

Queensland Health

patientsafety
centre

Children's Early Warning Tool A CEWT Solution to an Ugly Problem

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Problem Identified

- Following a number of Root Cause Analyses in Queensland Health there became an awareness that medical and nursing staff were having difficulty in managing serious illness or deteriorating patients (all levels)
 - **Recognition**
 - **Communication**
 - **Human Factors**

Recurring Themes

■ Recognition

- Lack of bedside seniority
- Supervision and education of junior medical and nursing staff
- Skill-mix
- Patient-mix (out lies)

■ Communication

- Graded assertiveness/authority gradient/empowerment
- Hierarchical system
- 'Silo' mentality

■ Human Factors

- Design issues (column documentation)
- Visually difficult
- Handovers
- Fatigue
- Knowledge/experience base (rural/remote)



Children's Early Warning Tool - Objectives

- To design a suite of tools to meet the needs of bedside clinicians
 - Observation chart
 - Reference ranges for age
 - Early warning score
 - Clinical escalation
 - Tool to assess interventions
 - Customisable

Design

- Blank canvas
- What observations predict deterioration?
 - Normal ranges for age?
 - Single point vs. cumulative score? (both...?)
 - Weighting of observations
- What observations – pragmatic
- Human factors approach to design

Assessment of Interventions

Customizable

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CHILDREN'S EARLY WARNING TOOL (CEWT)
For children less than 1 year old

URN: _____ (Affix patient identification label here)
Family name: _____
Given names: _____
Date of birth: _____ Sex: M F
Facility: _____

A full CEWT score should be calculated: - on admission
- if patient is deteriorating (1 score, clinical concern)
- for all patients each morning

Aside from the above, do appropriate observations at a appropriate frequency for clinical state

Any abnormal observations should continue to be checked until normal

Any observations outside the range of the graph should be written as a number

Modifications

If abnormal observations are expected for patient's clinical condition, please note below accepted parameters for future calls

Respiratory rate	<input type="text"/>	to	<input type="text"/>	Doctor's name	Designation
SaO ₂	<input type="text"/>	to	<input type="text"/>	Doctor's signature	
Heart rate	<input type="text"/>	to	<input type="text"/>		Date Time
Blood pressure	<input type="text"/>	to	<input type="text"/>		

Interventions

1
2
3
4
5
6
7
8
9
10
11
12
13
14

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CEWT CLINICAL REVIEW

URN: _____ (Affix patient identification label here)
Family name: _____
Given names: _____
Date of birth: _____ Sex: M F
Facility: _____

Review requested Date Time Ward doctor Registrar Emergency
Reason CEWT score Other (specify) _____

Review undertaken Date Time

	✓	Normal	Not examined	Abnormal	If abnormal, give details
Airway					
Breathing					
Circulation					
Neurology					
Abdomen					
Skin					
ENT					
Bones / Joints					

Impression: _____

Management
 Observe / No change
 Management changed (specify) _____

Doctor's name (please print) _____ Designation _____ Signature _____

Review requested Date Time Ward doctor Registrar Emergency
Reason CEWT score Other (specify) _____

Review undertaken Date Time

	✓	Normal	Not examined	Abnormal	If abnormal, give details
Airway					
Breathing					
Circulation					
Neurology					
Abdomen					
Skin					
ENT					
Bones / Joints					

Impression: _____

Management
 Observe / No change
 Management changed (specify) _____

Doctor's name (please print) _____ Designation _____ Signature _____

DO NOT WRITE IN THIS BINDING MARGIN

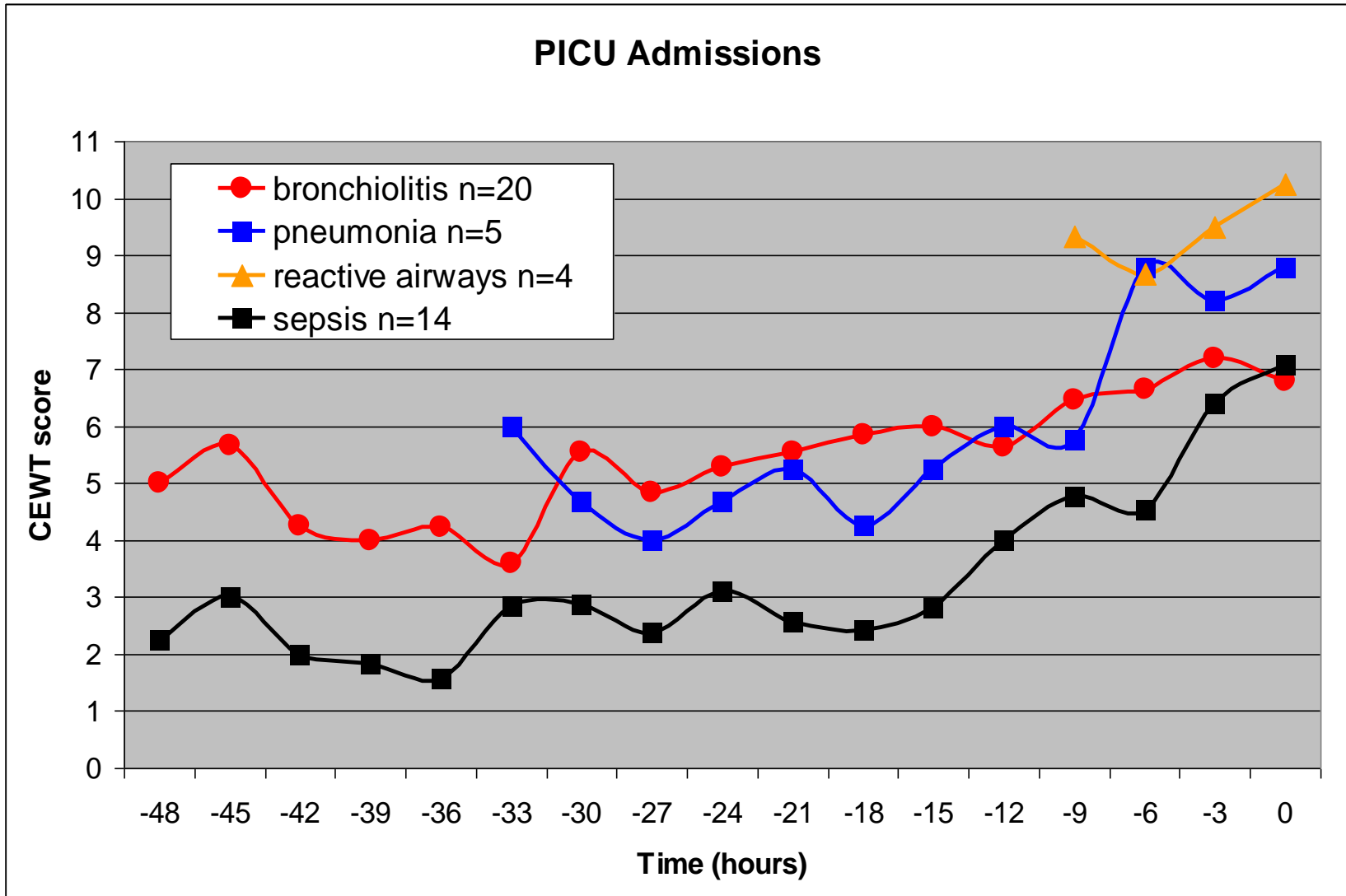


Validation

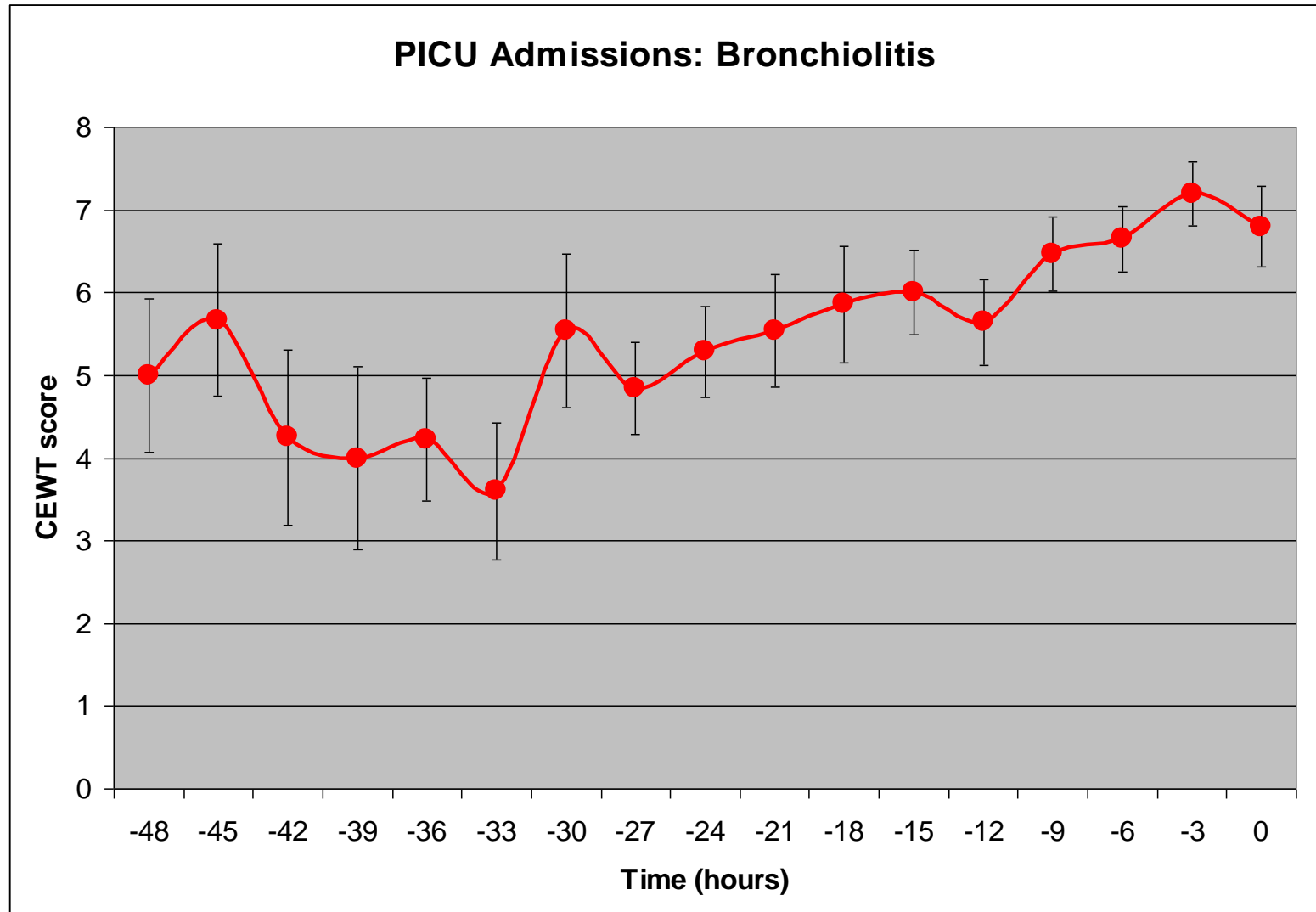
Retrospective

- All patients admitted to Paediatric Intensive Care Unit (PICU) from ward in 2007
- CEWT detected patients before PICU admission

Retrospective Validation

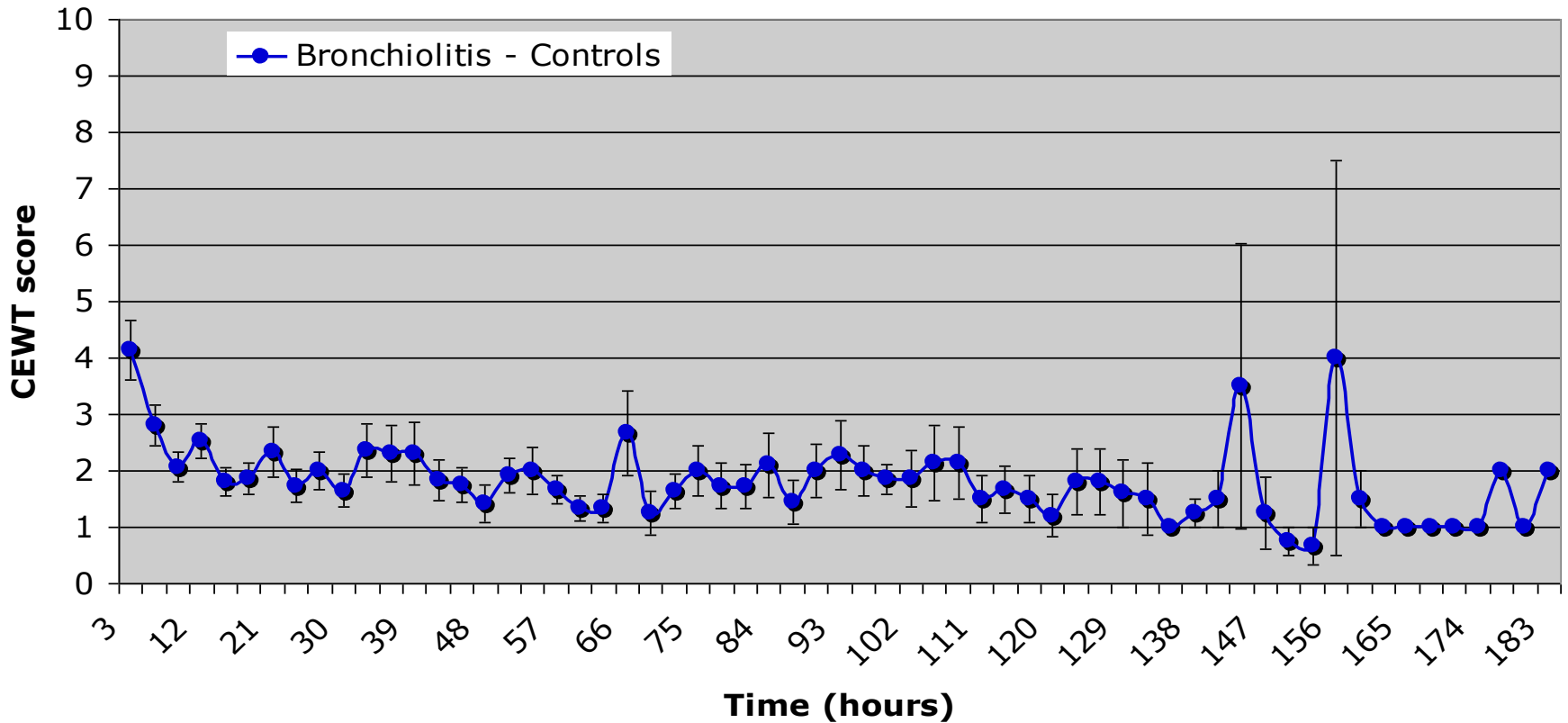


CEWT – Bronchiolitis



CEWT – Bronchiolitis Controls

Bronchiolitis - Controls



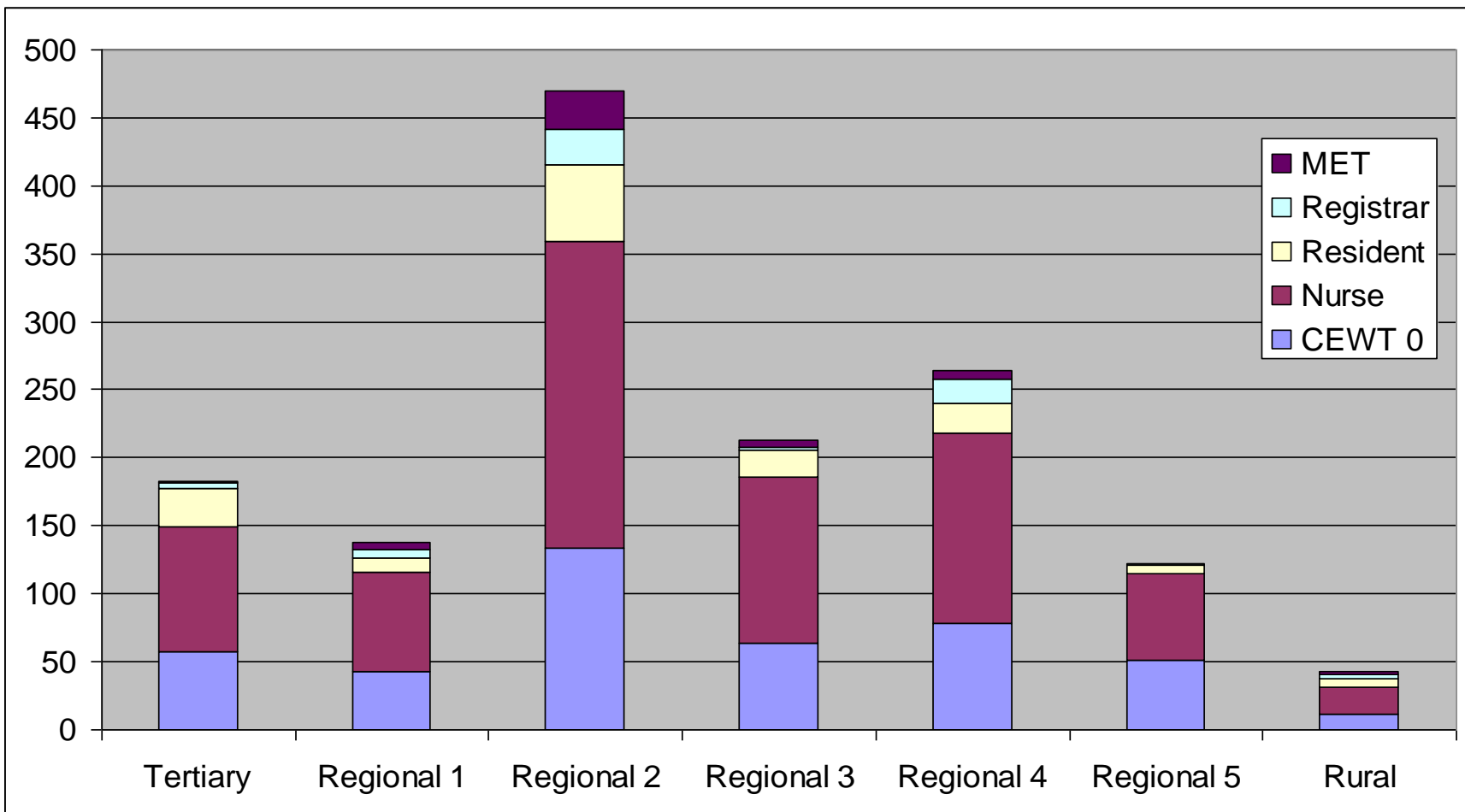
Validation

Prospective

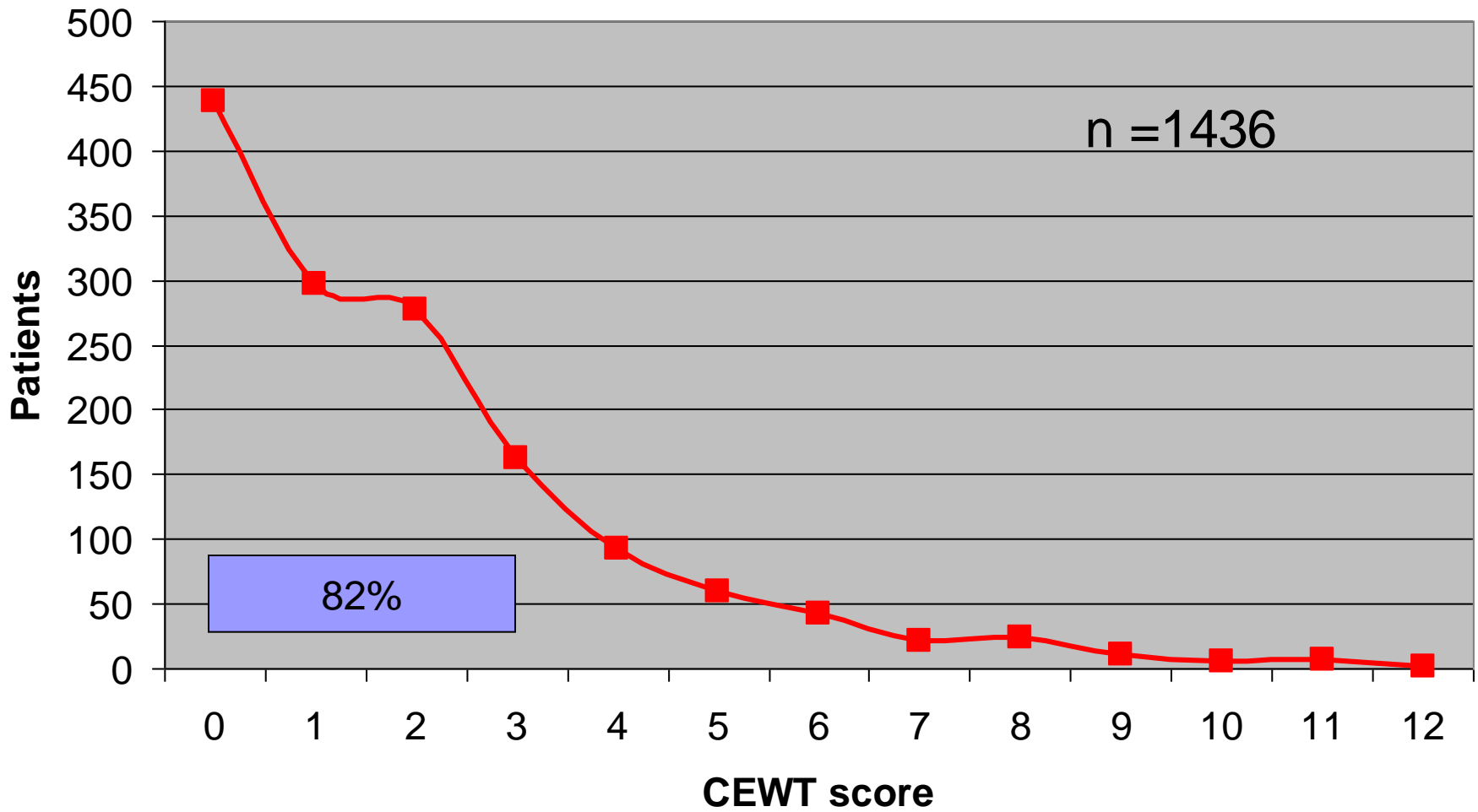
- Twelve pilot sites (tertiary / regional / rural)
 - Two month trial
 - Phased roll-out
- Semi-qualitative implementation study

Prospective Trial

- Approximately two thousand patients
- Currently data analysing
 - Optimise physiological weighting
 - Optimise action box (for different institutional capabilities)
- Impression is that scoring *seems* appropriate
- Two critical incidents
 - Patients had respiratory arrests
 - In both cases, CEWT had been overruled by registrar



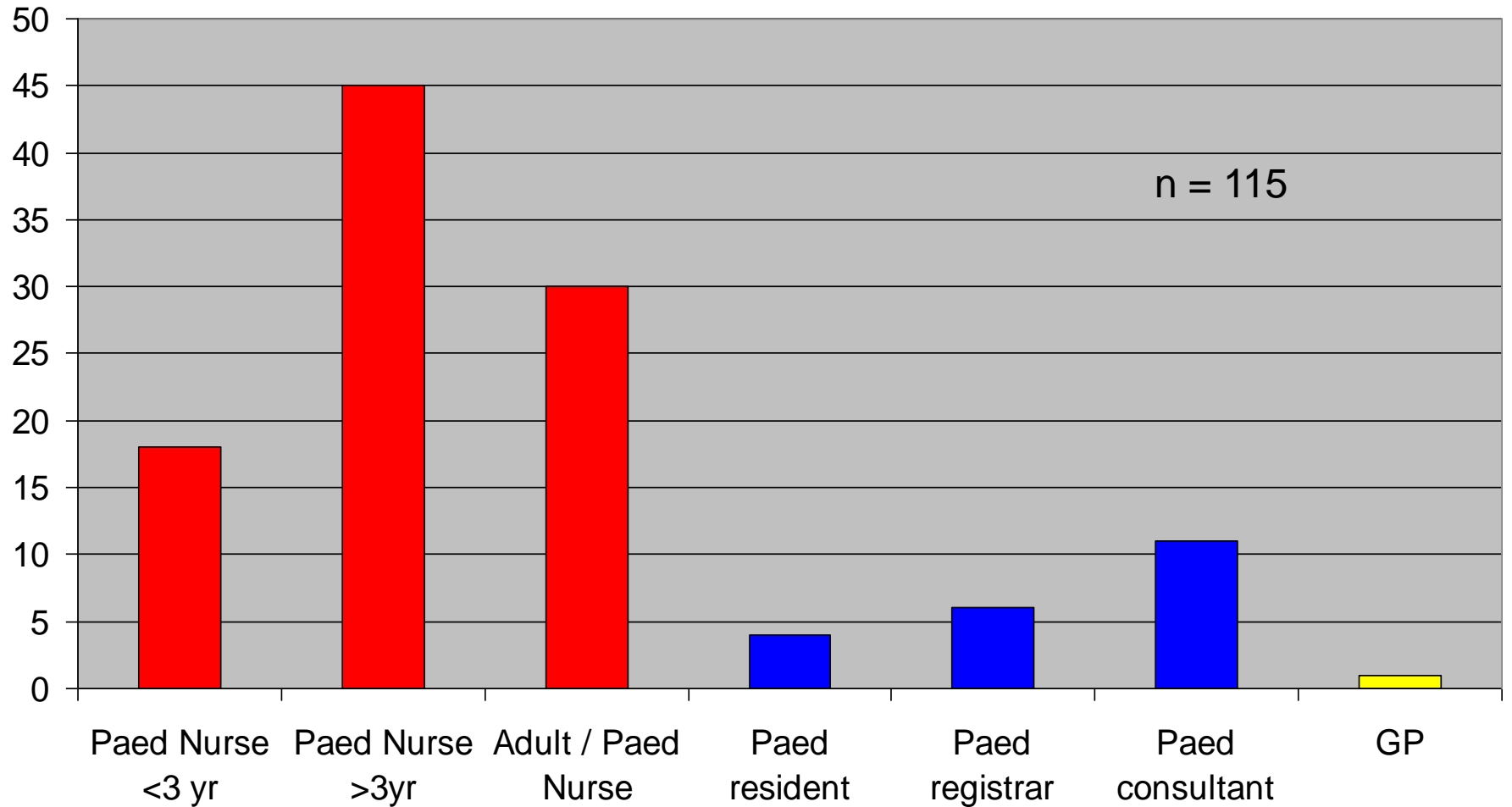
Maximum CEWT score



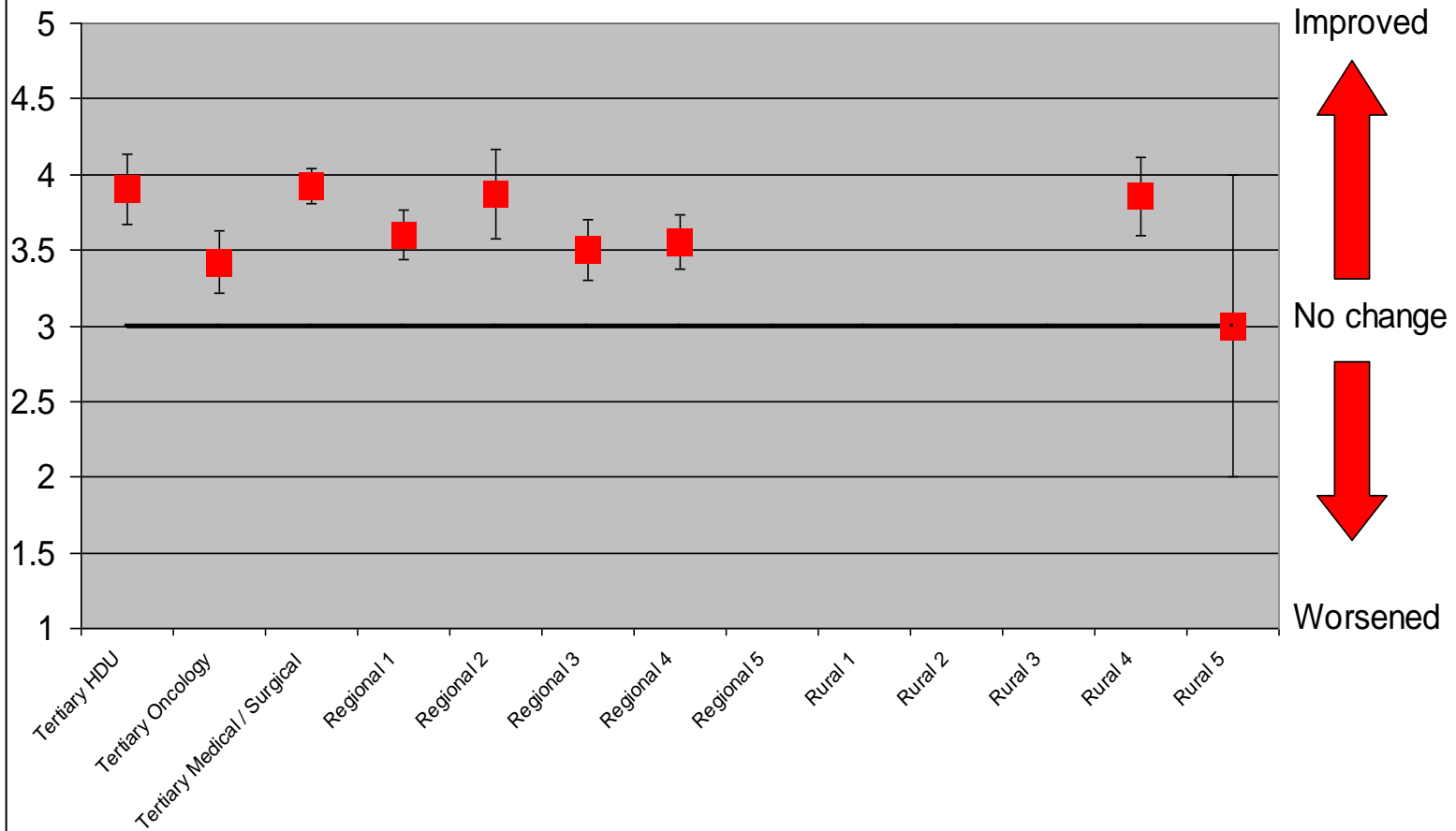


Survey Results

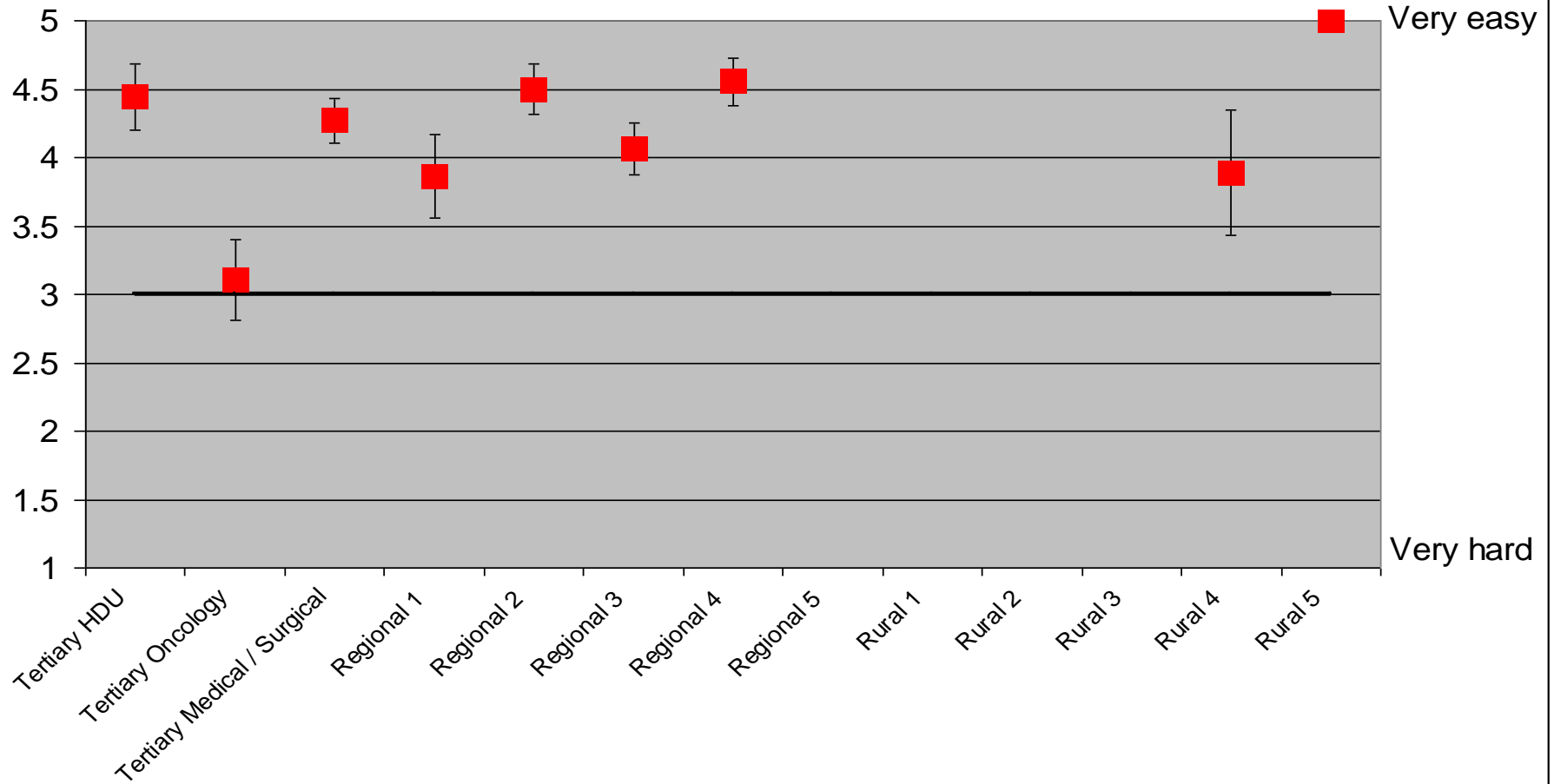
Children's Early Warning Tool - Respondents



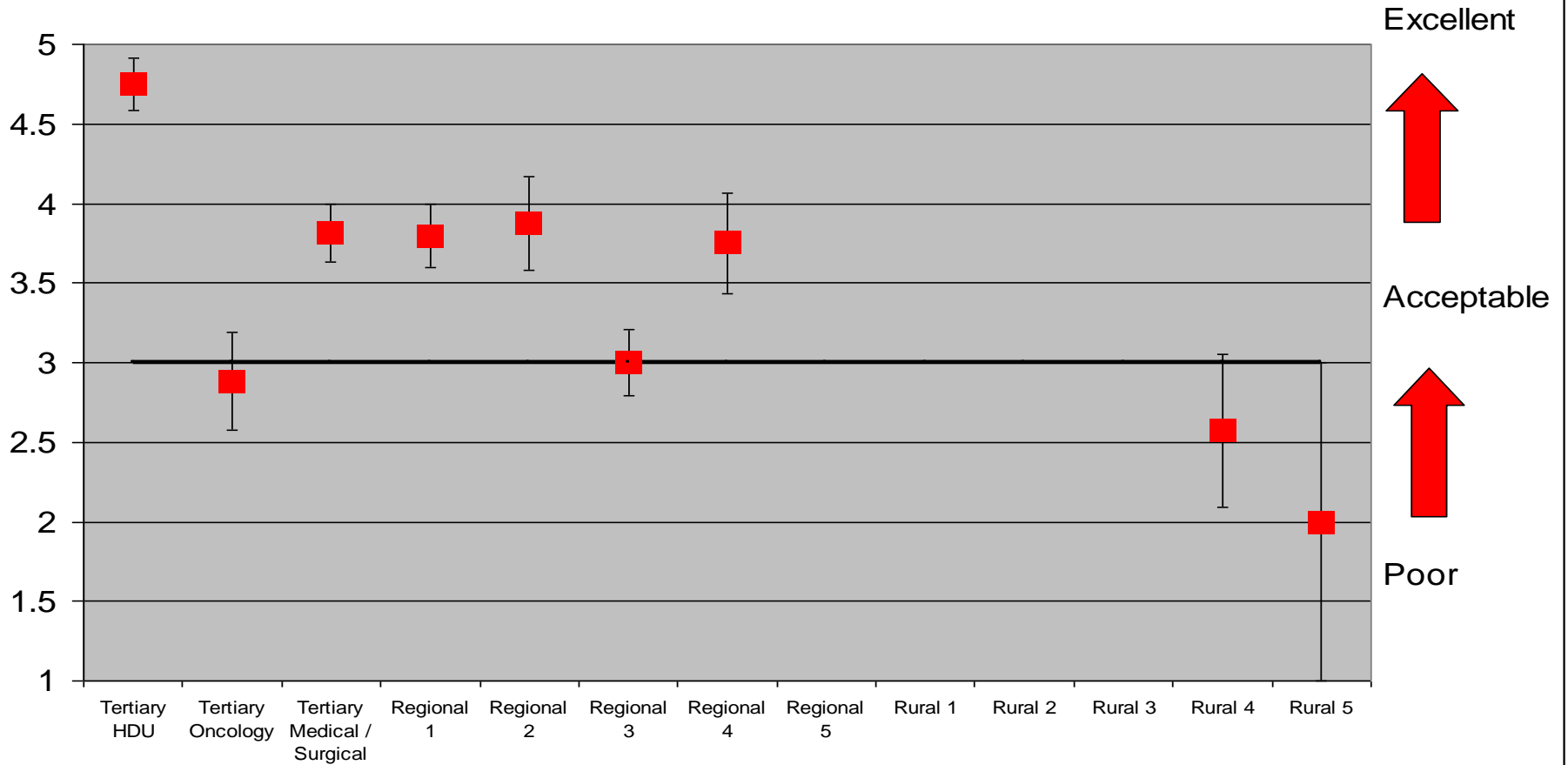
What Impact has CEWT had on your Ability to Care for Children in Hospital?



How Difficult was the CEWT Chart to Use?



How did you Rate the Educational Material and Support?





Feedback

Not really decrease workload but allowed for better understanding of patients condition and any changes they may be experiencing

It has made me more confident in looking after patients


Good to have one observation chart

Great chart – easy to see trends

Excellent tool to improve communication between doctors and nurses

Excellent tool for less experienced staff

Learning to use the form. We do not always have children in the ward.



It is great to see all of our documentation put into one form.
Congratulations.

Useful tool and easily identifiable guidelines


I can't wait to get a child in to use the chart..”

Please get rid of them!!

Please go back to old way (we should be able to determine if a child is unwell ourselves, without the use of a chart telling us when to call a MET!!)

Would like to have HR positioned above BP on chart

Definitely helps with obs to identify need for review but a good nurse should be able to do this without chart. However chart is definitely very helpful in empowering nurses in their decision to call for assistance.

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- “I really value this tool. It has given me confidence when contacting Dr’s for reviews. I really feel that it clearly displays trends. ‘It is fool proof’ when I am running the shift I feel I am safe in the knowledge that even a new grad, with little experience in children, has access to safe limits and it is right in front of them. I can also gain knowledge of patient condition at a glance, when reviewing each child as nurse in charge it makes my job easier.”



What Next ...

- Complete prospective analysis
- Optimise CEWT
- Design state-wide implementation
- Work collaboratively across borders
- Further projects
 - Other charts
 - Computers
 - Retrieval study
 - Telemedicine



Acknowledgements

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