Changes That Last

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Clinical Excellence Commission
Australia

What's the problem?

- Most Quality projects work well
- An improvement often results
- The gains are often short lived
- Very limited spread beyond ward level
- Rarely sustained

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Lumbar Punctures in a children's ward

- LP is common procedure
- Increasing evidence of post LP complications in children
- Concerns about consent, parental information, technical performance
- Anxiety provoking in parents and doctors
- *See 1, do 1, teach 1* no longer acceptable

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Interventions

- Teaching mannequins purchased “Baby Stap”
- Introduced teaching sessions at orientation
- JMS accredited prior to beginning term
- Sticker checklist and fact sheet for parents developed
- Significant improvement

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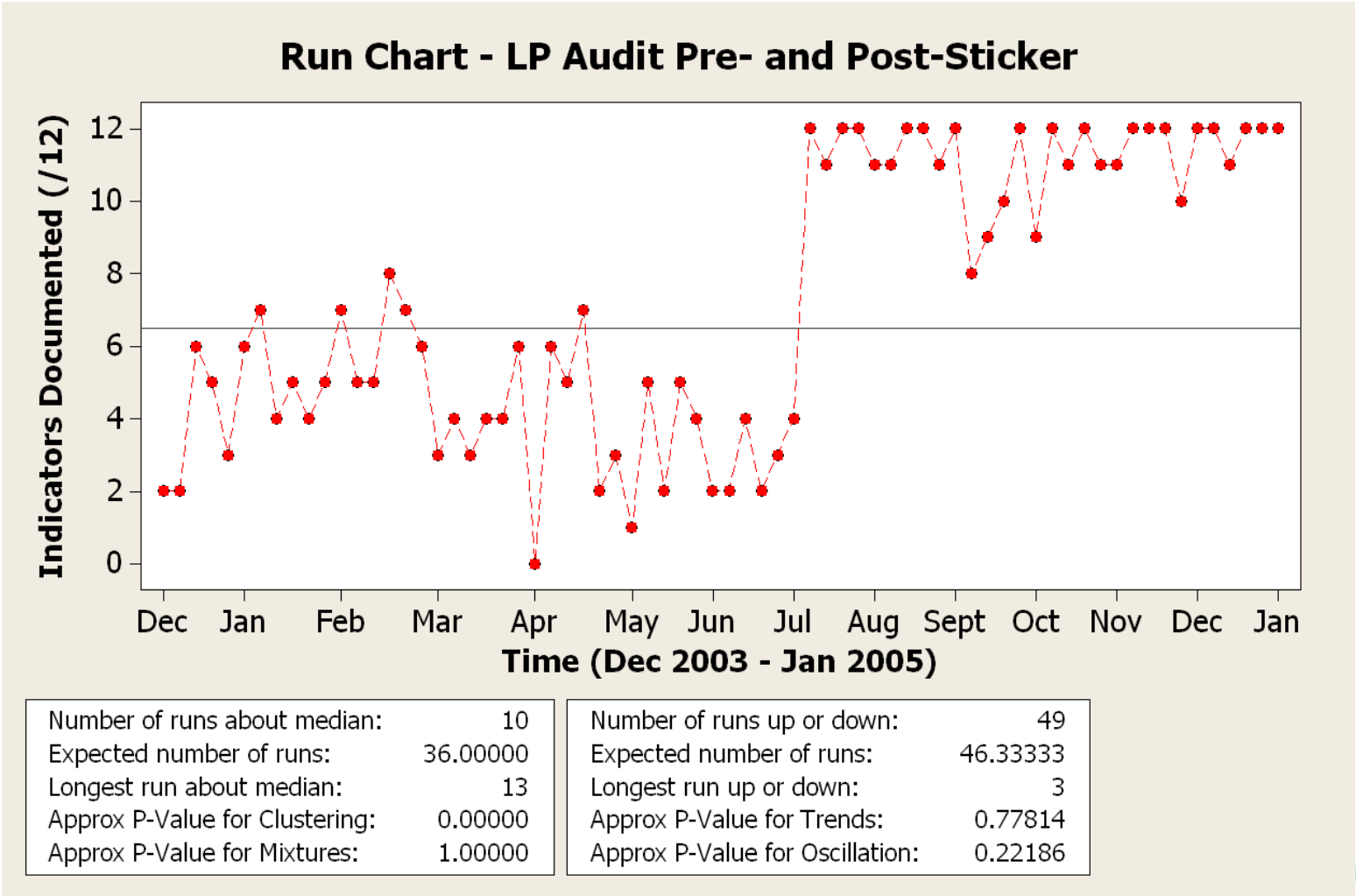
LP improvement project



Number of runs about median:	10
Expected number of runs:	36.00000
Longest run about median:	13
Approx P-Value for Clustering:	0.00000
Approx P-Value for Mixtures:	1.00000

Number of runs up or down:	49
Expected number of runs:	46.33333
Longest run up or down:	3
Approx P-Value for Trends:	0.77814
Approx P-Value for Oscillation:	0.22186

What's the Challenge?

- What happened next??

- How do we get spread at scale ?
- Whole system improvement
- Sustained improvement over long period
- Local leadership vital
- Improvement requires change (in behaviour)

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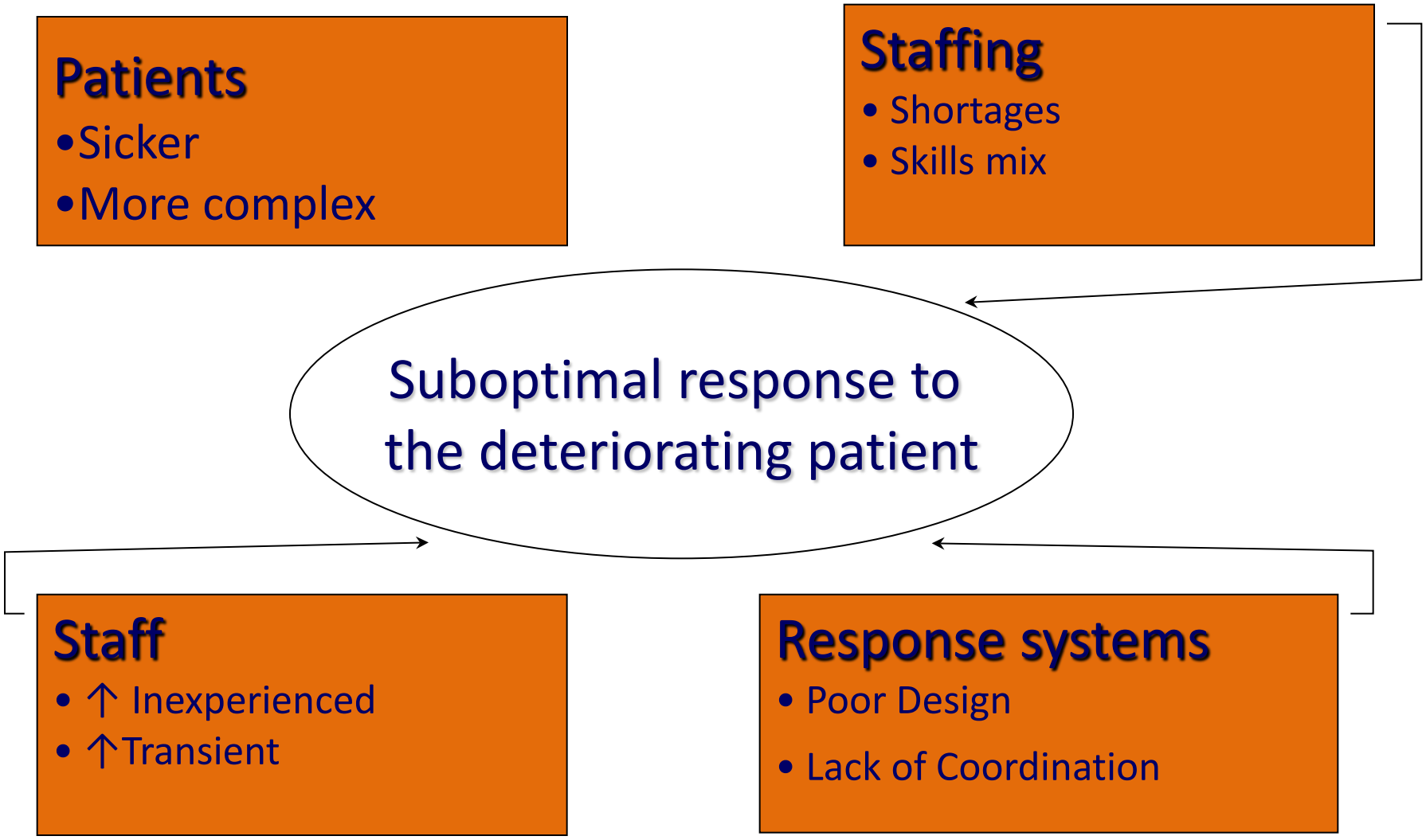
Deteriorating patients



Keeping patients safe- Between the Flags

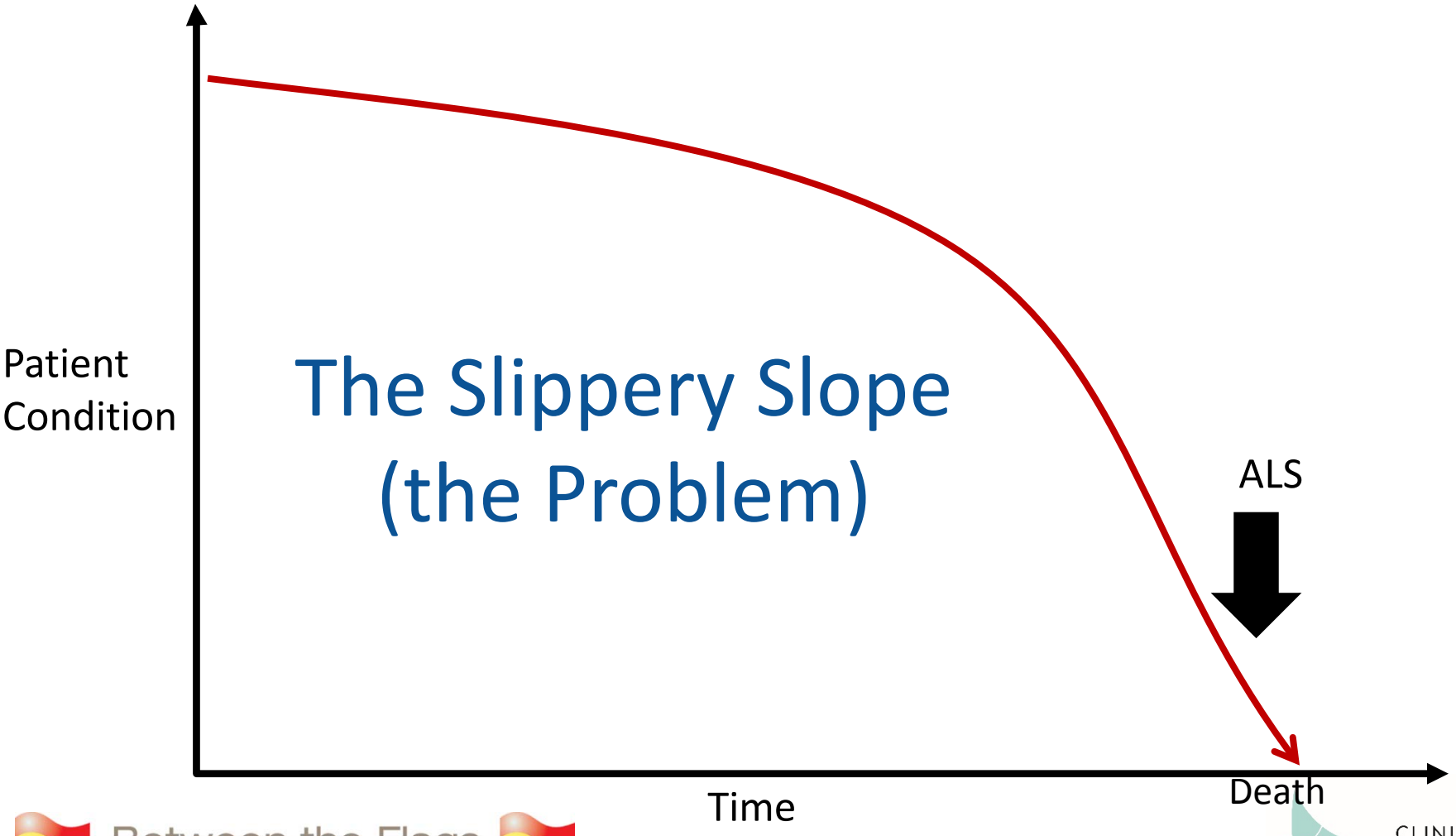
Clinical Excellence Commission

The Clinical Excellence Commission

is responsible for leading safety and quality

improvement in the NSW public health system

There's a problem…



Between the Flags
Keeping patients safe
A statewide initiative of the Clinical Excellence Commission

Source: Dr Charles Pain

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Ten years of quality and safety

What's the problem?

- Serious adverse events are common in hospitalized patients around the world [1-4]
- Documented warning signs in up to 80% [5-9]
- Early recognition and intervention improves outcomes [10-13]

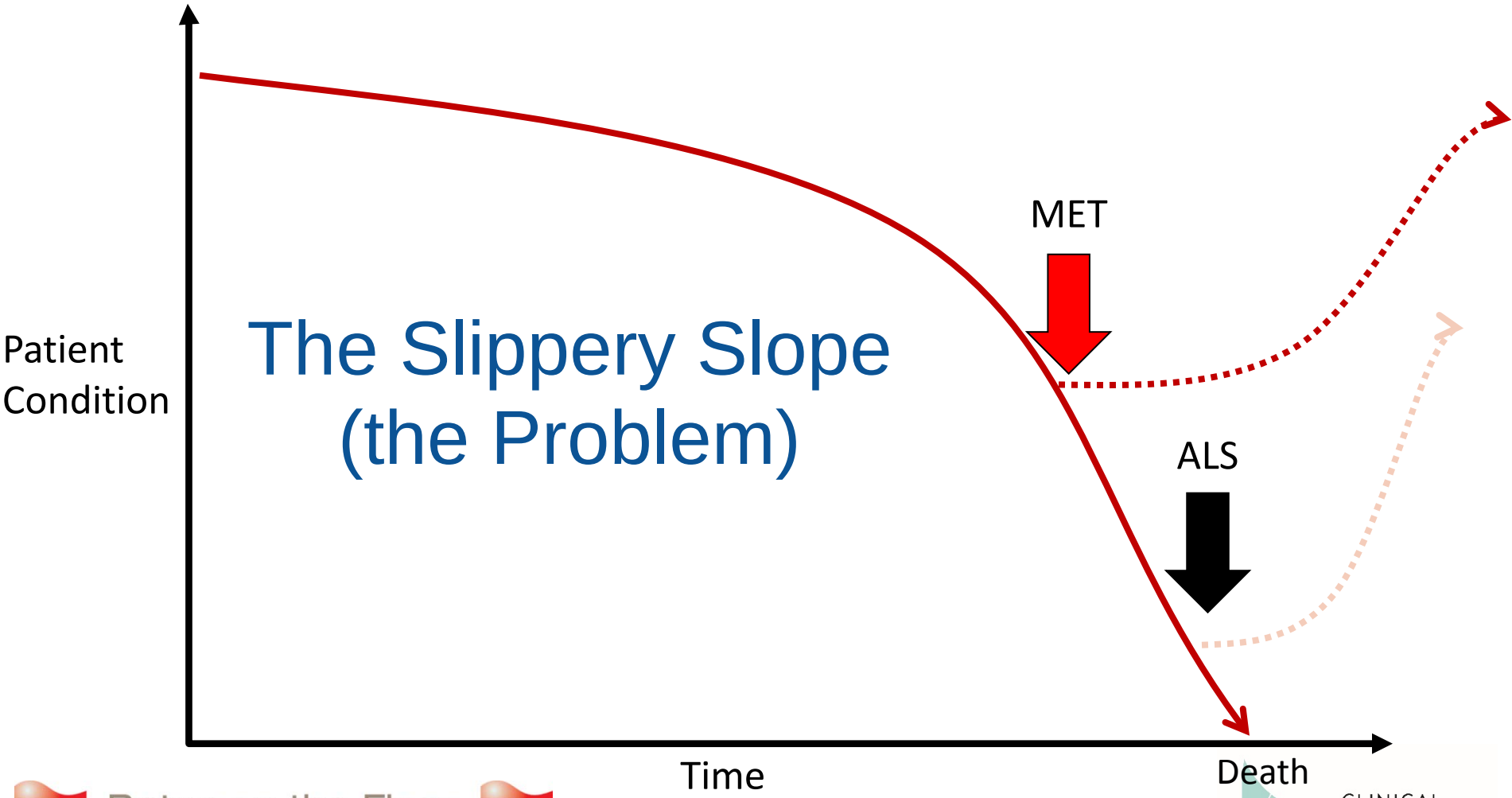
1 - 4 Wilson et al MJA 1992, Davis et al NZ Med J 1998, Brennan / Leape 1984, Baker etal 2000
5 - 9 Schein et al, Chest 1990, Buist et al MJA 1999, Hodgets et al Resus 2002, Nurmi et al Act Anaes Scan 2005, Bell et al Resus 2006
10 - 13 GISSI Am Heart J 1999, Rivers NEJM 2001, Nardi Min. Anest 2002, NINDS NEJM 1995

The solution

- Medical Emergency Team (MET) concept developed by Professor Ken Hillman [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
3. England et al, Critical Care 2008
4. IHI, 100,1000 lives campaign 2006

The solution?



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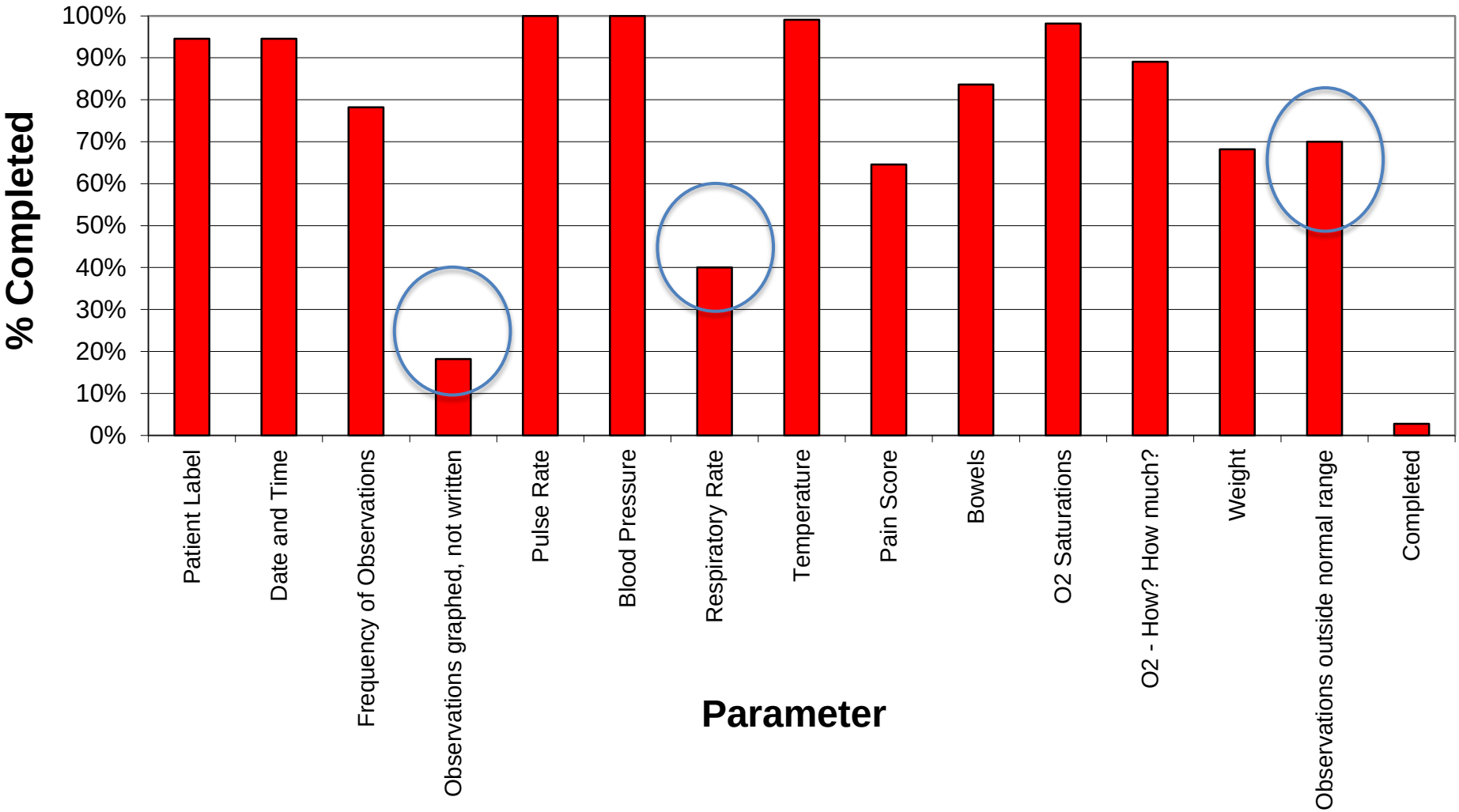
Completion of Observations



smh.com.au
The Sydney Morning Herald

How system fatally failed Vanessa

January 24, 2008 - 1:27PM
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.

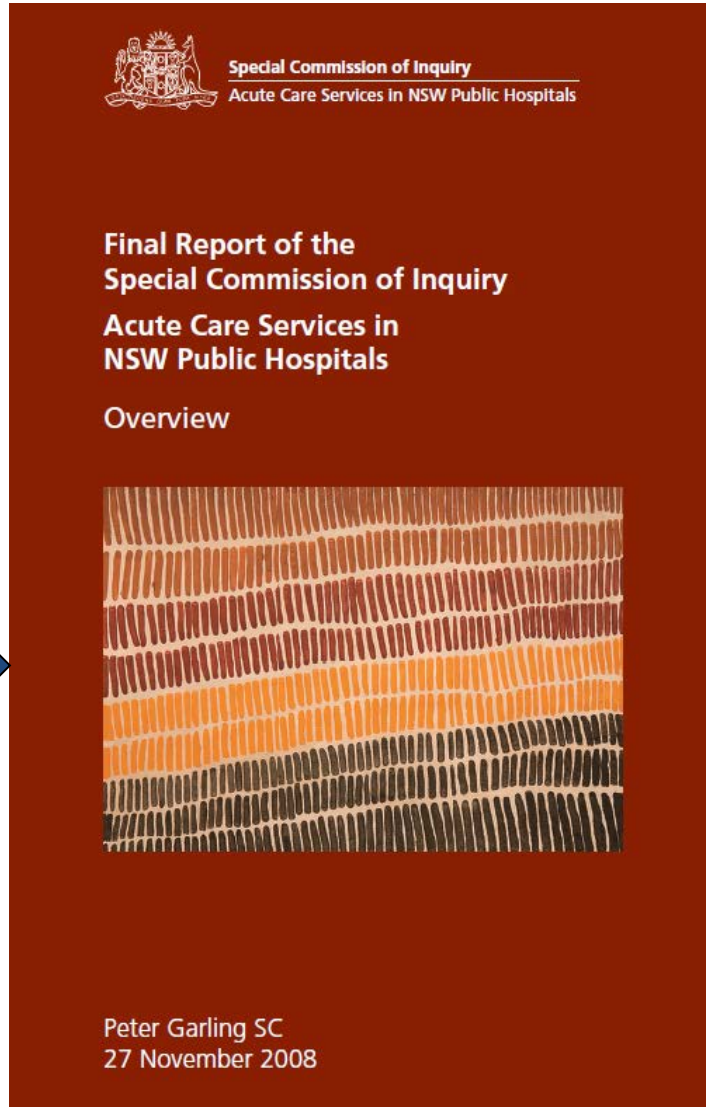
He indicated he would seek to appoint a high-profile lawyer such as Bret Walker, SC, to oversee the inquiry and has told his Health Minister, Reba Meagher, and the Director-General of Premier and Cabinet, Robyn Kruk, to finalise details within the

> *I have never seen a case such as Vanessa's in which almost every conceivable error or omission was detected and those errors continued to build one on top of the other*

Golf ball victim Vanessa Anderson.

Latest related coverage

- Iemma orders special inquiry into health system



Recommendation 91

A **system** to be put in place in NSW for the "detection of deteriorating patients", with the following elements:

- **early identification** of an at-risk patient;
- **escalation protocols** to manage deteriorating patients, which would include a rapid response system;
- detailed **education** and training programs, aimed at recognising and managing the deteriorating patient;
- **appropriate data** to monitor the implementation and progress of the program;
- **high level support** from management and clinicians;
- and ongoing **evaluation**.

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The NSW solution

Design a system to improve:

- prevention
- recognition
- escalation
- response

A Safety Net

Between the Flags

Keeping patients safe

Introduced in January 2010

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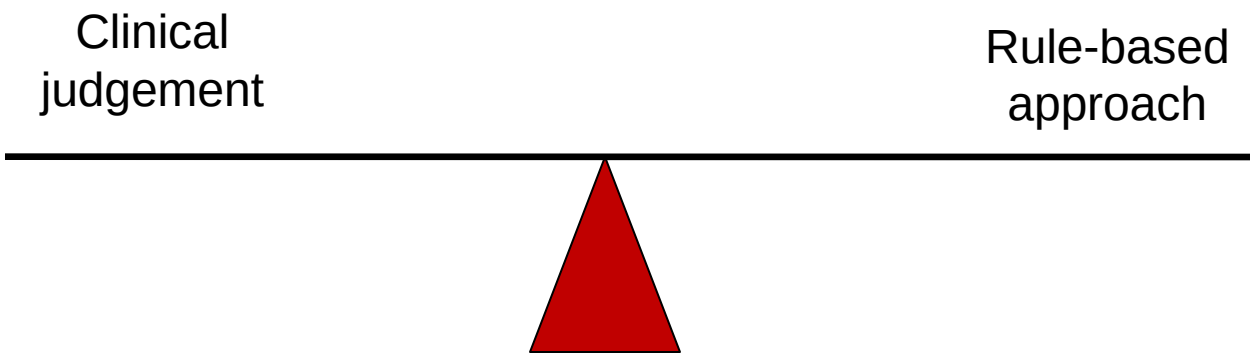
CEC approach

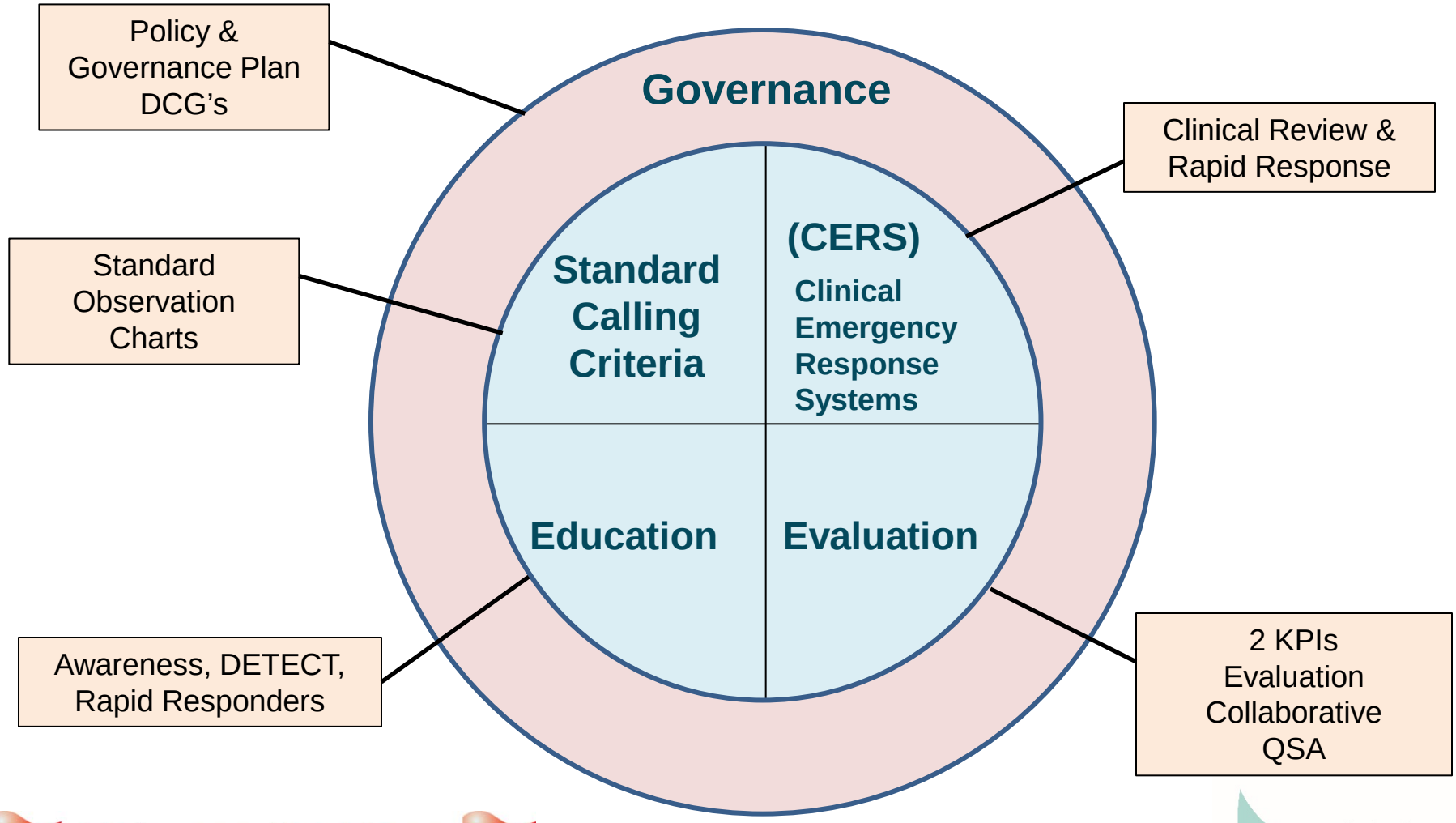
- Broad clinician engagement and consultation
- Keep it simple
- Standardisation across NSW
- Leadership and support centrally, BUT
- Allow facilities to customise their response
- Promote and support local clinical judgement

Striking the right balance



Source: Dr Charles Pain

The 5 Elements



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Source: Colette Duff

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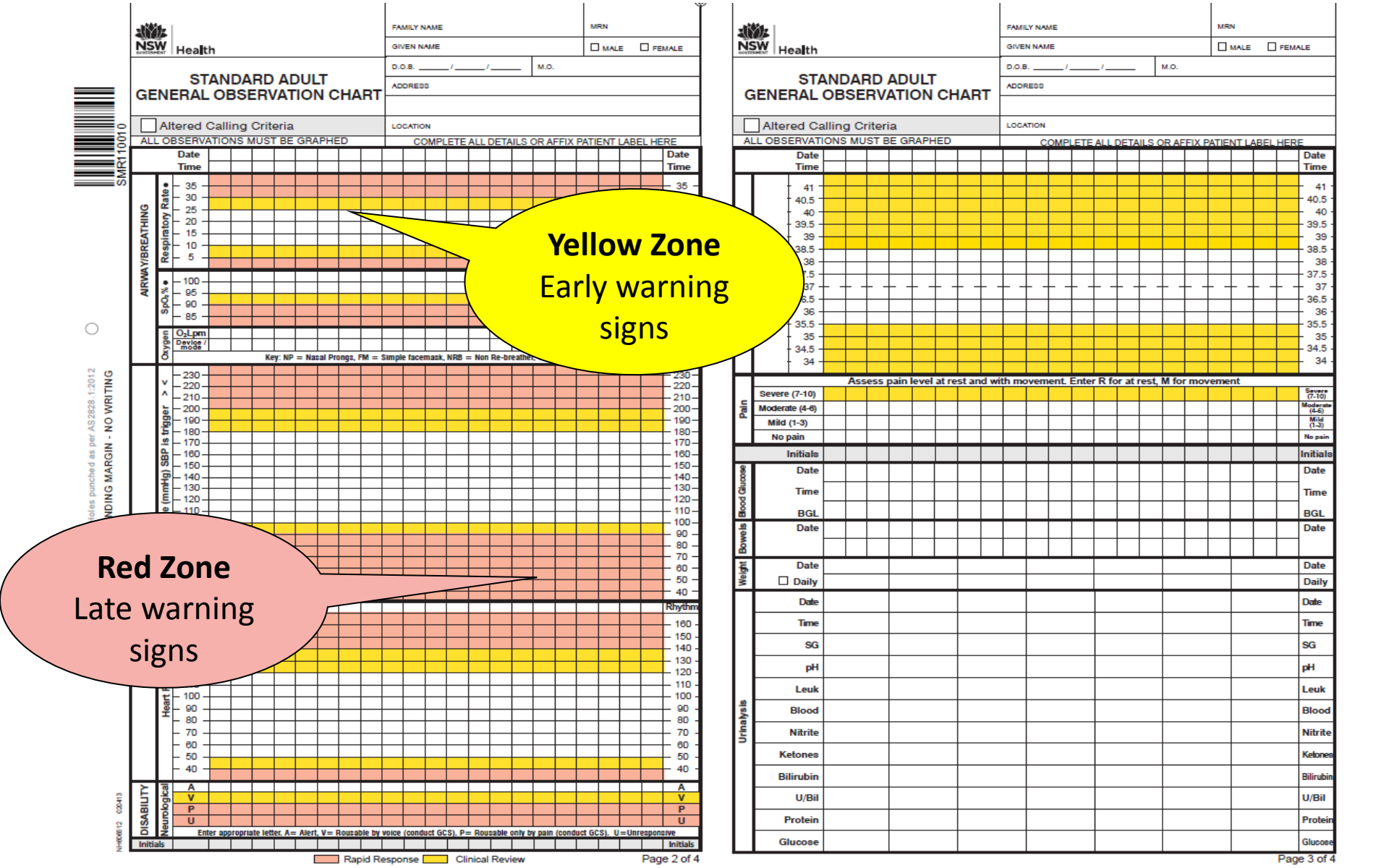
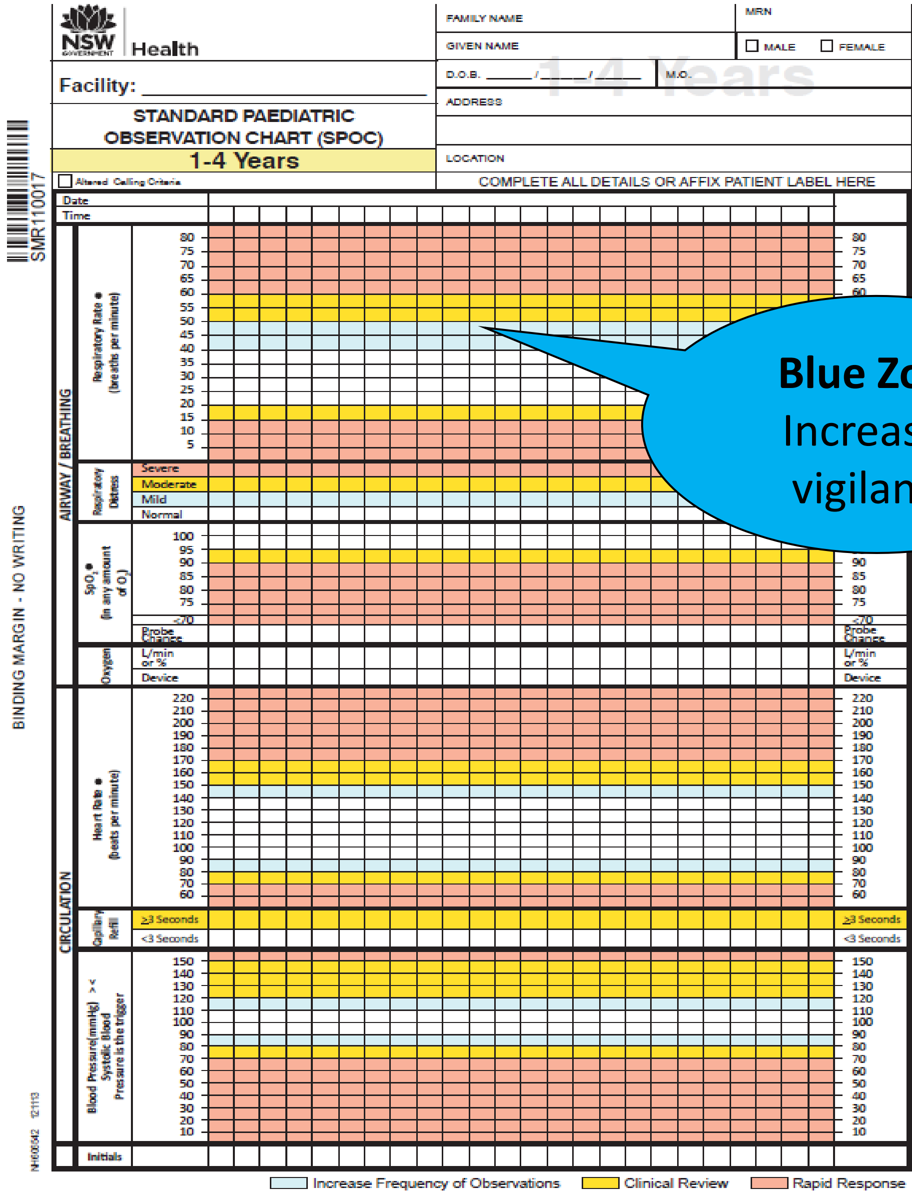
Standard Adult General Observation Chart

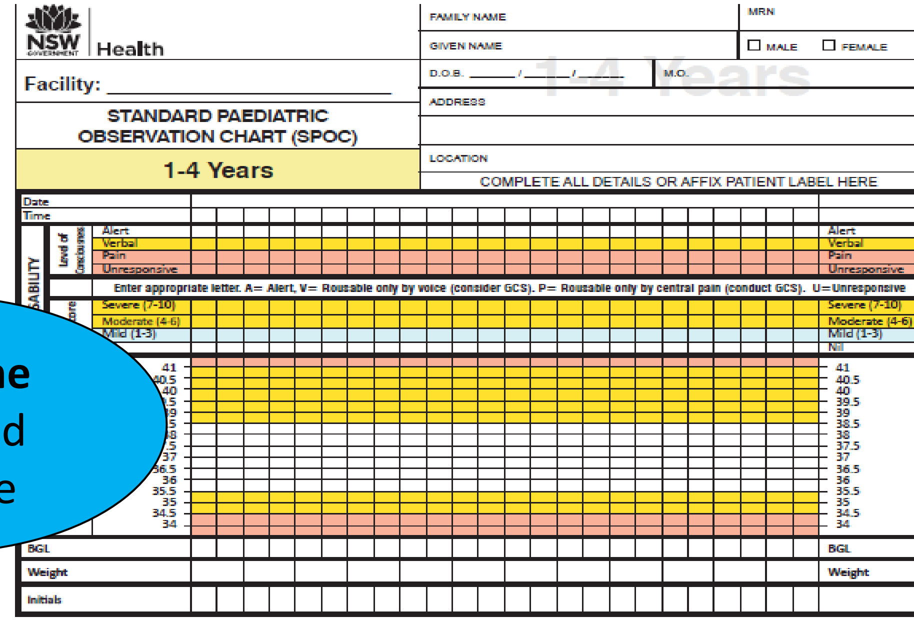


Yellow Zone
Early warning signs

Red Zone
Late warning signs

Standard Paediatric Observation Chart





CONSIDER EARLIER ESCALATION OF PATIENTS WITH

- Chronic or complex conditions
- Post-operative
- Pre-Existing cardiac or respiratory conditions
- Opioid Infusions

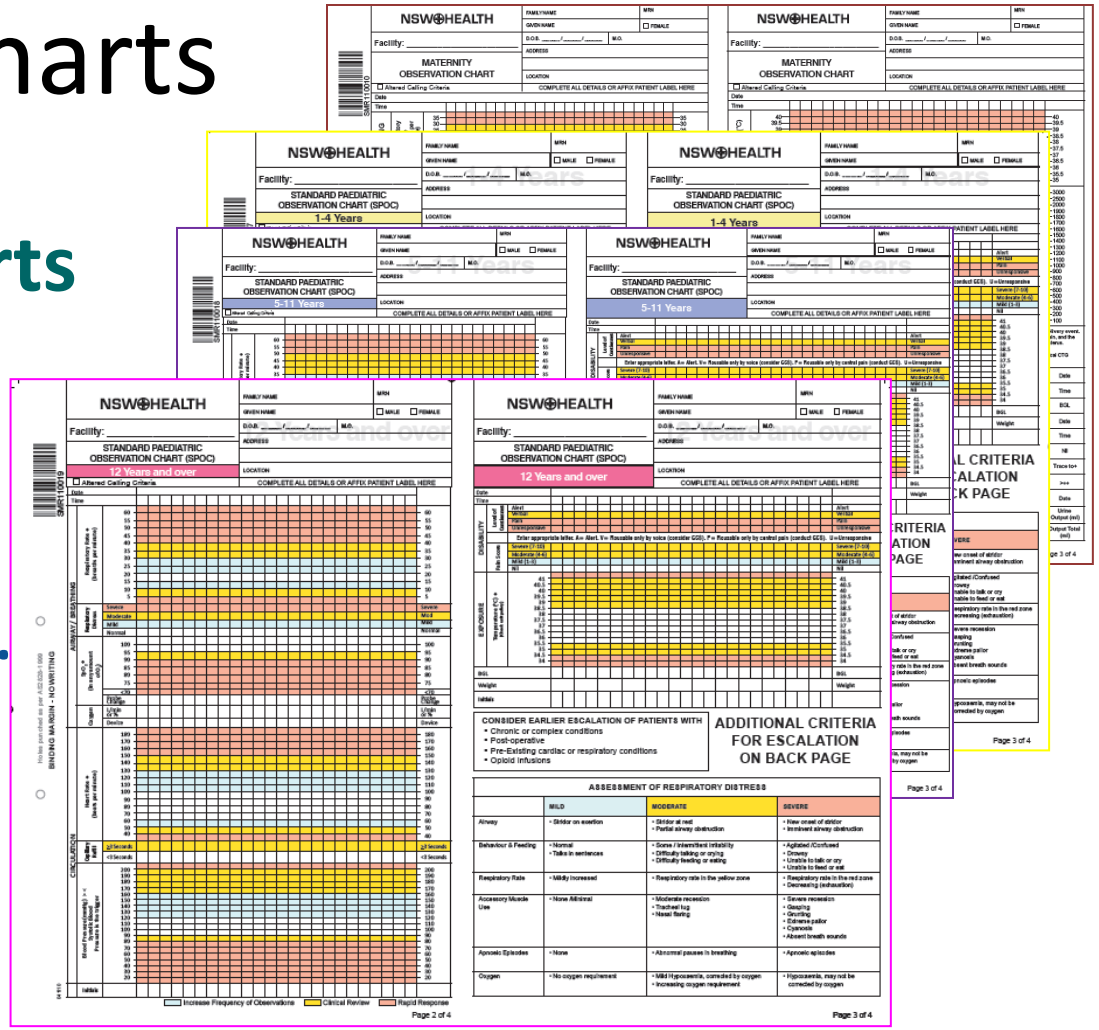
ADDITIONAL CRITERIA FOR ESCALATION ON BACK PAGE

ASSESSMENT OF RESPIRATORY DISTRESS

	MILD	MODERATE	SEVERE
Airway	• Stridor on exertion	• Stridor at rest • Partial airway obstruction	• New onset of stridor • Imminent airway obstruction
Behaviour & Feeding	• Normal • Talks in sentences	• Some / Intermittent irritability • Difficulty talking or crying • Difficulty feeding or eating	• Agitated /Confused • Drowsy • Unable to talk or cry • Unable to feed or eat
Respiratory Rate	• Mildly increased	• Respiratory rate in the yellow zone	• Respiratory rate in the red zone • Decreasing (exhaustion)
Accessory Muscle Use	• None /Minimal	• Moderate recession • Tracheal tug • Nasal flaring	• Severe recession • Gasping • Grunting • Extreme pallor • Cyanosis • Absent breath sounds
Apnoeic Episodes	• None	• Abnormal pauses in breathing	• Apnoeic episodes
Oxygen	• No oxygen requirement	• Mild Hypoxaemia, corrected by oxygen • Increasing oxygen requirement	• Hypoxaemia, may not be corrected by oxygen

Observation Charts

- 5 Paediatric Charts
- Neonatal
- Maternity
- Emergency Dept.



Standard Paediatric Observation Chart

NSW Health

Facility: ______________________

STANDARD PAEDIATRIC OBSERVATION CHART (SPOC)

1-4 Years

☐ Altered Calling Criteria

FAMILY NAME | MRN

GIVEN NAME | ☐ MALE ☐ FEMALE

D.O.B. ____/____/____ | M.O.

ADDRESS

LOCATION

COMPLETE ALL DETAILS OR AFFIX PATIENT LABEL HERE

SMR110017

BINDING MARGIN - NO WRITING

Date

Time

AIRWAY / BREATHING

Respiratory Rate (breaths per minute): 80, 75, 70, 65, 60, 55, 50, 45, 40, 35, 30, 25, 20, 15, 10, 5

Respiratory Distress: Severe, Moderate, Mild, Normal

SpO_2 (in any amount of O_2): 100, 95, 90, 85, 80, 75, <70

Probe Change

Oxygen: L/min or %, Device

CIRCULATION

Heart Rate (beats per minute): 220, 210, 200, 190, 180, 170, 160, 150, 140, 130, 120, 110, 100, 90, 80, 70, 60

Capillary Refill: ≥3 Seconds, <3 Seconds

Blood Pressure (mmHg) Systolic Blood Pressure is the trigger: 150, 140, 130, 120, 110, 100, 90, 80, 70, 60, 50, 40, 30, 20, 10

Initials

Blue Zone
Increased vigilance

☐ Increase Frequency of Observations ☐ Clinical Review ☐ Rapid Response

NH606042 121113

NSW Health

Facility: ______________________

STANDARD PAEDIATRIC OBSERVATION CHART (SPOC)

1-4 Years

FAMILY NAME | MRN

GIVEN NAME | ☐ MALE ☐ FEMALE

D.O.B. ____/____/____ | M.O.

ADDRESS

LOCATION

COMPLETE ALL DETAILS OR AFFIX PATIENT LABEL HERE

Date

Time

DISABILITY

Level of Consciousness: Alert, Verbal, Pain, Unresponsive

Enter appropriate letter. A= Alert, V= Rousable only by voice (consider GCS). P= Rousable only by central pain (conduct GCS). U=Unresponsive

Pain Score: Severe (7-10), Moderate (4-6), Mild (1-3), Nil

Temperature: 41, 40.5, 40, 39.5, 39, 38.5, 38, 37.5, 37, 36.5, 36, 35.5, 35, 34.5, 34

BGL

Weight

Initials

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Oxygen	• No oxygen requirement	• Mild Hypoxaemia, corrected by oxygen • Increasing oxygen requirement	• Hypoxaemia, may not be corrected by oxygen

Blue Zone Response

IF A CHILD HAS ANY ONE BLUE ZONE OBSERVATIONS YOU MUST

1. Initiate appropriate clinical care
2. Increase the frequency of observations as indicated by your patient's clinical condition
3. Manage anxiety, pain and review oxygenation in consultation with the **NURSE IN CHARGE**
4. You may call for a Clinical Review or Rapid Response at any time if worried about a patient or are unsure whether to call

Consider the following:

1. What is the usual for your patient or if there are any documented 'ALTERATIONS TO CALLING CRITERIA'?
2. Does the abnormal observation reflect deterioration in your patient?
3. Is there an adverse trend in observations?

Clinical Review Criteria

- Any Observation in the Yellow Zone
- Increasing oxygen requirement
- Poor peripheral circulation
- Excess or increasing blood loss
- Decrease in level of consciousness or new onset of confusion
- Low urine output <100ml over 4 hours or less than 0.5mL/kg/hr (via IDC) for 4 hours
- Polyuria, urine output >200mL /hr for 2 hours (in the absence of diuretics)
- Greater than expected fluid loss from a drain
- New, increasing or uncontrolled pain (including chest pain)
- Blood Glucose Level <4mmol/L or >20mmol/L with no decrease in Level of Consciousness
- Ketonaemia >1.5mmol/L or Ketonuria 2+ or more
- Concern by patient or family member
- Concern by any staff member

IF A PATIENT HAS ANY ONE (1) OR MORE CLINICAL REVIEW CRITERIA PRESENT, YOU MUST CONSULT PROMPTLY WITH THE NURSE IN CHARGE AND ASSESS WHETHER A CLINICAL REVIEW IS NEEDED AND

1. You must initiate appropriate clinical care
2. Increase the frequency of observations as indicated by the patient's condition, but at a minimum repeat within 30 minutes.
3. If Clinical Review is not attended within 30 minutes, escalate to Rapid Response
4. Inform the Attending Medical Officer as soon as practicable
5. Document A-G assessment, treatment, escalation process and outcome in the clinical record

To determine if a Clinical Review is required you should consider:

- Do you continue to be worried about your patient
- What is usual for the patient and whether there are altered calling criteria or an Advance Care Directive
- Whether there is an adverse trend in observations

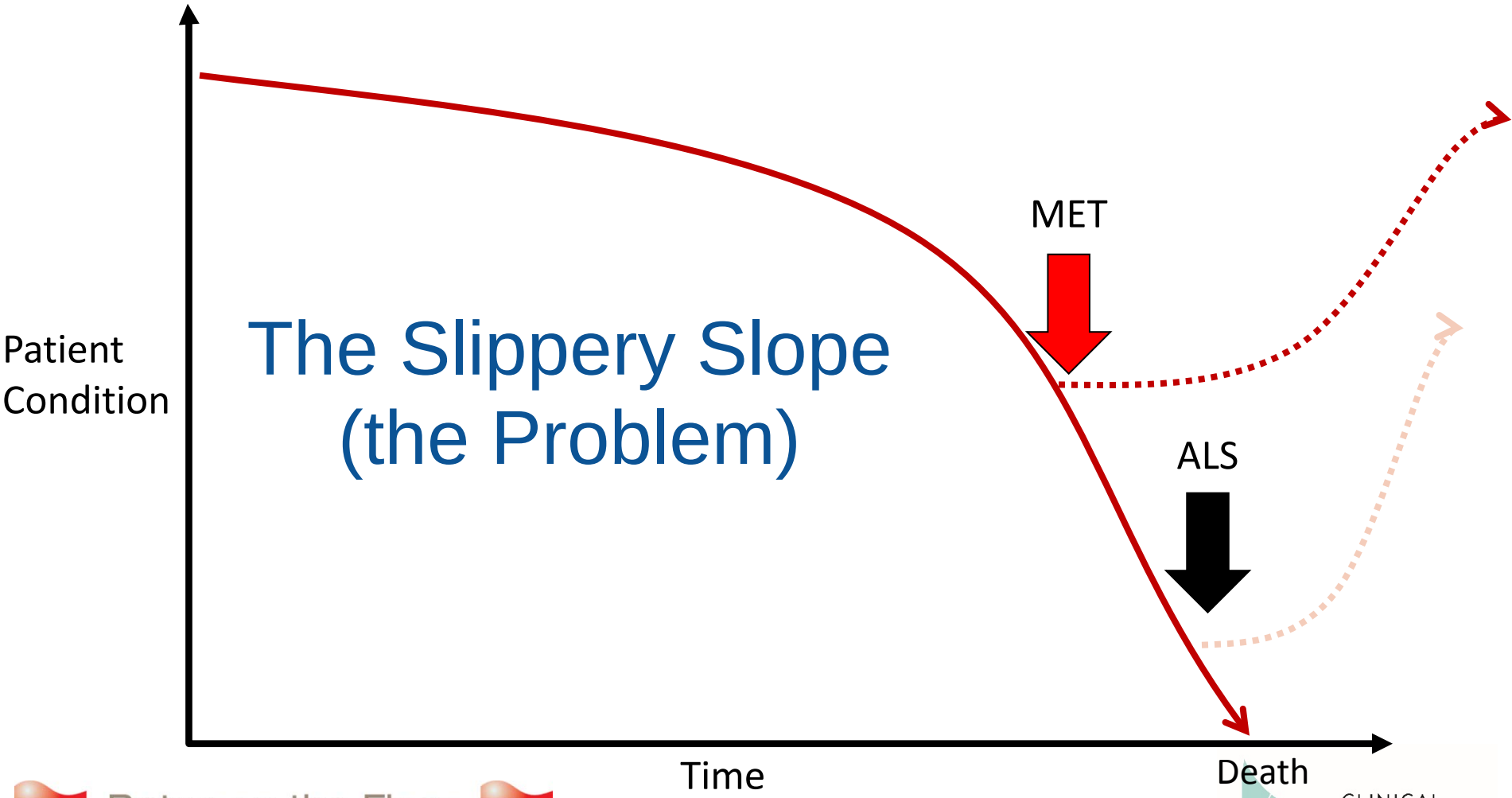
Rapid Response Criteria

- All cardiac or respiratory arrests
- Airway obstruction or stridor
- Unresponsive
- Any observation in the Red Zone
- Deterioration not reversed within one hour of Clinical Review
- Increasing oxygen requirement to maintain oxygen saturations greater than 90%
- Patient deteriorates further before, during or after Clinical Review
- Arterial Blood Gas: $P_aO2 < 60$ or $P_aCO2 > 60$ or pH <7.2 or BE<-5
- Venous Blood Gas: $P_vCO2 > 65$ or pH <7.2
- Only responds to Pain (P) or sudden decrease in Level of Consciousness on the GCS of 2 or more points
- Seizures
- Low urine output < 200mL over 8 hours or < 0.5mL/kg/hr (via IDC) persisting for 8 hours
- Blood Glucose level less than 4 mmol/L or >20mmol/L with a decreased level of consciousness
- Lactate ≥ 4 mmol/L
- Serious concern by any patient or family member
- Serious concern by any staff member

IF A PATIENT HAS ANY ONE (1) RAPID RESPONSE CRITERION PRESENT, CALL FOR A RAPID RESPONSE AND YOU MUST

1. Initiate appropriate clinical care
2. Inform the Nurse in Charge
3. Repeat and increase the frequency of observations as per local CERS protocol
4. Inform the Attending Medical Officer as soon as practicable
5. Document A-G assessment, treatment, escalation process and outcome in the clinical record

The past



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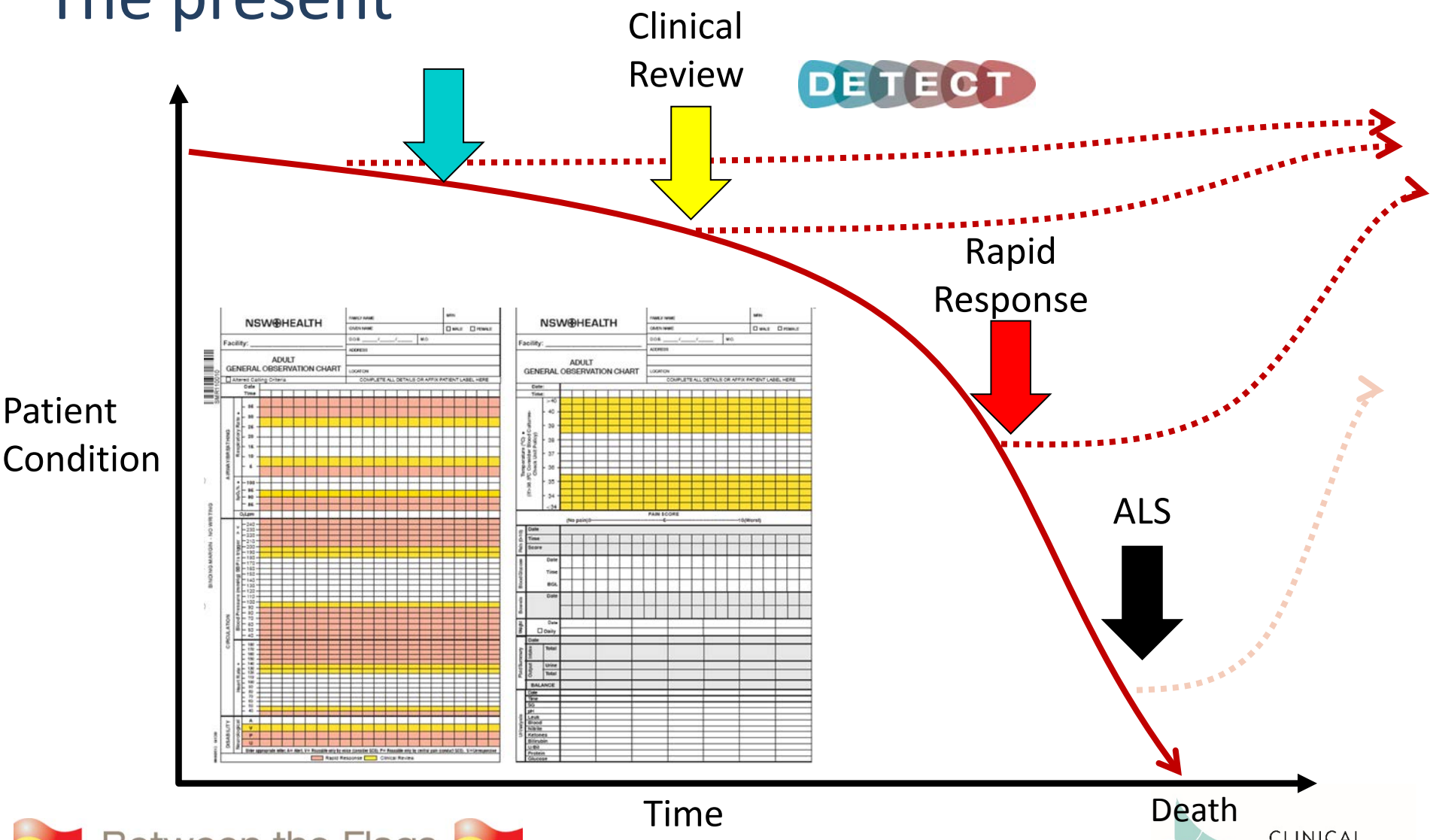
Source: Dr Charles Pain

The present



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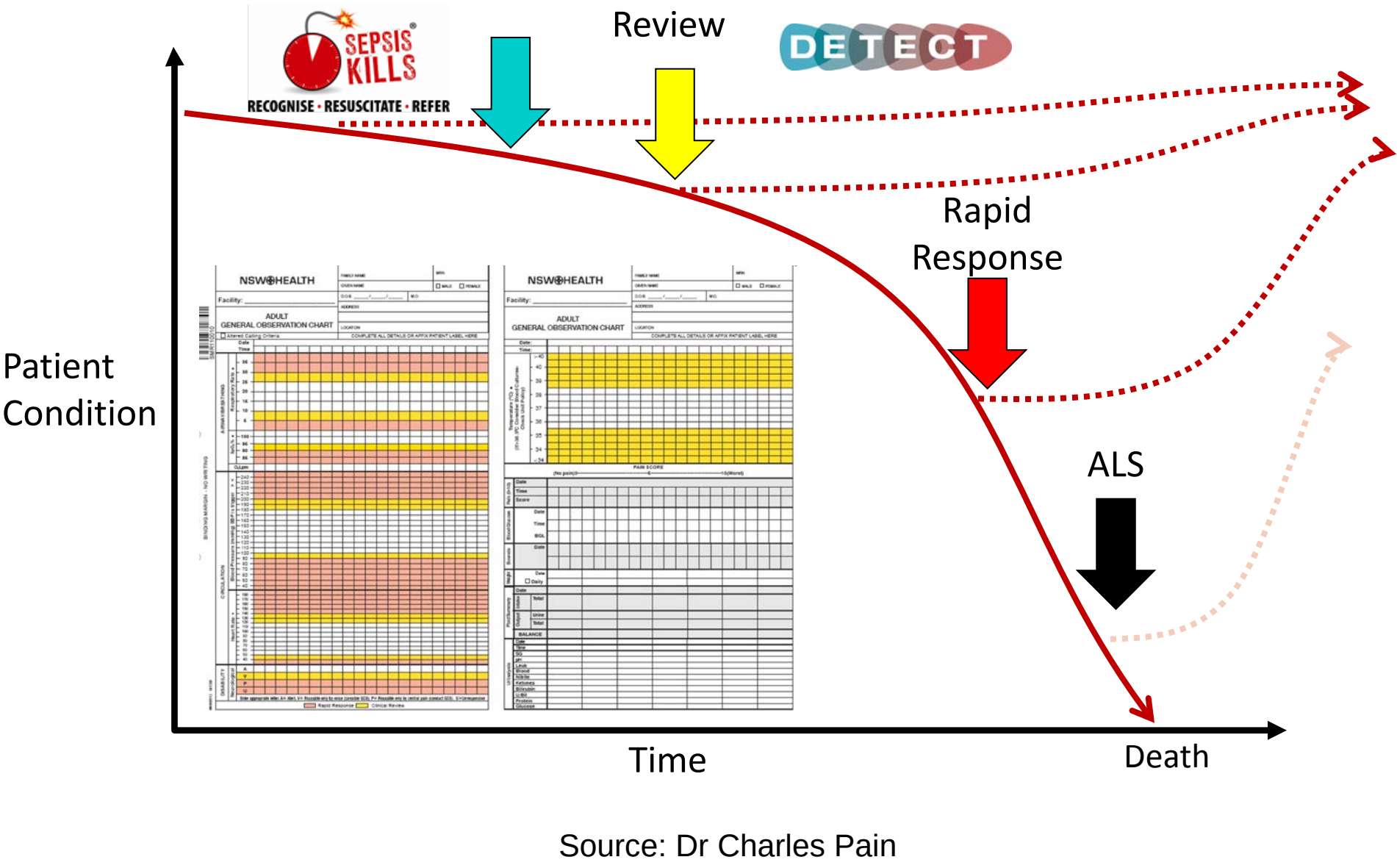
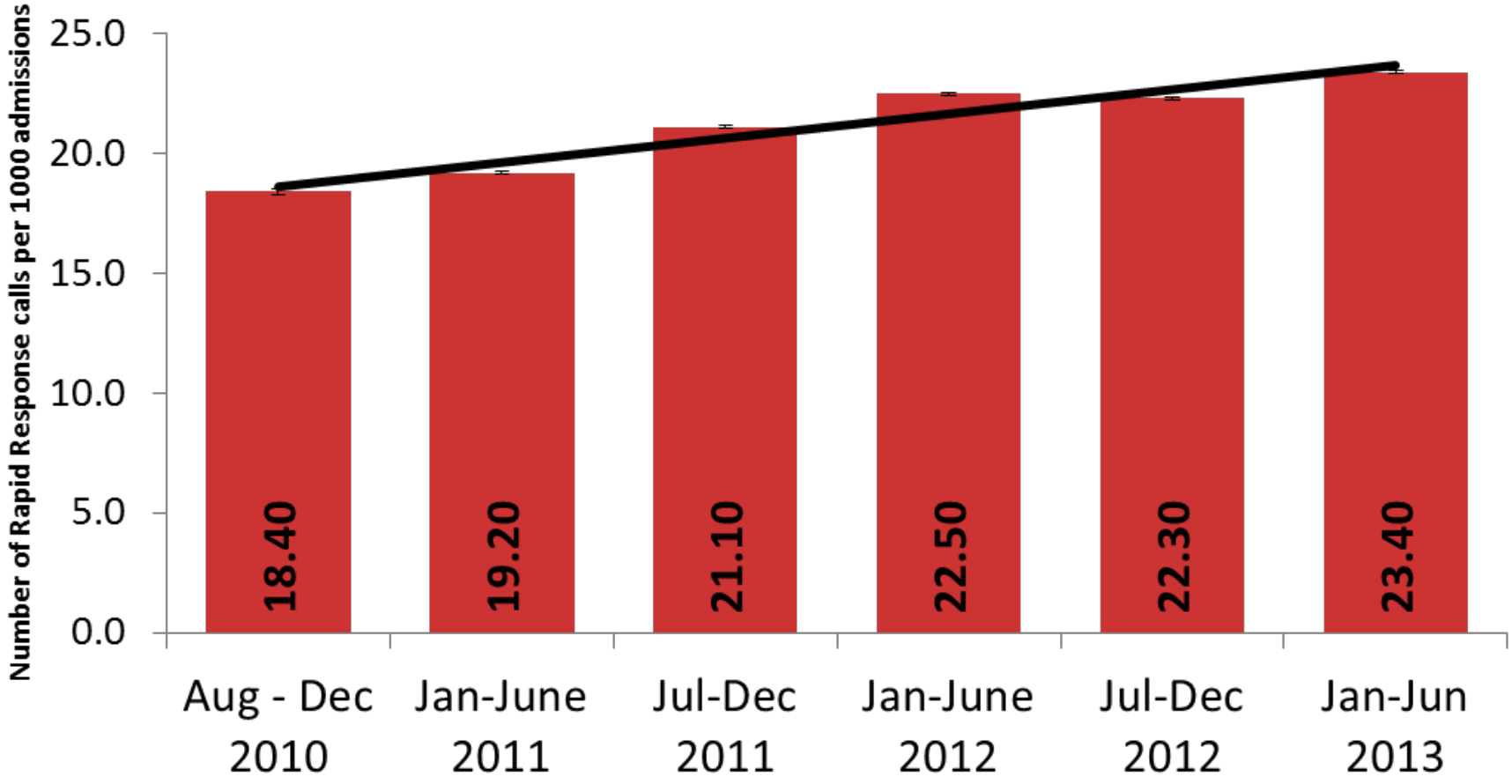
The future



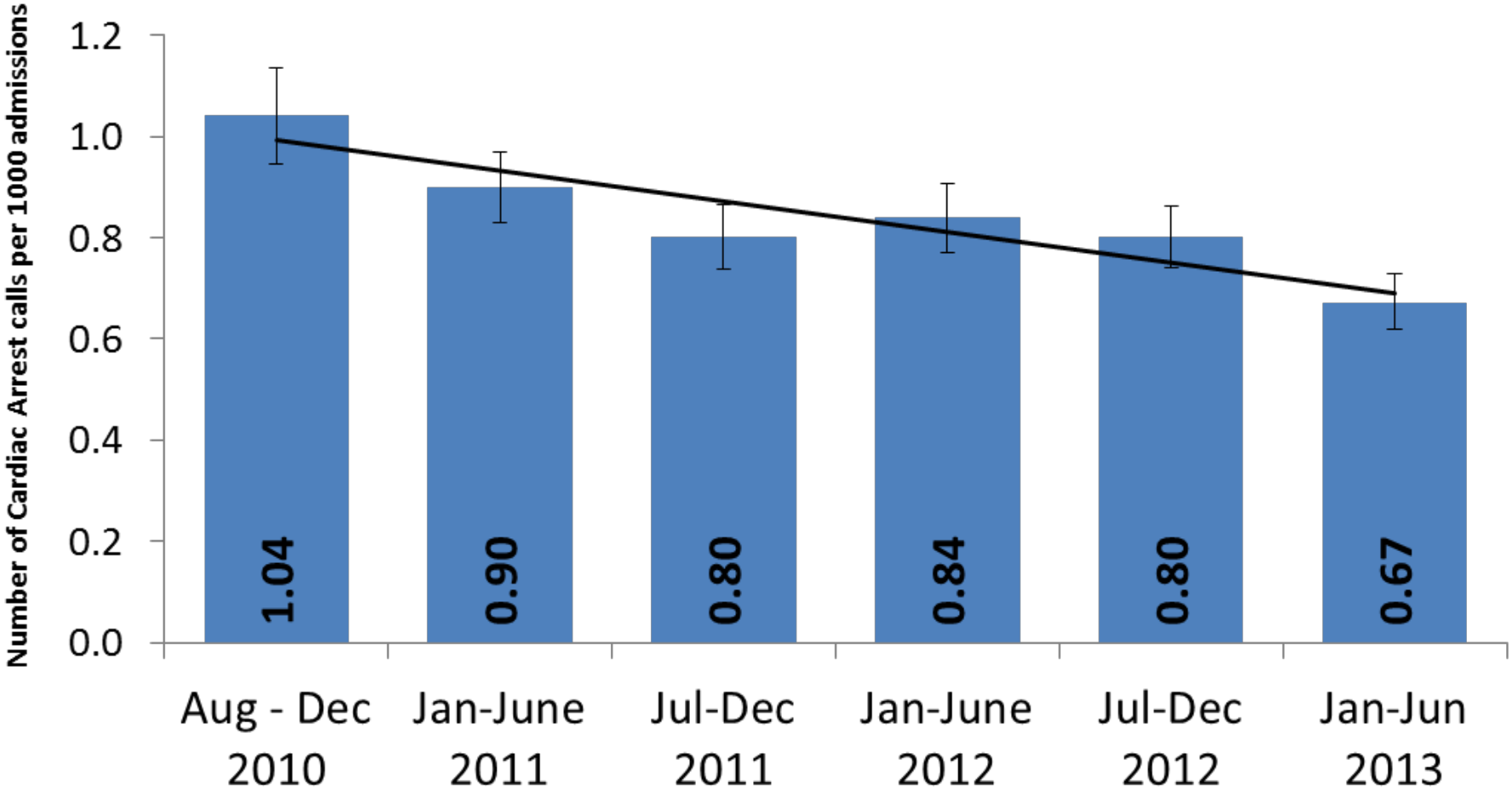
Source: Dr Charles Pain

New South Wales - Pulic Health Facilities
Rapid Response calls per 1000 admissions

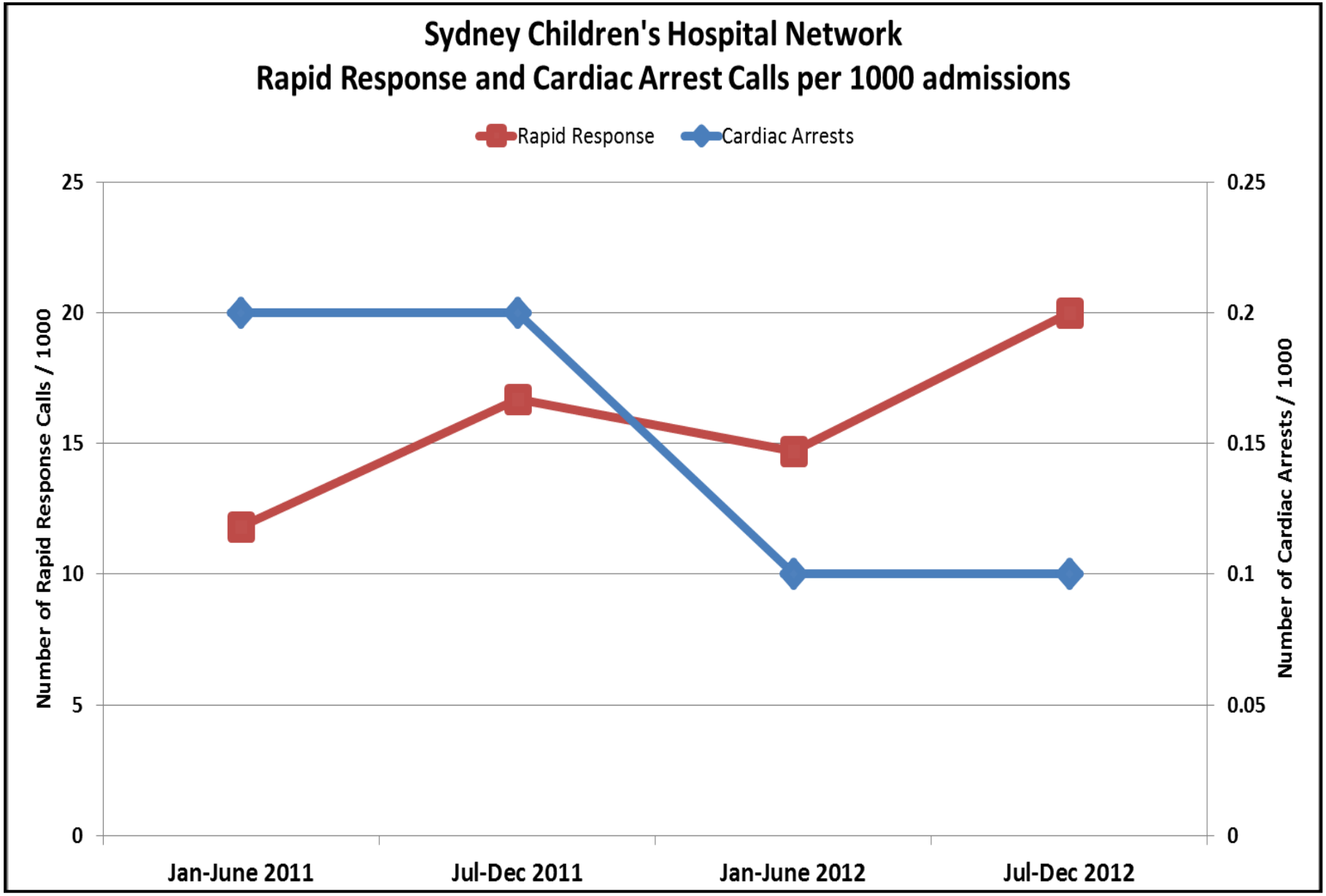


For every 1000 patients that are admitted to hospital there are *(number within columns on graph)* ***Rapid Response calls to late signs of deterioration***

New South Wales - Pulic Health Facilities
Cardiac Arrest calls per 1000 admissions



For every 1000 patients that are admitted to hospital there are *(number within columns on graph)* ***Cardiac Arrest calls***


Sydney Children's Hospital Network
Rapid Response and Cardiac Arrest Calls per 1000 admissions
Rapid Response
Cardiac Arrests
Number of Rapid Response Calls / 1000
Number of Cardiac Arrests / 1000
25
20
15
10
5
0
0.25
0.2
0.15
0.1
0.05
0
Jan-June 2011
Jul-Dec 2011
Jan-June 2012
Jul-Dec 2012

Lessons learned

- Even in large campaigns local leadership is key to success
- Build a guiding coalition of clinicians, managers and administrators
- Large scale transformation starts at the front line
- Governance framework is key
- Engage, consult, collaborate
- Standardize what you can
- Staged implementation- Start small and pilot
- Strike the right balance between clinical judgement and rules

Questions

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