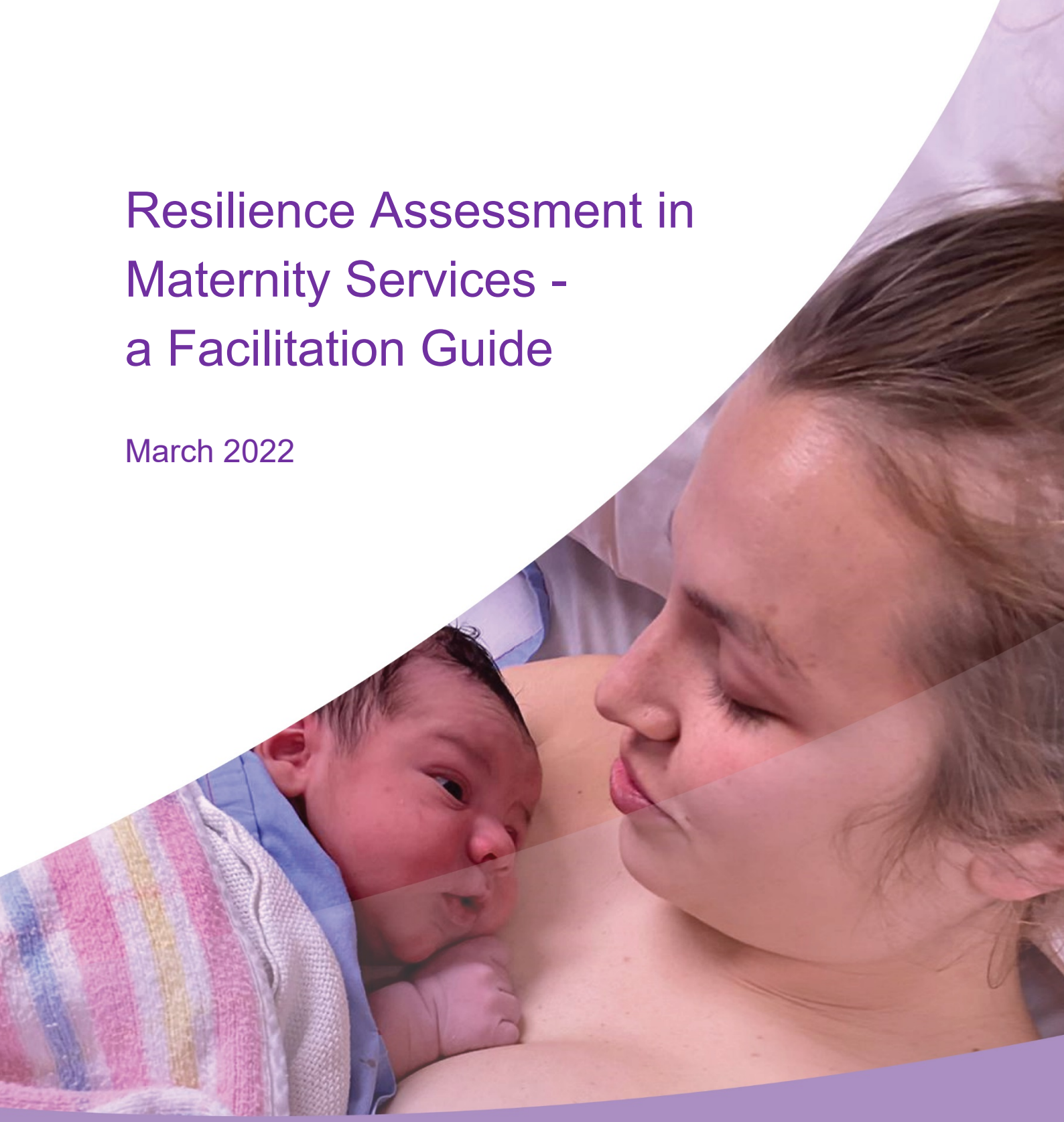
Resilience Assessment in Maternity Services - a Facilitation Guide

March 2022



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Introduction: Foundations of Safety Systems

A traditional approach to safety and quality has relied upon a focus on clinical governance processes including reacting and responding to adverse events. Whilst this is still necessary, increasingly, safety system experts have come to appreciate that we need an ambition to establish safety systems that predict and prevent adverse events as well as the ability to more rapidly adapt our systems to prevent future harm. This requires a deep understanding of the people, culture, structures and processes that determine the maturity of the safety system.

Resilience thinking and strategies are designed to change how a service prepares for adverse events. A resilient service is one that is continually anticipating, learning and striving towards clinical excellence where safety is everyone's business.

All hospitals with maternity services aim to provide safe, high-quality, care for mothers and babies. The birth of a baby is a significant event for individuals, couples, families and communities. For most, the experience of childbirth is a joyous one, however, for some, things may not go to plan. The vast majority of the time, patients receive safe and high-quality care in our system. However, maternity services need to be able to prepare for adverse events by having in place several important safety structures and processes, culture and programs. When things do go wrong, they need to be able to rapidly care for the mothers, babies and families to reduce further harm, whilst still providing compassionate care to others. At some point, the service will need to understand what went wrong and everyone will need to work together with those affected by the event. In the end, maternity services need to be learning rapidly, to prevent any recurrence and to improve the system in the future.

It is important that we acknowledge that no-one comes to work to do a bad job. Front line clinicians, need to be supported by managers and leaders who have a focus on reducing preventable harm, supporting safety culture with accountability, growing the capability of their staff and embedding mature safety systems.

"Too much pressure is put on the clinical team when something goes wrong"
Director of Clinical Governance

It is essential that we understand the nature of complex systems in health care. Resilience thinking emphasises systems thinking, which explores the characteristics of system components (interactions between the people, work tasks, technology, environment, as well as the structures and processes of clinical care).

In addition, the system elements include an appreciation that the whole is greater than the sum of its parts. That is, *the performance of a system doesn't depend on how the parts perform, taken separately, it depends on how they perform together – how they interact…* (AcKoff, 1981).

Chapter One

1.1 Setting the scene

The safe and high-quality delivery of maternity care is a complex endeavour.

Although the safety and quality of health care provided to each patient is highly dependent on the professionalism, skills and performance of individual clinicians, safety and quality require a team approach and are an organisational leadership responsibility.

Safety and quality of health care relies on effective governance, a strong safety culture with accountability and management processes, and the establishment of systems involving many contributors in health service organisations and across the health system. Personal accountability is achieved by leaders ensuring an unrelenting focus on building and sustaining strong safety culture so that all staff understand and meet the expectations and demonstrate the values expected of them.

1.2 Resilience – What does this mean?

Resilience is a concept utilised to evaluate the capability of complex systems to prepare for, respond flexibly and recover from a range of adverse events whilst maintaining safety.

Psychologists define resilience as the process of adapting well in the face of adversity, trauma, tragedy, threats, or significant sources of stress. As much as resilience involves "bouncing back" from difficult experiences, it can also involve profound growth individually, in teams and as a service.

There are many aspects of life we can anticipate, modify, and improve. That's the role of resilience. Not all outcomes are preventable, however becoming more resilient can empower an organisation to reduce preventable harm through learning and improving.

> **"A positive outlook is the foundation of resilience".**
> Patrick Lindsay

Safety I and II

A service that is resilient will learn from what is working well and what 'goes right' in their service. This equates to approximately 90% of the care we deliver in health care. A resilient service is one with a 'just culture' – one that is restorative not punitive.

The 'Safety II' concept complements the conventional safety thinking, referred to as 'Safety I'. The 'Safety II' concept argues that we should stop focusing on how to stop things from going wrong and instead place more emphasis on why things go right.

A 'Safety I' approach will focus on an adverse event as the focus point and then aim to try to prevent errors from occurring again, while 'Safety II' has much more emphasis on ensuring that as much as possible goes right. This is achieved by analysing the everyday and the exceptional events, acknowledging that errors will happen, and that there is system resilience. Such system resilience sees dynamic trade-offs to adjust performances to deal with disturbances or surprises.

Workarounds are often adopted and frequently become the 'norm', whilst violating policy, procedure and guidelines. These trade-offs can have both negative and positive effects on safety and quality. Taking a 'Safety II' approach to assessment is about looking much deeper in order to promote proactive safety management over a simple risk assessment approach.

1.3 Human Factors

Human Factors is the scientific discipline concerned with the understanding of interactions among humans and other elements of a system (International Ergonomics Association). Human Factors is basically the science of people at work. The World Health Organization describes it as the study of all the factors that make it easier to do the work in the right way. Understanding and applying a human factors approach in the health setting can enhance the way health care is delivered and received.

While most care is delivered safely, we are all human and capable of making mistakes. Our training and experience do not make us infallible. While we cannot eliminate human fallibility, we can act to optimise best practice and to moderate and limit the risks. Effective performance and efficiency are optimised when system factors are designed to accommodate the capabilities, limits and goals of people rather than simply requiring them to adapt.

Using human factors' principles can enhance patient safety and clinical care quality. These principles support health care personnel and optimise their wellbeing while at work, enabling them to function at their best. A failure to apply human factors' principles is frequently an aspect of adverse events in health care. In order to optimise the systems and processes that staff work in, a human factors approach is required. This supports the 'Safety II' concept that places the emphasis on considering what makes things go right, which includes ensuring staff are enabled to do their work in ways that work best.

A resilience assessment is related to a structured process, developed by patient safety system experts. This assessment can assess your service for safety governance and improvement against core elements that are related to safety maturity as well as the identification of areas requiring attention from both clinicians, the clinician leaders, and the organisational leadership.

It is an assessment that is undertaken in real time. This tool can be used as a baseline and then reassessed to identify the degree of improvement that has been made.

Risk assessment is a bottom-up approach that starts with data collection and progresses through modelling. Resilience assessment is a top-down approach that starts with assessing values of stakeholders and critical functions and, through decision models, progresses to the generation of metrics and data that can ultimately inform risk assessments.

Risk assessment is a preliminary phase to resilience analysis and provides the first elements needed for resilience assessment. Resilience analysis centres on the integration of risk perception, risk mitigation, risk communication, and risk management.

1.4 What can Resilience Assessments offer your service?

Resilience assessments offer the capability to review how systems may continually adjust to changing information, relationships, goals, threats and other factors that may yield negative outcomes. Resilience thinking considers future threats to the system with a view to minimising the impact of future adverse events. Resilience strategies have the potential to change how a service prepares for adverse events.

Resilience assessments are different from accreditation, however, and can be complementary. Accreditation is undertaken by a third-party provider related to a confirmation assessment that formally demonstrates a service's ability to carry out and meet minimum standards.

Resilience assessments are an opportunity to review the safety system at a point in time for its inherent culture, structures and processes that determine its level of safety maturity and ability to prepare, absorb, recover and adapt to adverse events. An independent resilience assessment can help avoid confirmation bias through fresh eyes. This can also be achieved by including an independent reviewer in the process.

1.5 Clinical Governance and Accountability in NSW Health Maternity Services – Framework

From 2020, in response to a number of serious adverse events in maternity care, the Senior Clinical Obstetrics Advisor and the Clinical Excellence Commission undertook a number of resilience assessments of the safety and quality of maternity services. A key recommendation to emerge was the need for Local Health Services to strengthen governance and accountability to ensure a robust clinical governance system including leadership, structures and processes for safe and reliable maternity services.

Each health service organisation is required to put in place strategies to meet and ideally exceed the requirements of the National Safety and Quality Health Service (NSQHS) Standards for clinical governance. The NSW Governance and Accountability Framework builds on the NSQHS Standards, providing more information about corporate and clinical governance, and roles and responsibilities for people within a health service organisation.

Governance, particularly clinical governance, is critical to ensuring safe, high-quality, and effective maternity services. Leaders ensure that the vision, purpose, structures and processes established within organisations ensure quality of care working with their teams to foster a safety culture.

Effective leadership ensures high-quality care for patients and provides an environment for staff to feel supported and able to thrive. There is evidence to support that governance and leadership, whilst ensuring accountability for safety and quality goals at a number of levels in a service and facility, do not always ensure that the culture and environment is conducive to meeting these goals.

Clinical governance is the set of relationships and responsibilities established by a health service organisation between its state or territory department of health (for the public sector), governing body, executive, clinicians, patients, consumers and other stakeholders, to ensure good clinical outcomes. It ensures that the community and health service organisations can be confident that systems are in place to deliver safe and high-quality health care, and continuously improve services.

The Australian Commission on Safety and Quality in Health Care stipulates the core elements required for effective clinical governance. The Clinical Governance Standard of the NSQHS Standards aims "*To implement a clinical governance framework that ensures that patients and consumers receive safe and high-quality health care*", according to the following criteria:

- Governance, leadership and culture: Leaders at all levels in the organisation set up and use clinical governance systems to improve the safety and quality of health care for patients.
- Patient safety and quality systems: Safety and quality systems are integrated with governance processes to enable organisations to actively manage and improve the safety and quality of health care for patients.
- Clinical performance and effectiveness: The workforce has the right qualifications, skills, capabilities and supervision to provide safe, high-quality health care to patients.

- Safe environment for the delivery of care: The environment promotes safe and high-quality health care for patients.

In addition, it is known that high-quality health care services are characterised by the following elements:

- Clear leadership and direction in the governance of quality and safety.
- System level oversight and management as well as clinician accountability to address local clinical issues and concerns.
- Consistency in approach to clinical governance requirements across the organisation and services.
- Strong reporting culture of adverse events, high level investigation and systematic and organisational learning to reduce future harms.
- Oversight and refinement as required for effective organisational committee structures for clinical quality and safety.
- An effective communication strategy that clearly articulates clinical safety risks, changes in policy or practices and system vulnerabilities.

This is enabled by building the patient safety and quality improvement capability of individuals and teams across the workforce, effective leadership, strong safety culture and staff engagement (linked with clinician and, importantly, medical engagement) and systems to highlight safety intelligence and undertake analytics.

1.6 Learning from experience and events

One way of assessing how well a maternity service is able to learn from when things go wrong is to have a look at what they have in place to be ready; what they have in place to manage what has happened; what they have in place to understand what has happened; and what they can do to prevent it from happening again. This is the focus of a 'resilience assessment'. When a service is resilient it is flexible enough to realise that there are always things to learn, yet informed and confident enough to make hard decisions to make things better in the future.

Safety management should move from ensuring that 'As few things as possible go wrong' to ensuring that 'As many things as possible go right'.

1.7 Clinical (Quality) Improvement Science

To have a resilient service, there needs to be ways to enable understanding of the data and clinical outcomes and then methods to improve these through proven methodology.

Improvement science is a methodology to address identified problems in a clinical area. It involves identifying, defining and diagnosing a problem, before developing solutions and implementing interventions that may address the issue. Solutions that test using small cycle testing are called "Plan, Do, Study, Act (PDSA) cycles. There are various tools and resources that can be applied in this process.

The Institute of Healthcare uses the Model for Improvement developed by Improvement, which includes three key questions:

1. What are we trying to accomplish?
2. How will we know that a change is an improvement?
3. What changes can we test that will result in an improvement?

Traditional or 'classical' clinical research focuses on evidence-based medicine (EBM). Its aim is to acquire new knowledge through scientific experimentation including blinded testing, the elimination of bias, and the use of an appropriately large sample size in a large single study classically testing one hypothesis.

Improvement science, in contrast, focuses on the multiple processes required to deliver EBM. The core characteristics are that the testing is observed rather than blinded; the bias is implicitly stable, not eliminated; the data collected is sufficient to allow many sequential tests; and rather than a fixed hypothesis, the process or processes being reviewed are, by definition, adaptable to change. The data measurement and analysis skills required of clinicians in improvement science are quite different to the suite of statistical tests used when engaging in classical scientific medical research. Indeed, the ability to deliver EBM as a strong and effective clinical leader requires an understanding of what W Edwards Deming refers to as Profound Knowledge of which there are four core components:

1. **Appreciation of a system** - interdependence, dynamic.

2. **Theory of knowledge** - learning from theory and practice, expert prediction, tests of change (PDSA cycles) for learning and improvement.

3. **Psychology** - interactions between people, intrinsic, beliefs and assumptions, the will to change.

4. **Understanding variation** - baseline about data (e.g. harm), variation to be expected, understanding common cause (random variation) compared with special cause.

Summary

This chapter has provided explanations of what is meant by resilience and how resilience can fit in to the assessment of a maternity service. The relationship to risk assessment and the incorporation of human factors is explained, what an assessment of resilience can offer your service, and how learning from experience can be facilitated with the incorporation of quality improvement.

The next chapter will take us through the essential components to undertaking a resilience assessment.

Chapter Two

Components of a Resilience Assessment

A Resilience Assessment sets out to evaluate the capability of complex systems to maintain safety, flexibility and recover from a range of potential adverse events. It offers the capability to better review how systems may continually adjust to changing information, relationships, goals, threats and other factors that may result in adverse outcomes. As such resilience efforts inherently consider the passage of time and shifting capabilities and risks that may arise due to changes in system performance. By definition, such an assesment will not only examine the preparedness of a system to reduce the negative consequences of adverse events but will consider the system's readiness during and after such events as well as assessing the system's ability to adapt subsequently.

As discussed in Chapter One, resilience and risk are inextricably linked. Risk assessment examines individual components of a system with a view to harden a vulnerable component of the system based upon a snapshot at a point in time. With risk assessment, the main focus is the identification of threats and protecting against them based on the event's likelihood and consequences. Resilience thinking considers future threats to the system with a view to minimising the impact of future adverse events. Fundamental to resilience assessment is the ability to plan and prepare for, absorb, recover from, and adapt from adverse events. Whilst they differ, they are complementary approaches to dealing with risk.

2.1 Domains of interest

There are four general management areas (domains) of any complex system:

1. Physical
2. Information
3. Cognitive
4. Social

Physical domain descibes the physical resources and the capability and design of those resources e.g. the infrastructure or buildings, the core services supporting clinical service delivery, the workforce delivering these services, and the equipment available to support service delivery. Implicit in this is the role delineation of a service.

Information domain describes the information available about the resultant clinical service delivery e.g. outcome data, clincal indicator data, benchmarking data, health care acquired complications, incident data.

Cognitive domain describes how the physical and information domains are combined to make decisions about clinical service delivery e.g. service capability, individual capability or scope of practice.

Social domain describes how the system structures and informs its stakeholders in order to make cognitive decisions about clinical service delivery e.g. staff education or patient education.

2.2 Phases of Interest

As previously described, there are four phases of interest in a resilience assessment:

- Prepare
- Absorb
- Recover
- Adapt

Prepare phase is concerned with what is in place in preparation for reducing the negative consequences of adverse events e.g. what physical, information, cognitive and social elements are embedded within a service in order to deal with adverse events.

Absorb phase is concerned with what additional elements across the four domains are in place that assist with the service to take in what has happened and withstand the adverse event.

Recover phase is concerned with what additional elements across the four domains are in place that assist the service to understand what has happened whilst continuing to provide clinical services.

Adapt phase is concerned with what additional elements across the four domains are in place to assist the service to learn from what has happened and respond in such a way that allows clinical service delivery in the future to avoid such adverse events or minimise their impact.

2.3 Resilience Matrix

A Resilience Matrix is a framework for the performance assessment of integrated complex systems. The framework consists of a **4 x 4 matrix** where the horizontal axis contains the major subcomponents of any system and the other axis lists the stages of a disruptive event. With a resilience assessment, the rows describe the four general management domains of any complex system (**physical, information, cognitive, social**). The vertical axis describes the four stages of adverse event management (**plan/ prepare, absorb/ withstand, recover, adapt**). Figure 1 demonstrates the matrix.

	PREPARE	ABSORB	RECOVER	ADAPT
PHYSICAL				
INFORMATION				
COGNITIVE				
SOCIAL				

Collectively, these sixteen cells provide a general description of the functionality of the system through an adverse event. For example, the ***Information - Recover*** cell is assigned a rating according to the ability of the system to collect (monitor) and share (analyse and disseminate) data that will aid in 'recovery', or the ***Social - Adapt*** cell is assigned a rating according to the capacity of the system users to modify behaviour and sustain changes beyond the immediate event response.

2.4 Scoring the matrix

Resilience is assessed by assigning a score to each cell. Each cell reports the capacity of the system to perform in that domain during the phase of interest. The matrix of scores can be aggregated to represent a snapshot of overall system resilience, which in turn, can be monitored over time, used for comparison with similar systems, or examined more closely to illuminate gaps in system capacity.

In order to develop the metrics for each cell, firstly the team undertaking the assessment must define the system they are examining (e.g. services across a facility or across numerous facilities or across an entire district or network) and the threat under consideration (e.g. serious adverse events). Once this is defined, the critical function(s) of the system to be maintained needs to be understood. In the context of adverse clinical events, the critical function to be maintained would be patient safety. Then for each critical function selected, indicators must be agreed for each of the cells. An example of this process is demonstrated in Figure 2. Once these are described, scores can be generated to assess system performance for each cell. The scores from all the cells can then be aggregated to create an overall resilience rating. An example of the scoring for each cell is shown in Figure 3.

System Boundary: Maternity services across a Local Health District
Threat scenario: Serious adverse clinical events
Critical function(s) to be maintained: Maternal and perinatal safety
Selected indicator categories:

	PREPARE	ABSORB	RECOVER	ADAPT
PHYSICAL	**Quantified resources** *Local resources*	**Resource planning** *Mobilising resources*	**Networked resources** *Networked resources*	**Flexibility of resources** *Flexibility of resources*
INFORMATION	**Collected/ Reported** *What data do we collect and report?*	**Reported/ Reviewed** *What data reported is reviewed?*	**Reviewed/ Analysed** *What data reviewed is analysed?*	**Analysed/ Refined** *What data analysed is refined to inform improvement?*
COGNITIVE	**Capability/ Escalation** *What can we do?*	**Escalation/ Performance** *What happens when we need help?*	**Performance/ Review** *How are we really doing?*	**Review/ Improvement** *How can we improve?*
SOCIAL	**Educated/ Connected** *How do we learn?*	**Connecting/ Listening** *How do we feed back?*	**Listening/ Responding** *How do we respond?*	**Responding/ Collaborating** *How do we work better together?*

Selected indicators:

	PREPARE	ABSORB	RECOVER	ADAPT
PHYSICAL	**Quantified resources** - physical facility - core services - workforce - equipment	**Resource planning** - demand management	**Networked resources** - operational plan	**Flexibility of resources** - COSOPS - maternity BCP
INFORMATION	**Collected/ Reported** - multiple data sources	**Reported/ Reviewed** - data reviewed in meetings	**Reviewed/ Analysed** - data monitoring with interpretation	**Analysed/ Refined** - data analysis and refinement
COGNITIVE	**Capability/ Escalation** - service capability - individual capability (S of P)	**Escalation/ Performance** - escalation procedures both operational and clinical	**Performance/ Review** - internal service review - individual PDRs	**Review/ Improvement** - service redesign - improvement capability
SOCIAL	**Educated/ Connected** - clinician education - patient education	**Connecting/ Listening** - staff feedback - patient feedback	**Listening/ Responding** - feedback to staff - feedback to patients	**Responding/ Collaborating** - collaboration - co-design

Figure 2. Indicator categories and selected indicators

Matrix Position	Metric Selected	Values	Source	Upper score	Lower score
Prepare - Physical	- physical facility is operational - core services operational - permanent workforce - equipment available	Confirmed Mostly confirmed (minor deficits) Part confirmed (major deficits) Not confirmed	Interview, documentation, observation	Confirmed	Not confirmed

Figure 3. Scoring example

2.5 Interpreting the score

As we discussed in Chapter One, safety and quality of health care relies on, amongst other things, a strong safety culture. Personal accountability is achieved by leaders ensuring an unrelenting focus on building and sustaining strong safety culture so that all staff understand and meet the expectations and values expected of them. A mature safety culture does not just simply exist, but rather matures over time through an iterative process of continuous improvement supported by strong governance systems and leadership.

The primary purpose of a resilience assessment is to gauge the level of safety culture maturity. Safety literature tells us that a safety culture improves as it is increasingly informed and there is increasing trust and accountability. Most safety maturity models recognise 5 levels of maturation: basic; reactive; planned; proactive; and resilient (figure 4). The resilience assessment methodology described in this guide is used to assess where along such a scale the system under examination is positioned. The scores from the matrix are used to determine this position.

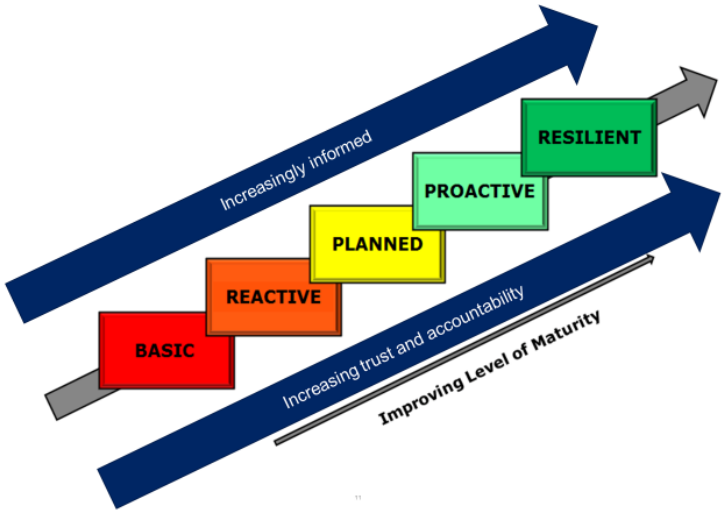


Figure 4. Safety maturity model (adapted from Foster P, Hoult S. The Safety Journey: Using a Safety Maturity Model for Safety Planning and Assurance in the UK Coal Mining Industry. *Minerals*. 2013; 3(1):59-72. https://doi.org/10.3390/min3010059)

Using the matrix of scores, a colour coding system can be applied to give visual feedback. For simplicity, we will use various shades of green, with dark green representing 'confirmed', green representing 'mostly confirmed', pale green representing 'partially confirmed', and white representing 'not confirmed'. In all but the most resilient of systems, there is degradation of the scores, and hence colour, as you move through the various phases of interest. Different domains will exhibit different degrees of degradation depending on the strengths of the system being examined. Using the example in figure 3, the scores are converted as follows:

	PREPARE	ABSORB	RECOVER	ADAPT
PHYSICAL	Confirmed	Confirmed	Mostly confirmed	Partly confirmed
INFORMATION	Confirmed	Mostly confirmed	Partly confirmed	Not confirmed
COGNITIVE	Mostly confirmed	Mostly confirmed	Partly confirmed	Not confirmed
SOCIAL	Confirmed	Mostly confirmed	Partly confirmed	Not confirmed

	PREPARE	ABSORB	RECOVER	ADAPT
PHYSICAL	Confirmed	Confirmed	Mostly confirmed	Partly confirmed
INFORMATION	Confirmed	Mostly confirmed	Partly confirmed	Not confirmed
COGNITIVE	Mostly confirmed	Mostly confirmed	Partly confirmed	Not confirmed
SOCIAL	Confirmed	Mostly confirmed	Partly confirmed	Not confirmed

For simplicity, those cells that score 'confirmed' or 'mostly confirmed' are treated in a similar fashion. Thus, for the example used, both the prepare and the absorb phases scored 'confirmed' or 'mostly confirmed', with both the recover and adapt phases scoring predominantly 'partially confirmed' or 'not confirmed'.

For the purposes of the resilience assessment, significant deficiencies in the prepare phase would indicate a 'basic' level of safety maturity. Such deficiencies expose the system to ongoing adverse events because the physical, information, cognitive and social domains are insufficient to prepare for such occurrences.

If there were no significant deficiencies in the prepare phase, but there were significant deficiencies in the absorb phase, this would indicate a 'reactive' level of safety maturity. Such a system would be unable to absorb, recover and subsequently adapt following adverse events.

If there were no significant deficiencies in the prepare and absorb phases, but there were significant deficiencies in the recover phase, this would indicate a 'planned' level of safety maturity. Such a system has a reduced ability to recover from and adapt following adverse events.

If there were no significant deficiencies in the prepare, absorb and recover phases, but there were significant deficiencies in the adapt phase, this would indicate a 'proactive' level of safety maturity. Such a system has a significant ability across the four domains to be able to recover following adverse events.

Finally, if there were no significant deficiencies in the prepare, absorb, recover and adapt phases, this would indicate a 'resilient' level of safety maturity. Such a system has a significant ability across the four domains to be able to not only recover but adapt following adverse events. Such a system has the flexibility of resources, the level of targeted data analysis, a high level of redesign and improvement capability, together with a shared mental model for safety that is required of a truly mature safety system.

So, for the example above, there were no significant deficiencies in the prepare and absorb phases, but there were significant deficiencies in the recover and adapt phases. This example would therefore be rated as 'planned' in its maturity level. Figure 5 summarises the interpretation of the scores.

	PREPARE	ABSORB	RECOVER	ADAPT
PHYSICAL	BASIC REACTIVE	PLANNED	PROACTIVE	RESILIENT
INFORMATION	BASIC REACTIVE	PLANNED	PROACTIVE	RESILIENT
COGNITIVE	BASIC REACTIVE	PLANNED	PROACTIVE	RESILIENT
SOCIAL	BASIC REACTIVE	PLANNED	PROACTIVE	RESILIENT

Figure 5. Interpreting the scores.

Summary

This chapter has covered the various components of a resilience assessment and outlined how the resilience matrix and the scoring system come together to assess the safety maturity of the system. The resilience matrix is used to examine the four main domains (physical, information, cognitive and social) across the four stages of adverse event management (prepare, absorb, recover and adapt). The system boundary to be examined, the threat scenario and the critical functions to be maintained are described and articulated in a terms of reference for the assessment. Metrics for the resulting 16 areas of interest in the matrix are developed and agreed on before the assessment starts. The source of the metrics is determined, and the scoring values are described before the assessment commences. The chapter concludes with the description of how the scoring is aligned with the proposed safety maturity model.

The next chapter will take you through the assessment process itself.

Chapter Three

The Assessment

Chapter Two described the individual components in a facility that support and influence safety systems and the measurements used to assess the level of maturity. A thorough assessment of the systems is required, however it is important to understand that a forensic analysis of the facility is not required.

An effective assessment cannot be executed as a desk top exercise. You only require 'just enough' information to answer your queries. Remember, this is not a forensic investigation.

3.1 Governance

Local health district governance safety resides with the Chief Executive and the Board. It is recommended that the Chief Executive ensures the establishment of a formal implementation committee to ensure Executive support for the subsequent recommendations. The Executive sponsor is recommended to be either the Chief Executive or a senior LHD Executive. The Executive sponsor ensures the establishment of a formal governance or implementation committee to ensure executive support for the subsequent recommendations.

A successful assessment is one where the outcomes of the assessment resonate not only with local clinicians and managers but also with your Executive teams given the accountability for clinical maternity services rests with the senior leaders of the organisation.

To ensure a useful assessment it is vital that the right people are involved both as assessors and participants. There needs to be an established structure for the assessment to make sure the health service structures and processes are supportive of any actions and recommendations derived from the assessment.

A term of reference is recommended to describe the scope for your assessment and the members of the review team. An assessment may be undertaken across the Local Health District, at hospitals or for a maternity service. It is crucial that you define the boundaries of the assessment. The methodology is applicable to all.

3.2 Right People

During the assessment the team will immerse themselves in the service in addition to reviewing what is provided on paper. An effective assessment cannot be executed as a desk top exercise. When building the assessment team there are some essential team attributes to consider. You may wish to consider adding a level of independence to enable the assessment of your service to have 'fresh eyes'. This may mean collaboration with another district or incorporating a representative from the Clinical Excellence Commission (CEC).

Team Member Attributes and Representation:

- A team leader with leadership skills who must also have:
  - expertise in understanding maternity care and services
  - adept understanding of safety systems and culture
- Both medical and midwifery staff members who have an in-depth understanding of how the facility operates:
  - District Clinical Risk Midwifery Consultant (if available in your district) or equivalent
  - Senior Obstetrician with management experience
  - Clinical Governance Unit representative
  - Director of Clinical Governance, Deputy DCG or Patient Safety Officer with understanding of Improvement methodology and data analysis.

3.3 The Assessment

When planning how the assessment will be undertaken it is important to include who the team should meet with and what information you need.

It is advised that team members are allotted a domain to review as this enables the assessors to be responsible for part of the assessment. The individual assessors will gather evidence to inform scoring within the matrix outlined in the previous chapter. A checklist is available in Appendix 1.

This will require that the team divides: it is useful to work in pairs. Schedule regular catch-ups or huddles throughout the day with the whole team to discuss and confirm findings and determine whether there is adequate information or whether there are still gaps. Evidence is gathered from varied sources.

For example, in the cognitive domain, when considering the facility's understanding of service capability, the assessor is required to determine if a service has adequate staffing, expertise and support structures to provide the appropriate care for women and babies. The evidence should confirm that:

- the service and support structures meet the minimum standards for the level of care provided and the service capability has been assessed and is current and all women and babies are appropriate for the level of care; and
- there is seamless transfer of women/ babies across the network according to Tiered Networking Arrangements for Perinatal Care in NSW PD2020_014.

When the midwifery team members meet with the midwives to explore their understanding of this, the discussion could be opened with the question of:

"Have you had any experiences where you have felt that care was out of scope for your facility?"

"Tell me how you managed this."

From this line of enquiry, you should be able to gain information about the staff's understanding of service capability, what escalation processes are in place and how risk is identified, communicated and documented.

Following the meeting the assessors will then confirm/ validate that the service has documentation of Tiered Perinatal Network Operational Plans that describe the service capability of all facilities, the risk assessment and governance processes for business as usual and clinical escalation pathways and demand escalation frameworks to ensure patient flow. You require 'just enough' information to satisfy that the service capability is in place, remembering this is not a forensic investigation.

During the face-to-face interactions it is important to stress this is not a traditional 'review' but an assessment of maturity of the patient safety systems. It is about finding out "how things are done in this organisation or service". There are no right or wrong answers.

Exploring leadership in the maternity service is crucial. This needs to be supported by organisational leaders:

- Ask the Executive staff what they do to support current clinical leads and emerging leaders. For example, examine the commitment and actions to support clinical co-leadership (medical and midwifery) within the Local Health District.
- Ask about the roles and responsibilities of the Heads of Department.
- Is the incumbent job description clearly defined and expectation from the Executive described?
- Ask if the Executive meet on a regular basis to discuss staff-identified safety issues and incidents.

A walk around of the maternity service's physical environment will enable you to observe its relationship with the whole facility. This is also an opportunity to meet clinicians and confirm issues that you may have unanswered. For example, you may need to observe for evidence of team safety fundamentals (huddles, handover, multi-disciplinary meetings), enquire how clinical handover is conducted, who attends, where is it held, how often and what actions are taken. Further confirmation would be to physically attend a clinical handover.

During the face-to-face interactions it is important to stress this is not a 'review' but an assessment of how things are. There are no right or wrong answers. You may need to give a quick explanation of what a resilience assessment is. Questions will be influenced by the domain you are exploring, and the domain will determine who you need to speak with to get your answers.

Ask questions such as:

- How do you know the service is safe?
- When did the service last experience an event of harm and how did you respond?
- What evidence, including data, do they have to support that the service is providing safe and high-quality care?
- Can you tell me about the improvements you have made to improve the safety and quality of care?

Suggested Face-to-Face Interactions:

This will be dependent on the size of the facility and the staffing profiles within the service:

- General Manager
- Director of Nursing and Midwifery
- Director (and Deputy) of Medical Services
- District or Service-based Clinical Directors, District or Service-based Midwifery Leaders
- Head of Department (Obstetric/ Neonatal/ Paediatric – as deemed relevant)
- Midwifery Managers

- Midwifery Unit Managers
- Patient flow coordinator
- Quality Team – Director of Clinical Governance, Deputy Directors of Clinical Governance, Patient safety manager or other staff
- Patient Liaison
- Employee Assistance Program representative
- Visiting Medical Officers/ GP Obstetricians - this will be influenced by the models of care in the service
- Staff specialists & Obstetrics and Gynaecology Registrars/ Trainees, Junior Medical Officers
- Clinical Midwifery Consultants
- Clinical Midwifery Specialists
- Depending on models of care – meetings with team members (e.g., Midwifery group practice)
- Consumers or consumer representatives.

Documentation to review:

When determining what documentation/ evidence is required, it is useful to consider the components of each of the four domains:

1. Physical

What resources are required to support the functioning of the service? This will begin with local resourcing and expand to networked resources available. Ask how flexible the available resourcing is to respond to a surge in activity or, for example, during a global pandemic.

Within this domain you will want to see evidence of workforce resourcing such as:

- Any workforce tool reviews and recommendations
- Current recruitment (and deficits) in the medical and midwifery workforce
- Any ancillary or support staff deficits

Determine whether there is an up-to-date business continuity plan. Are there any structural work plans to consider including planned capital works?

2. Information

Within this domain you will want to see evidence of data collection, reporting, review and analytics for example:

- Clinical Indicator reports (ACHS)
- Benchmarking – (HRT WHA)
- Summary Report IMS+
- HACS (QIDS)

Minutes and Terms of Reference for Morbidity & Mortality, Governance committees, and Clinical Meetings – for the previous 2 years

- Is data used in these meetings?
- How is it discussed?
- How is it actioned/ responded to?

3. Cognitive

You will want to see examples of documentation supporting the following areas in question:

- Service capability assessment
- Scope of practice documentation and performance reviews - medical and midwifery
- Escalation pathways
- Service reviews
- Education/ training plan

4. Social

Understanding the cultural aspect of the service will require review of documentation that reveals how the service supports and provides feedback to staff and patients. How responsive is the service concerning policy and procedures?

Explore:

- Evidence of staff education
- Evidence of patient information
- Complaints/ feedback processes
- Policy/ procedures processes
- Evidence of patient support systems
- Evidence of staff support systems
- Allocation of time to the following meetings (listed below)
- Speaking up for safety systems

The assessment team should observe evidence of professional and multidisciplinary teamwork. Effective teamwork and communication are foundational elements in a high-functioning service with a strong culture of safety and are key elements of high-reliability organisations. Our inability to communicate effectively within teams and with patients and their carers is directly linked to patient harm.

To confirm evidence, attendance at the following meetings would be beneficial:

- Huddles
- Rounding
- Morbidity & Mortality
- Case reviews
- Staff meetings
- Peak clinical and operational meetings – such as routine safety and quality meetings

Guidance on best practice of these elements can be accessed on the CEC website at this link.

Summary

This chapter has described the framework for and the undertaking of the assessment, beginning with the governance that will support the assessment and provides accountability for senior leaders within the organisation.

The appropriate assessment team members and their attributes have been described, and the suggested people and positions that require face-to-face interviews as well as the sources for collecting the evidence to support the meetings and inform the assessment.

In the next chapter we will describe constructing a report and the feedback.

Chapter Four

The Report and Recommendations

The previous chapter described the framework for the assessment. It described recommendations for the roles and attributes of the assessment team; how the actual assessment should be undertaken and the specifics of how the assessment team should gather the information. A methodical and well-prepared assessment process will facilitate the right people being available to describe the right information that will assist the assessors to gain a thorough understanding of the organisation in a timely manner.

This chapter will describe how the information gathered will be synthesised to provide a report and recommendations. The report will highlight the areas of strength in the organisation and those areas where foundational elements for safety are either absent or incomplete. This information will assist the organisation to prioritise the areas of greatest need and attention.

Formulating the Report

The Resilience Matrix is described in full in Chapter 2 and will be used to guide the description and explanation of each component of the assessment:

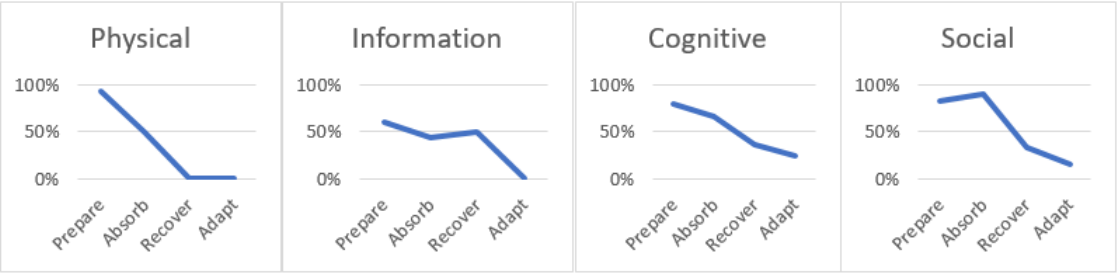
- Each domain should be described separately and individually across the phases.
- The evidence gathered to assess and score each aspect needs to be described specifically to enable the organisation to fully appreciate the findings. An example for the Physical – Prepare phase where workforce is an area for assessment:
    - the required midwifery FTE as per Birthrate Plus has not been fully recruited over time with 10 FTE remaining vacant.
- With this information the assessors could observe the consequence of this workforce shortfall in the other phases. With less staff than required there would be less ability to recover and business continuity could be impacted.
- Demonstrate how the scoring for each phase describes the overall resilience; over time the strength of each phase will indicate the adaptability and therefore their resilience.
- How each phase is built upon will demonstrate the resilience e.g., if the attributes/ characteristics of each phase build upon one another, this is a strong indicator of the ability to recover and adapt from adverse events. However, if the scoring of the attributes (colour) degrades across the phases, this demonstrates evidence of a system improvement opportunity.
- Examination of all the domains will highlight how each is interconnected e.g., what communication the service receives in terms of data (information) influences how the service makes sense of what it has and the communication it receives (cognitive). If one is strong then it is likely that the other will be as well and vice versa. If the quality of data analytics is strong and there are robust communication pathways, then the cognitive domain is also likely to score highly.

	PREPARE	ABSORB	RECOVER	ADAPT
PHYSICAL				
INFORMATION				
COGNITIVE				
SOCIAL				

In this example the Information – adapt phase has degraded to the point of no colour; similarly, the social-adapt phase has also weakened.

In this diagrammatical representation you can observe that all domains have degraded over time; the assessment of each domain will be similar or mirror the trend of each other. It would be unusual that one domain would be a highly performing domain if other domains are underperforming.

The degradation in each of the domains is demonstrated in the following graphs:



"The performance of a system doesn't depend on how the parts perform taken separately, it depends on how they perform together – how they interact" Ackoff, 1981

Description of each Domain

The report should systematically describe each of the domains across the phases to demonstrate how the results were formulated. The reader will be able to distinguish from the descriptions which of the indicators were assessed as performing and which were not.

The indicators included under the physical domain in the prepare phase comprised infrastructure, support services, workforce and equipment. The physical infrastructure is good, however, with respect to workforce, the midwifery workforce has significant deficits with ongoing vacancies.

This report would indicate that a priority would include a midwifery recruitment strategy.

A concluding statement after the description of each domain is a useful way to pull the information together to assist the reader to fully understand the assessed level of resilience. An example for the Information Domain:

In summary, there is no participation in the clinical indicator program. This, in addition to the lack of systematic review of clinical data including trended data and infrequent multidisciplinary review, results in the service having a lack of situational awareness of how the service is performing in relation to peers outside a few specific areas such as severe post-partum haemorrhage. The lack of reporting of clinical data and sharing with front line clinicians, as part of a closed loop, impairs the service's ability to absorb adverse clinical events. In the information domain there is limited ability to recover and subsequently adapt from adverse clinical events.

This methodical approach should be replicated for each of the domains across all phases to formulate the overall assessment.

Major themes and thematic analysis

Once the methodical and systematic review is complete the assessors should have a sense of the emerging themes. The engagement with the stakeholders, examination of material provided by the organisation, the scoring process and the detailed descriptive report will reveal themes. Some of the more common themes from assessments include:

- Networking
- Governance
- Data and Information
- Policy Responsiveness
- Organisational structure and leadership
- Safety systems – monitoring, teams and accountabilities
- Safety culture – communication, collaboration and teamwork
- Continuity of care and care planning

Each theme would be described based on findings with a narrative of how these themes emerged and the consequences of each. For example, in the theme Safety systems – monitoring, teams and accountabilities the description could include:

The ims+ system is used for recording clinical incidents. The number of serious incidents is reported in various governance meeting minutes throughout each facility's meetings. The assessment team were unable to find evidence of an emphasis on learning from these incidents. There are limited systems in place that facilitate learning from mistakes. Responsibility for safety was not seen as everybody's business. There is a paucity of improvement science knowledge or ability within the district. The maternity teams will need support to develop their knowledge in improvement science.

The reader should be able to identify how the themes were developed including specific examples and evidence.

Future state

A concluding statement/ description of how the assessors consider the future of the organisation if nothing was to change. An assessment of the resilience of the organisation to withstand future adverse events or to successfully adapt to such incidents.

This leaves the maternity services vulnerable to adverse clinical events. In order to achieve a truly resilient service across the district, the deficiencies within the prepare phase require urgent attention.

Recommendations

It would be rare that the state of a service has been because of the organisation alone or an individual within the organisation. There is often shared responsibility for the emerging themes. As such the recommendations should reflect this shared responsibility and articulate the actions required by all those concerned. There would be a shared responsibility to the following organisations/ roles:

1. NSW Health and pillar organisations
2. Local Health District (LHD)
3. Facilities
4. Clinical Managers

The recommendations should be directly linked to the findings described in the document and the reader should be able to identify how the recommendation will provide an appropriate opportunity for system improvement.

Each recommendation should also have a priority rating of Urgent, High or Medium. This rating will provide direction to the organisation for prioritisation of the body of work to be undertaken. A completion date for actions and person/ position responsible should be identified. Examples are provided below:

1. NSW Health and pillar organisations

eHealth NSW works with CEC and the NSW Ministry of Health to develop a statewide dashboard to have a near real-time view of the performance of maternity services in NSW. HIGH PRIORITY. CEC responsible with completion due by end of 2022

This recommendation is directly linked to the assessment of data and data analytics in the Information domain. The assessors considered a more robust system was required to support the facility/ service to have available data in a timely manner.

2. Local Health District (LHDs)

The LHD DCG supports the participation in a clinical indicator program as well as quality improvement capability to support front line clinicians in all maternity services in the district. MEDIUM PRIORITY. Director Clinical Governance responsible with 12 months to action

3. Facilities

The Hospital Executive at each facility reviews, redesigns and evaluates processes for information and data flow from and between the LHD and clinicians to ensure robust communication. URGENT PRIORITY. Hospital Executive in each facility responsible with 6 months to action

4. Clinical Managers

The Head of Department (HoD) Obstetrics and Gynaecology reviews the mandatory education compliance for medical officers and works with the facility to address gaps. URGENT PRIORITY. Head of Department responsible with 6 months to action.

Feedback

It is important that the organisation feels supported with timely feedback, sufficient explanation and direction for implementation of findings:

- An initial presentation to the team on the day the assessment is completed is important to verify content/ impressions – (a template presentation is available at this link and in this webinar Professor Michael Nicholl speaks on role of resilience assessments)
- Within an agreed timeframe the formal report will be provided to the Executive or the commissioning role/ person
- An additional meeting should be planned to discuss progress and support implementation of recommendations and monitoring arrangements

Summary

This chapter demonstrates how the report should systematically describe each of the domains across the phases to explain how the results were formulated. The reader will be able to distinguish from the descriptions which of the indicators were assessed as performing and which were not. The descriptions across the phases build on the subsequent descriptions as a way of recognising the interconnected nature of each.

Once the methodical and systematic review is complete the assessors should have a sense of the emerging themes. The recommendations should be assigned to each theme to address how they can strengthen the overall resilience. In maintaining the philosophy of a shared responsibility for system performance and improvement, the recommendations should be allocated to multiple levels and roles within the organisation.

The final chapter will describe the next steps emphasising the impact of a robust assessment and implementation of robust recommendations on development of safety systems and improved performance.

Conclusion

The ability for complex systems, like health, to perform in a resilient manner is not simply about avoiding adverse events but rather about the realisation that humans (clinicians) always try to do the right thing in a system that might not perform in such a way to support those endeavours. Resilience looks at how the system functions as a whole to support the workforce to do a good job. The four basic domains (physical, information, cognitive and social) are the keystones to an understanding of how a system functions, how it responds, how it monitors, how it learns, and how it anticipates (Hollnagel, 2016).

These four domains provide a top-down perspective which allows us to examine the system across the various stages of system impact following a threat to that system. Systems need to be prepared so that they can react appropriately when something happens. This preparation requires the ability to monitor and respond. The ability to respond is fundamental and unless that response can be modified by experience, then the system will not learn from what has happened. Learning is essential for a system to absorb threats. The ability to recover requires a sophisticated level of monitoring that allows for the detection of threats before they have an impact. The ability to adapt requires not only a high level of monitoring and learning, but also a deep understanding of the change required to sustain the system in a resilient fashion. With increasing resilience there is increased trust and accountability, and the system is increasingly informed. As such, resilient systems have a well-developed level of safety maturity.

A Resilience Assessment is a strengths-based process that provides an opportunity to look at a system from the top-down to identify those positive elements that are present, and those areas identified that require improvement. It looks at the structures, systems and processes that support the workforce to do a good job. As such it will identify deficits in the:

- physical assets required to operate safely
- data available to monitor safety
- understanding of what the workforce and the facilities can undertake safely
- knowledge of the workforce and patients to work together safely.

Thus, the potential links to planning and monitoring become apparent. Strategic, infrastructure, capital and workforce planning can all be informed by resilience assessment. The data needs and information technology requirements are also identified. Gaps in service capability, clinical scopes of practice and education requirements will be highlighted. At a higher level, results of a resilience assessment can inform clinical service, network and business continuity planning. From a governance perspective, both corporate and clinical governance plans can be influenced by such assessments.

The resilience of a system may be assessed as a one-off exercise as part of a response to an identified risk, however, it may be used more broadly to measure over time the improvements made through improved resource flexibility, data analytics, system redesign or collaboration and co-design efforts. Either way, a Resilience Assessment provides a deeper understanding of the people, culture, structures, and processes of systems. This facilitation guide has attempted to describe how this can be achieved and how it can be linked back to how we plan for and design the health services that we deliver.

Appendix 1

Documentation for Reviews by the Local Assessment Team

Any relevant previous reviews, accreditation results, College accreditation / reviews etc.

Physical Domain:

- ☐ BirthRate+
- ☐ Current Recruitment (deficits) Medical and Midwifery
- ☐ Equipment Deficits
- ☐ Short Term Escalation Plans (STEPs)
- ☐ Maternity Specific Disaster Planning
- ☐ Business Continuity Plans
- ☐ Capital Works Planning or Post Occupancy Evaluation Report for recent builds
- ☐ Local operational plans
- ☐ Network plans

Information Domain:

- ☐ Clinical Governance (Quality) Plan
- ☐ Clinical Indicator Reports (ACHS)
- ☐ Benchmarking – (HRT WHA)
- ☐ Incident Summary Report (ims+)
- ☐ Meeting Minutes:
    - Peer Review / Morbidity & Mortality (M&M) meetings
    - Safety and Quality local and LHD Governance meetings and
    - Clinical meetings

Cognitive Domain:

- ☐ Scope of Practice Documentation – Medical and Midwifery
- ☐ Escalation Pathways
- ☐ Service Reviews
- ☐ Performance Development Framework
- ☐ Induction processes for new staff
- ☐ Service reviews
- ☐ Service redesign
- ☐ Improvement capability

Social Domain:

- ☐ Evidence of Staff Education
- ☐ Evidence of Patient Information / Education
- ☐ Complaints / Feedback Processes (staff and consumers)
- ☐ Policy / Procedures Documents and Processes
- ☐ Evidence of Patient Support Systems
- ☐ Evidence of Staff Support Systems
- ☐ Evidence of co-design
- ☐ Evidence of collaboration

Engage and consult with the following staff:

- ☐ General Manager
- ☐ Director of Nursing
- ☐ Director and Deputy of Medical Services
- ☐ Clinical Managers / Leaders of Maternity Services
- ☐ Head of Department
- ☐ Midwifery Manager
- ☐ Quality Team and local Senior Patient Safety Manager
- ☐ Transfer Redesign Coordinator
- ☐ Clinical Leaders:
    - Patient flow Coordinator
- ☐ Clinical Midwifery Consultants
- ☐ Midwifery Unit Manager
- ☐ Staff specialists / Senior Registrars / SRMOs / JMOs
- ☐ VMO / GP O&G
- ☐ Educators
- ☐ General Midwifery Staff
- ☐ Patient Liaison Representative
- ☐ EAP Representative

Review the following meetings and processes:

- ☐ Huddles / Clinical handover
- ☐ Executive and Staff Rounding
- ☐ Peer Review / Morbidity and Mortality (M&M) Meetings
- ☐ Clinical Governance processes including case reviews
- ☐ Peak Clinical and Operational Meetings
- ☐ Other Staff Meetings

Notes

NSW GOVERNMENT

CLINICAL EXCELLENCE COMMISSION