Issue Paper for Bundaberg Hospital Commission of Inquiry

Safety and Quality

July 2005

EXECUTIVE SUMMARY

- The purpose of this paper is to summarise the evidence about the extent and causes of problems of safety and quality in healthcare, and to describe international, national and Queensland activities that are designed to resolve these problems.

- These problems are manifest as significant gaps between evidence based best practice and the care that is actually delivered. These gaps are demonstrable in all countries where they have been measured, and regardless of the type of healthcare delivery system. Queensland is no exception.

- The size of the gaps may be substantial with up to 4- or 5- fold differences occurring in mortality from the same condition between different hospitals. In the case of patient safety, adverse events are known to occur in up to 16% of hospital admissions. Of these events at least half are considered to be avoidable, 14 % result in permanent disability, and 5% are fatal.

- It is well recognised that there is usually no single cause of these problems and that they result from various combinations of individual, team, organisational, environmental, and patient factors.

- In both safety and quality deficiencies, problems more commonly arise because of constraints in organisational systems than in the actions of an individual. Management of this complex environment is difficult, especially as the correction of one problem not infrequently makes another worse.

- The primary management responsibility in this environment is for effective clinical governance. This requires a transparent system of accountability for effective, safe, high quality care, measurement of clinical outcomes, and appropriate management of any deficiencies. The most serious deficiencies in healthcare delivery usually occur where clinical governance is inadequate.

- In response to these concerns about suboptimal care, a wide range of projects has been developed in Queensland in recent years, and some of these have already resulted in significantly improved patient outcomes. It is clear however that there is still substantial room for improvement.

- In 2004-5 therefore, several of these successful projects were integrated and expanded as part of a new approach to improve outcomes further both directly and through improved governance system. This program has 5 key target areas:
    o Improving the standardisation of clinical practice and support systems.
    o Developing a culture of safety.
    o Developing new skills for the new healthcare environment.
    o Encouraging and implementing promising innovations.
    o Attracting, training and retaining highly skilled staff.

1. INTRODUCTION

1.1 In an ideal world, every healthcare intervention for which there is good evidence of effectiveness would be provided for all patients for whom it is appropriate, in a timely fashion, in, or as close to their homes as possible, without any harm caused by the intervention itself, and at an affordable price. The patient would also be fully informed about all the options and would thus make the most appropriate choice.

1.2 In reality, there are often gaps between the real and the ideal, and efforts to reduce one gap may sometimes inadvertently increase another. As the number of new healthcare interventions is growing rapidly, so too is the level of such potentially harmful interactions. It therefore follows that no single simple solution exists, and that new organisational systems will be needed to manage this new level of complexity.

1.3 The purpose of this paper is to summarise the evidence about the extent and causes of problems of safety and quality in healthcare, and to describe international, national and Queensland state activities that are designed to resolve these problems.

2. EXTENT OF THE PROBLEM

2.1 Safety

2.1.1 The size and importance of the safety problem has been well described in a landmark review by the USA Institute of Medicine "To Err is Human". [1] It is known for example that admission to hospital anywhere in the world is associated with an approximate 10% risk of an adverse event. This has been well established in the USA[2],[3],[4] Canada[5], and Australia [6], [7] The Australian studies found that 50% of these events were preventable, and resulted in significant harm with 14% resulting in permanent disability and 5% in death. It is also known that drug therapy, surgical procedures, falls, pressure ulcers and hospital acquired infections account for most of the avoidable harm.

2.1.2 Adverse events, as well as causing physical and psychological harm also generate a significant financial and social burden. It has been estimated for example, that the immediate cost to the Australian healthcare system is of the order of $2 billion each year,[8] with additional longer-term costs after discharge. Effective programs to prevent harm are therefore likely at the very least to be cost neutral, and at best to result in substantial savings.

2.1.3 Although the litigation rate is sometimes used as a marker of the avoidable harm caused to patients, only 1-2% of the affected patients take this type of action. Clearly, therefore, focussing only on reducing litigation will not significantly alter the burden of harm.

2.2 Quality

2.2.1 The quality of healthcare has traditionally been judged against the six principles of effectiveness, efficiency, equity, acceptability, appropriateness, and accessibility.[9] It is clear however, that there are wide variations in extent to which practically all these principles are followed in practice. The most disconcerting examples are in the extent to which both clinical outcomes and the appropriate treatment vary from place to place. It is known for example, that in the USA, the chances of death from a given medical condition of the same severity varies by up to 400% between different hospitals, [10] and that increased spending on interventions does not necessarily produce better outcomes or patient satisfaction[11],[12]. Similar variations in death rates have been described in hospitals in the UK. [13] It is also known that there are significant differences in the mortality from the same disease categories amongst Queensland hospitals, [14] and that if all hospitals in Queensland were able to emulate the outcomes of the best performers, 20% of deaths from acute myocardial infarct and stroke could probably be avoided.[15]

2.2.2 In the population as a whole, in another USA study, only about half those in need of a particular treatment received it, and many others received care that was contraindicated[16],[17]. Similarly, it is known that there are significant variations in Queensland in the use of indicated care in, for example, acute coronary syndromes.[18]

3. CAUSES

It is now well recognised that poor outcomes rarely have a single cause, and that they more commonly result from various combinations of individual, team, organisational and environmental factors. [19] The wide variations in patient and disease characteristics add other layers of complexity. James Reason has illustrated this causal multiplicity with the apposite metaphor of a vulnerable system as layers of "Swiss cheese" in which gaps in organisational defences against error are portrayed as holes in each layer. Most events are therefore "near misses", but when all the holes are in a line, disaster strikes. [20] Any classification that lists separate entities should therefore be viewed with caution, as the undoubted benefit of drawing attention to single issues carries the risk of ignoring other small but cumulatively significant contributory causes.

3.1 Individual factors

3.1.1 The discovery of the incompetence or malpractice of an individual clinician always captures public attention. Recent well-publicised examples from the UK include aberrant behaviour in a gynaecologist[21] and a pathologist[22]. Overt criminal behaviour is fortunately rare, but is especially troubling when found in a medical practitioner. [23]

3.1.2 However, the overwhelming majority of cases of patient harm are not associated with individual incompetence or criminal/intentionally harmful behaviour by the clinician. The staff member is often the final link in a chain of errors that lead to harm. Efforts targeting individuals in these cases usually fail as it is the system

that sets staff up to fail. Examples include inadequate orientation, lack of standardisation of equipment, and absence of formal patient handover briefings and overall failures of clinical governance as discussed below.

3.1.3 The career expectations and professional socialisation to which doctors, especially specialists, are exposed, also need to be taken into account. The career hurdles they must clear, and the high level skills they must acquire to be able to make complex demanding decisions, frequently results in the selection of competitive, authoritative individuals focused on the often unique needs of individual patients. This probably contributes to their high regard for autonomy and their lower enthusiasm for teamwork, and for the use of the standardised care plans and pathways that are known to improve outcomes in many disease processes[24], [25]. Professional leadership does not always equate with service improvement leadership so in this context it is noteworthy that

- The ex-president of the UK General Medical Council has recently suggested that the collegiality and professional ethos that evolved for valid reasons in an earlier age may no longer be sufficient for today's complex healthcare environment.[26]
- The Royal College of Physicians and Surgeons of Canada has expanded the role expectation of specialist physicians, beyond the traditional professional, scholar, and medical expert, to include communicator, collaborator, manager, and health advocate.[27]

3.2 Teams

3.2.1 The importance of multidisciplinary teamwork in many healthcare services is widely acknowledged in theory, but less commonly implemented in practice. In recent years the lessons learned in the development of teams to reduce the risks of accidents in the airline industry have been adapted for medical applications [28], [29] The importance of this work is emphasised by studies of UK hospitals correlating high mortality rates with a lack of team development [30], and evidence from USA Veterans Administration hospitals linking high surgical mortality and morbidity with poor team coordination and inter-disciplinary communications and lack of standardised systems of care. [31]

3.3 Organisations

There are many organisational factors that influence the delivery of safe high quality care including management, governance, and culture. There is substantial overlap and interaction amongst these factors but they need to be considered separately in the search for solutions.

Management systems

3.3.1 Probably the greatest gain in patient outcomes that can be achieved in the shortest space of time is through the use of management systems that ensure care that is known to be effective is routinely provided. As discussed above, this is often not the case. The interventions that are effective for this type of process improvement are known,[32] and as discussed below, the use of such methods in

Queensland has resulted in rapid and significant improvements in clinical outcomes such as mortality.

3.3.2 Over the past thirty years, leaders in high reliability/high hazard organisations such as aviation have recognised that human error is inevitable, and have redesigned systems to 'trap' errors before they lead to harm. This has resulted in significant safety improvements, and lessons that can be successfully applied to healthcare. [33] These include a specific focus on teams, communication and re-design of high-risk processes using a Human Factors Engineering (HFE) approach. Such systems contain specific 'forcing functions', which reduce the reliance on vigilance (paying attention) and through effective use of unambiguous feedback, displays and instructions, make it difficult to make a mistake.

3.3.3 It is also crucial that statistically valid monitoring methods are used to confirm the effectiveness of any service improvement intervention for several reasons:

- To restore and /or maintain the confidence of the public in their healthcare providers
- To persuade clinicians that their work is being reliably assessed.
- To persuade managers that investment in service improvement is worthwhile.
- To detect aberrant behaviour at the earliest opportunity.
- To support standardised best practice approaches to care.

3.3.4 For this purpose there is increasing recognition that the methods of statistical process control that have been widely used in industry to monitor quality outcomes for many years are of considerable value in health care. [34]

Governance

3.3.5 This subset of management is much discussed as a means of improving and maintaining the safety and quality of patient care, but is often difficult to implement, perhaps in part due to a lack of agreement about a precise definition. Dame Janet Smith who was responsible for the enquiry into the criminal activities of Harold Shipman in the UK obviously also struggled with this problem but produced a useful, if lengthy, description that is worth quoting in full:

" I hope that my own understanding of the concept of clinical governance has improved in the last few months. For those who are still unfamiliar with it, I shall attempt, not to define it, which seems to me well nigh impossible, but to describe it. Clinical governance is a system for improving the standard of clinical practice in the NHS and for protecting the public from unacceptable standards of care. The system comprises several different types of activity which should all fit together into a framework. This integrated system has replaced the previously disparate and fragmented approaches to the improvement of quality of care. The different types of activity include continuing education, the introduction and maintenance of good management systems, the promotion of clinical effectiveness, clinical audit, risk management, research and

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development and the fostering of an ethos of openness and accountability. Some of these activities are developmental in nature, such as continuing education and the dissemination of good practice. Risk management, by which organisations seek to analyse untoward events and learn from them, is another example of a developmental activity. Other activities are of a monitoring or supervisory nature; for example, organisations are required to collect data and information about the care being provided by their clinicians. This should enable the organisation to detect poor performance so that it may be corrected, but data collection should also draw attention to good performance and therefore have a developmental effect. Yet other activities are designed to encourage clinicians to monitor themselves, with the intention that this should provide the opportunity and incentive to improve clinical performance. For example, clinicians are provided with data about their own performance and that of their team or group; they are also encouraged to audit their own activities and those of their colleagues." [35]

3.3.6 In essence, good governance therefore requires clear accountability and effective performance monitoring and management. The enquiries into paediatric surgery in Bristol [36], obstetrics in King Edward Memorial hospital in Perth, [37] and in Camden and Campbelltown hospitals [38],[39] all illustrate various forms of failed governance.

<u>Organisational culture</u>

3.3.7 As in the case of governance, organisational culture is much discussed as an important factor in any consideration of safety and quality of care and is equally difficult to define or change. One useful approach classifies cultures as pathological, bureaucratic, or generative on the basis of how anomalous information is handled.[40] In this view, the pathological cultures suppress information or use it to maintain power, and the bureaucratic ones use it to construct new procedures. Generative cultures on the other hand use information positively for enquiry and change, and actively train staff to report and manage anomalies. It would certainly seem that some organisations have limited ability to effectively manage well-known and long-standing misdemeanours because of "cultures of secrecy". [41] A UK gynaecologist struck of the Medical Register for malpractice in 1998, provides a good example, having apparently been protected for many years by a workplace "culture of silence" about his misdeeds. [42] Evidence emerging from recent enquiries in Queensland do not seem to indicate that generative cultures are widespread.

3.3.8 It is also well established that improvements in safety in healthcare will not occur without other types of culture change. The prevailing legal system emphasises the need to blame individuals when mistakes happen. Indeed, at present blame *has to be* established before compensation can occur in civil litigation. This gives rise to fear in health workers and reluctance to report when things do go wrong. If safety is to improve, it is essential that a 'just' approach is used with staff when errors occur. Many jurisdictions both in Australia and overseas have enacted specific legislation that protects investigation teams and individuals.[43]

3.4 Environment

3.4.1 The problems of managing and changing healthcare systems are well known:

> " *Why are the so called systems of health care so notoriously difficult to manage? No country seems to be satisfied with the current state of it's system; almost everywhere reforms are being contemplated, organized or implemented; some in direct contradiction to others……… Still, nothing fundamental ever seems to change"* [44]

3.4.2 Some of this perplexity may perhaps be due, paradoxically, to the successes of modern health care, and specifically, to the explosive growth in beneficial diagnostic and therapeutic possibilities. These new options are becoming available at an exponential rate, whereas the capacity to fund the required services and to develop the appropriately skilled workforce is at best linear. [45] There will thus always be a gap or at least a lag, between what is theoretically possible and what is actually deliverable, and this gap is growing. This new environment has three characteristic features:

Service drivers - 'scope creep' and community expectations.

3.4.5 New, high risk and high cost interventions that are initially introduced in well-supported tertiary hospitals, and for low risk patients, rapidly become part of the expected repertoire for all hospitals and for all patients however old or frail. This creates two major challenges –

- Finding the necessary resources, including sufficient skilled staff for extension of the service into all communities.
- Gaining acceptance that extending the use of these interventions into higher risk patient populations also carries higher risks of adverse events, especially in the elderly, [46] or in the critically ill, [47] or those with advanced disease. In this context the safety record of health care is sometimes compared unfavourably with that of commercial aviation. More recently however, it has been suggested that a fairer comparison for high-risk surgery in elderly patients or those with advanced disease, would be to compare them with helicopter and ultra-lite aircraft that have more comparable accident rates.[48]

Service drivers - funding models

3.4.6 The recent rapid growth in health care costs has produced substantial concerns in treasuries and other health funding agencies around the world. This has led to stringent cost and activity containment styles of management, with lesser attention to the quality of the healthcare product per unit cost. This single financial focus is known to be ineffective in other industries, and there is growing recognition that hospitals should be funded and judged on the quality and safety of the outcomes delivered as much as on their throughput and costs. [49]

Healthcare as a complex adaptive system

3.4.7 A less obvious consequence of the exponential growth of interventions is the "combinatorial explosion" in interactions. This explosion may be illustrated in terms of human relationships: if there are only 2 people, there is only one relationship to manage, whereas 10 people will generate 45. These interactive explosions generate a new organisational phenomenon, the *complex adaptive system,*[50] management of which provide major challenges as they:

- Self-adapt to a wide range of conditions.
- Are very resilient with a high tolerance to external change.
- Constantly generate novelty that is manifest as 'emergent' properties. These may be desirable or undesirable.
- Have large gaps and /or time lags between cause and effect.
- Are less efficient than linear systems.
- Are not easily understandable, predictable, or controllable.

3.4.7 It is increasingly recognised that bureaucracies function well enough in times of low growth and task complexity, but as the rate of change and complexity increase, and complex adaptive systems emerge, such organisations lose their effectiveness and ability to predict and control. It is apparent that new approaches will be required in the management of such systems,[51] and the health care professionals that work within them. [52] Quite what these new systems will look like is uncertain, and the process of change will be challenging, as it will require as much "unlearning" as learning. [53]

4   DEVELOPMENTS & SOLUTIONS - International

The widespread concerns about the suboptimal quality and safety of healthcare have generated a bewildering array of new organisations, agencies, committees and accrediting bodies at national, state and hospital levels. It is therefore disconcerting that the same problems continue to occur in hospitals that have had quality committees in place for many years, and/or have been recently fully accredited. Appropriate strategic design, organisational structures and regulations are obviously necessary, but are not sufficient unless accompanied by effective operational change processes, and measurement systems to evaluate whether such changes have improved care. Fortunately, there is growing research evidence that systems designed to improve safety and quality in industry can be successfully adapted in healthcare. It is upon this evidence that Queensland Health's current approach to safety and quality of care is based.

A recent review of progress in the USA in the 5 years since "To Err is Human" was published concludes that progress has been patchy and modest overall. [54] Nonetheless there have been major safety and quality developments in the last few years – especially in USA and UK. These have occurred in a wide range of government and private healthcare organisations. Some of these key activities that have informed, or provided models for the Safety and Quality Program in Queensland are listed below.

4.1 United Kingdom

4.1.1 In the last few years there have been several major initiatives in the United
Kingdom that have been designed to improve a wide range of National Health
Service functions. Relevant developments include:

- *An Organisation with Memory* [55] This report, produced in 2000, contrasted
the poor performance of NHS in learning from failures in the area of patient
safety, with the success of high reliability organisations.

- *Building a Safer NHS*[56] The purpose of this report was to address the issues
raised in "An Organisation with Memory"

- *Patient Safety Agency* [57] This body oversees a national strategy [58] based
upon "8 levers and initiatives":

  o Regulation and inspection
  o Purchasing and design
  o Market incentives
  o Professional ethos
  o Measurement and system learning
  o Organisational governance and development
  o Infrastructure

4.1.2 In order to address high risk issues, specialty units such as the Safe Medication
Practice Unit were instituted as part of the Patient Safety Agency in response to
the report *"A Spoonful of Sugar"* 2001 published by the UK Audit Commission
for Local Authorities and the National Health Services.

- *UK Modernisation Agency* [59] This agency has implemented a wide range of
service improvement activities that have informed the design of Queensland
activities including:
  o The Improvement Leaders Guides [60]
  o Reviews of the literature of social movements and other factors that
determine the success and sustainability of organisational change [61], [62]

- *National Institute for Health and Clinical Excellence* [63] This body is
responsible for the development of clinical practice guidelines, and the
appraisal of new technology and treatments.

4.2 United States of America

- *Joint Commission on Accreditation of Healthcare Organizations* [64]
This is the peak organisation in the USA for healthcare organisation
accreditation and standards.
- *Institute for Healthcare Improvement* [65] This institute and its leader Don
Berwick have been influential throughout the world in promoting simple
practical approaches to clinical practice improvement through a wide range of
programs and learning opportunities, especially the Breakthrough
Collaboratives and "100,000 lives" project

- *The Veterans Health Administration* This large publicly funded healthcare system across the United States, has implemented a comprehensive Patient Safety Program. Key elements include:

  o A standardised approach to the management of clinical incidents – including root cause analysis [66]
  o Building capacity through the use of patient safety officers in hospitals and establishment of a National Centre for Patient Safety; [67]
  o Legislative and policy changes to protect individuals reporting incidents, and provide privilege for the incident investigation process;
  o Strategic investment in technology to support safe practice. This includes: fully computerised medical records, computerised order entry systems, patient bar coding and a bar-code medication administration system. It is has been found that up to 80% of medication errors can be prevented with electronic prescribing system with simple decision-support.[68]

5   DEVELOPMENTS & SOLUTIONS – Australia

Australia has made many contributions to the improvement of safety and quality of care including the landmark studies by Wilson et al (1995, 1999) documenting the risks and causes of avoidable harm in hospitals. Key agencies and activities at a national level include:

5.1 Australian Council for Safety and Quality in Health Care

5.1.1 The Australian Council for Safety and Quality in Health Care was established in January 2000 by all Australian Health Ministers to lead national efforts to improve the safety and quality of health care, with a particular focus on minimising the likelihood and the damage caused by error. The Council reports annually to Health Ministers, and provides a focus for national efforts in safety and quality by raising awareness, building consensus and clarifying the priority actions needed to develop safe systems. The Council works in close collaboration with many key stakeholders, including jurisdictional involvement through the State Quality Officials' Forum. The role and the future direction of the Council are currently under review. A draft final report of this review was submitted on 16 June 2005, and a final report is to be considered by Health Ministers on 28 July 2005.

5.2 Accreditation of health services in Australia

5.2.1 For many public and private healthcare services/ facilities, accreditation by an external third party has been regarded as an important measure of quality. The range of health service types and settings covered by accreditation has also expanded significantly in recent years beyond hospital-based services to include State-wide services such as pathology, information services, and public health services. Health Service Districts are encouraged to ensure that all of their services pursue and maintain accreditation/ certification with appropriate accrediting bodies. Specific details are listed below. Queensland Health reports its accreditation status in the annual Ministerial Program Statements that set out

performance against agreed targets and also to the Australian Institute of Health and Welfare (AIHW) and Productivity Commission. Facilities and services must have patient satisfaction assessment and feedback mechanisms in place to meet third party accreditation.

5.3 National Institute for Clinical Studies

5.3.1 The National Institute for Clinical Studies (NICS) [69] is Australia's national agency for improving health care by helping close important gaps between best available evidence and current clinical practice including, for example:

- Vaccinating against influenza in at-risk groups.
- Promoting the use of preventive therapies in people with chronic asthma.
- Encouraging peri-conceptional use of folic acid supplements.
- Achieving optimal control of blood pressure.

6 DEVELOPMENTS & SOLUTIONS - Queensland

A wide range of safety and quality improvement activities take place in Queensland. Many of these occur as part of the accepted clinical and managerial responsibilities of district staff. In response to concerns about persistent gaps between ideal and real world outcomes however, Queensland Health has developed a range of programs and strategies in recent years. This has occurred in 2 phases: 1999-2004 and 2004-5 onwards. A fuller description of the history, rationale for the 2004-5 changes, and an outline of current activities is given in Appendix 1. The key elements of the current program are summarised in the Table 2 below. As effective clinical governance is central to the prevention of major deficiencies in the safety and quality of care a further paper in this series will describe the proposed clinical governance framework in detail However, a diagram is also provided below to illustrate how the elements of the new program contribute at a practical level to implementation of this key responsibility.(Figure1) As shown in this figure, this entails a combination of strategic policies and regulations and state-wide systems to support service improvement in the clinical workplace.

6.1 Strategy and Policy

Strategic plan for safety and quality

6.1.2 The *Strategic Plan for Safety and Quality 2005-2010*, includes a *Safety and Quality Strategy Map* which outlines the key objectives for Queensland Health from the perspectives of consumers, paying for health, internal processes, and shaping the workforce.

Safety and Quality Board

6.1.3 This new Board, established in December 2004, replaced the Queensland Health Council for Safety & Quality in Health Care. The Board's membership includes representation from the Health Services Districts, Zonal Management Units,

consumers, and a health service manager from outside Queensland Health. The Board determines and manages the safety and quality strategy that supports evidence-based practice, the use of information in providing effective healthcare, and standardisation of processes and practices as appropriate.

Service Capability, Credentials and Privileges

6.1.4 This set of policies defines the level of acuity and complexity of care that is appropriate for a given hospital. Clearly recent experiences have demonstrated problems in the translation of these policies into practice.

Credential & Clinical Privileging

6.1.5 The Credential & Clinical Privileging policy is a significant component of a clinical governance framework. This is required to ensure that clinicians are qualified for the services they provide. Credentialing and the awarding of clinical privileges are also part of the Queensland Health *Clinical Service Capability Framework for public and licensed private health facilities* (also known as the Service Capability Framework)

Service Capability Framework.

6.1.6 The Service Capability Framework (SCF) defines the scope of services to be provided by a particular facility in Queensland. This outlines the minimum support services, staffing, safety standards and other requirements in both public and private health facilities to ensure safe and appropriately supported clinical services. Health Service Districts, in conjunction with Zonal Management Units, are expected to perform a detailed review of their services according to the SCF, identify gaps in support and core service provision and develop, document and implement risk management strategies to mitigate these risks if required. In order to ensure that there is access to services of all levels of complexity, networks of services (specifying hospitals roles and their links) have been progressively developed in each zone.

6.1.7 The granting of clinical privileges is part of a formal process of identifying the work that the clinician may undertake **at a particular facility**. The work allowed to be undertaken is expected to be consistent with the approved credentials of the individual, the services approved for the facility and access to their available levels of support services, for example Intensive Care, Diagnostic Imaging, Pathology, Pharmacy, etc

6.1.8 Service providers and consumers need to be informed about the safety issues associated with adequate volumes of activity and the availability of support services. In some cases it may be safer and more effective for the patient to travel to a major or regional centre where the clinician has had significantly greater experience in treating a particular condition and access to a higher level of support services.

6.1.9 Monitoring of volumes and activity levels of surgeons / proceduralists is also required to ensure that the clinicians reach a certain critical mass of performing procedures.

6.2 Clinical Service Improvement Programs

6.2.1 All the programs summarised in Table 2 are based on research and/or international evidence based best practice. As shown in the table, some are fully operational while others are in various stages of development in response to recently recognised new needs.

<u>Key target areas</u>

6.2.2 The programs targets 5 key areas:

- Improving the standardisation of clinical practice and support systems.
- Developing a culture of safety.
- Developing new skills for the new healthcare environment.
- Encouraging and implementing promising innovations.
- Attracting, training and retaining highly skilled staff.

<u>Operational principles</u>

6.2.3 The major operational principles that underpin activities include:

- *Prioritisation of high impact conditions:* - through selection of common diagnostic groups that carry a high risk of mortality or complications, and that show a significant gap between best practice and current practice.
- *Use of validated best practice improvement methods:* - derived from international experience and research
- *Use of effective measurement systems:* - through the use of established statistical methods to demonstrate unequivocal progress towards specific clinical outcome targets.
- *Exploration of new approaches:* - through the implementation and assessment of new organisational improvements including: cultural change methods, healthcare team development and training and outcome driven funding models.

<u>Key partnerships</u>

6.2.4 These programs are being implemented through key partnerships with:

- *Local hospital services:* **-** through close collaboration with, and support for, local hospital safety and quality services, accreditation processes, and risk management programs.
- *Clinician networks:* - through the expansion and development of existing and new cross-hospital clinician collaborative networks, and the alignment of these networks with strategic priorities.

- *Tertiary educational institutions and professional associations:* - through joint initiatives to ensure that safety and quality learning objectives are included in undergraduate educational programs and integrated with postgraduate healthcare professional education. Examples include :

  - A partnership with the Royal Australasian College of Surgeons to develop the Queensland Audit of Surgical Mortality (see appendix for details) There is also in-principle agreement for this audit to form the basis of a wider collaboration that will include other aspects of surgical practice, skills development and advanced training.

  - A working group of Senior QH staff and University of Queensland School of Medicine Academics to improve and increase the content relating to patient safety and quality in the MB BS medical degree program

Clinician involvement

6.2.5 It is well recognised that engaging the attention of clinicians in health service improvement programs often presents a challenge. The Queensland program however seem to have been unusually successful in this regard. As shown in Table 2, the majority of the programs that are fully operational have been developed, and/or are being implemented and delivered by clinicians. Several hundred clinicians are involved across various programs, but especially in:
- Collaborative for Healthcare Improvement
- Clinical Pathways Reference groups
- Human Error and Patient Safety Program
- Safe Medication Practice Unit
- Clinician Development Program
- Healthcare Related Infection Surveillance and Prevention
- Crisis Resource Management Training
- Pre-Hospital Trauma Life Support
- Surgical / Procedural Skills
- Centre for International Medical Graduates

6.3 External Accreditation

6.3.1 Queensland Health facilities and services participate in an endorsed accrediting program as required in the Queensland Health *Safety and Quality Strategic Plan 2005-2010*. Accreditation of health services has been considered as part of a recent national review. The final report from this review will be presented to the Australian Health Ministers Conference on 28 July 2005. Queensland Health will continue its current use of external agencies pending directions arising from this report..

Agencies

Australian Council on Healthcare Standards (ACHS)

6.3.2 The ACHS Evaluation & Quality Improvement Program (EQuIP) is the main accrediting agency used by Queensland Health facilities and services. The ACHS EQuIP program is used by, but not limited to, larger and provincial Health Service Districts. ACHS EQuIP provides organisations seeking accreditation with a four-year program that includes Self-Assessment, Organisation-Wide Survey and Periodic Review and the development of a Quality Action Plan. Accreditation is awarded when it has been demonstrated that the organisation meets fourteen (14) ACHS standards, including nineteen (19) mandatory criteria. Accreditation can be awarded for up to 4 years.

Institute for Healthy Communities Australia (IHCA) Quality Improvement Council

6.3.3 The Quality Improvement Council (QIC) standards are considered to be more applicable to community-based healthcare services and are used in the main by smaller rural integrated Health Services Districts. QIC is based on a continuous quality cycle with seventeen (17) standards that must be achieved

International Standards Organisation (ISO) certification

6.3.4 ISO certification is based on performance evaluation using an audit process. ISO does not specify performance criteria, as these are set by the health care service. Accreditation is awarded for 3 years.

Current Accreditation Status

6.3.5 The majority (87%) of Queensland Health acute inpatient services are currently accredited by an external organisation. (Table 1) The remaining 13% were progressing towards accreditation. Health Services Districts are moving towards 'whole of district' accreditation that entails the use of the same accrediting organisation by all healthcare services and facilities within a District. 28 Queensland Health, Health Service Districts have achieved accreditation with ACHS EQuIP.   Five (5) Health Service Districts are accredited with QIC/IHCA.   In June 2005, ISO9001 was applied to one (1) Health Service District, which has successfully achieved certification. In addition, Queensland Health Statewide services such as Information Services and Queensland Health Pathology and Scientific Services are certified with ISO 9001:2000. The remaining three (3) Health Service Districts are progressing towards accreditation with QIC/IHCA.

7   IMPLICATIONS FOR RURAL / REGIONAL HOSPTIALS

7.1 Problems related to facility size and environment

7.1.1 All of the issues discussed in this paper that determine the safety and quality of patient care in large metropolitan hospitals also apply in smaller regional and rural hospitals. These facilities also have to deal with additional constraints.

Social /clinical conflicts

7.1.2 A conflict accompanies attempts to meet all of the 7 desirable characteristics of health care for smaller populations simultaneously. In brief, care that may be the most acceptable, accessible and equitable when delivered near home, and is therefore the most *socially* appropriate, is unfortunately often less effective, efficient and safe when delivered in small centres and may therefore be less *clinically* appropriate. There are several reasons for this but the main one is the difficulty of recruiting and retaining clinicians, particularly specialists, in smaller population centres. This is also for social and professional / clinical reasons. Socially, the difficulty of attracting staff to smaller centres is well known, but the clinical reasons may be less obvious

Professional critical mass

7.1.3 Increasingly, hospital specialists can only work effectively and safely in peer supported multi-disciplinary teams. If there is not a critical mass of peers, continuing education, professional development and appraisal of performance will also be difficult.

Relationship between case numbers and outcomes

7.1.4 For many surgical and other interventional procedures, it is well known that a certain minimum number of cases per unit of time is required for the best outcomes. This may simply be a matter of having sufficient experience and practice, but there are probably other reasons that relate to the above multi-disciplinary, multi-specialist nature of modern hospital practice. This was demonstrated in a recent study that showed that the mortality of complex oesophageal, pancreatic and other surgery was, as expected, inversely related to the number of cases performed by a given surgeon, but in fact was more strongly inversely related to the volume of other procedures performed at the same hospital.[70] This again illustrates the inter-dependent complexity of specialist medical care and the difficulty in justifying complex high-risk interventions in low volume centres.

Pressure and complexity of external regulation

7.1.5 As discussed above, good clinical governance is essential for the maintenance of high safety and quality standards. In essence, as shown in Figure 1 this governance consists of appointing and credentialing appropriately qualified staff; ensuring that they undergo appropriate professional development; have

their clinical outcomes monitored, and have any aberrant performance appropriately managed. In simpler times professional qualification and ethos were, rightly or wrongly, assumed to guarantee high standards and professional development was only thought to require discipline specific knowledge. In those times hospitals could function well enough on trust and local knowledge. As the number of healthcare options and thus community expectations have risen, so too have the numbers of external agencies to whom hospitals are accountable and the consequent layers of required organisational complexity and regulation. This is a burden for all hospitals but is especially challenging for smaller provincial and rural centres.

Private-public interactions

7.1.6 In a mixed public-private health care delivery system it is also important to take account of the commercial reality of private specialist practice in a small population centre, if visiting medical staff are to work in a public hospital service. The size of the population to support a viable practice varies from speciality to speciality, but at the margin there are problems of isolation and fatigue if there is only a single specialist. Continuous on call adversely affects recruitment and retention as well as patient safety and quality of care.

Special educational needs

7.1.7 Modern clinical care requires an extensive skill set and lifelong learning. This is even more important in smaller centres and isolated practice than in large well supported metropolitan hospitals where help and expertise is near at hand. This has recently been highlighted in the case of overseas trained doctors, but it is no less true for Australian trained junior doctors who are often expected to provide care in isolated rural areas at an early stage in their careers.

7.2 Current and future solutions

7.2.1 Ultimately the decision as to whether a given clinical service is provided for a given size of population will always reflect a compromise between local access, and the most effective, efficient and safe care. Nonetheless there are resources and programs that support clinical services in rural and regional hospitals. Some of these are already in use and others are being developed.

Outreach services

7.2.2 Many specialists, both public and private already travel on a regular basis to provincial and rural centres, and provide valuable clinical services. This mode of delivery is however, sometimes disconnected from the local staff, who are thus at risk of becoming de-skilled. It is also impossible for visiting specialists to implement safety and quality programs as they would in their metropolitan base, if, as is usually the case, all their time in the outreach clinics is taken up with service delivery.

<u>Cross district networks</u>

7.2.3 All zones have implemented cross-hospital or district networks to a varying extent and in slightly different forms. These have mostly been commenced as a means of coordinating services and obtaining consolidated clinician advice about service delivery, but there is potential for merging these activities with the service improvement functions of the collaboratives. This model, which clearly has the potential to support rural and regional hospitals in their safety and quality improvement programs, is also being explored in New South Wales. [71]

<u>Tele-health services</u>

7.2.4 Queensland has the advantage of an extensive tele-health network, and this provides opportunities for reducing the travel burden for both patients and staff and for increasing professional learning opportunities. Professor Wootton and colleagues of the University of Queensland Centre for Online Health and Royal Children's Hospital have demonstrated the effectiveness of telehealth systems in reducing the need for transfer of paediatric patients to travel to large centres[72], and in the distance management of diabetes, cardiac conditions and rehabilitation after knee joint surgery. Options for expanding this model of service are under consideration.

<u>New workforce models</u>

7.2.5 The shortage of all types of health care professional staff is a problem for many hospitals but especially rural and provincial centres. This is likely to worsen in the future and has led to a variety of new workforce designs and developments. These have been the subject of other papers in this series by the Workforce Reform Branch so will not be further discussed here.

<u>Learning opportunities</u>

7.2.6 There are several learning opportunities that are specifically focused on the needs of rural and provincial hospitals

- *Medical Grand Rounds*. These are traditional vehicles for postgraduate medical education. These are usually centred on case presentations with expert reviews or lecture, and increasingly are used for discussions about safety and quality of care. Paediatric Grand Rounds from the Royal Children's Hospital and Medical Grand Rounds from the Royal Brisbane and Women's hospital have been available to all Queensland hospitals over the telehealth network for a number of years.

- *Skills Development Centre* As listed above this Centre already provides or is developing several programs that specifically address the special problems of delivering safe care in non-metropolitan services.
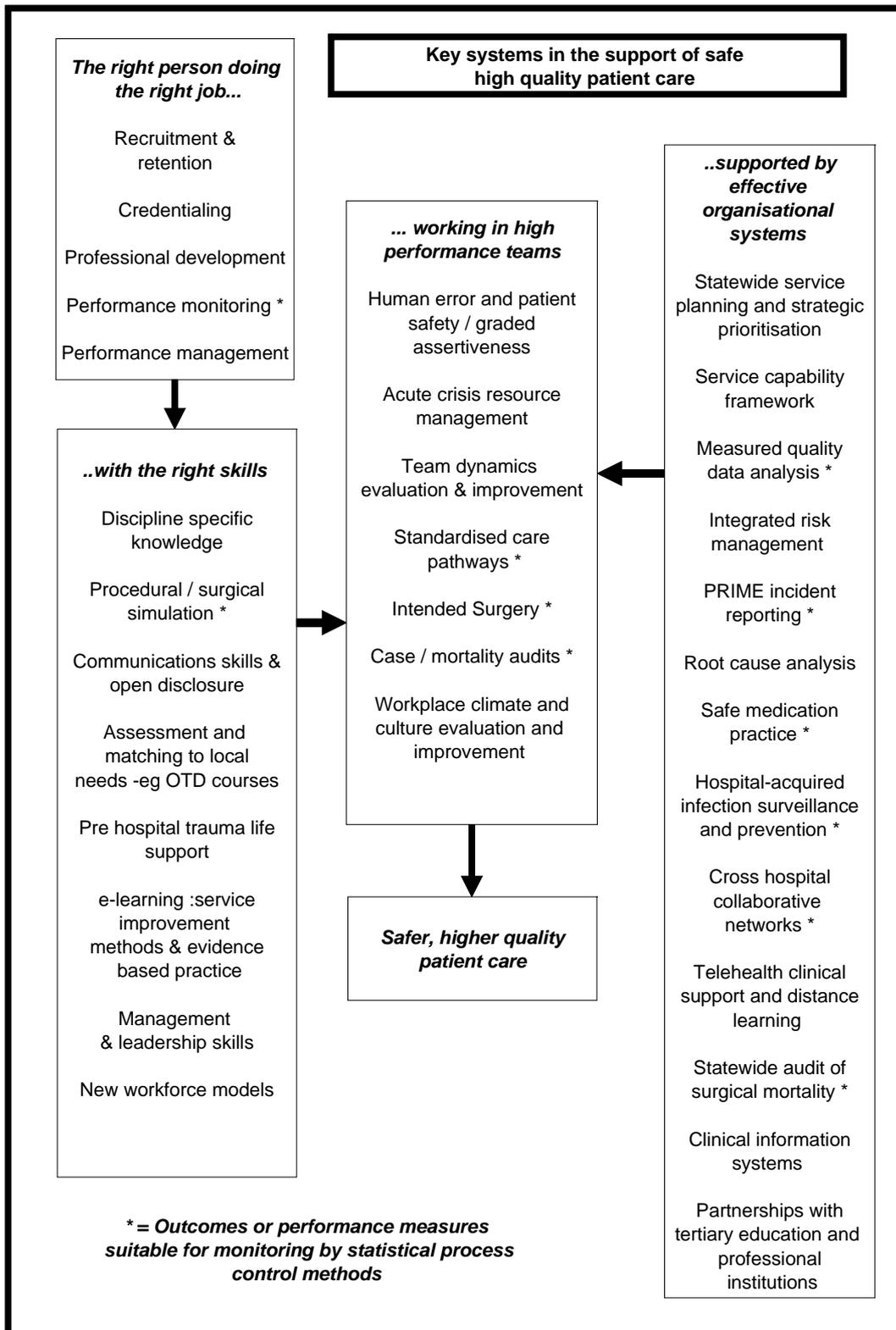
8 CONCLUSIONS AND FUTURE DIRECTIONS

8.1 It is clear that there are major gaps between the quality and safety of healthcare that is known to be achievable and what is often achieved in practice. These gaps occur in all countries and with all types of healthcare delivery system. It is also clear that these problems rarely have a single cause, and that they more commonly arise from a complex mixture of individual, team, organisational and environmental factors.

8.2 Although all healthcare facilities experience these problems from time to time, it is apparent that they are more frequent and damaging in some facilities than others. Studies of the differences that distinguish these more successful organisations are therefore a valuable source of practical solutions to the problems of services improvement. These solutions are to be found in non-healthcare industries as well as in healthcare, and vary along a spectrum of ease and speed of implementation. At one end of this spectrum are the relatively simple and well understood, but often underutilised, techniques of adult learning, staff and team development, performance management and outcome measurement. At the other more difficult end of the spectrum, are the areas of organisational learning, culture change, and complex adaptive systems. It is obviously sensible to start at the simple end where the demonstrable gains can be quickly achieved, while developing the new methods and systems that will be needed for the more difficult tasks. This is the approach that is being taken by Queensland Health.

8.3 In the face of major service delivery or quality problems, organisations frequently decide to re-organise. In healthcare however, different organisations often seem to use diametrically opposite types of re-organisation despite having the same declared goals. This suggests that re-organisation per se may be less effective than is commonly believed, and that some of the less spectacular, if slower, methods of service improvement mentioned above might be more useful.

8.4 These methods are derived from well-validated international experience and are designed to support the key functions that are known to be essential for any safety and quality improvement process:

- Improving the standardisation of clinical practice and support systems.
- Developing a culture of safety.
- Developing new skills for the new healthcare environment.
- Encouraging and implementing promising innovations.
- Attracting, training and retaining highly skilled staff.

FIGURES AND TABLES

Table 1 Accreditation status of Queensland Health facilities (as at 31/12/2004)

INPATIENT *(Includes acute, acute outposts, psych and dental hospitals, excludes nursing homes, young persons disabled services, flexible residential (MPHS)*	**Total Number facilities/ services**	**Not started**	**In progress**	**Total accredited**
Central	63	0	7	56
Northern	84	0	14	70
Southern	56	0	6	50
TOTAL:	203	0	27	176
NON-INPATIENT *(Includes mental health, sexual health, pathology, oral health, excludes Aged Care & Public Health)*				
Central	198	0	9	189
Northern	174	0	37	137
Southern	174	0	26	148
TOTAL:	546	0	72	474

Figure 1 Clinical governance support systems

Key systems in the support of safe high quality patient care

The right person doing the right job...

Recruitment & retention

Credentialing

Professional development

Performance monitoring *

Performance management

..with the right skills

Discipline specific knowledge

Procedural / surgical simulation *

Communications skills & open disclosure

Assessment and matching to local needs -eg OTD courses

Pre hospital trauma life support

e-learning :service improvement methods & evidence based practice

Management & leadership skills

New workforce models

... working in high performance teams

Human error and patient safety / graded assertiveness

Acute crisis resource management

Team dynamics evaluation & improvement

Standardised care pathways *

Intended Surgery *

Case / mortality audits *

Workplace climate and culture evaluation and improvement

Safer, higher quality patient care

..supported by effective organisational systems

Statewide service planning and strategic prioritisation

Service capability framework

Measured quality data analysis *

Integrated risk management

PRIME incident reporting *

Root cause analysis

Safe medication practice *

Hospital-acquired infection surveillance and prevention *

Cross hospital collaborative networks *

Telehealth clinical support and distance learning

Statewide audit of surgical mortality *

Clinical information systems

Partnerships with tertiary education and professional institutions

* = Outcomes or performance measures suitable for monitoring by statistical process control methods

Table 2 - Current State-wide safety and quality improvement activities

Centre/ branch	Program	Status	Type	Objectives
PSC	Patient Safety System Implementation.	2	S,T,M, P	Reduce preventable patient harm by standardised approach to management of clinical incidents at local, and state-wide level. Increase local knowledge and capacity to effect change through deployment of Hospital Patient Safety Officers.
PSC	Incident reporting information system (PRIME.)	2	M	Improve reporting and analysis of clinical incidents and sentinel events at a local and state-wide level.
PSC	Root Cause Analysis	2	P	Improve capacity of staff to analyse causes of adverse events & prevent recurrence
PSC	* Human Error and Patient Safety (HEAPS) Program.	3	T,S	Increase skills and knowledge about factors that pre-dispose to human error; develop graded assertiveness and basic systems analysis.
PSC	* Intended Surgery	2	T,M	Avoidance of surgery of wrong type or on wrong patient or site
PSC	* High-risk medicines management	3	P,S,T	Reduce drug adverse outcomes through redesigning processes for ordering, supplying and administering high risk drugs and standardized inpatient medication chart, nurse & junior doctor education, training and safety risk awareness competencies.
PSC	* Medication continuum	3	P,S,T	Reduce drug adverse outcomes and increase medication effectiveness through improved communications amongst healthcare professionals
PSC	Medication review	2	P,S	Reduce drug adverse outcomes and increase medication effectiveness through pharmacist review.
PSC	Using information technology to improve medication safety	1	P	Providing a strategy for the introduction of systems to improve medication safety and the quality use of medicines
PSC	* Hospital Acquired Infection Surveillance	3	M,P	Reduce risk of hospital acquired infections
PSC	Open Disclosure	2	S	Improve staff skills and thus patient satisfaction with provision of information about the causes of adverse events, and the measures to be taken to prevent recurrences.
CPIC	* Cross – hospital clinician collaboratives	3	P,M,S	Improve clinical outcomes through increased use of evidence based best practice, outcome monitoring and change facilitation.
CPIC	Distance / e-learning resources	3	S	Increase knowledge of service improvement methods and evidence based practice

Centre/ branch	Program	Status	Type	Objectives
				amongst clinicians
CPIC	* Surgical and Maternal Care Clinical Pathways	3	P,T,S, M	Improve outcomes of surgical and other clinical procedures and interventions through standardisation of care processes and tracking of variances.
CPIC	Measurement systems and analysis	3	M,P	Improve monitoring and benchmarking of clinical outcomes through state wide computer clinical indicator measurement and analysis systems including new applications for statistical process control.
CPIC	* Queensland Audit of Surgical Mortality	2	M,P,S	Reduce mortality risk of inappropriate or unsafe care in both elective and emergency surgery.
CPIC	Patient Flow Management	2	P,M	Measure and improve flow of emergency and elective patient hospital admissions
CPIC	Team and group dynamics	1	T,S,P	Develop new ways to measure and improve team performance and culture
CPIC	New funding models	1	P	Develop new pilot funding models to drive quality and safety performance improvements as well as cost efficiency and budget performance
SDC	* Crisis Resource Management Training:	3	T,S	Improve outcomes and through improved individual and team skills in the face of medical emergencies.
SDC	* Pre Hospital trauma Life Support	3	S	Improve staff capability for first response to trauma in rural and remote locations
SDC	Communication Skills:	2	S	Enhance communication skills between clincians and patients and amongst clinicians to improve patient satisfaction and team performance and to reduce risks of litigation and improve patient safety.
SDC	* Psycho Motor (Surgical) skill training	2	S	Enable clinicians to develop and objectively measure surgical skills in complex procedures where proficiency can be gained in a safe synthetic environment.
SDC	Simulated procedural skills	2	S	Enable clinicians to develop and objectively measure procedural skills in a safe synthetic environment.
SDC	* Centre for International Medical Graduates	3	S	To assess and develop technical, interpersonal skills and cultural understanding in international medical graduates to ensure that they are well equipped for the workplace
SDC	Rural and Remote Arrangements	2	S	To provide support for development and maintenance of clinical skills and knowledge within local health communities, via a network of affiliate SDC provincial / rural

Centre/ branch	Program	Status	Type	Objectives
				centres
INNOV	Measured Quality annual reporting	3	M,P	Develop and maintain statewide facilities to assist clinicians to measure and benchmark clinical outcomes.
RMD	Integrated Risk Management	3	M,P	Measure and assess the likelihood and significance of all types of organisational risk
INNOV	Innov8	3	P,S	Encourage staff to communicate their ideas for service improvement and to support implementation of the most useful and innovative projects
INNOV	Staff health	2	S	Improve staff health
INNOV	Workplace climate	2	S,T,P	Improve staff satisfaction, recruitment and retentions
INNOV	Leadership development	2	S,T,P	Develop staff leadership skills
INNOV	Telehealth	3	P	Reduce need for patients in provincial / rural areas to travel for clinical services
INNOV	Governance Framework	2	S,T,P	Provide a coherent and comprehensible plan to improve accountability for clinical services and to monitor and manage performance
INNOV	Clinical Service Capability Framework	3	P	Define the appropriate level of services for a given health care facility
INNOV	Credential & Clinical Privileging Policy	3	S	Determine that the performance of a particular clinical service or procedure by a particular clinician is within their competence and is appropriate for the particular healthcare care facility.
WREF	Professional Preparation & Development	2	S,P	To provide professional support mechanisms – professional supervision, minimum practice standards, skill development
WREF	Workforce Participation Modeling	2	P,M	To collate and analyze information about current and future health workforce requirements
WREF	New Work Design and Skill Mix Models	2	S,T,P	Design and develop new combinations and distributions of skills sets in healthcare professionals to meet the needs of the new healthcare environment.
IS	Health Connect	2	P	Improve the safety and quality of care through improved electronic communications
IS	Clinical Information System	2	P,M	Improve the safety and quality of care through improved and integrated electronic clinical information systems

Abbreviations

Centre / Branch :   PSC   Patient Safety Centre   CPIC   Clinical Practice Improvement Centre
                           SDC   Skills Development Centre   INNOV Innovation Branch
                           WREF Workforce Reform   IS   Information Services Directorate
                           RMD   Resource Management Directorate

Project / program status
1 = Conceptual / design stage
2 = In process of implementation
3 = Fully operational

Program /project type (where multiple, in approximate order of importance)
S   Individual staff learning / skills development / workplace satisfaction
T   Team performance evaluation and improvement
P   Process or system improvement
M Monitoring / measuring / tracking S, T or P performance

* Programs with current active clinician involvement in implementation and delivery

Appendix 1

Safety and Quality Program 1999-2004 & 2004-5

Recent history 1999-2004

In 1998, Queensland Health developed a range projects in recognition of the problems of safety and quality of healthcare outlined in the main paper. In the same year, the funds were allocated to the States and Territories for quality improvements under the 1998-2003 Australian Health Care Agreement. A Quality of Health Services Framework, a Strategic Plan for Quality, and the Quality Improvement and Enhancement Program (QIEP) were developed by Queensland Health and endorsed by State and Commonwealth Health Ministers in May 2000.

QIEP Projects

The selection of Queensland projects was based on requests from Health Service Districts. Some of the funds were directed towards corporate process improvement, others towards clinical care improvement. The Projects were grouped into the following clusters:

- Clinical & Non-Clinical Risk Management
    - Risk Management
    - Prevention Of Falls In Hospitals/Facilities
    - Incident Monitoring
    - Infection Control
- Consumer Participation
    - Consumer Participation
    - Informed Consent
    - Patient Complaints & Survey
- Reducing Variation In Health Service Delivery
    - Collaboratives For Healthcare Improvement
    - Measured Quality
    - Clinical Pathways
- Credentials And Clinical Privileges
- Clinical Audit Processes
- Information Management
    - Clinical Informatics
    - Quality Use Of Medicines/ Drugs And Pharmacy
- Distance Management
    - Rural And Remote
    - Telehealth
- Quality Systems
    - Accreditation Review
    - Pathology Quality System
    - Measuring Quality In The Non-Government Health Sector
- Change Management
    - Clinician Development
    - Zonal Projects

Major achievements of QIEP :

- Clinical Practice Improvements

  o Reduction in the number of patients receiving toxic levels of warfarin through the introduction of prescribing system changes

  o Safe medication prescribing training for medical undergraduates and interns.

  o IV fluid guidelines resulting in 20% reduction in inappropriate use

  o A standard Statewide inpatient medication chart, now used in 108 facilities and associated with a demonstrable decrease in prescribing and administration errors

  o Increased use of evidence based practice and standardised pathways by clinicians

  o Improved mortality from cardiac disease

  o Increased uptake of cardiac rehabilitation

  o Improved teamwork skills Human Error and Patient Safety program

  o Reduction in harm from needle-stick injuries

- Systems and networks

  o Development and piloting of a statewide incident reporting system PRIME.

  o Electronic Infection Control Assessment Technology (eICAT).

  o Standardised approaches to healthcare associated infection surveillance for surgical site, blood stream and occupational exposures with real time analysis in the twenty-four largest hospitals in Queensland.

  o Provision of a de-identified and aggregated hospital infection data set on an annual basis to Queensland Health and participating hospitals.

  o Measured Quality annual reporting for hospitals including patient satisfaction results, and a statewide public released report.

  o Statewide Clinical Improvement Collaboratives established in high impact clinical conditions. (Cardiac, Renal disease and Stroke)

  o Distance / e-learning resources in Evidence-Based Practice Training and Quality and Safety Improvement..

  o Statewide computer based clinical indicator benchmarking system

  o Medication Safety initiatives including Information Management Systems.

- - Electronic systems to facilitate medication management in all pharmacy departments across the state

    - Applications of statistical process control analysis to hospital admission delays, patient flow, bed management and discharge rates

- Policies / procedural guidelines / educational material

    - Intranet (QHEPS) guideline web site

    - Development of clinician skills in service improvement and evidence based practice through online learning systems

    - Queensland Health Integrated Risk Management and Incident Management Policies.

    - Primary Clinical Care Manual (PCCM) for rural & remote area.

    - Informed consent - procedure specific consent forms and patient information sheets for all common procedures.

    - Credentials and Clinical Privileges Policy and Guidelines 2002

    - Medication risk awareness training packages for nursing staff..

    - Heparin, insulin, and acute pain management systems.

- National uptake of QH initiatives:

    - Falls prevention guidelines

    - Common medication chart

    - Informed consent template & guidelines development

    - Rollout of the eICAT program to participating hospitals and fifty other hospitals in Australia.

    - Use of QH Credentials and Clinical Privileges Policy and Guidelines to form basis of national Credentialing Standard

New approaches 2004-2005

Despite these successes there were clear limitations in that the various programs were
- Fragmented and poorly integrated
- Limited by the fact that they were dependent upon short term project funding and thus difficult to sustain.
- Patchy in uptake across the state
- Not well linked to major strategic priorities.

In 2004-2005 therefore, it was determined that all the successful safety and quality improvement activities should be permanently funded, expanded, integrated and supported through a new Innovation and Workforce Reform (IWR) Directorate. The structure and activities of this directorate have been determined by the key functions that are known to be essential for any safety and quality improvement process:

- Improving the standardisation of clinical practice and support systems.
- Developing a culture of safety.
- Developing new skills for the new healthcare environment.
- Encouraging and implementing promising innovations.
- Attracting, training and retaining highly skilled staff.

These activities are distributed as follows:

Patient Safety Centre

Established in 2005, the role of the Patient Safety Centre (PSC) is to prevent patient harm resulting from healthcare. The PSC will lead and coordinate improvement in safety culture and ultimately patient safety, by providing the support; capacity and resources to enable clinicians and managers to effectively identify and address key safety problems. The PSC combines a focus on known high-risk patient safety areas such as medications, infection, falls and pressure ulcers, with a comprehensive approach to the management and prevention of adverse events,[73] through the following key initiatives:

Safe Medication Practice Unit:

Adverse events associated with the use of medications are one of the most common incidents leading to patient harm (10.8% of adverse events in hospitalised patients), at a cost of about $380million per annum to hospitals.

A number of interventions have been demonstrated to reduce drug adverse events[74], including: the appropriate use of information technology in areas such as electronic prescribing with decision support; clinical pharmacy services; medication liaison services on admission and discharge from hospital; and medication distribution systems. These principles have been implemented through the Safe Medication Practice Unit (SMPU), with demonstrated improvements in patient outcomes, service efficiencies, financial and staff indicators. Current activities include:

- *High Risk Medicines & Processes*
    - Standardised processes for ordering, supplying and administering of high-risk medicines. (Incorporating the Health Minister's requirement for implementation of the national medication chart by 2006)
    - Increasing awareness of risk of patient harm in medication management
- *Medication Continuum*
    - Ensuring transfer of accurate comprehensive and complete, standardized information relating to medications on admission and discharge from QH facilities. (Incorporating Pharmaceutical Reform contractual requirements between QH and the Commonwealth for the implementation of the "Australian Pharmaceutical Advisory Council's National Continuum of QUM Guidelines".

- *Medication Review*
  - Reviewing of therapy decision to ensure safe, effective medication treatment. (Incorporating the Health Minister's requirements for implementation of pharmaceutical review by 2007).
- *Electronic Medicines Management Strategy*
  - A strategy for the implementation of electronic solutions and standards to address medication safety issues. (Incorporating implementation of electronic system safety initiatives).

The SMPU uses a "bottom-up" approach with clinicians to the identification, development and implementation of service improvements through the QH Medication Safety Improvement Group, and a collaborative of hospitals. Initiatives developed locally are shared within sites through the four annual Medication Safety Workshops.

The SMPU is also responsible for the implementation of a range of Health Ministers' directives and national directives including: Australian Pharmaceutical Advisory Council Quality Use of Medicines National Guidelines; the National Inpatient Medication Chart; and the national directive for the introduction of pharmaceutical review for all inpatients by December 2006.

Centre for Healthcare Related Infection Surveillance and Prevention

The Centre for Healthcare Related Infection Surveillance and Prevention (CHRISP) was established as a temporary unit in July 2000 at the Princess Alexandra Hospital from funding provided by the Quality Improvement and Enhancement Program.

CHRISP is now a permanent unit within the Patient Safety Centre and has three main streams of activity:

Surveillance:
- Systematic standardised surveillance – 24 participating sites (large hospitals)
- Signal Infection Surveillance – small and medium sized hospitals.

The CHRISP surveillance system uses an application developed in-house entitled "Electronic Infection Control Assessment Technology" (eICAT). The software is deployed as a site-specific infection control solution with periodic centralised (de-identified) data contribution to CHRISP. This data is used to compile both individual hospital and annual state-wide CHRISP reports. eICAT is utilised in over seventy public and private hospitals throughout Australia. CHRISP has also made significant contributions to the reduction of harm from needlestick injuries (NSI), the most common source of exposure to blood borne pathogens for workers in healthcare occupations, [75] and is currently evaluating the use of retractable safety devices in preventing this type of injury.

Health economics of health care associated infection:

CHRISP is conducting research to estimate the economic cost of health care associated infection in Queensland and the assessment of the cost benefit and effective of interventions designed to reduce blood stream infection

Behavioural research

CHRISP has developed a model of healthcare worker behaviour in relation to hand washing and is using this in an interventional and educational program to improve and sustain compliance.

<u>*Safety Improvement Unit*</u>

The Safety Improvement Unit is currently implementing a standardised approach to clinical incident management using the successful Veterans Health Administration model. Key initiatives include:

- *Patient Safety Officers* Twenty five Patient Safety Officers will be trained and deployed into the Districts to provide capacity and resources to assist Districts in effectively identifying, analysing and addressing adverse events. .

- *PRIME* – This is a web-based information system that is currently being implemented to all QH sites. This will facilitate information on clinical incidents and sentinel events to be analysed locally and centrally. It will also support effective clinical governance through a standardised approach to clinical incident identification and management.

- *Legislation* Necessary legislative amendments are currently being drafted in line with similar changes in NSW and other jurisdictions. This will be essential to address the culture of fear that often prevents reporting and improvement.

- *Human Error and Patient Safety Training:* This educational workshop has been delivered to over 4000 QH staff and to other government departments including State Coroners Office and Police. It uses a "teach the teacher" delivery model that has produced over 100 trained presenters throughout the state. It has proven to be very popular with clinicians and highly effective in raising awareness and understanding of the factors that pre-dispose to human error. These include methods adapted from successful models developed in the aviation industry[76]. It also provides training to help address some of these issues such as graded assertiveness, [77] and basic systems analysis for incidents. This will continue as an important part of training all clinician managers in QH into the future.

- Correct Site, Side and Patient Surgery: This program is a Ministerial commitment, and is implementing a protocol that is similar to standard pre-flight checks used in aviation, modified for use in the operating theatre. It is designed to prevent mistakes that result in surgery on the wrong patient, site or side. As this represents an important change of practice, senior surgeons have been engaged to lead the implementation across the state. A reference group from relevant Colleges and Associations provides recommendations on implementation of the protocol.

Coronial Management Project

This project aims to improve coordination between QH & the Coronial System by:

- Using a medical summary of deceased patients for the coroner, providing quality information to coroners in a timely manner.
- Facilititating the distribution of Coroners' Reports to relevant areas of QH and coordinating feedback to the Coroners about recommendations contained in the reports.

Open Disclosure

This protocol that has been developed to address a Ministerial commitment, will be piloted in seven sites across Queensland. This is a process of full and open disclosure by clinicians, to patients when adverse outcomes occur. This has been shown to be highly effective in improving patient satisfaction and may lead to reduced litigation.

Clinical Practice Improvement Centre

Established in February 2005, the Clinical Practice Improvement Centre (CPIC) has been designed to integrate and build upon the successes of 3 projects previously under the Quality Improvement and Enhancement Program: the Collaborative for Health Care Improvement (CHI), the Clinician Development Program (CDP); and the Clinical Pathways Program (CPP).

The central role of CPIC is to help clinicians and health service managers to improve patient outcomes through a number of projects and support systems that are based upon a few principles:

- Selection of high impact targets – on the basis of :
    - o High incidence, mortality, or morbidity.
    - o Significant gaps between evidence based best practice and current practice.
    - o A plausible solution.
- Use of proven, scientifically valid service improvement methods
- Development of systems that are likely to be sustainable.[78]

Collaboratives

The Queensland Collaborative for Health Care Improvement, developed over the past few years, has proven to be an effective means of helping clinicians improve patient outcomes.[79] There are now more than 500 doctors, nurses and allied health staff in up to 29 hospitals (Table) who work together in a variety of clinical interest groups listed in the table below. The main focus of the work of the collaboratives is directed towards ensuring that evidence based best practice is actually used, and that clinical outcomes are measured so that progress may be documented. The success of the work of various Queensland collaboratives has been reported in the scientific literature by Scott and colleagues [80],[81],[82],[83]

Table - Collaboratives in Queensland Hospitals

	Date started	Number of Qld member hospitals
Cardiac	Jan 2001	23
Cardiac Rehabilitation	Oct 2002	29
Renal	Jan 2001	13 (All hospitals with a renal unit)
Stroke	Sept 2003	12
Stroke Rehabilitation	Jan 2005	Under development
Emergency Department	Sept 2003	22
Diabetes	July 2005	Under development

Pathways and processes

There is good evidence that the use of standardized pathways and guidelines for well-defined conditions and procedures results in improved outcomes. Over the past few years many pathways have been developed in Queensland for a wide range of conditions including vaginal birth, caesarean section, neonatal care, total knee and hip arthroplasty fractured neck of femur; day surgery, appendicectomy, laparoscopic cholecystectomy. One or more of these pathways is now in regular use in 29 Queensland hospitals. The current activities of the CPIC pathways group are focused upon extending the variety and scope of application throughout the state and in developing measurement systems to track outcomes and variances.

Measurement systems and analysis

All service improvement activities require robust, valid and simple methods of collecting and analyzing data about clinical outcomes. The Measurement and Analysis Team was originally developed for the collaboratives but now supports all CPIC groups through:
- *Clinical indicator workshops*
- *Data collection systems* such as optically scannable forms.
- *Data analysis and presentation*
- *State-wide electronic indicator analysis tool*. This uses central database systems but is available on desktop computers in all Queensland hospitals. Clinicians in the collaboratives are therefore able to benchmark their own results with those from peer group hospitals.
- *Statistical process control techniques.* As discussed above this methodology, used to in industry for many years, is now proving to be of great value in healthcare. It has been shown for example that this type of analysis would have demonstrated the criminal behaviour of a UK GP, and the suboptimal performance of paediatric surgery at Bristol in the UK, a decade or more before they were actually detected by conventional means. [84] Less dramatic, but no less important applications of statistical process control have been shown to be of value in tracking the rate of hospital-acquired infections, [85] and the acquisition of skills in anaesthesia[86]; surgery[87], and gastrointestinal procedures. [88]

Queensland Audit of Surgical Mortality

This is to be based on the original Scottish model [89], as subsequently imported into West Australia [90] that has shown that peer review of all deaths by surgeons is able to reduce inappropriate or unsafe care in both elective and emergency surgery. The Royal Australasian College of Surgeons supports a national implementation of this form of audit, and CPIC is working in close partnership with the college to develop this facility in Queensland.

District Liaison

The District Liaison Team will work with District managers and clinicians as a single communications channel for all CPIC programs to avoid confusion and duplication. It will do this through:

- Review and discussion of any clinical outcome variances as revealed by Measured Quality Services.
- Provision of support for district service improvement activities.
- Maintenance of quality/safety e-learning systems and development of new modules.
- Support for workshops and other learning opportunities in order to develop local district services improvement skills and resources.

Team and group dynamics

As described above, health care team dysfunction is a significant cause of poor quality and safety outcomes. CPIC is therefore developing methods of measuring and improving group dynamics and team function. This will use methods modified from those that have proven successful in the airline industry and high-reliability organisations

New funding models

At present the main expectations of Queensland public hospitals as defined in the employment contracts of district managers are specified primarily in terms of activity such as elective surgery targets and length of hospital stay, and budget performance. While budget integrity and high efficiency are obviously necessary, this narrow model does not encourage high performance in the primary responsibilities of hospitals for patient safety and high quality clinical outcomes. A pilot operational funding model that will incorporate such clinical outcome targets is therefore under development. This is consistent with similar projects in the USA and UK that are using various ways of linking payment with defined organisational or clinician quality and safety performance [91],[92]

Skills Development Centre

The Queensland Health Skills Development Centre (SDC) has been built as a statewide virtual training and simulation centre to impart advanced skills to surgeons, doctors, emergency teams, anaesthetists, nurses and other health professionals. Opened in September 2004, the SDC is the largest centre of its kind in the southern hemisphere and is equipped with the latest simulation and virtual reality training

technology. Some of the programs are of proven value and have been imported into the centre, others are being developed to meet new needs. Key programs that are related to improving patient safety and quality of care include

Crisis Resource Management Training:

- Objective: to create a crisis-hardy workforce that uses the skills of the team and other human factors elements to improve outcomes when such events arise.

Pre Hospital trauma Life Support

- Objective: to build capability in rural and remote locations to optimise the outcome for those involved in trauma.

Communication Skills:

- Objective: to enhance communication both with patients and between clinicians reduces risks and ensures that there is clarity of purpose and reduced levels of litigation and improved patient satisfaction.

Psycho Motor (Surgical) skill training

- Objective: to enable clinicians to develop procedural / surgical skills in complex procedures where proficiency can be gained in a safe synthetic environment.

Simulated procedural skills

- Objective: to allow individual techniques can be practiced until the clinician becomes proficient. This allows the essential advanced life support skills to be taught especially in the area of airway management, CPR and access.

Centre for International Medical Graduates

- Objective: to assist international medical graduates in their progression to Parts I and II registration with the Australian Medical Council. The Preparation for Employment (PFE) course assists non-working doctors to gain insights into the Australian healthcare system and through structured observership allows for them to gain employment if they reach an acceptable standard.

Electronic / distance learning

- Objective: to enable coursework to be accessible on line and to create a blended learning approach that will support those in more rural and remote locations.

Rural and Remote Arrangements

- Objective: to provide a network of affiliate centres across the State and perhaps even interstate where training can be provided on a distributed basis helping clinicians maintain currency of practice within their local health communities.

<u>Innovation Branch</u>

The Innovation Branch is actively contributing to the Safety and Quality program in a number of areas:

Strategic /Policy

It is known that good governance increases the effectiveness of improvement strategies.[93] The Innovation Branch established and supports the QH Safety & Quality Board and the QH Workforce Board. Strategic plans for Safety & Quality and Workforce have been developed through consultation and detailed state-wide objectives for 2005-2010. The branch is also responsible for governance, credentialing and service capability policy development. (see main paper)

Measured Quality Service

All 75 of Queensland's major hospitals have participated in the collection of data against a scorecard of clinical and non-clinical indicators through the Measured Quality Program since 2002. Health Service Districts are advised of any significant variation in their performance against these indicators, when compared with their peer hospitals.   Members from the Measured Quality team travel to all hospitals to discuss these variations and the options for improvement with hospital executive, managers and clinicians. Queensland was the first jurisdiction in Australia to publicly report this performance in aggregated form

Recognition and implementation of innovative staff ideas

QH has a high number of professionally qualified staff and therefore great intellectual potential to support better clinical practice. *Innov8* is a simple system to encourage all staff to contribute their ideas for improving QH services and patient care. The benefit of the system is that it encourages good ideas from across the whole state and ensures that these are assessed with a view to funding those with the greatest potential.

The following are examples of those ideas that have been revealed through the *Innov8* program and that have received support:

- A system for prioritisation of pathology testing that reduces emergency department delays and improves patient safety.
- Patenting of various innovations including new vaccine delivery systems and diagnostic testing for major public health diseases.
- Development of a collaborative Tropical Health Research Institute in far North Queensland.
- Investigation of 'Medi-hotels' as a model of improving service delivery through private sector partnerships.
- Design of a simple Velcro strap to stop accidental breakage of pulse oximeter finger probes.
- Development of state-wide policy manuals to prevent duplication and rework.
- Redesign of cleaners trolleys to improve safety.

Staff health

In order to demonstrate commitment to Queensland Health staff, the Innovation Branch is actively promoting programs across the Health Service Districts to improve staff health and wellbeing. This strategy is based on proven public health programs such as promoting physical activity and quitting smoking.

Workplace climate

The Innovation Branch has also commenced regular staff surveys in partnership with Districts to identify areas where staff morale can be improved. Creating a participative, team based culture is known to support development of trust and psychological safety to the extent that it supports open communication and identification of mistakes.[94] In addition, NHS studies demonstrate a strong association between advanced human resource practices, including staff appraisal, teamwork, and learning and development with lower patient mortality. (West et al 2002)

Leadership development

The style and quality of leadership is a strong determinant of staff satisfaction and new program is under development for both senior management and clinical leaders within QH to improve leadership capability. It is also known that staff satisfaction has a very strong positive association with patient satisfaction[95] and is related to reduced absenteeism and turnover [96]. Therefore improving staff satisfaction is vital to recruit and retain staff, which in turn has a major impact on the quality of clinical services available and patient satisfaction with them.

Telehealth

The state-wide telehealth service provides an innovative solution to the problem of delivering services in places where distance and workforce shortages create challenges to the safety and quality. The statewide telehealth network enables a senior clinician in one location to support rural or remote clinicians and their patients rather than always needing to transfer the patient to a larger hospital. (see main paper)

Medi-hotels

Medi-hotels are known to improve patient access to clinical services using private partnerships and are currently under investigation.

Workforce Reform Branch

Workforce issues have been addressed in an earlier paper in this series. Issues and activities relevant to safety and quality are summarised in Table 2 in the main paper

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