

# Responding to Disaster: Resilience Engineering and Shared Leadership in Coping with Unexpected

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**Christchurch, New Zealand**  
**February 22, 2011**  
**12:50 pm**

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**Three minutes later...**



# Christchurch Hospital -Basic Facts

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- Christchurch Public Hospital is only one tertiary hospital in wider Canterbury area. Population catchment of 510,000 people
- Largest tertiary hospital in the South Island- approximately 650 beds
- Provides all complex specialist services
- One of only four main teaching hospitals in New Zealand
- Busiest Emergency Department in Australasia

# Impact on Hospital

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- Hospital was subjected to severe shaking
- Parts of the hospital were flooded
- No main power, interrupted generators power
- Affected stairwells and elevators
- 365 injured arrived to ED first 24 hours, 142 were admitted
- 109 acute hospital beds have been lost

# The Challenge

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- Full occupied medical ward- 27 patients and 15 family members
- 10 staff on duty
- Minimal initial communication
- 440 aftershocks during the first 24 hours
- Major utilities failure
- High level of stress and uncertainty
- Duty of care- unable to leave the building
- Need to coordinate care, support staff and patients
- No communication with own family (Children in three different schools)
- Full evacuation commenced late night
- Long event: EQ 12:51, ward evacuated and locked at 23:35

# The Challenge 2011-2013

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- **March 2011:** Relocating the team to the Princess Margaret Hospital. Setting up acute medical ward within one week post the quake
- **June 2011:** Two evacuated teams are moving to the same location. Acute medical services are now split between two hospitals
- **July 2011:** Development and immediate implementation of an innovative models of care. Direct acute medical admissions from community into three relocated wards bypassing ED. No ED/ICU outreach, minimal medical cover afterhours. No advanced radiology, blood gases analyzer on site.
- **July 2011-August 2013:** Outstanding clinical performance and safety record, high staff motivation, retention and morale.
- **September 2013:** Teams return to Christchurch Hospital Campus



# Resilience Engineering

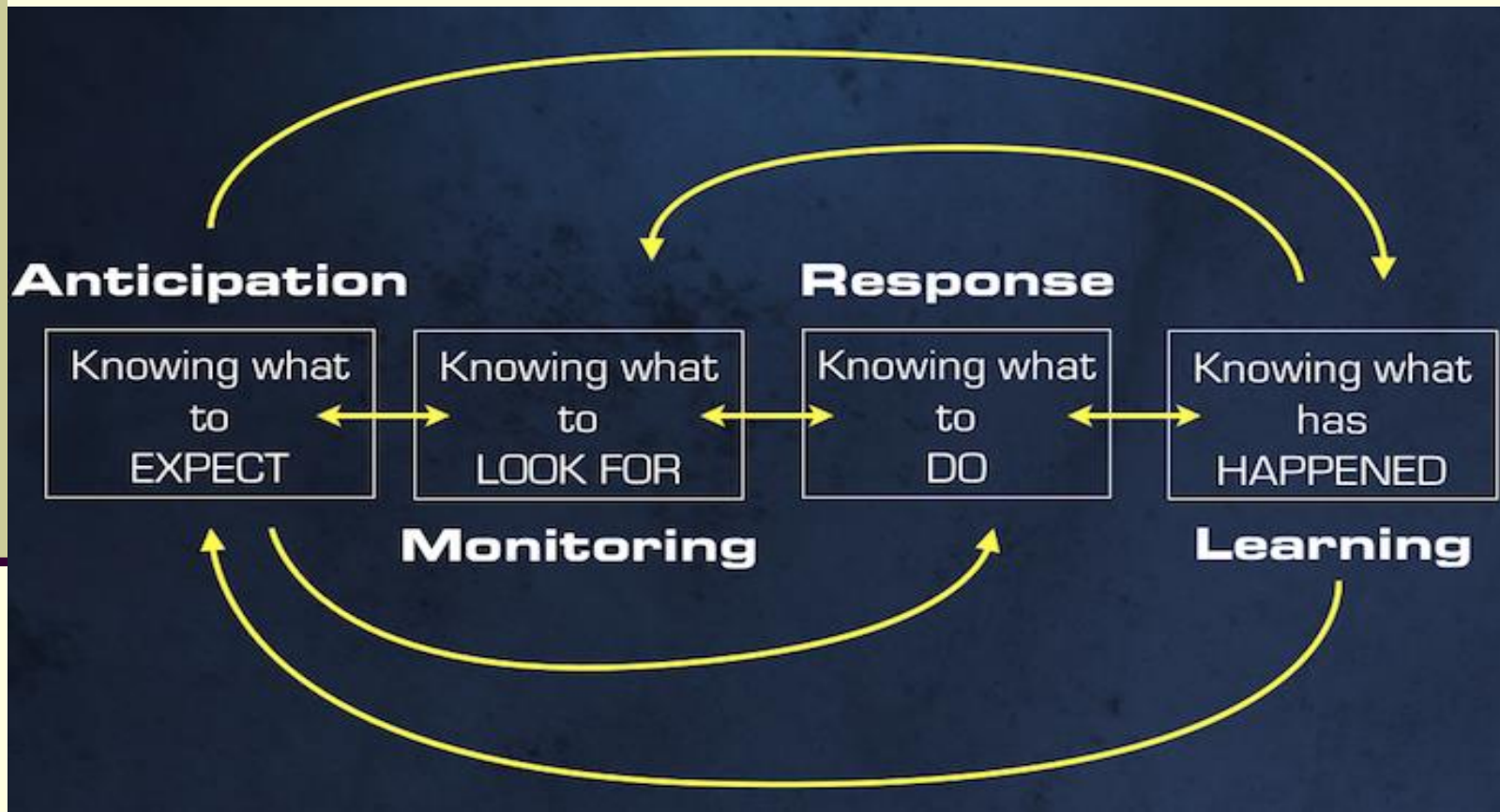
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Resilience is the intrinsic ability of a system to adjust its functioning prior to, during or following changes and disturbances in order to sustain required operations under expected or unexpected conditions (Hollnagel, 2013)



Resilient  
Health Care  
Network

# Four Capabilities of Resilient System



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- Creating **psychologically safe** environment
  - **Making it easier** to do the right thing
  - **People** are the solution
  - **Model** reflective practice

# Capability to respond

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- Situational awareness
- Adaptability
- Workarounds

# Capability to monitor

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- Monitoring of clinical KPIs
- Creating safe environment
- Early warning signs of stress, fatigue and anxiety

# Capability to learn

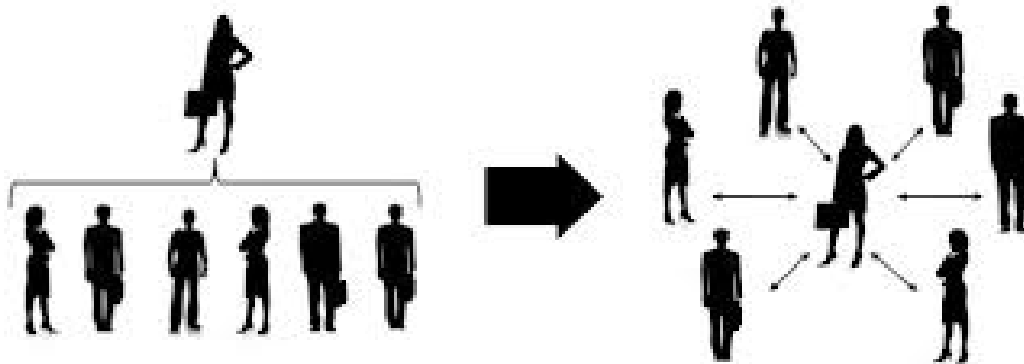
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- Creating learning opportunities in real time
- Hot debrief
- Upskilling
- Double loop learning
- Capturing and refreezing workarounds and adaptations

# Capability to anticipate

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- Anticipatory thinking
- Prospective sensemaking
- Situational awareness
- Mindful organisation approach





# Shared Leadership



- Some of those in formal management positions may not, because scale of event, time requirements and, level of responsibility, be best placed to provide overall crisis leadership
- All members of a team have the potential to act as leaders, and therefore it is important to develop leadership capacity at all team levels
- Build trusted and team wide approach to leadership

# Shared Leadership-Medical Ward

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- Shared decision making
- Open communication within team
- Shared accountability
- Mutual trust
- Support of emergent leaders within group

# Leader's qualities

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- Influence
- Ability to listen
- Courage
- Humility
- Trust

# Shared leadership in Crisis

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- Clarity about how it works in practice
- Agreed procedures for making decisions
- Relationships and trust-building leadership team
- Rethinking the role of the leader
- Inter agency response

# Summary

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- Resilience engineering could provide a framework to support individuals and teams in complex environment
- Integration of four resilient capabilities with shared leadership approach helped to develop high adaptive capacity and cohesion, turning crisis into opportunity for individuals and teams
- Future development of integrated approach to managing unexpected utilizing resilience engineering and shared leadership in an environment of complex adaptive systems

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If you are interested in collaboration on further research or want to learn more about how resilience engineering could benefit you and your teams please contact:

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