Maternity Resilience Assessment – strengthening patient safety systems at scale in NSW

Prof Michael Nicholl
Dr Harvey Lander

NSW GOVERNMENT

CLINICAL EXCELLENCE COMMISSION

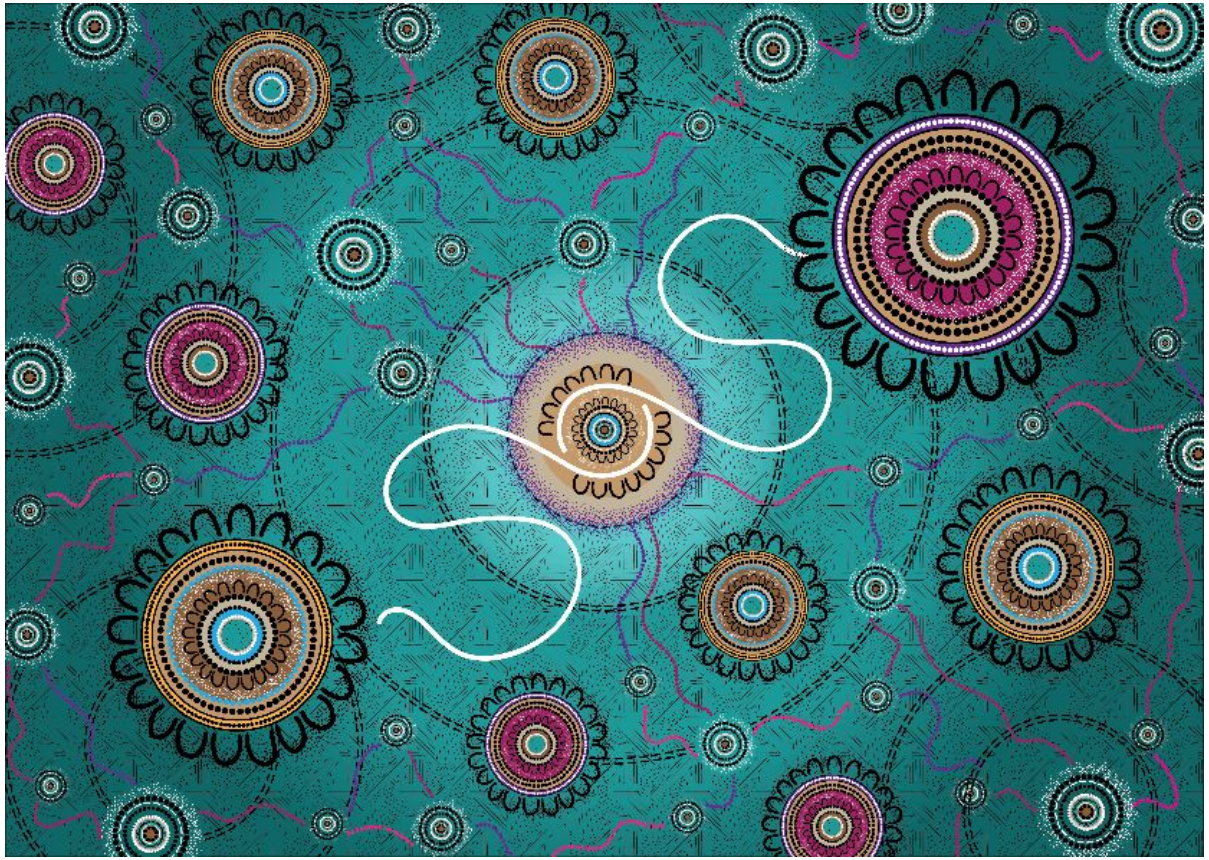
Disclosures

- Nil declarations of interest

NSW GOVERNMENT | CLINICAL EXCELLENCE COMMISSION

Acknowledgement of Country and Elders

- Before we begin,
- I would like to acknowledge the traditional owners of the land where we meet today.
- I pay my respects to their Elders past and present.
- It is upon their lands that we meet.



NSW GOVERNMENT | CLINICAL EXCELLENCE COMMISSION

Key messages

- Resilient Safety Systems are based on challenging our existing mental and process models
- Helps guide strength based improvement
- Achieves high level engagement
- Complimentary to risk assessment, standards / accreditation (linked pragmatically)
- Drives:
  - Flexibility of resources
  - Data analytics
  - Practice improvement
  - Development of collaboration and a shared mental model of safety

NSW GOVERNMENT | CLINICAL EXCELLENCE COMMISSION

In NSW…..

250 women birth each day of which:

- 25% are overweight, 15% are obese, 9% smoke
- 25% are over the age of 35
- 4% are Aboriginal and/or Torres Strait Islander, and of these 43% smoke
- 15% are affected by diabetes
- 5% are affected by hypertension
- 4 women suffer a 3rd or 4th degree perineal tear everyday

Of the 262 babies born each day:

- Over 1/3 are delivered by caesarean section
- 20 are born prematurely, 18 are low birth weight

2 babies die everyday

12 families are affected by stillbirth every week

100 women per month are transferred for urgent higher level care

NSW GOVERNMENT | CLINICAL EXCELLENCE COMMISSION

Safety has to be the priority

Maternity care in NSW …. a call to action

- Aims
  - Improve the safety of mothers and their babies
  - Improve the experience of care (including quality and satisfaction)
  - Achieve high value maternity care

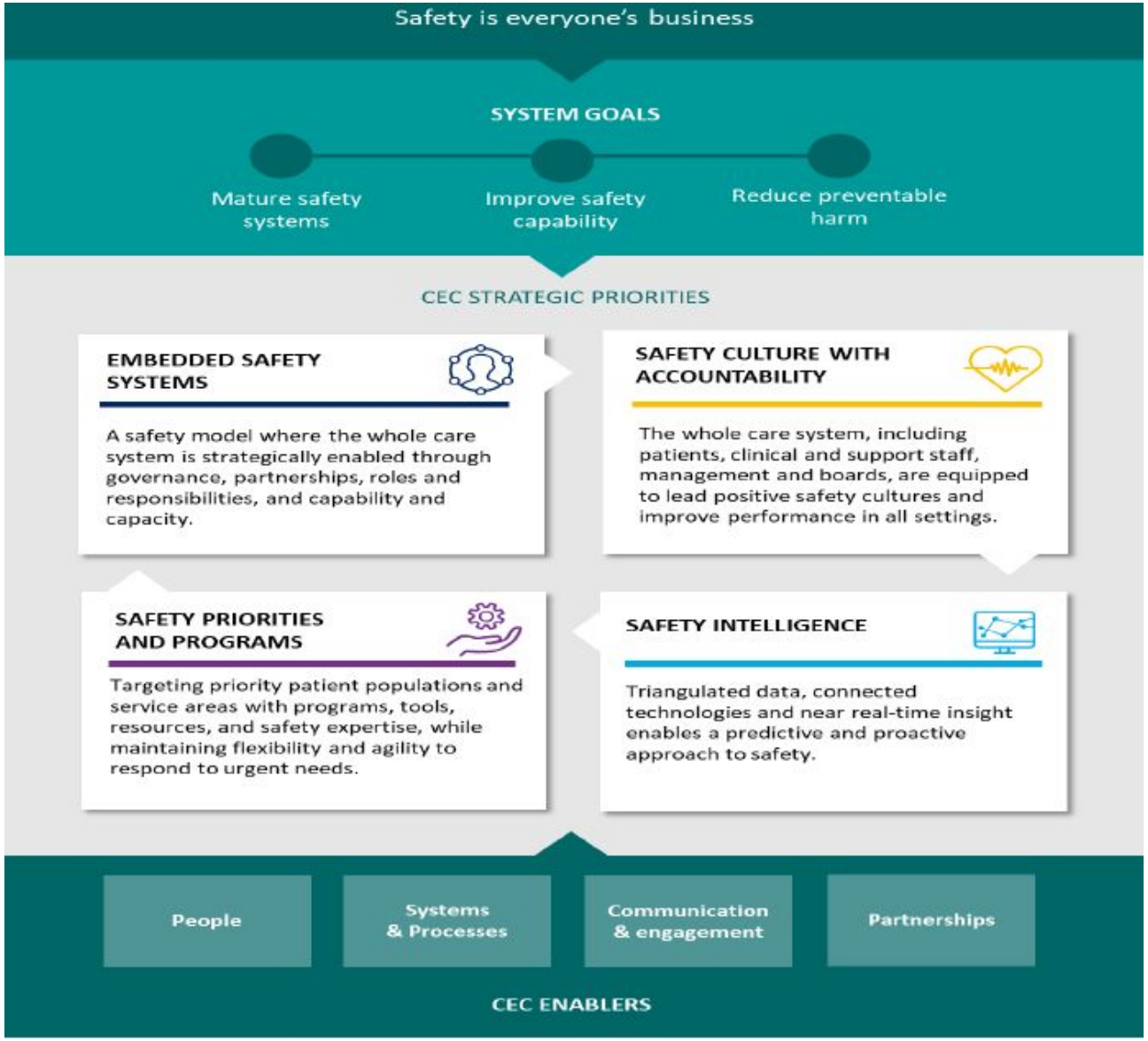
- Realised through
  - Improved safety
  - Enhanced quality
  - Better value

With a focus on

- Women and their families
- Improved governance and accountability
- Real time data and analytics
- Redesign of maternity care
- System integration
- A life course approach to maternity care
- Disinvestment in low value care

NSW GOVERNMENT | Health

CEC Strategic Plan



NSW GOVERNMENT | CLINICAL EXCELLENCE COMMISSION

NSW Health Safety System Model

How do you know your system is safe?

ACCOUNTABLE LEADERSHIP AND CULTURE

1. How can we assure ourselves that everyone understands their role and accountability to ensure safety in health care?
2. How do we know there is an organisation-wide culture for staff where there is high-trust, psychological safety, and shared sense of purpose?
3. How do we know if we are being open with patients and families when things go wrong?

SAFETY GOVERNANCE

1. How confident are we that we are meeting the Clinical Governance Standard 1 (NSQHS) every day?
2. As an organisation, how do we show we have centralised and distributed responsibility and oversight of patient safety?
3. How do we know that we are learning from harm, error, and near-misses, as well as understanding and creating the conditions that support safe delivery of care?

Reliable and Resilient Safety System

SAFETY INTELLIGENCE

1. To what extent do Clinicians, Managers and Executives understand where harm, waste and unwanted clinical variation exists today?
2. To what extent do Clinicians, Managers and Executives have access and use real-time, meaningful information for safety and improvement over time?
3. How is the organisation benchmarking itself against exemplars?

SAFETY AND IMPROVEMENT CAPABILITY

1. How do we know we have the necessary critical mass of safety and improvement expertise and leadership in our teams and organisation?
2. What is the organisation's plan to develop and maintain a faculty for essential safety and quality capability development?
3. To what extent are we a learning organisation that emphasises the importance of replicating what goes well, rather than what goes wrong?

SAFETY IMPROVEMENT

1. What are the organisation's current safety priorities and programs?
2. How are Clinicians, Managers and Executives implementing safety programs with the appropriate tools, resources, and required expertise?
3. How are the leaders engaging their frontline teams in improvement conversations?

EMBEDDING SAFETY STRATEGICALLY

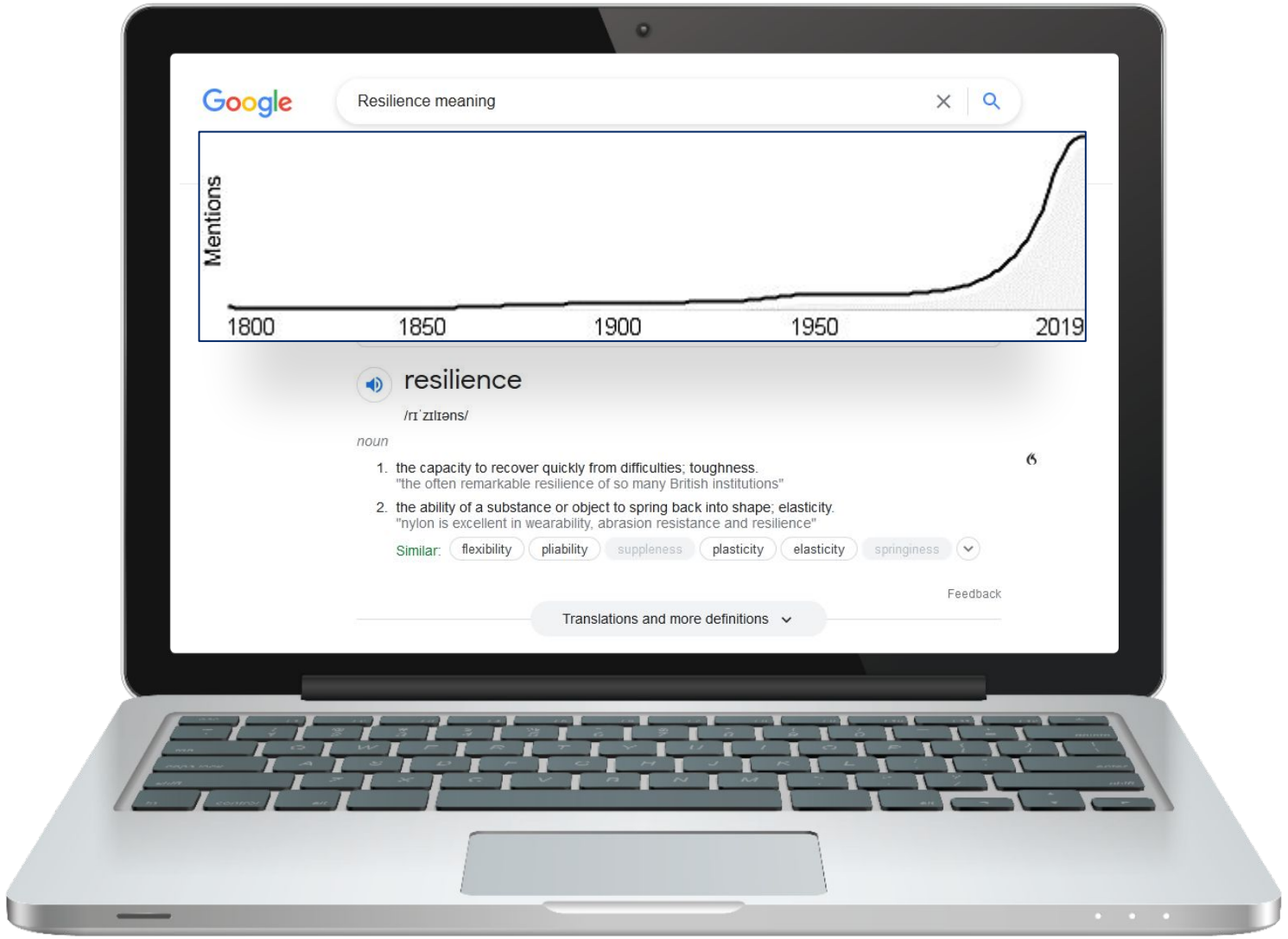
1. To what extent is the organisation creating and sustaining the strategic elements required to create safety resilience?
2. How does the organisation strategically deploy its expertise in safety improvement to the priorities that need it most?
3. How does the Executive team role model accountable leadership and culture for safety and quality?

NSW GOVERNMENT

CLINICAL EXCELLENCE COMMISSION

Resilience

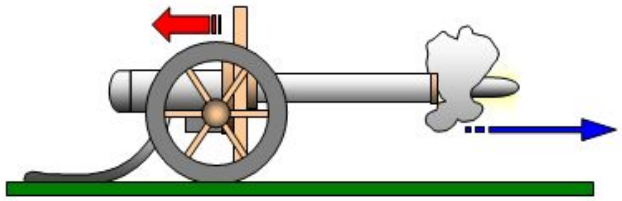
The term is everywhere, and everywhere it means something a little different

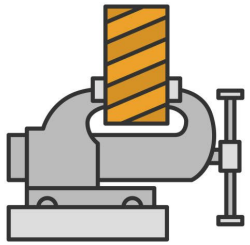


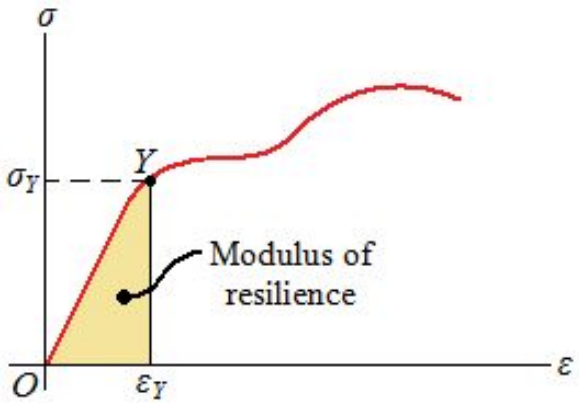
NSW GOVERNMENT | CLINICAL EXCELLENCE COMMISSION

Resilience

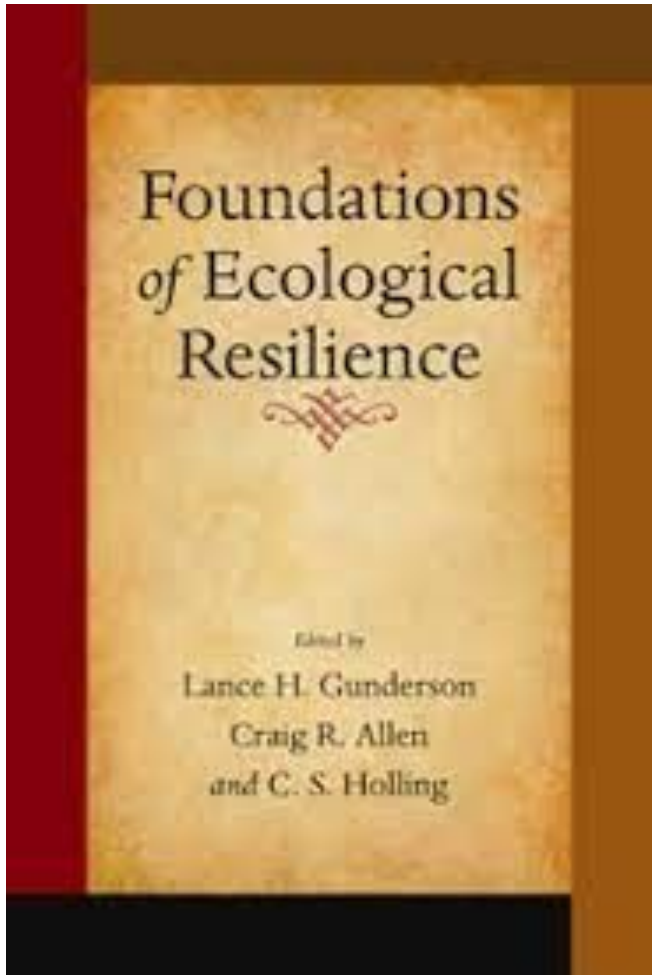
- The term resilience was introduced into the English language in the early 17th Century from the Latin verb ***resilire***, meaning to rebound or recoil.
- Term first used in scholarly work of Tredgold (1818) introduced the term to describe a property of timber, and to explain why some types of wood were able to accommodate sudden and severe loads without breaking.
- Four decades later, Robert Mallet further developed this concept of resilience as a means of measuring and comparing the strength of materials used in the construction of the Royal Navy's fighting ships. Mallet developed a measure - ***the modulus of resilience*** - as a means of assessing the ability of materials to withstand severe conditions.







Ecological perspective



- Crawford Holling first introduced the concept of resilience to ecology and the environment. In 1973 he defined the resilience of an ecosystem as the measure of its ability to absorb changes and still exist.
- Holling suggested two ways of viewing the behaviour of systems:
  - A built structure is designed to perform specific tasks under a range of predictable external conditions, so we are concerned with the ability of such systems to respond ***immediately and constantly*** to an external event.
  - But if we are dealing with an ecosystem which may be profoundly affected by external changes, and continually confronted by the unexpected, the immediacy and constancy of its behaviour becomes less important than its ***persistence and adaptability***.

NSW GOVERNMENT | Health

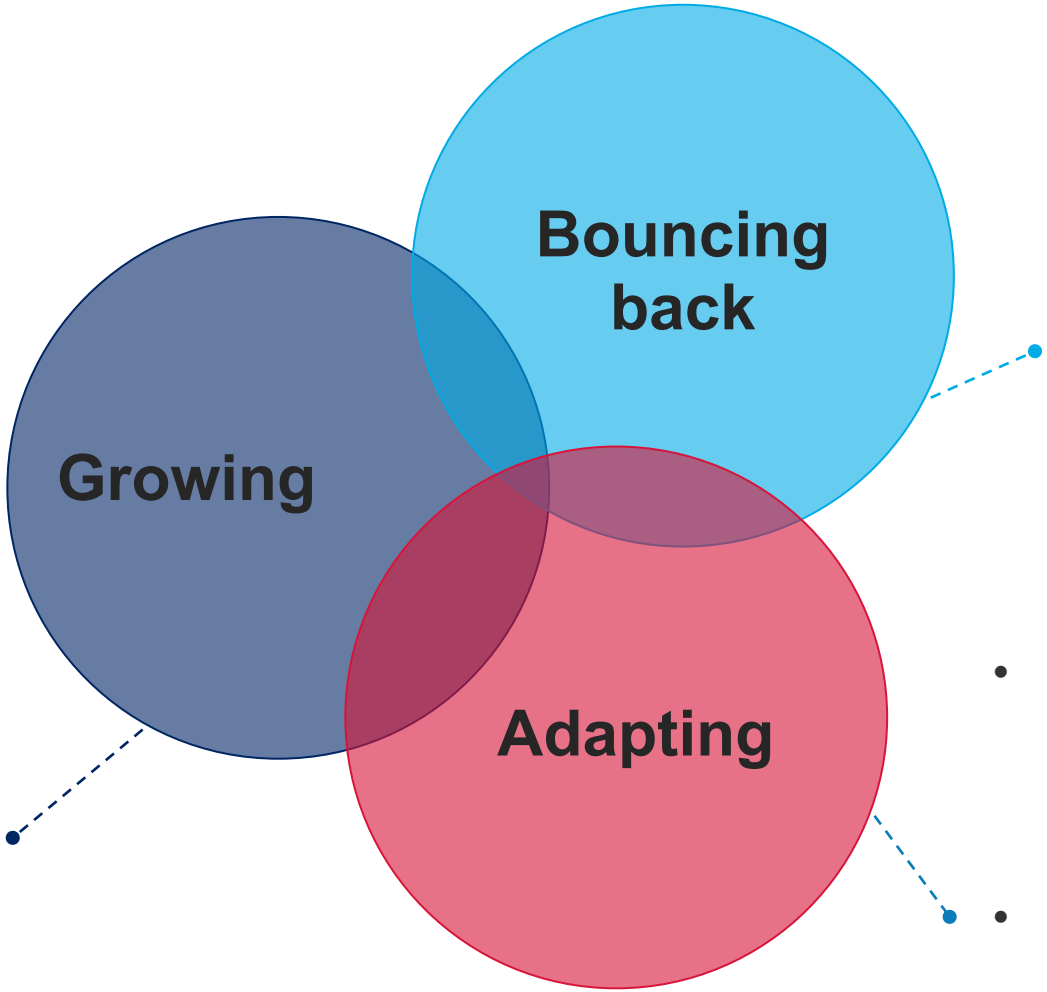
Individual perspective

- The term resilience has been used for over two decades in assessing how well individuals cope in traumatic situations.
- Early work focused on the resilience of children, but it has broadened to encompass the ability of adults to manage abnormal situations, particularly their involvement in war, disasters and even ‘routine’ abnormal events such as major traffic accidents.
- 2 concepts: **Adaptation and Transient dysfunction**

NSW GOVERNMENT | CLINICAL EXCELLENCE COMMISSION

Core perspectives

- Psychological perspectives of resilience focus on the ability of individuals to grow, develop and learn considering traumas or challenges.
- In this perspective resilience is an individual psychological capacity often linked to vulnerable groups and how they adapt to cope with adversity.



- Engineering perspectives of resilience focus on the ability to ‘bounce back’ to some equilibrium state after stress, disruption or surprise.
- The engineering perspective seeks to understand and strengthen how people adapt and build adaptive capacity into a system or organisation.
- The engineering perspective is primarily adopted in the safety science.

- Ecological perspectives of resilience focus on the ability to adapt and reorganise to maintain core functions and activities.
- This perspective focuses on how biological systems and communities that face unpredictable and uncertain threats adapt to cope with these and maintain system stability.

NSW GOVERNMENT | CLINICAL EXCELLENCE COMMISSION

Resilient healthcare

"Patterns of resilience: A scoping review and bibliometric analysis of resilient health care": https://www.sciencedirect.com/science/article/pii/S0925753518321386

Resilience and safety science

- The Safety II approach and Hollnagel et al. define resilience in healthcare as:

"a health care system's ability to adjust its functioning prior to, during, or following changes and disturbances, so that it can sustain required performance under both expected and unexpected conditions"

NSW GOVERNMENT | CLINICAL EXCELLENCE COMMISSION

Hollnagel E, Braithwaite J, Wears R, editors. Resilient health care. Boca Raton: CRC Press; 2013.

Resilience in healthcare research

- A large international research programme on Resilience in Healthcare (RiH) is seeking to address understanding and definitional issues in a 5-year study across Norway, England, the Netherlands, Australia, Japan, and Switzerland (2018–2023)

… the capacity to adapt to challenges and changes at different system levels, to maintain high quality care.

Wiig, S., Aase, K., Billett, S. *et al.* Defining the boundaries and operational concepts of resilience in the resilience in healthcare research program. *BMC Health Serv Res* **20,** 330 (2020). https://doi.org/10.1186/s12913-020-05224-3.

Safety

- Managing risk

- A safety management system is a systematic approach to managing safety risks, including the necessary organisational *culture*, structures, accountabilities, policies and procedures

Safety Culture

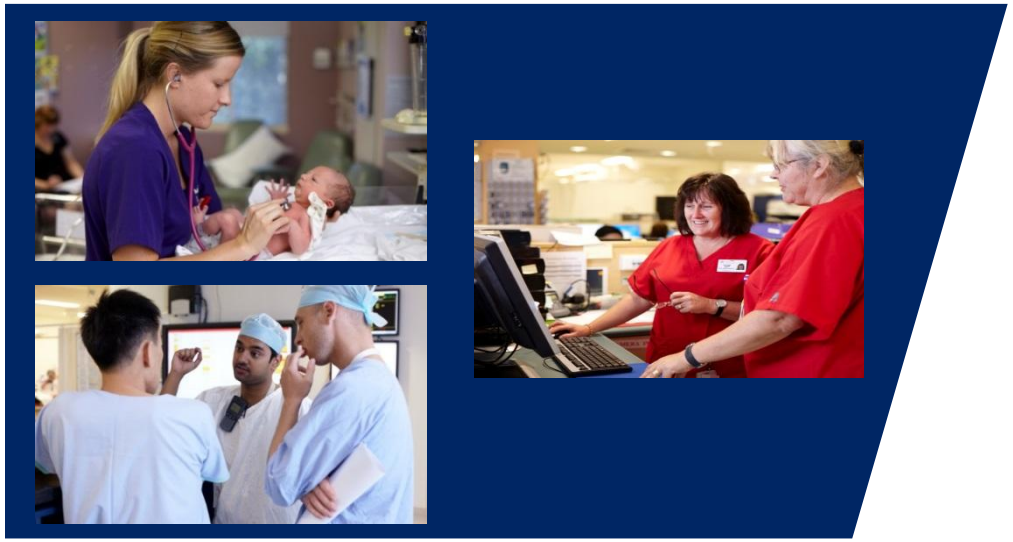
- About attitudes and behaviours
- Unless it is prevailing (national, jurisdictional, organisational, and professional priority) it will not permeate groups and individuals
- Leadership is crucial:
  - Attitudes / actions that constantly emphasise the importance of safety must be modelled, developed and encouraged
  - Behaviours that support this approach should be rewarded
  - Behaviours that undermine this approach should not be tolerated
  - A sound safety culture is restorative, wary, just, flexible, learning and informed

Evolution of a sound safety culture

- **Pathological** – who cares as long as we don't get caught
  - **Reactive** – safety is important, we do a lot when we have an incident
  - **Planned** – we have a system in place to manage all risks
  - **Proactive** – we work on the problems that we still find
  - **Resilient** – safety is how we do business around here

NSW GOVERNMENT | CLINICAL EXCELLENCE COMMISSION

Comparison of Risk and Resilience Management Systems



- **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
  - Identification of threats and protecting against them based on the events likelihood and consequences
- **Resilience** thinking considers future threats to the system with a view to minimising the impact of future adverse events
  - The ability to plan and prepare for, absorb, recover from, and adapt to adverse events

Both allow for the use of quantitative and qualitative data

NSW GOVERNMENT | CLINICAL EXCELLENCE COMMISSION

Benefits of Resilience Thinking over Traditional Risk Analysis

- Whilst they differ they are **complimentary** approaches to dealing with risk
- **Risk assessment** can be either a **bottom up or top down** approach that usual starts with data collection and progresses through modelling
- **Resilience** is a **top down** approach that starts with assessing values of stakeholders and critical functions and through decision models progresses to generation of metrics and data that can ultimately inform risk assessments
- **Risk assessment is often a preliminary phase to resilience analysis**
  - Provides the first elements needed to trigger, or not, the need for resilience assessment.

Resilience analysis centres on the integration of risk perception, risk mitigation, risk communication, and risk management

NSW GOVERNMENT | CLINICAL EXCELLENCE COMMISSION

Resilience assessment is not…

- A forensic analysis
  - There is no detailed review of individual cases

- A traditional service review
  - There is **no** examination of past or current performance

- An accreditation exercise
  - There are **no** standards that we hold the service to

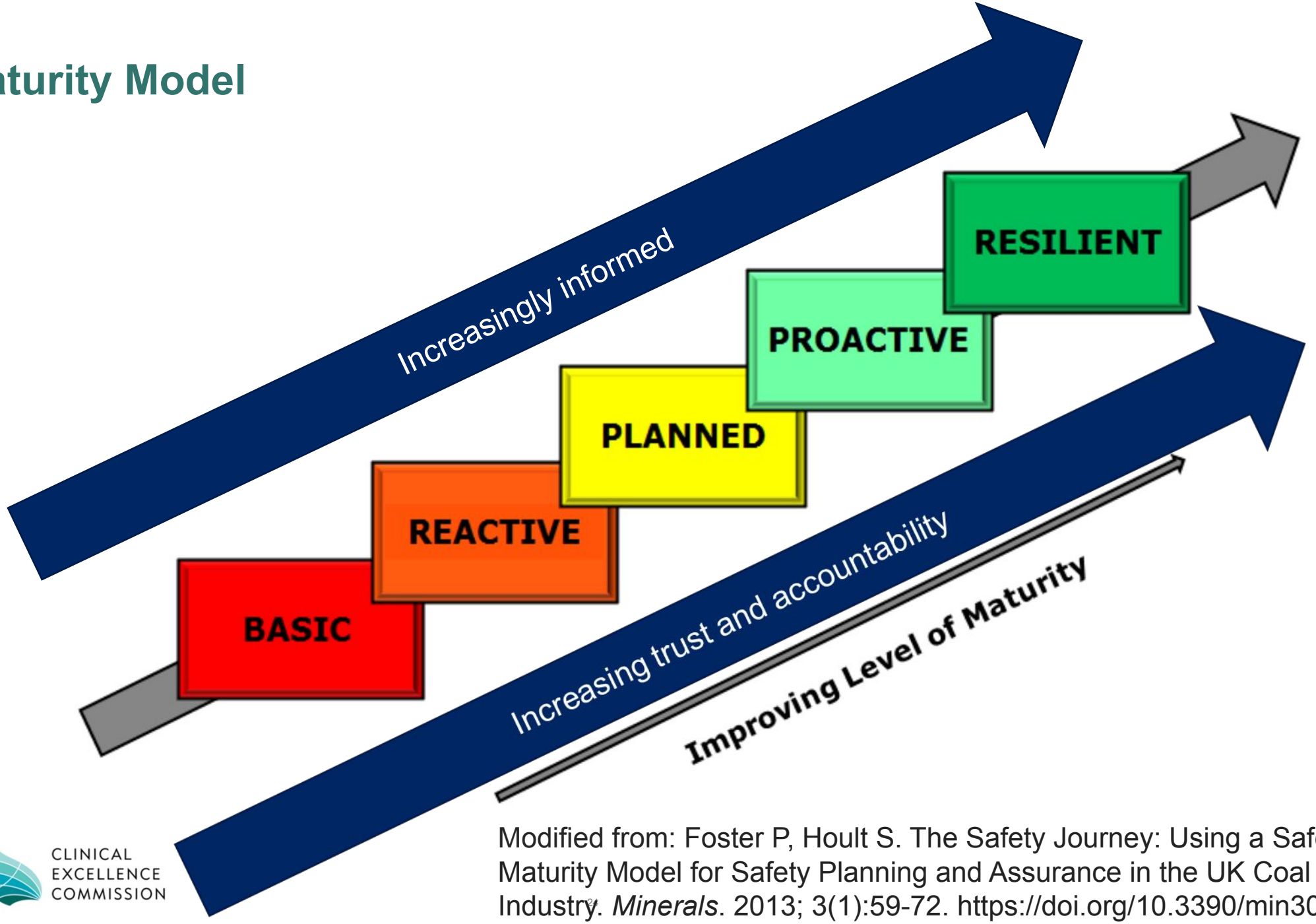
NSW GOVERNMENT | CLINICAL EXCELLENCE COMMISSION

Resilience assessment is…

- A strengths based approach
- A top-down approach that acknowledges that no one comes to work to do a bad job but how does the system support people to do the best job possible
- Looks at future performance
- Considers the local context and provides a framework to hold the system as accountable to itself

NSW GOVERNMENT | CLINICAL EXCELLENCE COMMISSION

Safety Maturity Model



Modified 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

Methodology

- **Risk management** helps the system **prepare and plan** for adverse events, whereas **resilience management** goes further by integrating the temporal capacity of a system to **absorb and recover** from adverse events**, and then adapt**.
- The **Resilience Matrix** is a framework for the performance assessment of integrated complex systems. The framework consists of a **4 x 4 matrix** where one axis contains the major subcomponents of any system and the other axis lists the stages of a disruptive event. The rows describe the four general management domains of any complex system (physical, information, cognitive, social). The four domains can be described as follows:
  - **Physical: Physical resources and the capabilities and the design of those resources**
  - **Information: Information and information development about the physical domain**
  - **Cognitive: Use of the information and physical domains to make decisions**
  - **Social: Organisation structure and communication for making cognitive decisions**
- The columns describe the four stages of incident management (**plan/prepare, absorb/withstand, recover, adapt**).

Resilience matrix

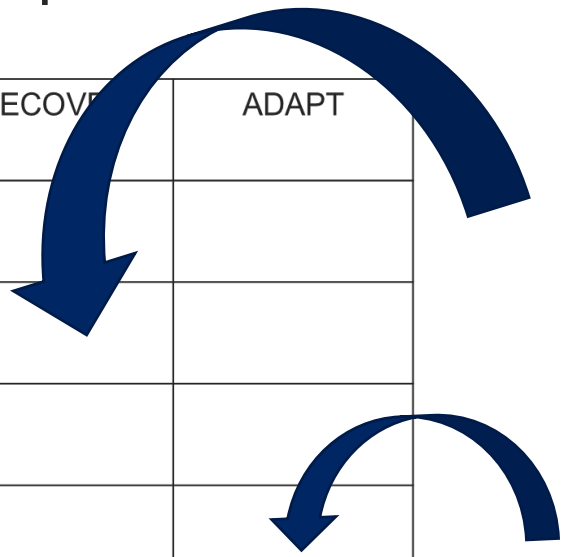
	PREPARE	ABSORB	RECOVER	ADAPT
PHYSICAL				
INFORMATION				
COGNITIVE				
SOCIAL				

NSW GOVERNMENT | CLINICAL EXCELLENCE COMMISSION

Methodology

- Collectively, these sixteen cells provide a general description of the functionality of the system through an adverse event. **Resilience is assessed by assigning a score to each cell** that reports the capacity of the system to perform in that domain and time .For example:

	PREPARE	ABSORB	RECOVER	ADAPT
PHYSICAL				
INFORMATION				
COGNITIVE				
SOCIAL				



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'.

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 incident response.

NSW GOVERNMENT | CLINICAL EXCELLENCE COMMISSION

Methodology

- The matrix of scores can be aggregated to represent a **snapshot of overall system resilience**, which can be monitored over time, used for comparison with similar systems, or examined more closely to illuminate gaps in system capacity.
- To perform the resilience assessment using the matrix approach a team of reviewers have:
  - defined the system boundary and the threat scenario under consideration;
  - identified the critical function(s) of the system to be maintained;
  - for each critical function, selected indicators and generated scores for system performance in each cell; and
  - aggregated the matrices to create an overall resilience rating.
- The scoring of the metrics in this review is based on evidence provided to the reviewers.

NSW GOVERNMENT | CLINICAL EXCELLENCE COMMISSION

Resilience Matrix – activity (complete the matrix)

	PREPARE	ABSORB	RECOVER	ADAPT
PHYSICAL				
INFORMATION				
COGNITIVE				
SOCIAL				

NSW GOVERNMENT | CLINICAL EXCELLENCE COMMISSION

Resilience Matrix

	PREPARE	ABSORB	RECOVER	ADAPT
PHYSICAL	*Local Resources*	*Mobilising resources*	*Networked resources*	*Flexibility of resources*
INFORMATION	*What data do we collect and report?*	*What data is reviewed?*	*What data is analysed?*	*What data is refined to inform improvement?*
COGNITIVE	*What can we do?*	*What happens when we need help?*	*How are we really doing?*	*How can we improve?*
SOCIAL	*How do we learn?*	*How do we feedback?*	*How do we respond?*	*How do we work better together?*

NSW GOVERNMENT | CLINICAL EXCELLENCE COMMISSION

Resilience Matrix

	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 feedback?*	**Listening / Responding** *How do we respond?*	**Responding / Collaborating** *How do we work better together?*

NSW GOVERNMENT | CLINICAL EXCELLENCE COMMISSION

Methodology

	PREPARE	ABSORB	RECOVER	ADAPT
PHYSICAL	**Quantified resources** - physical facility operational - core services operational - permanent workforce - equipment available	**Resource planning** - demand management	**Networked resources** - operational plan	**Flexibility of resources** - maternity business continuity plan
INFORMATION	**Collected / Reported** - multiple (3) data sources	**Reported / Reviewed** - data incorporated into meetings	**Reviewed / Analysed** - data monitoring with interpretation	**Analysed / Refined** - data analysis and refinement
COGNITIVE	**Capability / Escalation** - service capability - individual capability	**Escalation / Performance** - escalation procedures both operational and clinical	**Performance / Review** - internal service performance review - individual performance development review	**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

NSW GOVERNMENT | CLINICAL EXCELLENCE COMMISSION

Scoring – example ‘prepare phase’

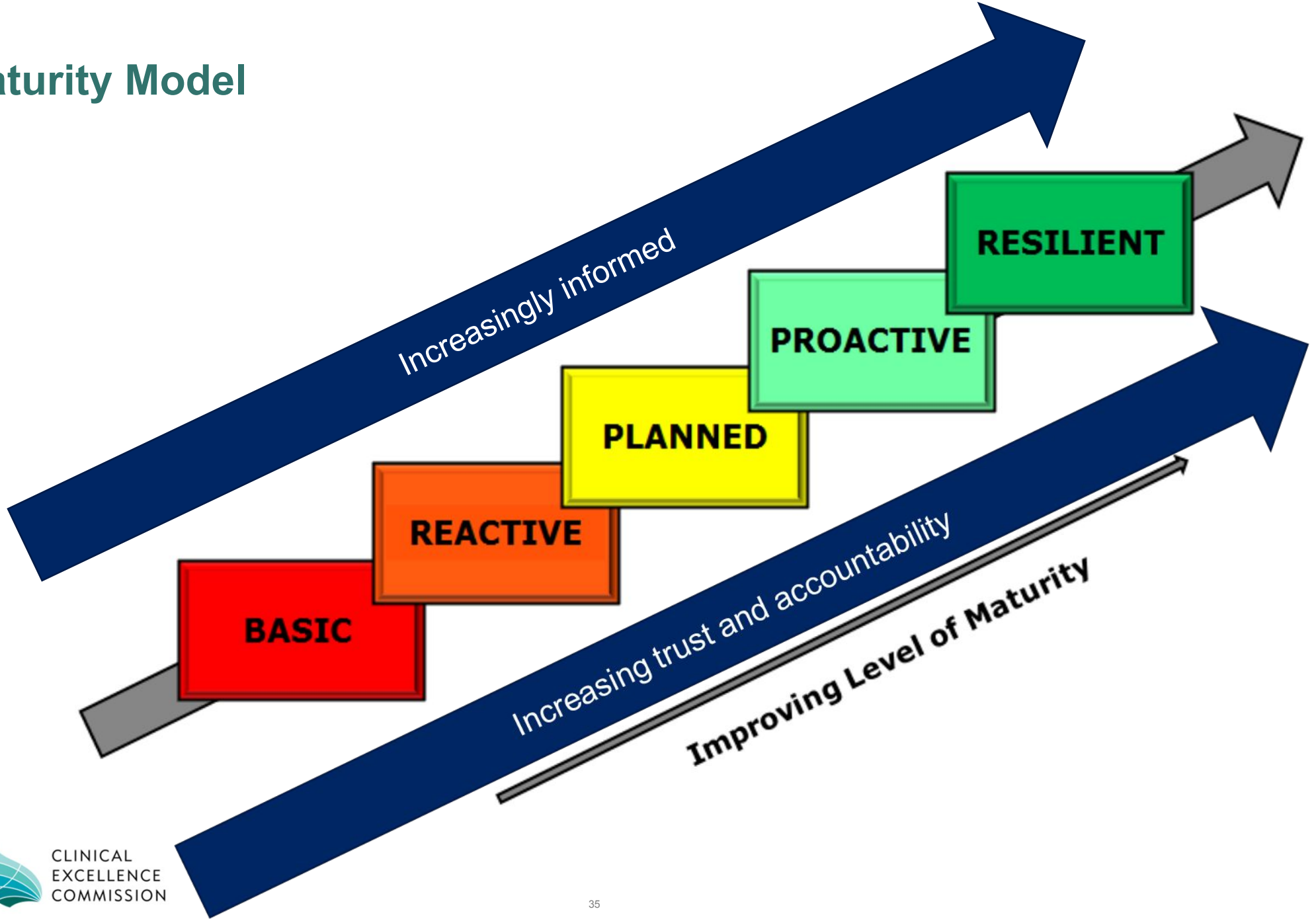
Matrix Position	Metric Selected	Value	Source	Upper score	Lower score	Score
Prepare - Physical	- physical facility is operational - core services operational - permanent workforce - equipment available	Confirmed Mostly confirmed Part confirmed Not confirmed	Interview, observation	Confirmed	Not confirmed	
Prepare - Information	- multiple (3) data sources	Confirmed Mostly confirmed Part confirmed Not confirmed	Interview, observation	Confirmed	Not confirmed	
Prepare - Cognitive	- service capability - scope of practice	Confirmed Mostly confirmed Part confirmed Not confirmed	Interview, observation	Confirmed	Not confirmed	
Prepare - Social	- clinician education - patient education	Confirmed Mostly confirmed Part confirmed Not confirmed	Interview, observation	Confirmed	Not confirmed	

NSW GOVERNMENT | CLINICAL EXCELLENCE COMMISSION

Confirmed (all elements demonstrated) / **Mostly confirmed** (minor deficits) / **Partially confirmed** (major deficits) / **Not confirmed** (absence of elements)

	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

Safety Maturity Model



NSW GOVERNMENT | CLINICAL EXCELLENCE COMMISSION

Analysis

- Assessment by domain
- Assessment across prepare – absorb – recover – adapt
- Overall assessment
- Themes and thematic analysis
- Recommendations – from the top down (Ministry, pillars, LHD's, facilities, etc)

NSW GOVERNMENT | CLINICAL EXCELLENCE COMMISSION

Case Study - LHD

3 services - 16 recommendations

Key issues identified

1. lack of cohesion between the three services, operating autonomously

2. lack of strategic planning and specific clinical service plan

3. network deficiencies in terms of leadership development and support, workforce planning and information transfer.

4. Need for improved use of data and data analytics and focus on improvement science and redesign

"The thought of seeing my District through the eyes of others was both terrifying and intriguing. But this is where the philosophy behind the assessment was so on point. This assessment wasn't about ticking boxes – it was about looking at elements that make a service work"

District Clinical Midwifery Consultant, LHD

NSW GOVERNMENT | CLINICAL EXCELLENCE COMMISSION

Case Study - LHD

- MoH – review current Framework for Maternity Service Capability, develop/progress the statewide near real time "dashboard", provide capability development for maternity service redesign
- LHD response

1. Internal governance/implementation committee
2. New clinical service plan (linked to strategic and workforce plan)
3. Strengthening of network and clinical stream model
4. Revised leadership roles and responsibilities
5. New site based Medical Clinical Lead role in the smaller services
6. Re-designed the TORs and membership for peak governance meetings
7. Daily MDT meetings in all units including Birthing
8. Enhanced clinical handover/safety huddles/clinical supervision
9. Investment in O&G SS positions, support of solo O&G resident in smaller service, staff education safety & quality and improvement capability
10. Multi-disciplinary review of all booked maternity patients to ensure identified risks/ model of care escalation pathway for women with emerging risks

NSW GOVERNMENT | CLINICAL EXCELLENCE COMMISSION

Statewide outputs to date

- **QIDs MatIQ – near real time maternity dashboard**
  - In 2021, QIDS MatIQ became available allowing you to create up-to-date maternity reports using your own public hospital eMaternity data and benchmark against other Local Health Districts (LHDs), facilities with the same capability service level and state-wide data.
- **Resilience Assessment Facilitation Guide**
  - The facilitation guide and supporting resources are intended to assist health services understand the components of mature safety systems and to follow a structured process in order to facilitate a resilience assessment
- **Governance and Accountability Framework for NSW Maternity Services**
  - Self assessment against the National Model Clinical Governance Framework

NSW GOVERNMENT | CLINICAL EXCELLENCE COMMISSION

Key messages

- Resilient Safety Systems are based on challenging our existing mental and process models
- Helps guide strength based improvement
- Achieves high level engagement
- Complimentary to risk assessment, standards / accreditation (linked pragmatically)
- Drives:
  - Flexibility of resources
  - Data analytics
  - Practice improvement
  - Development of collaboration and a shared mental model of safety

NSW GOVERNMENT | CLINICAL EXCELLENCE COMMISSION


QUESTIONS
NSW GOVERNMENT
CLINICAL EXCELLENCE COMMISSION