Large scale health systems improvement to recognise and manage deteriorating patients

Dr Harvey Lander and Malcolm Green
The NSW health system provides the safest and highest quality care for every patient.

To improve healthcare for patients in NSW through leadership in safety and quality.

**Our Core Values**
Collaboration * Openness * Respect * Empowerment

<table>
<thead>
<tr>
<th>1. Building system excellence together</th>
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<tbody>
<tr>
<td>Understand needs and work in partnership on agreed priorities</td>
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<tr>
<td>Strengthen governance for safety and quality</td>
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<table>
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<tr>
<th>2. Quality improvement capability and capacity</th>
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<tr>
<td>Enhance leadership in safety and quality</td>
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<td>Enhance frontline capability and capacity in safety and quality</td>
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<th>3. Knowledge-based system improvement</th>
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<tr>
<td>Enhance improvements in identified key areas</td>
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<tr>
<td>Strengthen meaningful monitoring and feedback</td>
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<th>4. Organisational excellence</th>
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<tr>
<td>Develop adaptable delivery systems with demonstrated impact</td>
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<tr>
<td>Ensure alignment of key priorities and coordination of processes across CEC</td>
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Safe, high quality patient care
High performing reliable systems
A culture built on improvement

Clinical Excellence Commission
"I had an epiphany."
The Quality Triangle

Quality Assurance

Quality Management

Quality Improvement
A simple way to think about quality and safety – the dimensions of care

Quality
Everything that should happen for the patient, happens.
Accessible
Efficient
Effective
Patient centred (acceptable)
Equitable

Safety
Everything that should not happen to the patient, does not happen.

What we strive to achieve:

ZERO
PREVENTABLE HARM

100
PERCENT RELIABILITY

Remember: “Zero 100”

Raj Behal 2014
Learning objectives

- Understand the multivalent strategy which underpins the successful implementation of the *Between the Flags* program
- Understand the impact of a large scale patient safety net system on health systems culture
- Share in the lessons learned from the implementation of the *Between the Flags* program
- Build system capability and leadership at scale
Designing a system

a) What do you do to ensure patients deteriorate in your system?

b) Turn to the person next to you and compare?

c) If you were to focus on three things to improve what would they be?
The Slippery Slope
(the Problem)

Failure to rescue, the problem...

Time

ALS

Patient Condition

Death

Source: Dr Charles Pain
What’s the problem?

• Serious adverse events are common in hospitalized patients around the world 1-4

• Documented warning signs in up to 80% of deteriorating patients 5-9

• Early recognition and intervention improves outcomes 10-13

Leadership in NSW

• Medical Emergency Team (MET) concept developed by Professor Ken Hillman in NSW \(^1\)

• MET and Rapid Response Systems catch on across Australia, the US and the UK \(^2-4\)

1. Lee et al, Anaesth Intensive Care 1995
2. Ball et al, BMJ 2003
4. IHI, 100,1000 lives campaign 2006
But there’s still a problem….

• Failure to recognise and respond to deteriorating patients is a significant issue$^{1-3}$
• Imbalance between patient needs and available resources$^4$
• Need to identify the root causes to inform strategies$^5$

1. McQuillan et al, British Medical Journal, 1998 (UK)
2. Buist et al, Medical Journal of Australia, 1999 (Australia)
3. Bell et al, Resuscitation, 2006 (Sweden)
4. Devita et al, Critical Care Medicine, 2006
How system fatally failed Vanessa

January 24, 2006 - 12:27PM
Page 1 of 2 | Single page

NSW Premier Morris Iemma today announced a Special Commission of Inquiry into the NSW health system following an inquest into the death of a girl who was hit by a golf ball in 2005.

Deputy State Coroner Carl Milovanovich was scathing of the NSW Government in his findings into the death of Sydney teenager Vanessa Anderson at Royal North Shore Hospital.

“She died from respiratory arrest due to the depressant effects of opiate medication after a doctor misread her chart.

The coroner said "almost every conceivable error or omission" had occurred in her treatment before her death and called for a wide-ranging inquiry into the NSW health system.

Mr Iemma stopped short of ordering a royal commission. Instead announcing a statewide inquiry in the troubled health system.

“We will be establishing a special commission of inquiry to act on that recommendation of the coroner," Mr Iemma said.

He indicated he would seek to appoint a high-profile lawyer such as Brett Walker, SC, to oversee the inquiry and has told his Health Minister, Reba Meagher, and the Director-General of Premier and Cabinet, Robyn Kruk, to finalise details within the
Garling on Culture

“...I have no doubt, given the material before me, that there is a negative culture in NSW public hospitals which at worst manifests itself in bullying and harassment, but which also reflects a great divide between clinicians and administrators.”

Peter Garling SC, November 2008
What clinicians said

“We live in a micromanagered hell, a micro-mismanaged hell. It is run with a top-down culture of bullying and with the bottom-up response of fear and loathing.”

Senior clinician giving evidence to Garling Commission
Recommendation 91

A system to be put in place in NSW with the following elements:

• early identification
• escalation protocols including rapid response system;
• detailed education and training programs
• appropriate data to monitor
• high level support from management and clinicians;
• and ongoing evaluation.
From project to program
Transformation requires leadership

• Health systems face great challenges
• Internationally > 20 years shows that incremental improvements help
• But, transformation requires whole of system approach with leadership at all levels
"It is better to lead from behind and to put others in front, especially when you celebrate victory when nice things occur. You take the front line when there is danger. Then people will appreciate your leadership."

-Nelson Mandela

MANAGEMENT IS DOING THINGS RIGHT;
LEADERSHIP IS DOING THE RIGHT THINGS.

PETER F. DRUCKER
Large system transformation

1 – engage individuals at all levels
2 – build in feedback loops
3 – attend to history
4 – engage clinicians
5 – patients and families involvement

Best et al, large system transformation: a realist review 2012
Leadership at all levels

Secretary NSW Health
Clinical Excellence Commission
Ministry of Health
Local Health Districts
Directors of Clinical Governance
Hospital Executives
Clinician leads
Frontline clinicians
Health care teams – rapid response

Chief of Ministry
Statewide S&Q organisation
Statewide – Policy and regulation
Local healthcare authority with individual boards
Local hospital leadership
Key clinicians
Microsystem
The response team
'Between The Flags' Launch

(Liverpool Hospital)

10 News @ 5:00pm
13 January 2010
Aim

To improve early recognition and response to clinical deterioration and thereby reduce potentially preventable deaths and serious adverse events in patients who receive their care in NSW public hospitals.
The System - 5 elements

- Policy & Governance Plan
  - DCG’s
- Standard Observation
  - Charts
- Awareness, DETECT,
  - Rapid Responders
- Standard Calling
  - Criteria
- Clinical Emergency
  - Response System
- Education
- Evaluation
- Clinical Review & Rapid Response
- 2 KPIs Evaluation
  - Collaborative
  - QSA

Source: Colette Duff
Standard Adult General Observation Chart

**Patient Details**
- **Family Name:** BLAKEHURST
- **Given Name:** Peter
- **Date of Birth:** 29/07/19xx
- **Gender:** Male

**Location:** Surgical Ward

### Vital Signs
- **Heart Rate:**
  - Date: 03/10
  - Time: 06:10
  - Rate: 80
  - Date: 04/10
  - Time: 06:10
  - Rate: 78
  - Date: 05/10
  - Time: 06:10
  - Rate: 80

- **Blood Pressure:**
  - Date: 03/10
  - Time: 06:10
  - SBP: 110
  - DBP: 70
  - Date: 04/10
  - Time: 06:10
  - SBP: 110
  - DBP: 70
  - Date: 05/10
  - Time: 06:10
  - SBP: 110
  - DBP: 70

### Assessed Pain Level
- **Assessed Pain Level at Rest:**
  - Date: 03/10
  - Time: 06:10
  - Level: 2
  - Date: 04/10
  - Time: 06:10
  - Level: 3
  - Date: 05/10
  - Time: 06:10
  - Level: 2

- **Assessed Pain Level with Movement:**
  - Date: 03/10
  - Time: 06:10
  - Level: 2
  - Date: 04/10
  - Time: 06:10
  - Level: 3
  - Date: 05/10
  - Time: 06:10
  - Level: 2

### Labs
- **Blood Tests:**
  - Date: 03/10
  - Time: 06:10
  - Blood Glucose: 7.6
  - Date: 04/10
  - Time: 06:10
  - Blood Glucose: 7.8
  - Date: 05/10
  - Time: 06:10
  - Blood Glucose: 7.7

### Additional Observations
- **Other Observations:**
  - Date: 03/10
  - Time: 06:10
  - Other: None
  - Date: 04/10
  - Time: 06:10
  - Other: None
  - Date: 05/10
  - Time: 06:10
  - Other: None
CEC approach

• Broad clinician engagement and consultation
• Keep it simple whether possible – single trigger escalation
• Standardisation across NSW
• Allow facilities to customise their local response
• Promote teamwork
• Promote and support clinical judgement
Local approach – a hospital

- Leadership is required at every level
- Executive top down, clinicians bottom up, between teams and units (horizontal)
- Support cultural conditions for effective leadership
- Coalition is built over time with an inclusive process
- Clinical outcomes
Local approach

- Governance - Clinical Council, Medical Director
- Committee structures
- Adult and Paediatric charts
- Response system (CERS) – local policy
- Education – DETECT and DETECT junior
- Evaluation – CRs, RRs (times, wards), transfers to ICU, deaths
Standard 9 – Recognising and Responding to Clinical Deterioration in Acute Health Care

www.safetyandquality.gov.au/
Is it working?
Evaluation

• Key Performance Indicators
  • Rapid Response calls / 1000 admissions
  • Cardiac Arrests calls / 1000 admissions

• Quality Systems Assessment (QSA) reports

• Hospital visits

• Standard Observation Chart audit tools

• Academic Research Partners - UNSW
Evaluation

BETWEEN THE FLAGS EVALUATION

**PROCESS** (intervention) **EVALUATION**

- Track and Trigger observation chart: Audit completion
- Standard calling criteria: Audit breaches
- Education package: Assess learning outcomes

**PROCESS** (intervention) **EVALUATION**

- Clinical Review: • Measure rate of calls • Audit appropriateness of calls
- Rapid Response: • Measure rate of calls • Audit appropriateness of calls

**OUTCOME** **EVALUATION**

- Reduce overall deaths: Measure death rate
- Reduce unexpected deaths: Measure rate of unexpected deaths
- Reduce unexpected preventable deaths: Measure rate of unexpected potentially preventable deaths
- Reduce cardio-respiratory arrests: Measure rate of cardio-respiratory arrests

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**Note:**

1. Unexpected deaths = all deaths minus NFR deaths
2. Potentially preventable deaths = Unexpected deaths that had breaches of calling criteria that were not acted on
Overall the BTF has benefitted patient safety in our department/unit (Adults) 2010

Overall the BTF program has benefitted patient safety in our department / unit (Paeds) 2011

Overall the BTF program has benefitted patient safety in our department / clinical unit (all) 2012

2010

2011

2012

47% Strongly agree 48% Agree

21% Strongly agree 25% Agree

38% Strongly agree 44% Agree

Benefit to Patient Safety

Overall the BTF has benefitted patient safety in our department/unit (Adults)

Overall the BTF program has benefitted patient safety in our department / unit (Paeds)

Overall the BTF program has benefitted patient safety in our department / clinical unit (all)

Between the Flags
Keeping patients safe
### Executive support/clinical leads:

<table>
<thead>
<tr>
<th>Statement</th>
<th>2010</th>
<th>2011</th>
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<tr>
<td>Strong executive support is an important part of the success of BTF in our dept/unit</td>
<td>28%</td>
<td>32%</td>
</tr>
<tr>
<td>Strong executive support is an important part of the success of BTF in our department / unit.</td>
<td>47%</td>
<td>49%</td>
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<td>Our BTF clinical lead (champion) has been critical to the uptake and acceptance of the program by clinicians in our dept/unit</td>
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<td>28%</td>
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<tr>
<td>Our BTF clinical lead (champion) has been critical to the uptake and acceptance of the program by clinicians in our dept/unit</td>
<td>39%</td>
<td>38%</td>
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Cardiac arrest calls in NSW

![Chart showing the decline of cardiopulmonary arrest rate from Aug-Dec 2010 to Jan-Jun 2016.]
“In my view, this is one of the most important reforms introduced in NSW hospitals for a generation. If properly followed, the ‘Between the Flags’ program saves lives.”
Lessons learned

• Build a large coalition of clinicians, managers and administrators
• Governance is key
• Design for the real world - staged implementation
• Multivalent strategy
• Standardisation across NSW (the foundation stone)
• Strike the right balance between clinical judgement and rules
• Moving up the Slippery Slope
Conclusions

- BTF has changed clinical practice in NSW and is now part of the clinical language
- Staff strongly believe it is making a difference
- Rapid Response Rates and Cardiac Arrest Rates down
- 20% reduction in LMDRGs
- BTF is unmasking the age old root causes such as cultural issues and barriers to escalation
Moving up the ‘slippery slope’

Prevention

Clinical Review

Rapid Response

Advanced Life Support

Death

Outcomes

Continued Treatment Plan
Revised Treatment Plan
Referral
Clinical Pathway
High care unit / facility
End of Life care

Usual Residence / Rehabilitation

Source: Dr Charles Pain
SEPSIS KILLS program:
reduce preventable harm to patients with sepsis

RECOGNISE:
Risk factors, signs and symptoms of sepsis and inform senior clinician

RESUSCITATE:
With rapid antibiotics and IV fluids within one hour

REFER:
To specialist care and initiate retrieval if needed
What does REACH stand for?

- Recognise
- Engage
- Act
- Call
- Help is on its way

Helps to ‘cast the safety net’ wider
A standardised process for the screening of medical records of patients who have died in NSW PHOs: includes EOL measures

A process is in place for: timely identification of patients at risk of dying; commencing early conversations around end of life wishes, initiation of end of life planning; and appropriate referral to support services

Tools ensure that all patients receive optimal symptom control, have social, spiritual and cultural needs addressed, and bereavement support for families and carers occurs
Ten Functions of In Safe Hands

- Leadership and Governance
- Information Management
- Team Structures and Dynamics
- Support Service and Equipment
- Care Planning, Co-ordination and Delivery
- Workforce Management
- Standard Protocols and Procedures
- Education, Training and Supervision
- Patient Safety and Quality Systems
- Patient Experience

in safe hands
Future Challenges & Opportunities

• Medical leadership/engagement at all levels
• Getting the balance right (rules vs judgement)
• Tailoring the education to real time data
• Continuous monitoring and its role
• An electronic world
• Building high-reliability teams
Beyond the Flags:
Bringing Big Data and Real-Time Analytics to Early Warning Detection in the Hospital

Dana P. Edelson, MD MS, FAHA, FHM
Executive Medical Director for Inpatient Quality & Safety

May 5, 2016
What the CEC will do next
Adult Patient safety Program

- Essentials of safety
- Hand Washing
- Leadership Walk Rounds
- Surgical timeout
- Huddle or Team Talk
- Intensive Care Unit Daily Goals
- Ventilator Associated Pneumonia (VAP) Bundle
- Deteriorating patients
- Central Venous Catheter (CVC) Insertion
- CVC Maintenance
- Peripheral Venous Cannula (PVC) Bundle
Points of care

- VTE
- SEPSIS
- Pressure Ulcers
- Falls
- Catheter Associated Urinary Tract Infections (CAUTI)
- Deteriorating Patients
- Heart Failure
- Surgical Site Infections
- Safer Use of Medicines
MICRO LEVEL (Unit Huddle)

**Look back:** individual providers report on unexpected events, medical response team calls

**Look forward:** individual providers report on individual patients at risk for safety events

**Integration:** charge nurse considers overall unit status, planned discharges, staffing needs

MESO LEVEL (Inpatient Huddle)

**Look back:** charge nurses from each microsystem report on unexpected events, transfers to higher levels of care

**Look forward:** individual microsystems report on higher risk patients in mesosystem, overall unit status

**Integration:** Manager of Patient Services (MPS) works with charge nurses to develop plans and predictions for highest risk patients, develop capacity plan through system, predict and mitigate experience failures

MACRO LEVEL (Daily Operations Brief)

**Look back:** mesosystem leaders report on unexpected outcomes over last 24 hours, resolution of concerns raised at previous brief

**Look forward:** mesosystem leaders predict and plan for big issues of day with focus on problems at intersections of mesosystems

**Integration:** administrator of the day identifies responsible party(ies) for each concerns and sets clear follow-up
Patient Safety Program – Essentials
Huddle Principles and Guidance

Introduction
Huddles are a recognised methodology in healthcare to help increase safety and quality of patient care.

Purpose
- Aiming for higher reliability of healthcare
- Increase situational awareness for the health care team
- Improve the shared mental model in order to improve teamwork
- Clarifying the essentials of safety and quality for that environment
- Recognising, acknowledging and predicting the required responses needed to improve patient and staff safety as well operational issues

Types of huddles
- Whole of organisation/hospital huddle
- Microsystem huddle at ward (including Emergency Departments/Theatre)
- Outpatient huddle eg Hospital in the Home
- Community settings or MPS (Multipurpose Health Facility)
- Post event specific huddle – not specifically covered in this document, refers to meeting of the team after a significant event/incident
Five dimensions to assist monitoring and improving safety (Charles Vincent)

• **Past harm**: this encompasses both psychological and physical measures.

• **Reliability**: this is defined as ‘failure free operation over time’ and applies to measures of behaviour, processes and systems.

• **Sensitivity to operations**: the information and capacity to monitor safety on an hourly or daily basis.

• **Anticipation and preparedness**: the ability to anticipate, and be prepared for, problems.

• **Integration and learning**: the ability to respond to, and improve from, safety information.
Safety is a process of enquiry

Past harm

Has care been safe in the past?

Reliability

Are our clinical systems & processes reliable?

Integration and learning

Anticipation and preparedness

Sensitivity to operations

Are we responding & learning & improving?

Is care safe today?

Will care be safer in the future?

IT'S HARD WORK....
THIS SWIMMING BETWEEN THE FLAGS
We gratefully acknowledge

“Always swim between the red and yellow flags”
Thank you

For further information:

CEC-BetweentheFlags@health.nsw.gov.au