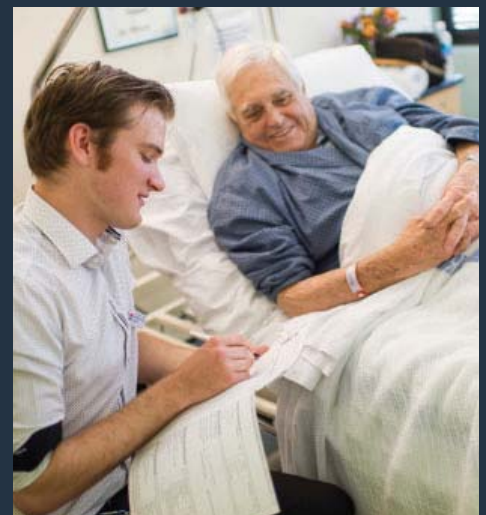


CLINICIAN'S GUIDE TO QUALITY AND SAFETY



CLINICAL
EXCELLENCE
COMMISSION



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FOREWORD

At the Clinical Excellence Commission (CEC), we recognise that clinical staff are committed to learning, changing and improving the health system in which they work. As leaders for quality and safety within the NSW Health system, we want to work with them in improving the system.

Clinicians beginning their journey in quality and safety need to be armed with the basic essentials of quality and safety science, data collection, incident monitoring and clinical practice improvement methodology if they want to improve the health system. It is with this task in mind that we have revised the previous *Clinician's Toolkit* and *Easy Guide to Clinical Practice Improvement* booklets to provide concise but essential pointers to help improve clinical care.

This guide is targeted at frontline clinicians starting in quality and safety improvement. Our intention is to outline the foundations of quality and safety and to provide an introduction into essential quality and safety tools.

This will be followed by a complementary “masters” level handbook for those senior clinicians and managers who are more experienced in quality and safety methodology.

Recognising that clinicians are busy people with significant clinical demands, we have deliberately kept the concepts short and easy to read. For those wanting more in-depth information, links are provided to online resources that are widely available.

We hope that you enjoy the updated Clinician's Guide to Quality and Safety and that it becomes a useful and practical resource as you embark on your improvement journey.



Carrie Marr
Chief Executive



Jonny Taitz
Director, Patient Safety



PUTTING THE PATIENT FIRST

Before outlining the contents of this document and providing an overview of quality improvement tools, it is useful to stop and consider WHY it is important to improve quality and safety within our health facilities. Essentially, this comes down to two priorities: keeping patients safe and improving the experience of care.

The following two patient incidents were recently reported through NSW Health's Incident Information Management System (IIMS). The names of the patients have been changed for privacy reasons, but the stories are real. They provide a good reminder of why it is important to keep quality and safety at the forefront of clinical care and the need to learn from clinical incidents to prevent future harm.

INCIDENT 1

Morris was a 73 year old retired banker electively admitted to a large teaching hospital in Sydney for a total knee replacement.

He had recently undergone an aortic valve replacement, Coronary Artery Bypass Grafts and was on warfarin. Pre-operatively, he attended the pre-admission clinic where he was prescribed enoxaparin and advised to cease the warfarin one week prior to surgery.

The surgery was performed without complication.

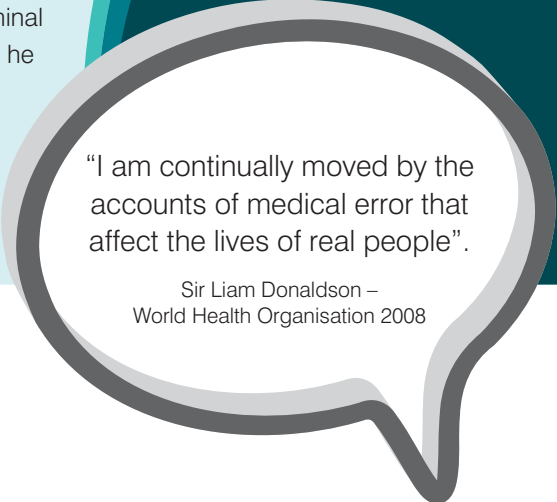
Post-operatively he was prescribed warfarin, enoxaparin and aspirin.

The doses of warfarin and enoxaparin were not prescribed correctly, as there was no consistent anticoagulant post-operative regime used within the facility, and no process for identifying patients who needed a medication management plan and pharmaceutical review.

International Normalised Ratio (INR) monitoring was conducted daily but, following transfer from one ward to another area and suboptimal formal handover between the treating teams, INR monitoring was not performed subsequent to the transfer.

On day ten post-operatively, Morris complained of severe abdominal pain. Bloods were taken which showed an elevated INR and that he was significantly over anticoagulated.

A retroperitoneal haematoma was diagnosed and despite all efforts to reverse the warfarin, he died in hospital four days later.



"I am continually moved by the accounts of medical error that affect the lives of real people".

Sir Liam Donaldson –
World Health Organisation 2008

PUTTING THE PATIENT FIRST

INCIDENT 2

Jenny was a 67 year old retired school teacher who had been unwell with a chronic illness for six months. Although her illness was progressive, she had been responding well to a change in her medication, and was almost at the point of discharge.

On the morning of her scheduled discharge she was seen walking around the ward. However a few hours later, Jenny suddenly collapsed in her chair.

She never regained consciousness.

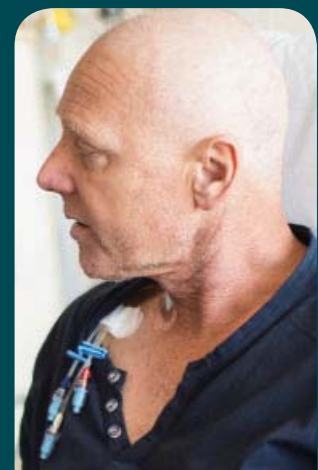
The chain of events leading to Jenny's death seems at first straight forward. As part of her treatment, a central venous access device (CVAD) was inserted to support infusion therapy. The CVAD line was scheduled for removal, but her care team elected to delay removal in case further infusion therapy was required. Jenny went for a walk around the ward and then sat down in a chair. Her family visited. She slumped in the chair and complained of having difficulty breathing.

Initial nursing observations showed her to have a tachycardia with a pulse of 140 beats per minute and a low oxygen saturation of 89% breathing room air. At this time, it was observed that the Intravenous (IV) administration set was disconnected from the CVAD and air was observed in the lumen of the CVAD and aspirated. A vascular air embolism was confirmed with imaging and it appeared that the Luer lock had become disconnected during routine management of the CVAD.

This version of events does not tell the whole story. In fact, a later investigation revealed a multitude of factors that made this incident seemingly inevitable. Indeed, the individuals involved had performed their job precisely as they'd been trained.

To begin with, the device connecting infusion therapy to the CVAD (connector) did not have an adequate Luer lock adapter. As a result, tightening the connection with reasonable force resulted in the connection slipping. This had probably happened before, but in this case it resulted in an unplanned disconnection.

Further investigation revealed that standard and recommended practice for clinical staff was to check the security of connections on all devices on each shift. Normally this would not be an issue, but due to the prolonged duration of the CVAD insertion and the design of the device, the checks resulted in the connection degrading, resulting in a disconnection. This issue was unknown to clinical staff at the time.



Patient with a CVAD

INTRODUCTION

All clinicians are leaders in some capacity - whether they are an intern supervising a medical student, a registered nurse mentoring new graduates, a pharmacist supervising a trainee pharmacist, or the head of a large clinical unit. This guide provides improvement tools that will help you to become a better clinical leader, no matter where you are in your career.

Traditionally, medical care has been based around what the clinician can do and does. But this is not necessarily what the patient needs. A new generation of clinical leaders is emerging; one that will ensure that the unit, department or division they lead will, above all, want to make a difference for good in the lives of the patients they care for.

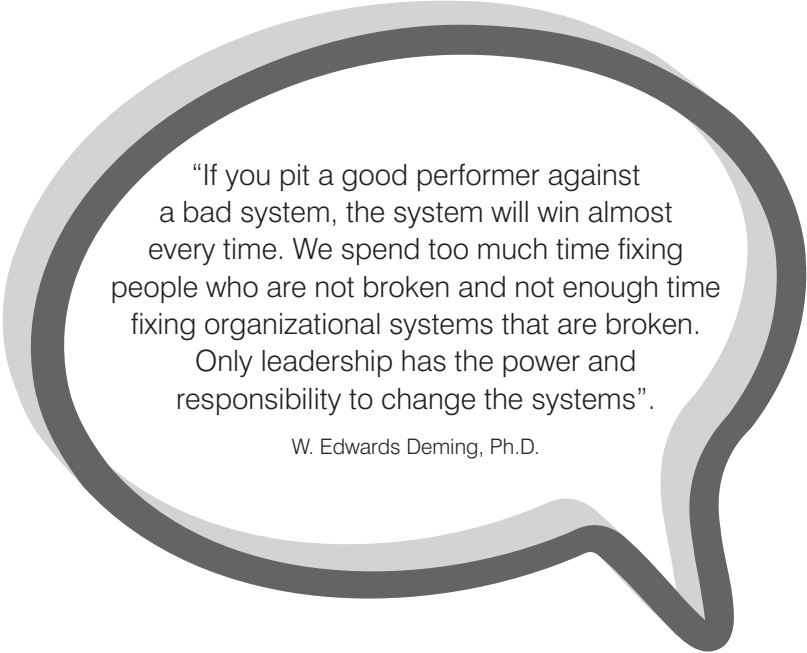
The new clinical leader knows the importance of putting the patient, rather than the clinician, at centre stage. They will be able to think critically, reflect and monitor their own performance, display integrity in open, honest, ethical behaviour, see the big picture and learn from experience.

This guide is designed to develop your clinical leadership skills and give you tools to improve the quality and safety of your clinical work, to better care for your patients, your colleagues and yourself. It covers five key areas to make that difference.

The five key areas relate to:

1. Enhancing a Just Culture in NSW Health
2. Explaining how Human Factors impact on the way we work
3. Discussing the importance of teams as the focal point for improvement
4. Identifying clinical issues and monitoring improvement
5. Undertaking a clinical practice improvement project

An overview of these areas is provided on the following page.



“If you pit a good performer against a bad system, the system will win almost every time. We spend too much time fixing people who are not broken and not enough time fixing organizational systems that are broken. Only leadership has the power and responsibility to change the systems”.

W. Edwards Deming, Ph.D.

INTRODUCTION

1. Just Culture

The culture in NSW Health is changing. It now has more focus on supporting staff, improving systems that will benefit patient care and putting the patient first - although there is still some way to go. A Just Culture is one that recognises that, while there is a clear line between acceptable and unacceptable behaviour, good professionals can still make mistakes. It recognises that, when a mistake occurs, the individual involved will be treated fairly, and that people should not be punished for errors due to a failure in the system over which they have no control. This section will show how, whatever your role in your workplace, you can become part of creating a Just Culture.

2. Human Factors

This concept is a relatively new one in health, although when you think about it, it's also a very obvious one. Human Factors looks at the things that limit our ability to do things well, under all circumstances. The science of Human Factors shows that we will never be infallible, even though we would like to be. Systems can be designed that do not depend on our infallibility. Understanding Human Factors can assist us in designing better, safer systems to help avoid error and to improve the care we give our patients. Once you have a basic understanding of the concepts around Human Factors, you will be on the lookout to find ways to improve the systems in which you work.

3. Teams working toward improvement

This will give you a better understanding of the building blocks, or microsystems, that make up the healthcare system where you work. One of the crucial microsystems in our health system is the interaction between the patient care team and the patient which is where you, as a clinician, are intimately involved. For a healthcare system, such as a hospital, to function well, the microsystems all have to work well. Once you have an understanding of how microsystems work, particularly those involved in patient care teams, you will be in a position to look for opportunities to improve the way you do your work.

4. Identifying clinical issues and monitoring for improvement

This section describes some of the activities that can be undertaken to gather information and assist in identifying and understanding the extent and nature of a clinical care problem. It also describes some processes which are already in place within the NSW Health system to monitor current practices which can be used to establish a clinical baseline and/or during re-measurement.

5. Clinical Practice Improvement

Once you have identified an opportunity to improve patient care, you will want to do something about it. This section will give you a simple and effective way to undertake a clinical practice improvement project that will benefit your patients. Such projects should not be done at the expense of your clinical work, but integrated into your normal clinical practice. You may even find that you have done something worth publishing, although publishing is not the primary aim of these projects. The real aim is to improve the care of your patients. You will also find that, as well as improving care, your work may become simpler because in the act of improving, duplication of care process steps may have been avoided and unnecessary steps removed. The responsibility to improve patient care and improve the system is not someone else's duty. It is the responsibility of all clinicians, including you. Every clinician can be part of the change and can personally make a difference. It is good for your patients, it is satisfying and it helps your career. So, get on board!



Learning improvement methodology

SUPPORT FOR IMPROVEMENT

Have you ever encountered a system issue or inefficiency in your department that you felt could be improved or done differently? We don't mean an 'incident' or Work Health and Safety (WHS) accident, which should be reported immediately in the incident management system and escalated without delay. We mean those system-related issues that don't provide the best experience of care, waste time or money, frustrate patients and/or staff and generally could be improved.

It is important to know that you are not alone on the quality and safety improvement journey. When you do come across such an issue, it is advisable to initially discuss it with your line manager (e.g. Director for Prevocational Education and Training (DPET), Nurse Unit Manager (NUM), Registrar or Consultant). If they agree it is a 'problem worth solving', you may like to try adopting the 'Clinical Practice Improvement' (CPI) methodology as outlined in Chapter 5 of this guide. Undertaking a clinical improvement project may be a worthwhile course of action to improve the process.

Commencing an improvement project can be a daunting task. However, there are many staff within your organisation who can support and guide you through the process.

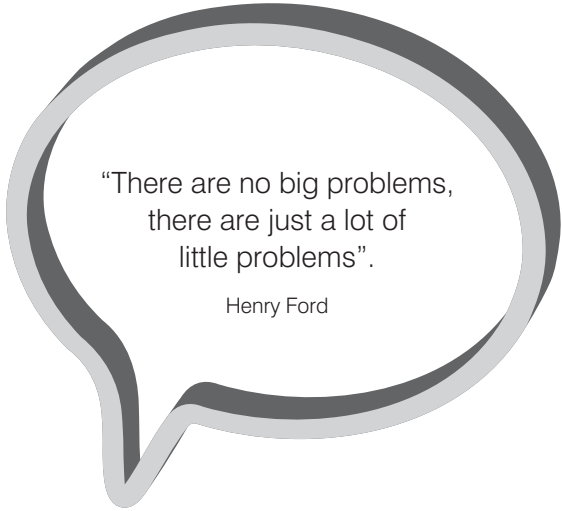
The appropriate individual to contact for advice may depend on your facility's management structure. The following is a list of staff to contact for general issues. They can also put you in touch with relevant people and resources. Their titles may differ between facilities and local health districts (LHDs) / specialty health networks (SHNs), but there should be a comparable equivalent in each LHD/SHNs:

- Clinical Governance Unit staff
- Director of Clinical Governance (DCG)
- Directors of Nursing and Midwifery (DONM), Medical Services (DMS), Allied Health and Pharmacy
- Patient Safety Officer (PSO)/ Manager (PSM)
- Professional Head of Department, such as your Head of Medicine, Nursing or Allied Health
- Quality Improvement (QI) staff

Directors of Clinical Governance and Clinical Governance Units are particularly concerned about the quality and safety of care provided to patients. Their role is to support a clinical governance framework through which "organisations are accountable for continually improving the quality of their services and safeguarding high standards of care by creating an environment in which excellence in clinical care will flourish".¹

Your Clinical Governance Unit can assist with:

- Advice about how to change processes and procedures
- Clinical incident management
- Clinical Practice Improvement projects (e.g. aim statement, PDSA cycles)
- Research opportunities and methodologies for clinical care improvement
- The management of complaints or concerns about a clinician's performance in connection with the practice of their profession
- Ways to improve patient and family partnership and engagement



"There are no big problems,
there are just a lot of
little problems".

Henry Ford

SUPPORT FOR IMPROVEMENT

Human Resource staff can assist with workplace issues such as:

- Absence from the workplace without proper notification
- Bullying and harassment
- Conduct that brings NSW Health or any of its staff, patients or clients into disrepute
- Criminal behaviour, charges or convictions
- Disciplinary matters
- Discrimination
- Exploiting relationships with patients or clients
- Failure to seek approval for secondary employment
- Fitness for work
- Grievances involving other staff
- Non compliance with lawful and reasonable directions
- Possible corrupt conduct, fraud, maladministration or substantial waste
- Sexual misconduct
- Staff under the influence of alcohol or drugs while at work
- Using or releasing official/patient information without proper authority

The Clinical Excellence Commission is also available to help you with any concerns or queries about quality and safety in your Local Health District or Speciality Health Network. You can contact us by phone on 02 9269 5500, or by email at CEC-PatientSafety@health.nsw.gov.au

CHAPTER 1

Enhancing a Just Culture in NSW Health

Healthcare is an industry with many risks to be managed and as a consequence, the potential for patient harm is high.^{2,3} In 1999, a landmark report called *'To Err is Human: Building a Safer Health System'* revealed that up to 98,000 US hospital deaths could be attributed to medical error each year.⁴ In 1995, the *'Quality in Australian Health Care Study'* estimated that 16.6 per cent of admissions were associated with an adverse event.⁵ The World Health Organization (WHO) "estimates show that in developed countries as many as one in 10 patients is harmed while receiving hospital care".⁶

Effective safety programs must be able to recognise, analyse and learn from errors to prevent recurrence⁷. Unfortunately, "the culture of medicine creates an expectation of perfection and attributes errors to carelessness or incompetence".⁴ As a consequence, personnel are understandably concerned about being punished or blamed for their honest mistakes and many errors go unreported or hidden.⁸ Dr Lucian Leape noted that the single, greatest impediment to error prevention in the medical industry is that we "blame and punish individuals when they make a mistake".⁹

Recall the incident in the patient story involving Jenny. In an organisation which does not promote a Just Culture, the practitioners involved in the incident may have been blamed for the disconnection. The story might have been framed to suggest that the staff 'broke' the connection, because they used the device incorrectly. However, taking a Just Culture approach, the organisation initiated an impartial investigation which revealed a device design issue which was principally responsible for the disconnection. This is a system failure that clinical staff had no control over and would not have been able to prevent. This highlights key features of a Just Culture by transparently and thoroughly reviewing all the factors that may have contributed to the incident and clearly highlighted, in a clear and consistent manner, that staff were not at fault.

James Reason has described a Just Culture as an environment in which people are encouraged to provide essential safety-related information, but in which they are also clear about where the line must be drawn between acceptable and unacceptable behaviour.¹⁰ There is an expectation that when an adverse event occurs, individuals will be treated fairly¹¹ and should not be held accountable for system failings over which they have no control. This is formally established as a guiding principle in the NSW Patient Safety and Clinical Quality Program (PD2005_608).¹²

Just Culture also recognises that competent professionals can still make mistakes (to err is human), or violate rules in systems where deviance and poor practice has become normalised. This is known as normalisation of deviance, or "to drift is human".¹⁰ This emphasis on normal error, and the system as a contributor to human error, sometimes results in Just Culture being misconstrued as a 'no-blame' philosophy. This is not the case - a Just Culture has zero tolerance for reckless behaviour that involves a wilful disregard of the patient's best interests or gross misconduct.¹³ It is fundamentally about holding people accountable in a way that is fair and consistent.¹⁴ For that reason, creating a Just Culture in healthcare is considered a positive change.¹⁵ In organisations that support Just Culture, individuals within that organisation are encouraged to seek supervision and support, promote standardised clinical handover and in particular escalate clinical concerns to more senior staff.

CHAPTER 1

Enhancing a Just Culture in NSW Health

Does your organisation have a Just Culture?


Do you work in a Just Culture? Here are a few things you might expect to see in your organisation if you do:

- A documented Just Culture policy
- Rules, procedures and expectations of performance and behaviour (i.e. responsibilities and accountabilities) are clear, communicated and achievable. Similarly, sanctions for unacceptable behaviour are clearly documented and communicated. The reporting of incidents in the NSW Health incident management system is encouraged and non-punitive. Refer to the NSW Health Incident Management Policy (PD2014_004).¹⁶
- Open communication about error is encouraged and speaking up elicits a positive response
- Staff who report incidents are involved in investigative processes and solution design
- Staff members are provided with support when adverse events occur
- Rules are enforced all the time, for everyone (regardless of position or discipline), not just when something goes wrong
- There is a transparent and consistent process for dealing with actions when there is ambiguity
- Reports are followed up and actions are taken to address error-producing system factors.

Your obligations within a Just Culture

Organisational culture is a shared set of values that determines individual actions and behaviours. What you do and say matters. To support a Just Culture in your organisation, you should:

- Maintain your own professional standard and conduct. Refer to the NSW Health Code of Conduct (PD2015_049)¹⁷ and your professional practice standards
- Do the substitution test – when things go wrong, ask whether another practitioner with similar skills in a similar situation would act differently
- Identify risks and consider other factors that could impact performance
- Report incidents and hazards as soon as identified
- Help to design/redesign safer systems and get involved in change initiatives
- When an incident occurs, provide patients with truthful, clear and timely communication. See the NSW Health Open Disclosure Policy (PD2014_028)¹⁸
- **Make safe choices:**
 - Follow procedures
 - Make choices that align with the **NSW Health CORE values**¹⁹ (Collaboration, Openness, Respect and Empowerment) and
 - Never sign for anything you are not sure was undertaken (e.g. action or item).



“The standard you walk past
is the standard you accept”.

Lieutenant General David Lindsay Morrison
AO Chief of Australian Army 2013

CHAPTER 2

Human Factors impact on the way we work

What is Human Factors?

Human Factors and Ergonomics is the scientific discipline concerned with understanding and designing systems so that they accommodate the people within them.²⁰

As this definition suggests, a core Human Factors principle is that maximum performance and efficiency is achieved when system factors are designed to accommodate the capabilities, limits and goals of people, rather than simply expecting people to adapt.

Although Human Factors is most commonly associated with human error, it is also concerned with process efficiency.

Human Factors (the scientific discipline) is named after those characteristics associated with the individual that have the potential to hinder optimal performance.

They include:

- Physiological characteristics (height, vision and strength)
- Psychological characteristics (perception, memory, intuition, bias, fatigue and values)
- Proprioceptive characteristics (hand-eye coordination, spatial awareness and balance)

System factors are those that can facilitate or hinder performance indirectly. System factors include:

- Communication and interaction - between individuals and teams, interactions with the physical environment, and interactions with equipment
- The formal structure and rules of the organisation
- The culture of the organisation

Fatigue is an example of the interaction between system factors and human factors. Fatigue can be exacerbated by system factors, such as rosters, workload and skill mix.²¹ This can make staff moody, forgetful, distractible,²² jittery and increase the willingness to engage in risk-taking behaviours.²³ Although fatigue is temporary, it can increase the likelihood of making a medical error.²⁴ Similar effects have been observed for stress, feeling time-pressured and even hunger.

Human Factors' experts advise that the most effective and efficient means of managing fatigue (and other personal conditions) is through the redesign of system factors, i.e. through rosters, workload and skill mix. However, because

fatigue can be impacted by a range of non-work variables, it is also your responsibility to regulate your own performance. A simple rule of thumb is that if you are feeling Hungry, Angry, Late or Tired (HALT), you should stop, take a breath and double-check your work.

H	Hungry
A	Angry
L	Late
T	Tired

Applications of Human Factors in Health

Human Factors was central to the outstanding safety records achieved in commercial aviation, petroleum engineering and nuclear power generation. Human Factors is relatively new to healthcare, but has already contributed to a number of quality and safety efforts. For example, root cause analysis was initially developed by Human Factors practitioners within NASA to analyse safety incidents and is now routinely used to investigate potentially avoidable adverse events in healthcare. Similarly, standardised communication protocols like ISBAR²⁵ were derived from techniques developed by Human Factors practitioners for use in nuclear submarines.

Because the majority of avoidable adverse events in healthcare are due to human error, Human Factors has much to contribute to clinical workflows, standards of care, team composition, the design of medical equipment and software, and the training needs of personnel. Indeed, the World Health Organization has noted that "A failure to apply Human Factors principles is a key aspect of most adverse events in healthcare".²⁴

In the earlier incident outlined involving Jenny, we see the interplay between system factors and human factors. Although the interaction was between staff and the CVAD (human factor), in reality a number of system factors made that action and the outcome (disconnection) inevitable. First, the Leur lock design was susceptible to damage. This was exacerbated by routine practices, regarding how to 'check' the connection. Further the CVAD remained in situ longer than usual.

CHAPTER 2

Human Factors impact on the way we work

A Human Factors approach to preventing this type of incident would focus on identifying clinical devices that could not be over-tightened, or identifying devices for which over-tightening would not produce catastrophic outcomes. A process change and associated training for checking the lines may also be considered in addition to - but not instead of - the above-mentioned product change.

Human Factors in Quality Improvement

User Centred Design (UCD)²⁶ is a framework by which we can accommodate the human factor when making system improvements. It involves analysing and supporting how target users actually work, rather than assuming the user will simply accommodate the intervention. Typically UCD begins with a process called Task Analysis. Task Analysis refers to a process of information gathering to understand how staff perform their tasks and achieve their intended goals. Information gathering methods include on-site observations, think-aloud, task walkthroughs, interviews, workshops and surveys.

User Centred Design also incorporates thorough usability testing and evaluation to identify impediments to ease of use as part of an iterative design process. Usability testing refers to evaluating a process, protocol, device or layout with representative users. Usually the users are asked to complete critical task scenarios and are observed to identify impediments to ease of use.

These UCD methods should be integrated into quality improvement methodologies like Clinical Practice Improvement.

The UK's Clinical Human Factors Group (<http://chfg.org/>) provides a good starting place to find out more about Human Factors methods (and Human Factors in general).

Common Human Factors concepts

Error is defined as “a failure of a planned action to achieve a desired outcome”.²⁷ It is a normal, everyday occurrence – after all, people make mistakes. For that reason, rather than trying to eliminate error through training or discipline, Human Factors engineers try to design systems that are error tolerant (either reduce the likelihood of error occurring or the severity of the outcome).

Situation Awareness is formally defined as “the perception of the elements in the environment within a volume of time and space, the comprehension of their meaning, and the projection of their status in the near future”.²⁸ Informally, it could be described as keeping track of what's happening around you, including identifying and prioritising at-risk patients, planning how to mitigate risks and quickly recognising and responding to critical events if they do occur.²⁸

Shared mental models is a reference to the degree of similarity in how team members understand the situation, the problem, the meaning of cues, what is likely to happen and the solution. This is critical to coordinating team efforts and should be considered during process/protocol redesign.²⁹

Mental workload is the level of attentional resources required to meet both objective and subjective performance criteria, which may be mediated by task demands, external support and past experience.³⁰

Overload refers to when the mental workload for a task exceeds available resources. It can result in a loss of situation awareness and poor performance. To avoid overload, Human Factors engineers often measure mental workload when evaluating processes and devices.²⁹

Summary

Human Factors is all about ensuring that work environments, tools, processes and training are consistent with the known capabilities, motivations and limits of human performance. For the same reasons that we would provide workers with a step-ladder to help them retrieve items from a high shelf, we must work to ensure that our quality and safety initiatives in healthcare make realistic assumptions about people's capabilities and behaviours.

Any initiative that depends on people completing tasks they cannot or will not do will not succeed.

Further reading on Human Factors: Wickens CD, Lee JD, Liu Y and Becker SEG. *An Introduction to Human Factors Engineering*. 2nd ed. New Jersey: Pearson-Prentice Hall; 2003.²⁹

CHAPTER 3

Teams working toward improvement: Understanding the importance of teams as the focal point for improvement

What is a team?

Teams are the foundation of the healthcare system. They are the small, functional, frontline units that provide most healthcare to most people. A team includes staff from multiple disciplines who work together to deliver that care and also the supporting staff (clerical, ancillary etc.) who help them.

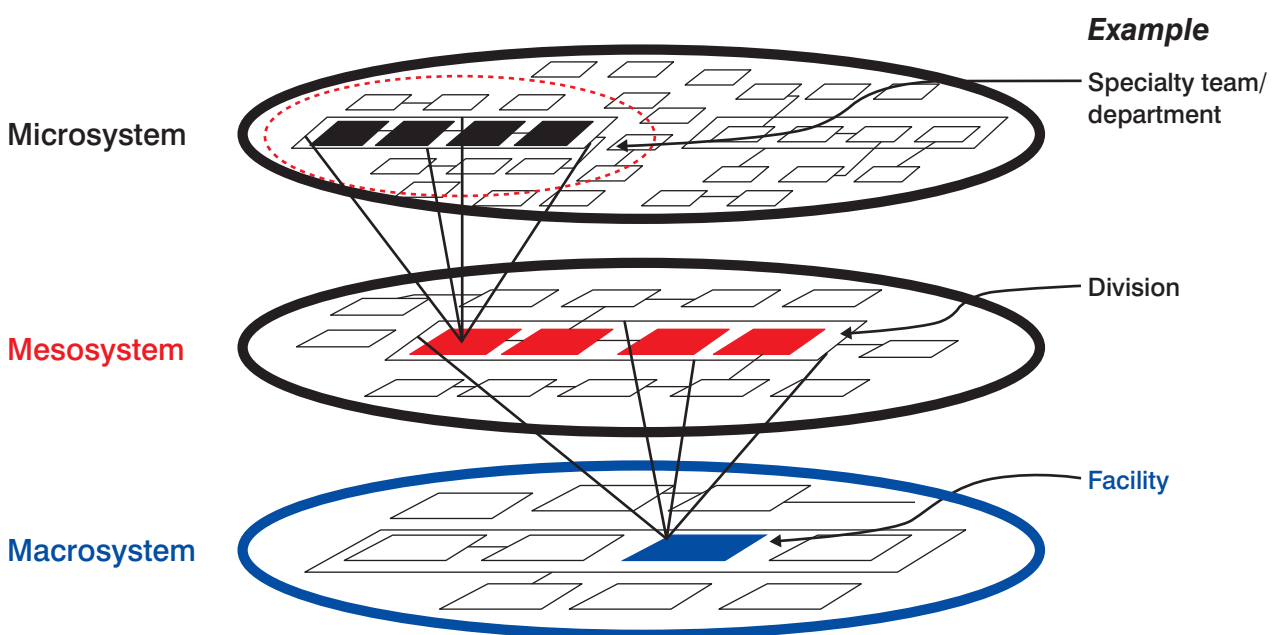
In most healthcare settings, teams work in clinical microsystems. A clinical microsystem is the essential building block of larger organisations and the health system. It is the place where patients, families and care teams meet. The quality and value of care produced by a large health system can be no better than the services generated by the small systems of which it is composed.^{31, 32}

Patients are an integral part of teams within the healthcare system. There is growing recognition that the quality and safety of care can be enhanced by engaging with patients, family and carers on quality improvement initiatives to improve health outcomes as well as safety.

Recall the patient story of Morris, outlined earlier in this document, who died of a preventable retroperitoneal bleed. In his case, elements of a well-functioning unit-based team were not demonstrated. Information sharing between care providers was not evident and handover between the clinical wards did not include a medication management plan or an updated list of tests that had been ordered. Care planning and coordination was inadequate, with standard protocols and procedures not available to support clinicians in their care of Morris.

Figure 1: What is a Microsystem?³²

The health system can be no better than the small systems...



Modified from: Henriks, Bojestig, Jonkoping CC Sweden

CHAPTER 3

Teams working toward improvement: Understanding the importance of teams as the focal point for improvement

Ultimately, microsystem units are the basic units of accountable care. Multidisciplinary teams should be encouraged to use daily, fixed, bedside ward rounds, to maximise information sharing between healthcare providers, patients and their carers.³³

A rounding process ensures that team members support each other and there is situational awareness of potential sources for error in the care of individual patients. All of the care is evaluated by unit-based data, which informs and drives the changes necessary to ensure the team continues to engage in quality cycles that guarantee the continued provision of best practice care.

Teams undertaking this type of process become highly reliable and resilient by their nature and embrace change as required. They take team care from being reactive and 'brittle', to having foresight, being 'resilient' and performing in an optimal way. Communication is the key. It needs to be explicit and clear. Many serious clinical incidents highlight the lack of clear communication as a contributing factor.



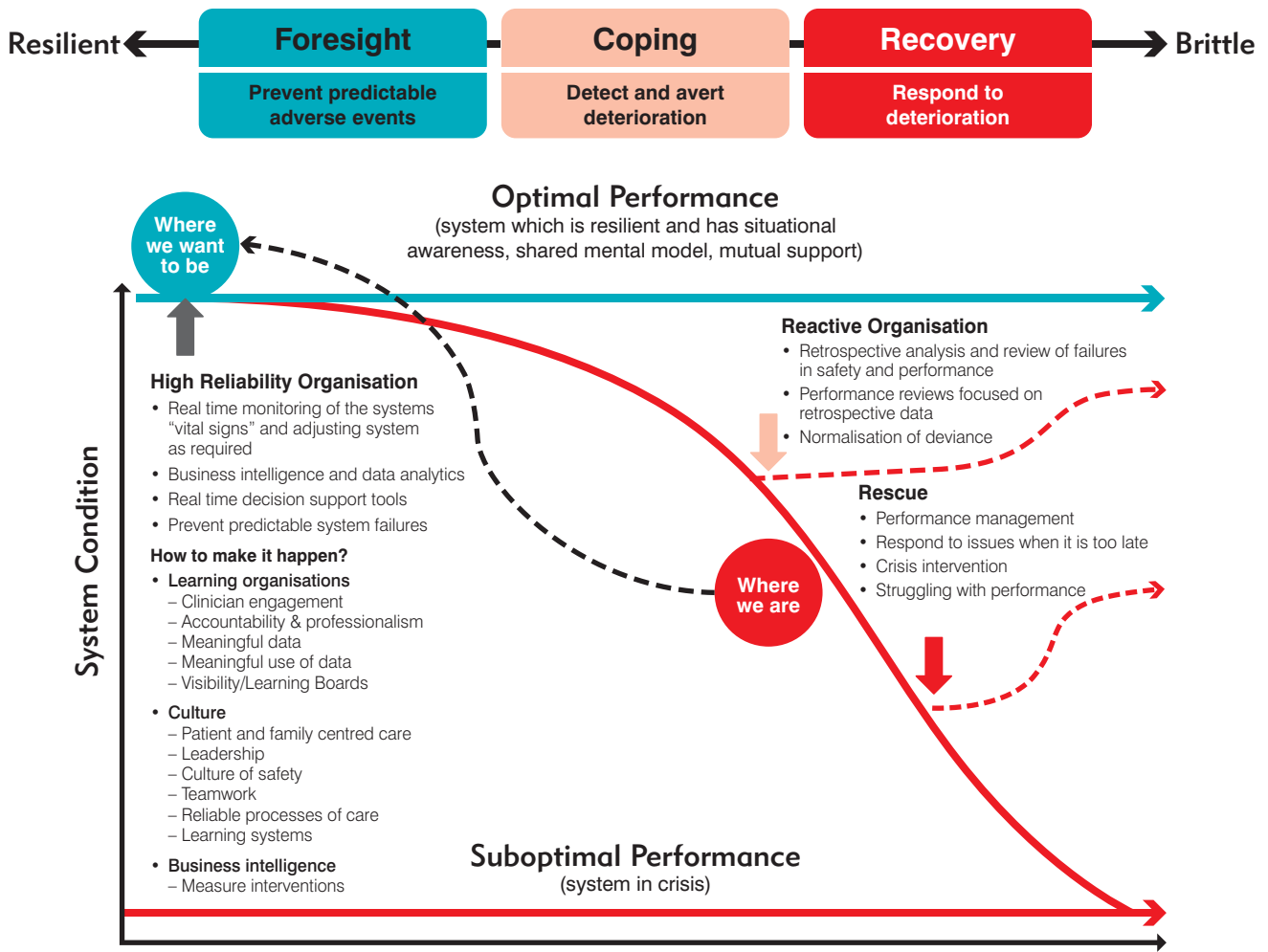
Clinical team communicating

CHAPTER 3

Teams working toward improvement: Understanding the importance of teams as the focal point for improvement

The following figure illustrates the important building blocks of a reliable organisation.

Figure 2: Framework for High Reliability Organisations³⁴



The Institute of Healthcare Improvement believes that “applying reliability principles to health care has the potential to help reduce ‘defects’ in care or care processes, increase the consistency with which appropriate care is delivered, and improve patient outcomes”.³⁵

CHAPTER 4

How to identify a clinical issue and monitor improvement

In previous chapters we have illustrated the importance of putting quality and safety at the forefront of clinical care. The incidents involving Morris and Jenny are examples of how we can learn from patient harm and improve the system in which we care for our patients.

In the following pages, some activities that can be undertaken in identifying and understanding the extent and nature of a clinical care problem are described.³⁶ Processes which are already in place to monitor practice in NSW Health are detailed. These processes can also be used to establish a baseline or re-measure after improvement work. They provide insight from various perspectives and can be used individually or collectively. This chapter provides links to some useful resources.

Five key steps should be followed when undertaking or using the information gathered from these methods:

1. Use an interdisciplinary approach, including junior staff, patients and students where possible
2. Any measure or process must have meaning for the various stakeholders, and should be understood and valued by the intended audience
3. All activities should be conducted in a manner that is transparent and accountable; not only to other clinicians but also to health service managers and patients (an exception to this is documents relating to the privileged work of the Root Cause Analysis (RCA) team, apart from the final report)
4. All information obtained and then shared must be de-identified to ensure confidentiality of the patient, clinician and location. This enables open and frank discussion of the issues identified around specific events and not on who was involved in the event
5. Patient care processes, not individuals, should be the focus of any discussions or actions.

In identifying and monitoring incidents, it is valuable to also consider any incident trends or clusters that might flag a broader system issue. Your role in recognising and reporting incidents via the clinical incident management system is absolutely critical. We strongly encourage you and your teams to make use of the clinical incident management system so that our system can learn from harm and become more reliable.

A key role of the Clinical Excellence Commission is to review all RCA reports and serious incidents across the state. From this, lessons are shared, programs and initiatives are developed where required to improve care and reduce the likelihood of future harm.

The case of Jenny identified earlier in this document, who died of a preventable air embolism associated with the management of her CVAD, is an example of how one incident led to identification of a broader issue. A review of incident management data over a 24-month period by the CEC identified six patients who had died from an air embolism during the management of their CVAD, suggesting a statewide issue. In response, the CEC issued a patient safety alert across NSW Health and published a Clinical Focus Report to highlight the problem and system improvement opportunities for reducing future harm.

The CVAD focus report, and other clinical focus reports undertaken by the CEC, can be downloaded from the CEC's website at <http://www.cec.health.nsw.gov.au/publications>

Some information sources for the identification and monitoring of quality and safety of patient care can be found in the following table.

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How to identify a clinical issue and monitor improvement

Table 1: Information sources for the identification and monitoring of the quality and safety of patient care.

Processes	Description	What can it tell us?	Involves
Clinical Incident Monitoring	<p>Incident monitoring is a system for identifying, reporting, and analysing incidents with a view to preventing their recurrence.</p> <p>Effective incident monitoring also looks at actions taken to improve the problems in the systems of care that are revealed by the incident. Interdisciplinary clinical teams discuss retrospectively, the incidents occurring in their clinical area in a set period of time, e.g. the past week. This might involve escalating those incidents or system problems that require action at the facility level.</p> <p>Incident counts, trends of incident types and themes of causes are monitored and acted upon.</p>	<p>Identifies care system issues that have resulted in or could result in patient harm.</p> <p>The process will identify what needs to be done to prevent this incident from occurring again, who is responsible for follow-up action and who else needs to know about this.</p>	<p>Interdisciplinary members of a ward or department.</p> <p>Each clinical team or ward-based unit identifies an appropriate time to discuss the incidents occurring in their clinical area in the previous time period, e.g. the past week.</p>
Detailed Case Review	<p>A comprehensive review of an identified clinical problem or issue.</p> <p>The problem may have been 'flagged' through the mechanism of Mortality and Morbidity meetings, multidisciplinary meetings, clinical indicators, audit, through incident monitoring or patient feedback/complaints.</p>	<p>The review process identifies 'what' happened and the systems issues which contributed to the clinical problem.</p>	<p>Interdisciplinary members of a ward or department. Clinical reviewers conduct clinical record review +/- staff discussion to gather additional information.</p>
Retrospective Medical Record Review	<p>A systematic review of the patient's medical record using standardised screening criteria (triggers) to flag adverse events which may have occurred during the provision of clinical care.³⁷</p> <p>Criteria can include an unexpected death, an unplanned return to theatre, the unexpected transfer of a patient from a ward to a higher level of care (ICU), unplanned readmission within 28 days of discharge and iatrogenic injury.</p> <p>Examples of tools used include the Institute for Healthcare Improvement IHI Global Trigger tool, Paediatric Trigger Tool, Inpatient Death Review Screening Tool</p>	<p>Objectively detects deviations in appropriate standards of care which may indicate an adverse event has occurred.</p> <p>It may identify adverse events that have not been notified through clinical incident reporting mechanisms.</p>	<p>Interdisciplinary members of a ward or department screen medical records.</p> <p>For example, the IHI GTT advocates screening 20 randomly selected medical records per month while other methods screen all deaths/all unplanned readmissions within 28 days.</p>

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Processes	Description	What can it tell us?	Involves
Root Cause Analysis (RCA)	<p>Root cause analysis (RCA) is a method of problem solving used for identifying the root causes of faults or problems. It comprises many different tools and processes. In NSW Health, the model used is systems-based RCA.</p> <p>RCA investigations in NSW Health may be performed under statutory privilege if they are commissioned according to the requirements of the Health Administration Act 1982³⁸ and the Incident Management Policy PD 2014_004.¹⁶ RCA is mandated by this policy for certain categories of events. The RCA process can also be applied under privilege to any event where the Chief Executive believes that significant system issues may have contributed to the outcome.</p>	<p>Identifies the underlying causes and/or contributory care delivery problem(s), which led to the incident occurring. The investigation outlines and prioritises mitigation strategies to prevent recurrence.</p>	<p>An interdisciplinary team, including clinicians and managers who fulfil similar roles to the individuals involved in the incident or who have clinical expertise in the issue being investigated. The team should not include staff members involved in the incident, or managers who have direct line responsibility for the people or areas under review.</p>
London Protocol	<p>London Protocol (LP) is a 'reflective' investigation process. The purpose is to use the incident to reflect on what "gaps and inadequacies it reveals in the healthcare system".³⁹</p> <p>London Protocol looks for care delivery problems,³⁹ within a specific clinical context. The framework presents groups of potential contributory factors which investigators consider relevant to the incident in question.</p>	<p>London Protocol identifies key care delivery problems. It highlights the contributory factors for the incident such as:</p> <ul style="list-style-type: none"> ■ Patient factors ■ Task and technology factors ■ Individual factors ■ Team factors ■ Work environment factors ■ Organisational and management factors³⁹ <p>Each of these factors can then serve as the starting point for drilling down to root causes, if the team wishes to proceed to a deeper level of causal analysis.</p>	<p>The method can be undertaken by an individual or a team. Ideally, a LP investigation team should consist of three or four people with knowledge of the clinical care problem and facilitated by an investigation leader.</p>

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Processes	Description	What can it tell us?	Involves
Mortality and Morbidity Meetings (M&M)	A meeting held on a regular basis to review and critically analyse deaths and serious morbidity in patients within a specific clinical group or specialty. The focus of these meetings is on the systems and processes of care for an individual patient and not on an individual clinician's performance.	Identifies whether deaths and adverse outcomes were preventable, whether optimal care was provided to the patient and if there are opportunities for system improvement(s). For example, were patient's symptoms controlled, appropriate conversations held in a timely manner and appropriate escalation decisions and goals of care made.	Members of the interdisciplinary team meet regularly to discuss predetermined cases after review of the clinical records.
Patient/Carer/ Consumer Experiences Patient Carer Stories	<p>The importance of feedback is to understand the relationship patients, families and carers have with our health system, and how we can improve their experience through quality and safety initiatives.</p> <p>Understanding the patient experience and partnering with patients to improve care and services can result in improvements in quality and safety such as, reduced lengths of stay, reduced adverse events, improved patient experience and their involvement in their care.</p> <p>Patient/carers stories go beyond questions of satisfaction, and explore the actual experience of patient and carer. They are a powerful tool to assist clinicians and health services to understand what is important to patients.</p>	<p>Provides information about the quality of care as experienced by the patient / carer / consumer and can identify areas for which improvement may be required.</p> <p>This can be used as an early warning system that practices within an area/department or organisation, fall short of meeting the needs and preferences of patients and public expectations.</p> <p>It can highlight:</p> <ul style="list-style-type: none"> ■ What is important to patients ■ Patterns of practice ■ Deficiencies in protocols, guidelines and procedures ■ Areas requiring further training and development ■ Critical clinical information 	Members of the interdisciplinary team including patients and their carers elicit feedback to provide an objective mechanism for monitoring clinical outcomes as an alternative to reliance on peer review and self-regulation.
Patient Shadowing	Patient Shadowing is an observational method by which the patient is 'followed' during the course of their admission and their experiences are witnessed and captured by observer(s).	Provides information about the patient/carers experiences as experienced by the patient/carers.	Members of the interdisciplinary team and patient/carers.

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Processes	Description	What can it tell us?	Involves
Clinical and Performance Indicators	<p>Clinical/performance indicators are objective measures over time that an anticipated outcome is achieved or that the process to achieve that outcome is of a suitable standard.⁴⁰</p> <p>The Australian Council on Healthcare Standards (ACHS) has a Clinical Indicator Program⁴¹</p> <p>NSW Health Performance Agreements⁴²</p> <p>The National Quality Use of Medicines Indicators for Australian Hospitals</p>	<p>Clinical/performance indicators show whether anticipated outcomes or the process to achieve that outcome have been reached.</p> <p>Allows comparison of outcomes within a given patient population or a process of care.</p>	Members of the interdisciplinary team and management.
Clinical Audit	An audit can be observational (e.g. hand hygiene compliance audit) or of charts/medical records (e.g. medical record documentation audit).	Clinical audits identify how close performance is to the agreed standards of care. ⁴⁰	Members of the interdisciplinary team.
Surveys	<p>A survey is a set of standardised open-ended or closed questions which a selected group of people (patients/consumer or staff) are asked to complete.⁴⁰</p> <p>NSW Health conducts:</p> <ul style="list-style-type: none"> ■ An annual statewide Patient Survey. Questions relate to patient experience. ■ Regular staff survey. Questions relate to workplace culture. ■ The Clinical Excellence Commission provides health services access to the Medication Safety Self-Assessment[®] for Australian Hospitals 	<p>Provides information about a process or an experience from the perspective of the individual.</p> <p>Can be used for:</p> <ul style="list-style-type: none"> ■ Providing baseline data against which the performance of the strategy, program, or project can be compared ■ Comparing different groups at a given point in time ■ Comparing changes over time in the same group⁴¹ 	Members of the interdisciplinary team and patients who have been in the public health system.
Safety Culture Measurement	<p>A tool (questionnaire) to measure staff attitudes and beliefs (culture) about patient safety. There are many tools available; the tool may also be referred to as a safety climate survey.</p> <p>Agency for Healthcare Research and Quality Surveys on Patient Safety Culture</p> <p>Manchester Patient Safety Framework</p>	<p>Provides information about staff's perceptions and attitudes about patient safety. It can track changes in perceptions and attitudes if administered over consecutive time periods.</p> <p>Culture will in part determine how well the safety improvement initiative will be accepted.</p>	Organisational staff.

CHAPTER 5

Clinical Practice Improvement

Overview

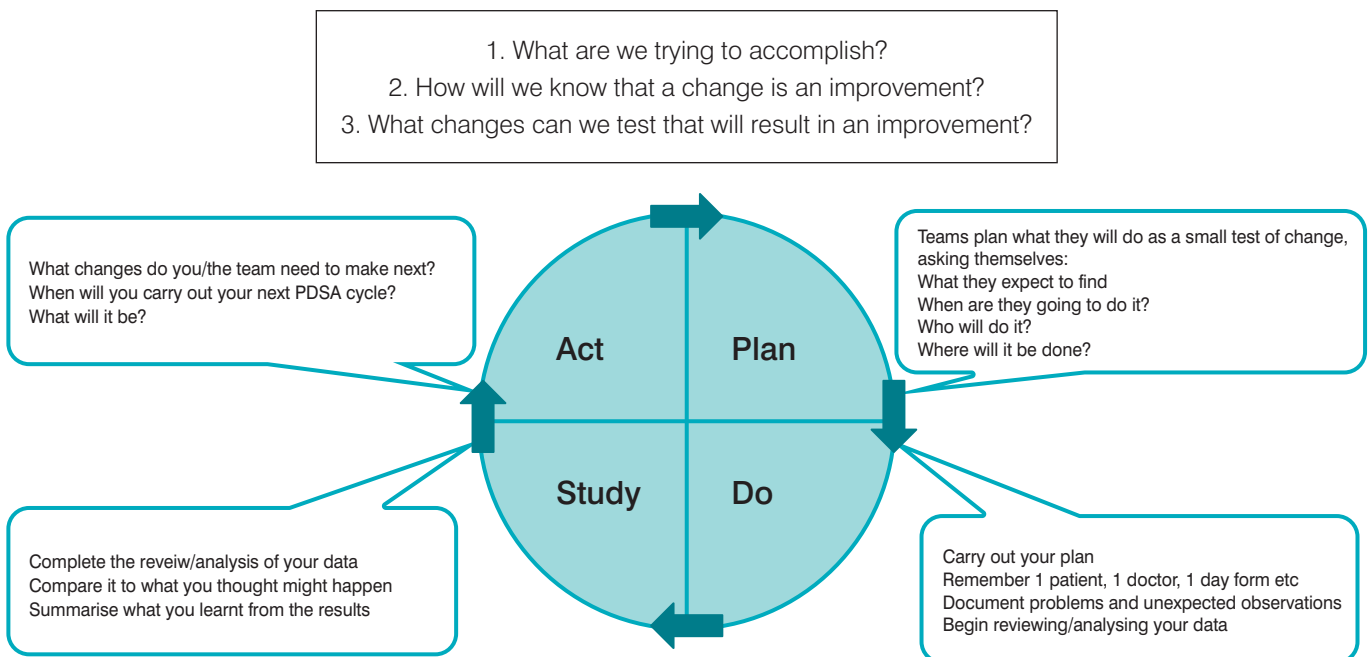
Numerous improvement methodologies are used nationally and internationally, to improve processes of care or patient outcomes. Clinical Practice Improvement (CPI) is a commonly used methodology to address identified problems in the clinical area. It involves identifying, defining and diagnosing a problem, before developing solutions and implementing interventions that may address the identified issues. Possible solutions are then tested using small-cycle testing called “Plan, Do, Study, Act” (PDSA) cycles.^{35 43} It is important to measure the impact of changes in order to verify that your

interventions have made a difference. PDSA cycles were originally known as the Shewhart cycle, “Plan, Do, Check, Act”, and based on manufacturing models. They were later modified by Deming to PDSA cycles.⁴⁴

There are three main concepts to consider when undertaking improvement. This is demonstrated well with the Model for Improvement below.^{35 43} This model was developed by Associates for Process Improvement and is used by the “Institute for Healthcare Improvement (IHI) as their framework to guide improvement work”⁴⁵

Figure 3: Model for Improvement⁴³ [image adapted]

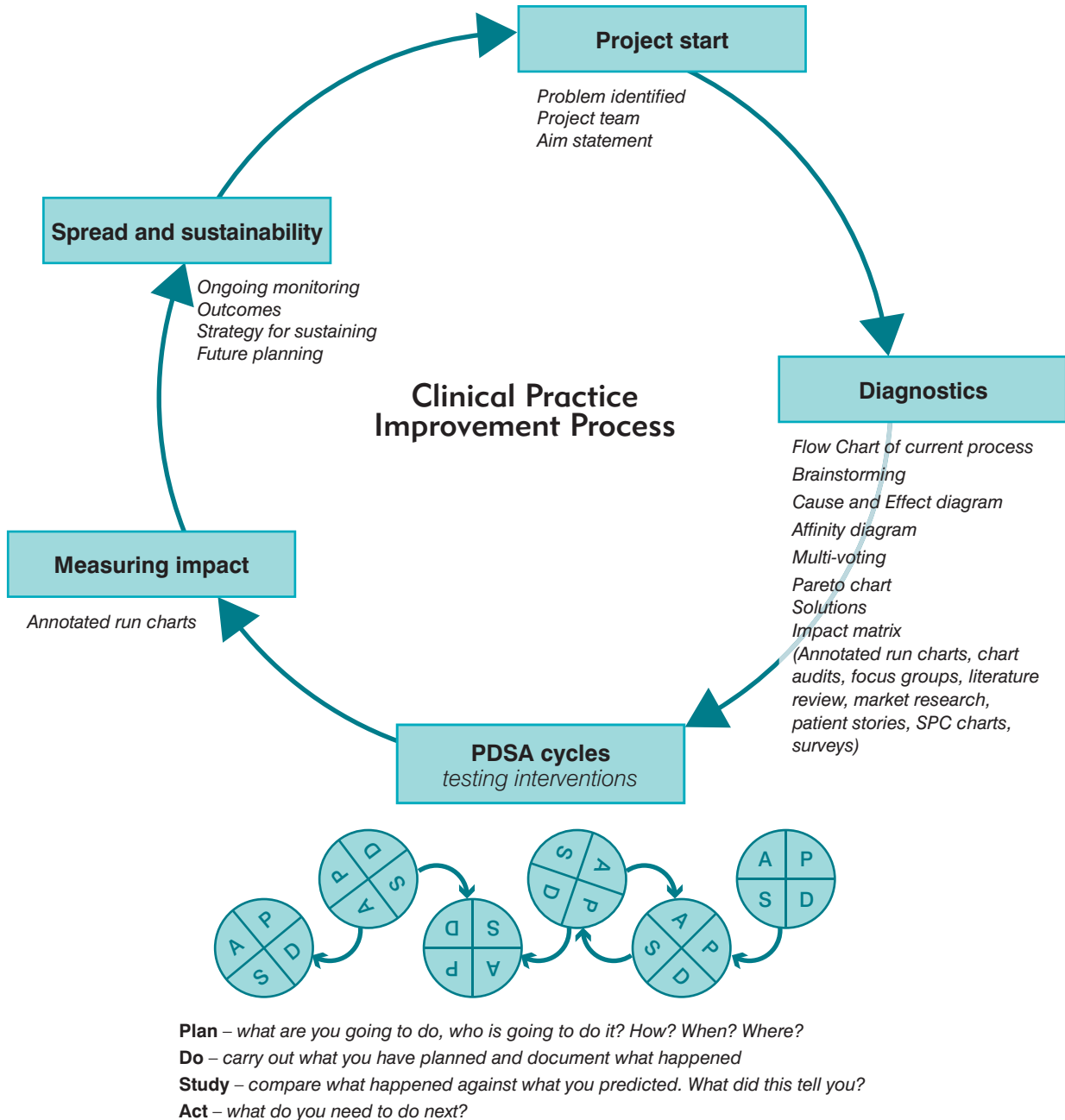
Model for Improvement



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Figure 4: Clinical Practice Improvement Process



In the following pages the incident involving Morris will be used as the basis for developing a project that could be used to improve future care.

Further information on CPI and the steps and tools involved in the process is available on the CEC website at <http://www.cec.health.nsw.gov.au/programs/clinical-practice>

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Problem Identification

Before commencing a project, you need to identify that there is a problem. You may find this out anecdotally, through team meetings or patient feedback, or through one or more of the processes outlined in Chapter 4.

In the case of Morris, who died from a preventable bleed, the management of complex patients on anticoagulant medication provides an identifiable problem and area for improvement.

Project Team

The first step in the process is to gather a project team. The team should include:

- Clinical staff who work in the area/s in which the problem occurred
- A patient who can provide useful information on the problem from their perspective, if practical
- Experts from other fields that may be involved (in the example of Morris, a pharmacist on the team would be a good inclusion as it involved a medication)
- A quality advisor who knows and can facilitate others to use the tools and the steps in the process
- An executive sponsor (often the manager of the area where the problem occurred)

The team needs to articulate the perceived problem and then develop an aim statement.

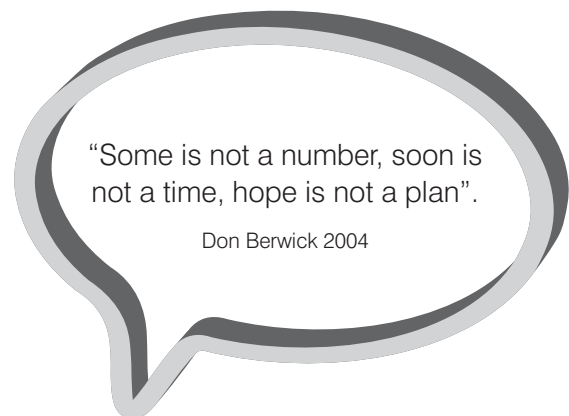
Aim Statement

An aim statement needs to be developed so that the project team and sponsors of the project have a clear understanding of what the team is trying to address. A good aim statement will meet the following SMART criteria:

S	Specific
M	Measurable
A	Achievable (stretch goal)
R	Realistic/relevant
T	Time based

The following is an example of a comprehensive aim statement which meets the SMART criteria:

“Within six months” (*time*), between 90 (*achievable and measurable*) and 100 per cent (*stretch goal*) of patients on anticoagulants will be on a management plan (*specific*), in keeping with a hospital or Local Health District (LHD) or Specialty Health Network (SHN) consensus based post-operative plan (*realistic*).



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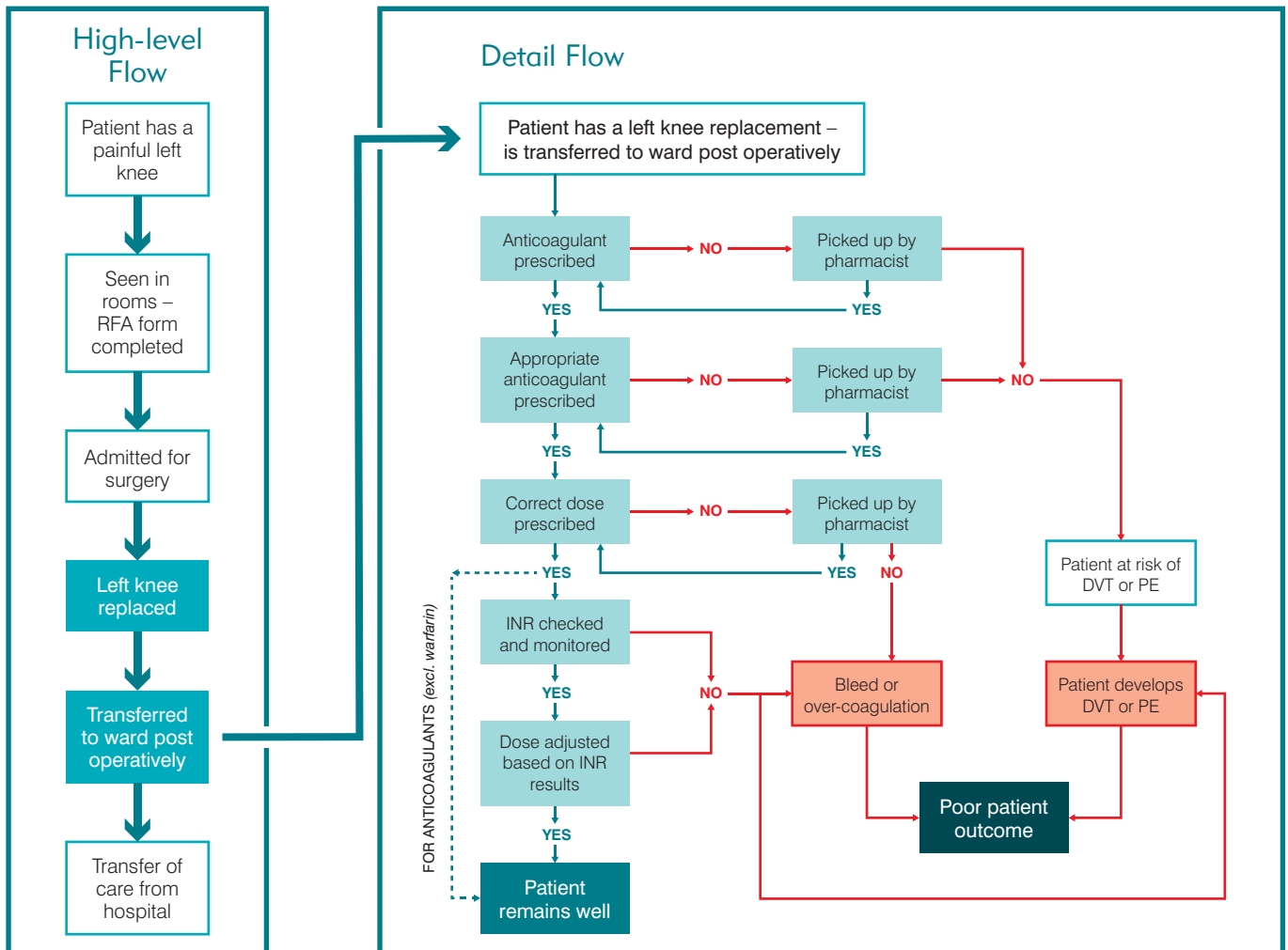
Clinical Practice Improvement

Flow Process

The next step is to outline the current processes of care, in a flow chart involving two parts. The first is a high level flow, which provides a helicopter view. The second is a more detailed flow chart of all the steps that the patient may take on their journey.

One way to do this is for the team to write down the current process on a whiteboard. In the example, this will involve following a patient on anticoagulants from when they first see a surgeon, admission for surgery and post-operative care.

Figure 5: Flow Chart of Patient Journey



NB: Routine International Normalised Ratio (INR) is only required for Warfarin. It is not required with contemporary oral anticoagulants.
RFA – Referral for Admission, DVT – Deep Vein Thrombosis, PE – Pulmonary Embolism

A flow chart allows a common understanding of the problem and for the whole team to see the different steps involved.

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Brain Storming

The next step is to identify what members of the team think contributes to the problem from their perspective. This should be carried out in silence (to cut through the authority gradient, stopping junior staff being influenced by senior colleagues). An easy way to complete this

process is for team members to write down on sticky notes specifically what they think the issues are – one issue per sticky note.

Most people will come up with between five and seven issues or causes, similar to the examples below.

Figure 6: Brain Storming



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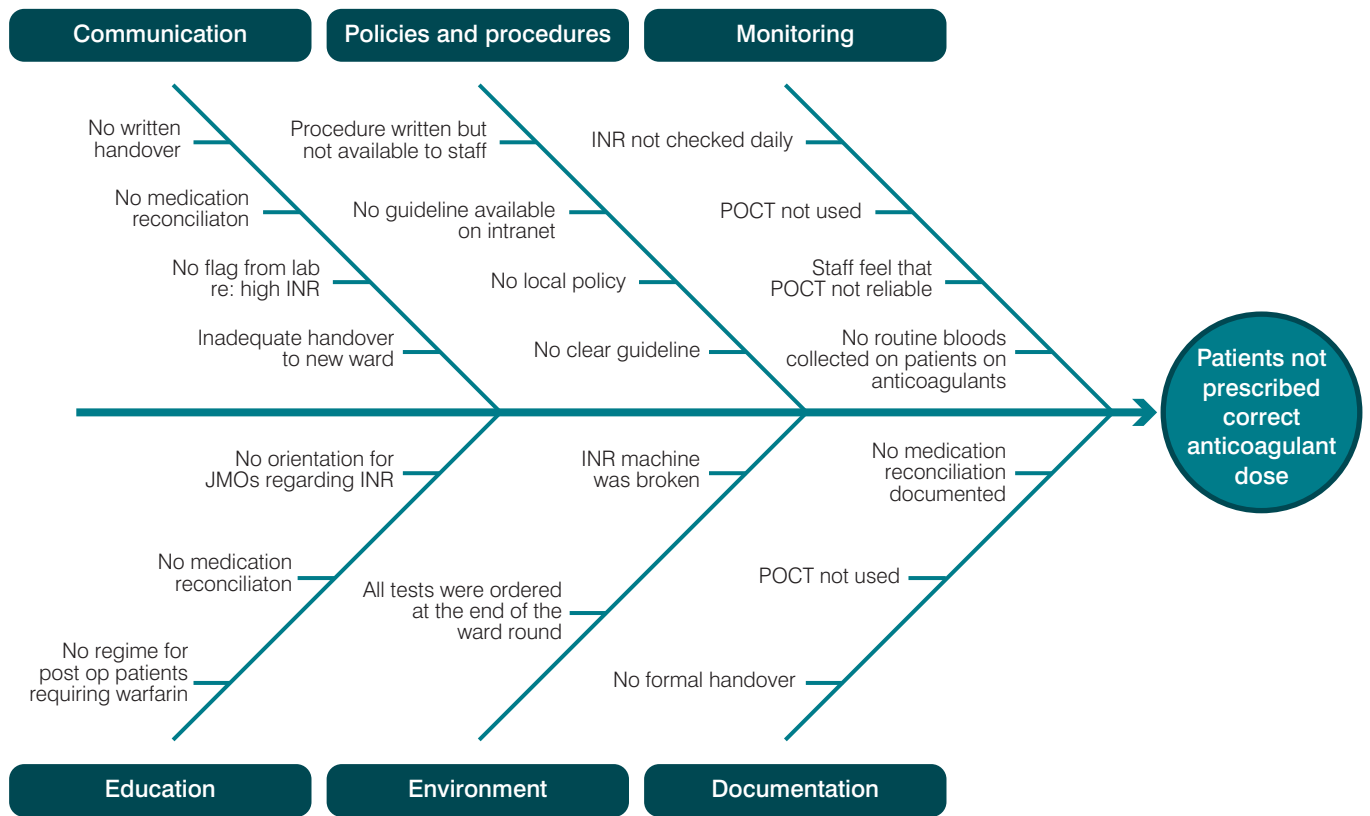
Cause and Effect Diagram

Now that you have some possible issues that contribute to your problem from the team's perspective, you can display this information in a Cause and Effect Diagram.

The Cause and Effect Diagram is also known as the Ishakawa or fishbone diagram. The sticky notes from the brainstorming exercise should be placed into categories, e.g. education, equipment, organisation, patient factors,

appointments etc. Let the team members come up with the categories as this gives them ownership of the problems. Each individual sticky note can become a subcategory. These can be displayed on a diagram which shows the relationship between the issues contributing to a lack of a standardised anticoagulation pathway and the effect this has on the patient/consumer.

Figure 7: Cause and Effect Diagram - Reasons why patients are not on a standardised anticoagulation pathway



INR – International Normalised Ratio
POCT – Point of care testing

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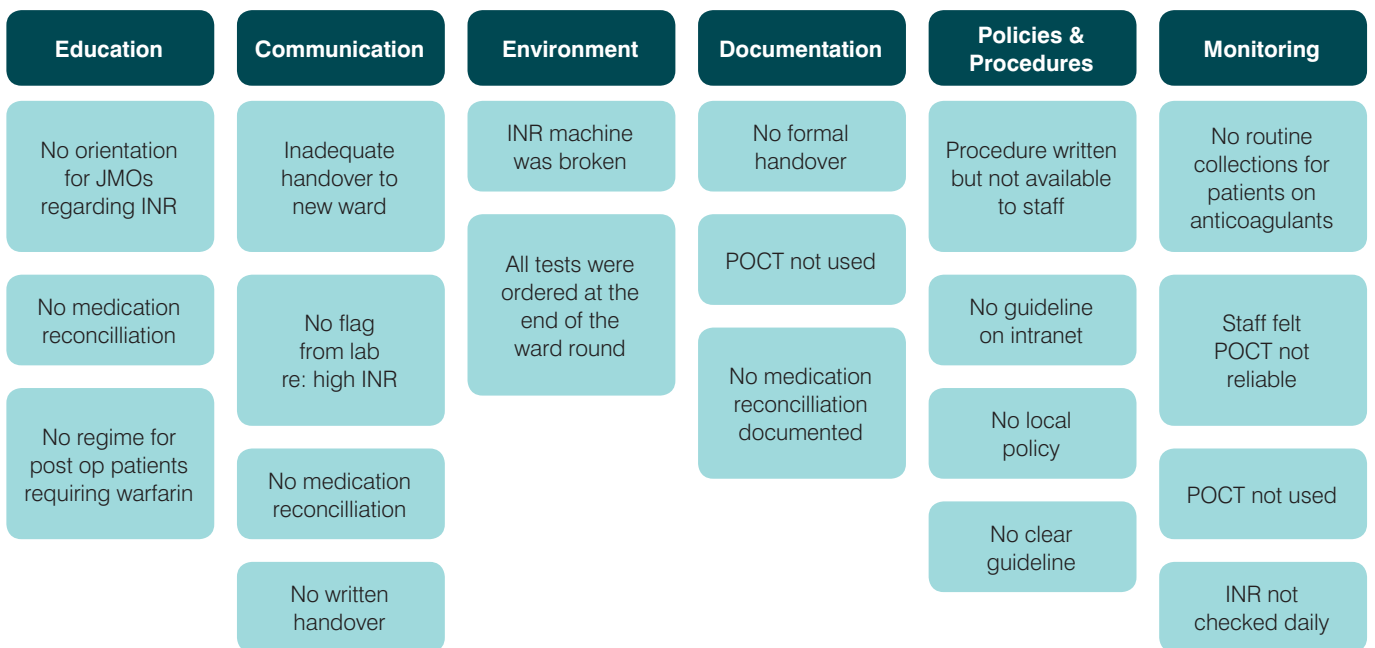
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Affinity Diagram

Some people prefer to display their sticky notes of the issues identified in the brainstorming as an Affinity Diagram. An Affinity Diagram can contain the

same information as a Cause and Effect Diagram, but is displayed in a different format. This can be useful in appealing to the way different people learn.

Figure 8: Affinity Diagram - Reasons why patients are not on a standardised anticoagulation pathway



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Multi Voting

Multi voting is a consensus method for prioritising the issues identified by the project team. The team leader goes through the sticky notes and removes any absolute double-ups (things that mean exactly the same).

The idea of this stage of the CPI process is to reduce the number of sticky notes by half. For example, if there are 40 sticky notes after the doubles have been taken out, the aim is to end up with 20 sticky notes.

Each team member gets 20 votes each, and each person must allocate one vote per sticky note. At the end of this round, remove any sticky notes which didn't receive any votes (do not throw these away as you will need to go through them to ensure you are not discarding something important).

Weighted voting

Remove sticky notes which only received one vote, then two votes and maybe even three votes until you have reduced the number of the remaining sticky notes by 50 per cent. By this time, if you started with 40 sticky notes then it was reduced to 20, each project team member would receive 10 votes each.

In this stage, team members with 10 votes can put all their 10 votes on one sticky note, if they wish, indicating that they think this sticky note most contributes to the problem, or they can spread their 10 votes out across multiple sticky notes.

Figure 9: Multi Voting



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Pareto Chart

A pareto chart graphically displays the team's identified priorities, using a consensus process. The pareto chart displays the most important issues (from the team's perspective) from the highest to lowest number of votes. They can then work out what 20 per cent of the issues, if addressed, can provide 80 per cent of the solution.

Solutions

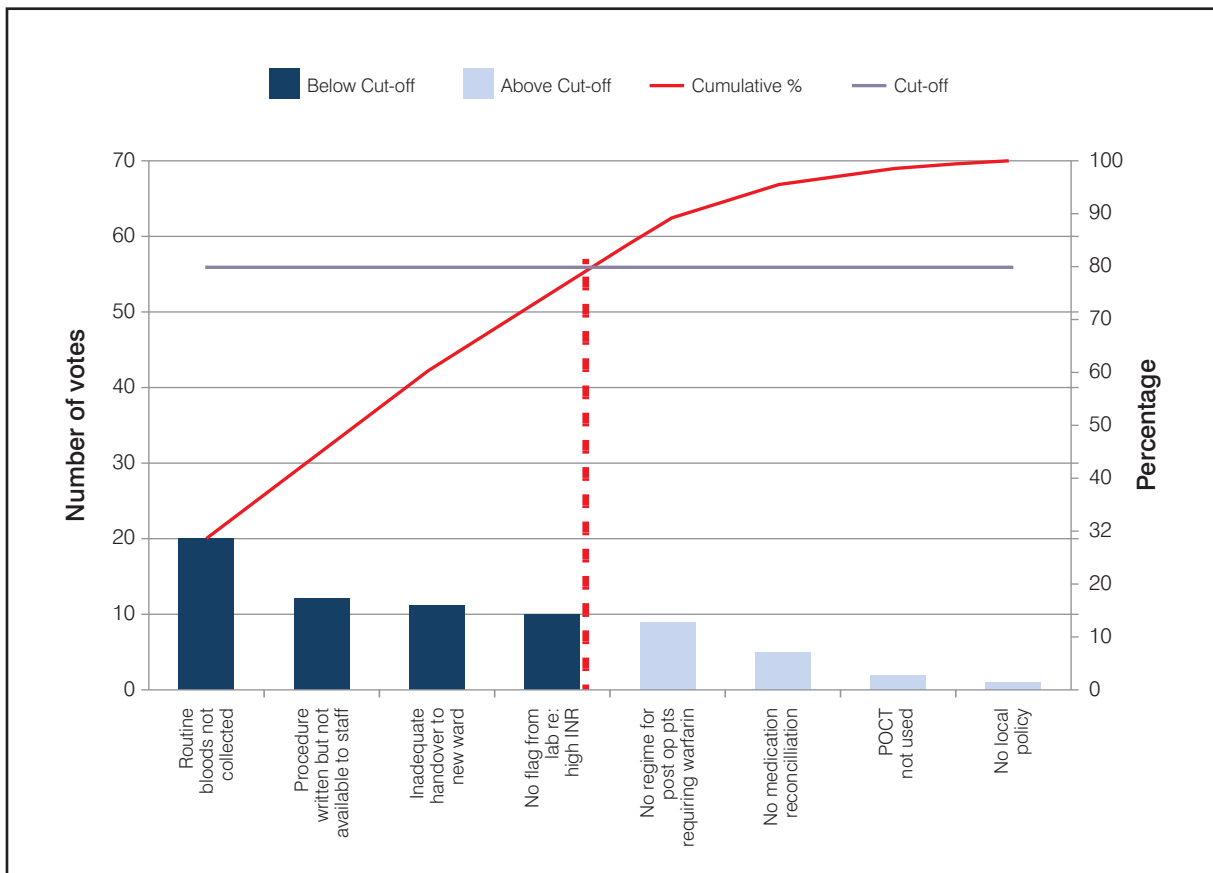
After the team has identified the issues, the next step is to come up with some solutions to address the issue of inconsistent anticoagulation of post-operative patients. There are many different tools you can use for developing solutions. A talking stick approach can be useful as part

of this process, to make sure that each person has a turn to share his or her ideas and opinions with the rest of the group. If there are multiple ideas, undertaking another brainstorming session may be useful.

Possible Solutions

1. Set up a post-operative schedule for bloods to be collected every post-operative morning
2. Plan for bloods to be collected on ward rounds
3. Ensure written procedure is available for staff
4. Develop a flow chart for post-operative care for patients on anticoagulants and display prominently on the ward
5. Teach all staff how to use and maintain Point of Care Testing (POCT)

Figure 10: Pareto Chart – Reasons patients' not prescribed correct anticoagulant dose



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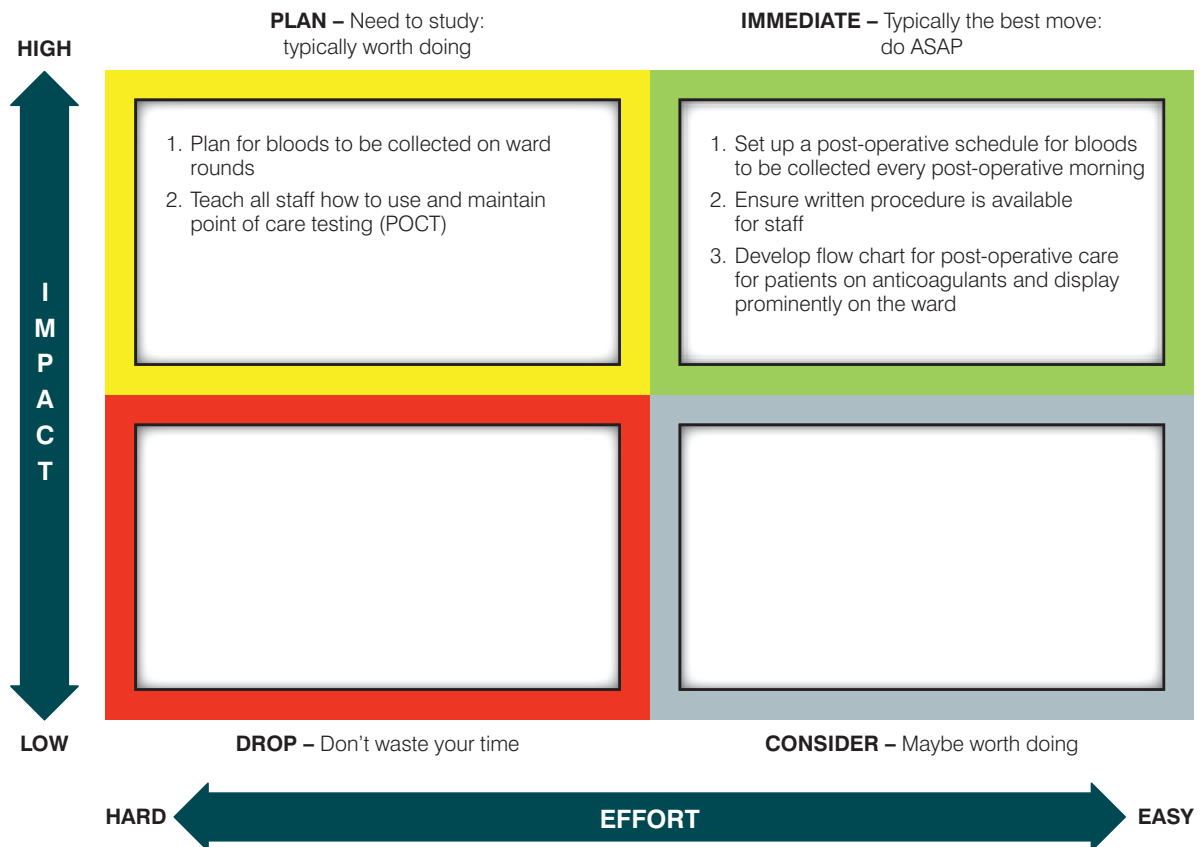
Clinical Practice Improvement

Impact Matrix

Once possible solutions have been identified, there are a few choices you can make to generate solutions. Either begin testing the ideas to see if they work or, alternatively, you can use the impact matrix. By going through each solution in turn and deciding as a team what value that

solution has to the organisation (ward, department. etc.) and how easy or difficult it would be to implement, you can make the decision to test and implement the solutions in the green box first.

Figure 11: Impact Matrix



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Plan, Do, Study, Act (PDSA) Cycles (small cycle testing)

The aim of the PDSA small-scale tests is to learn what doesn't work, and in what circumstances the solution doesn't work. That way, you are not implementing something more broadly, only to have it fail down the track. A potential solution that may be worth testing in the anticoagulation case could be a standardised post-operative checklist embedded in the Electronic Medical Record. This would need to be tested on a small scale (a pilot), to see that it works, and does not have unintended consequences, before rolling it out more broadly. Other potential solutions can also be piloted and

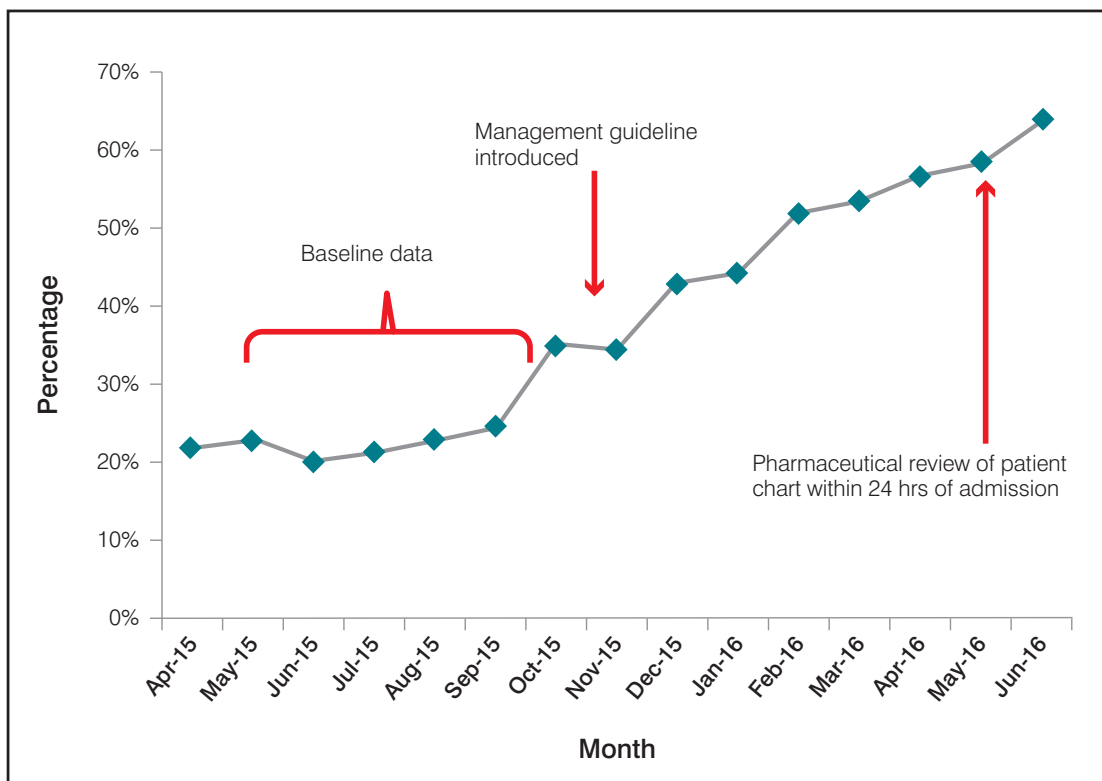
evaluated in the same way. Sometimes a pilot test can be as simple as using a single patient.

When you have carried out PDSA cycles to see what does and doesn't work, and in what circumstances, you need to plot these onto a chart to measure and see whether or not our interventions have made a difference.

Measurement

Below is an annotated run chart describing the interventions which were carried out and what difference the interventions made.

Figure 12: Annotated Run Chart – Percentage of patients on an anticoagulant management plan



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Spread and Sustainability of Improvement

It is important that when you are implementing solutions that you think about how the solutions implemented from the project will continue when the project team is no longer convening. The other important factor to consider how the measurement will continue for the larger clinical team for ongoing monitoring and measurement of the interventions.

Factors that are known to increase the likelihood of improvement initiatives being successful in terms of implementation, spread and sustainability are outlined below.⁴⁶

Enablers for spread and sustainability of improvement

- Culture – people feeling able and supported to work in new ways
- Significant levels of ownership, time, will, courage and effort
- Strong beliefs in themselves and the team
- Effective communication to all stakeholders about the problem being solved
- Staff stability
- Availability of tools (such as the NHS Improving Quality: The Sustainability Model)⁴⁷
- Staff understand how to effectively sustain improvement
- Effective communication to all stakeholders about the benefits of the improvement
- Strong leadership at executive and project team levels

Teams embarking on process improvement projects should be aware from the outset of the factors that support spread and sustainability and should incorporate these and act on them early in the project. An easy tool to assist with this is The Sustainability Model from NHS Improving Quality.⁴⁷ A number of scoring and sustainability models are available for your team to review. Listed below are links to three well-known organisation's sustainability tools.

National Health Service (NHS) UK

- <http://www.nhs.uk/resource-search/publications/nhs-inst-sustainability-guide.aspx>

Institute for Healthcare Improvement (IHI)

- <http://www.ih.org/resources/Pages/Tools/HowtoGuideSustainabilitySpread.aspx>

NHS Scotland Quality Improvement Hub

- <http://www.qihub.scot.nhs.uk/knowledge-centre/quality-improvement-topics/spread-and-sustainability.aspx>

CHAPTER 6

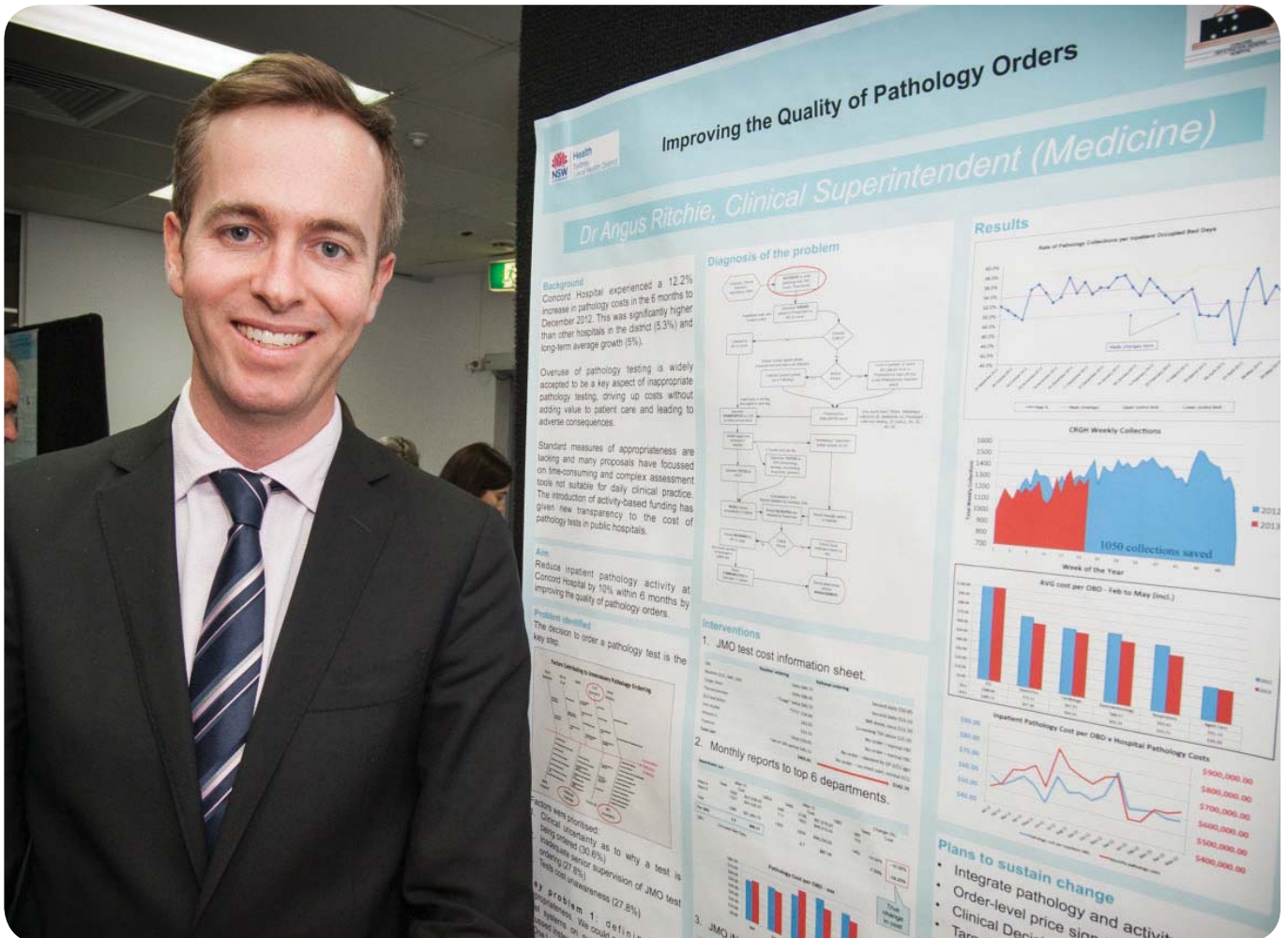
Want to learn more? Next steps

The Clinical Excellence Commission (CEC) runs two-day Clinical Practice Improvement (CPI) courses in many local health districts. More information is available at <http://www.cec.health.nsw.gov.au/programs/clinical-practice> or contact your Clinical Governance Unit to see when the next CEC course is available. Your Clinical Governance Unit will also be able to advise on any local CPI courses that are available.

The CEC also runs year-long Clinical Leadership Programs (CLP) to develop leadership skills (the programs incorporate CPI methodology) – more information can be found at <http://www.cec.health.nsw.gov.au/programs/clinical-leadership>

The Clinical Leadership Program (CLP) is offered at a Foundational and Executive level:

- The Foundational Clinical Leadership Program (FCLP) is aimed at middle level clinicians and managers. It uses a practice development framework and is delivered by facilitators employed in the local health districts.
- The Executive Clinical Leadership Program (ECLP) is aimed at senior clinicians and managers. It is delivered centrally in Sydney by a Faculty who have worked extensively in the areas of leadership, communication and professional development in a healthcare context. Both programs aim to improve clinical quality and patient safety through enhanced leadership practices.



USEFUL WEBSITE LINKS

NSW

Agency for Clinical Innovation

www.aci.health.nsw.gov.au

The Agency for Clinical Innovation works with clinicians, consumers and managers to design and promote better healthcare for NSW.

Bureau of Health Information

www.bhi.nsw.gov.au

The Bureau of Health Information is a board-governed organisation that provides independent reports about the performance of the NSW public healthcare system

Clinical Excellence Commission

www.cec.health.nsw.gov.au

The Clinical Excellence Commission is responsible for leading safety and quality improvement in the NSW public health system.

National

Australian Association for Quality in Health Care (AAQHC)

<https://www.aaqhc.org.au/>

Australian Commission on Safety and Quality in Healthcare

<http://www.safetyandquality.gov.au/>

Australian Institute of Health and Welfare (AIHW)

<http://www.aihw.gov.au/data/>

International

Agency for Healthcare Research and Quality

www.ahrq.gov

Healthcare Improvement Scotland

www.healthcareimprovementscotland.org

Institute for Healthcare Improvement

<http://www.ihl.org/resources/Pages/default.aspx>

Intermountain Healthcare (transforming healthcare)

<https://intermountainhealthcare.org/about/transforming-healthcare/>

International Society for Quality in Healthcare

<http://www.isqua.org/home>

Ko Awatea Healthcare system innovation and improvement

<http://koawatea.co.nz>

National Patient Safety Agency

www.npsa.nhs.uk

NHS Improving Quality

<http://www.nhsiq.nhs.uk/>

Scottish Patient Safety Programme

www.patientsafetyalliance.scot.nhs.uk

The Health Foundation

www.health.org.uk

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