/applications   ☐   length

☐   inter-professional delivery

8. Any other comments

…………………………………………………………………………………

…………………………………………………………………………………

…………………………………………………………………………………

Thank you for your participation and feedback.

Introduction to Patient Safety

Lesson guide for presenters Module 2 - *Managing a clinical incident*

Background

A previous Australian study identified a deficiency in Junior Doctors' knowledge and attitudes towards medical error reporting. This study, combined with a subsequent extensive literature search, identified the following:

- JMOs require explicit teaching about medical error
- They are reluctant to report medical errors
- They prefer teaching on the subject to be interactive, delivered by a senior clinician, and involve case studies and personal experience

This module has been designed with these factors in mind. This document provides information as to how to get the best out of the accompanying PowerPoint presentation. It is not a generic 'how to teach' guideline. The assumption is that those teachers who are using the module are already aware of these principles. This guide is more a 'how to use these specific resources'.

In many cases, we advise the use of local information, statistics and experiences. Where that isn't possible, we have provided some regional, national, or international information which can be used in place of locally available materials.

Introduction to Patient Safety

Teaching Plan   Module 2 – *Managing a Clinical Incident*

Teacher Activity	Learner Activity	Time	Comments
Introduces Self and topic. Establishes environment (pagers, confidentiality etc)	Gather in groups of 4-6	2-3 min	
Summary of Module 1 (2 slides)		2 min	
Abridged version of 'Faultlines' video to set the scene		2 min	
Ask learners to think of an error that they witnessed/committed	Briefly discuss the events in their small groups	5 min	Participants should focus on the facts of the event, not what caused the event, what happened next or the feelings of those involved
Ask the groups to tell the larger group about the errors witnessed	Large group discussion facilitated by teacher	7 min	As above
Use the next series of slides to ask the learners what should happen after an error. Compare this with what actually happened in the situations they described. Discuss the reasons why things may not have gone the way they should	Large group discussion facilitated by teacher	7 min	As far as possible, get the participants to contribute answers *before* displaying them on screen

Summarise the local reporting process, using own slides	Large group discussion facilitated by teacher	5 min	It's important not to get too bogged down in this section. In most places, participants will have a dedicated teaching session just dealing with the reporting system.
Use the next series of slides to emphasise the positive benefits of reporting. Can use Wayne Jowlett story, national figures provided, or local case studies	Large group discussion facilitated by teacher	7 min	This is crucial. One of the reasons JMOs don't report errors is because they don't perceive any positive outcome as a result
Discuss the reactions of doctors who commit a medical error. Ask learners to think back to the cases they discussed at the start of the session	Small group discussions	5 min	This is potentially the most powerful part of the session. It is also potentially the most tricky. You should use your judgement as to how 'emotional' to make it. This will depend on your knowledge of the group and your own feelings.
Feed back into larger group. Use slides, video, Andrew Hobart case, or self disclosure by teacher. Briefly cover coping strategies	Large group discussion facilitated by teacher	10 min	
Summarise and close	Facilitator	3 min	
TOTAL		**55 min**	

Introduction to Patient Safety

Presenter notes – Module 2   *Managing a clinical incident*
To be used in conjunction with PowerPoint presentation

Slide 2
Confidentiality
While it is important to create an environment where JMOs are safe to discuss medical error there needs to be a caveat to the usual understanding of confidentiality.
Suggestion:
"Everything discussed within this room shall remain in this room. However, if any information is discussed that poses a threat to ongoing patient safety, that information will need to be handed on to the appropriate person. All efforts to de-identify information will be made."

Slide 4
Outcome Definitions
This slide can be omitted if the definitions have previously been discussed in Module 1.

Slide 6
Faultlines video
If this module is being delivered separately to Module 1 (ie. on a different day) this short clip from the Faultlines video can be used to set the scene.

Slide 7
Adverse events happen
Remind the participants that it needn't be a serious adverse event which caused harm. It could be a near-miss that they observed or were involved in, which may be easier for them to disclose.

Slide 8
What should happen after an adverse event?
It encourages participation if only the title is shown, and the participants are asked what they think should happen. The 'answers' can be introduced via a mouse click.

Slide 9
Open disclosure
The four steps outlined are contained in the National Open Disclosure Standard. (Australian Commission on Safety and Quality in Healthcare)

Slide 10
Reporting
Before introducing the text, ask 'What percentage of junior doctors do you think would report a medical error they witnessed'?

Slide 11
Why doctors may not report
Again, it's helpful to gain the views of participants before displaying the 'answers'.

Slide 14
How does incident reporting lead to improved patient safety?
Junior doctors should be encouraged to explore each step in their own workplace and identify weaknesses and particularly how they can contribute to this. They often get stuck on incident reporting systems-takes too long; not enough computers etc. Suggest explore with them whether reporting is a good thing. If so, then question how they can do this.

There are many ways to report and sometimes a discussion with a local safety officer, or a ward based paper system can work really well. Relies on leadership, which will be a factor for discussion.

Slide 15
Why report?
It is helpful to have a 'local story' of an incident which led to action and subsequent improvement in care.

Slides 16 & 17
Wayne Jowlett case
This case can be used to identify many issues relating to medical error. In this session, we focus upon 2 things:
1) The fact that this error had occurred several times before, leading to deaths. Either because it wasn't reported widely enough or because it wasn't acted upon, several subsequent preventable deaths occurred.
2) Once it was widely realised to be a problem, action was taken (re-designing the needle for example) to prevent any further similar errors

This particular adverse event had occurred frequently before this highly publicised case, and unfortunately has occurred since this case (including two cases in Australia in the last two years).

Slides 18 & 19
How to report
Replace these slides with your hospital's own local reporting system. Do not spend too long on this as it will almost certainly be covered in a stand-alone session. This is merely a reminder.

Slide 20
What happens after an error is reported
This was one of the issues that clearly came out of the previous medical error project: JMOs want to know in some detail exactly what happens if they complete an incident report.

Slide 21
The 'second victim'
Ask: Think back to the beginning of the session when I asked you to think about an adverse event or near-miss that you had experienced or witnessed … now think about how you felt or how the other doctor felt.

Slides 22-24
The 'second victim'- The Andrew Hobart case
Andrew was a first year consultant who was dealing with a child with a febrile convulsion. At the time, it was common practice in ED departments in the UK to have a 'Boyles' anaesthetic machine, which was often used to deliver oxygen to patients. In this case, pure nitrous oxide was given instead and the child became hypoxaemic, suffered a cardiac arrest and died. Again, this case can be used to discuss many elements of medical error, but in this session we use it to focus on the emotional impact upon the doctor. He was devastated and for a while it was thought that he wouldn't work again. Even several months later at the trial he broke down sobbing.

The highlighted text on Slide 24 emphasises the initial response of relatives of victims of adverse events. It contrasts nicely with Slide 25.

Slide 25

The highlighted text emphasises the personal effects suffered by doctors involved in serious adverse events. This inquest was almost a year after the event and the doctor is obviously still seriously distressed.

The second highlighted text illustrates how relatives are, on the whole, very forgiving about adverse events, as long as they believe that their concerns have been addressed and that there is genuine honesty on the part of those staff involved.

Slide 27

Coping strategies

The bottom two points are in brackets as they are clearly not healthy reactions (although they are understandable and unfortunately very common).

Slide 28

Where to go for support

This slide should be modified according to local protocols.

Slide 30

Summary

Ask participants to complete a workshop evaluation before leaving. Provide participants with handouts including a list of resources.

Introduction to Patient Safety

Evaluation form Module 2 – *Managing a clinical incident*

1 List the three most important messages for you from today

a) ....

b) ....

c) ....

2 How useful do you rate today's session?

Very useful   ☐
Moderately   ☐
Not at all   ☐

3 Which elements of today's session were most useful to you? Please rank in order of usefulness 1 – 5, with 1 being most useful and 5 being least useful. (e.g. if you found small group discussions most useful then rank 1 and the video least useful rank as 5)

Faultlines video   ☐
Small group discussions   ☐
Lecture   ☐
Clinician presenters own experience   ☐
Opportunity to feedback your own experience   ☐

4. Did the session make any of the discussed topics clearer? If so what?

....

....

....

5. As a result of today's session do you feel more confident with your knowledge about:

　∘　how to report?　　　　　　　　　　yes/no

　∘　the importance of reporting?　　　　yes/no

　∘　coping strategies?　　　　　　　　yes/no

Please explain:

………

………

………

7. Were there topics discussed that you didn't understand?

………

………

………

8. As a result of today's session do you feel you would be more likely to report a medical error you have experienced or witnessed?

Yes　　　　☐

Unsure　　☐

No　　　　☐

Please explain your answer:

………

………

………

9. Any other comments?

………

………

Thank you for your participation and feedback

Introduction to Patient Safety

Resources and Recommended Readings

Australian Patient safety Foundation
http://www.apsf.net.au/

Australian Commission on Safety and Quality in Healthcare
http://www.safetyandquality.org/

Morbidity & Mortality rounds on the Web
Agency for healthcare Research & quality
http://www.webmm.ahrq.gov/

World Health Organisation
World Alliance for Patient Safety
http://www.who.int/patientsafety/en/

Runciman B, Merry A, Walton M. (2007) Safety and Ethics in Healthcare: A Guide to getting it Right, Ashgate: UK

Bogner, M.S. (2004) Understanding Human Error *Misadventures in Health Care: Inside Stories* p1-12. Mahwah NJ, Ehrlbaum

Gawende, A. (2002) Complications: A surgeons notes on in imperfect science, Picador

Reason, J. 1990 *Human Error* Cambridge University Press, Cambridge

Reason J. Human error: models and management. *British Medical Journal*; 2000, 320:768-770

Runciman W, Hibbert P, Thompson R, Van Der Schaarf T, Sherman H, & Lewalle P. Towards an International Classification for Patient Safety: key concepts and terms. *International Journal for Quality in Health Care;* 2009 21(1):18-26

Junior Medical Officers and Medical Error. Postgraduate Medical Institute of Tasmania. 2007. Commissioned by the Medical Training Review Panel.

Kaldjian L, Jones E, Wu B, Forman-Hoffman V, Levi B & Rosenthal G. Reporting medical errors to improve patient safety. *Archives of Internal Medicine*; 2008, 168(1):40 – 46

Evans S, Berry J, Smith B, Esterman A, Selim P, O'Shaughnessy J & DeWit M. Attitudes and barriers to incident reporting: a collaborative hospital study. *Quality & Safety in Health Care;,* 2006, 15(1)39-43

Weingart SN, Wilson RM, Gibberd RW, Harrison B., Epidemiology of medial error. *BMJ* 320:774-777, 2000.

APPENDIX 3   Resource materials for participants

Resources and Recommended readings

PowerPoint handouts (available on accompanying CD)

Introduction to Patient Safety

Resources and Recommended Readings

Australian Patient safety Foundation
http://www.apsf.net.au/

Australian Commission on Safety and Quality in Healthcare
http://www.safetyandquality.org/

Morbidity & Mortality rounds on the Web
Agency for healthcare Research & quality
http://www.webmm.ahrq.gov/

World Health Organisation
World Alliance for Patient Safety
http://www.who.int/patientsafety/en/

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Weingart SN, Wilson RM, Gibberd RW, Harrison B., Epidemiology of medial error. *BMJ* 320:774-777, 2000.