

Paediatric MET Code Evaluation: Using ViCTOR Metrics for Quality Improvement

RACP 2019
CONGRESS

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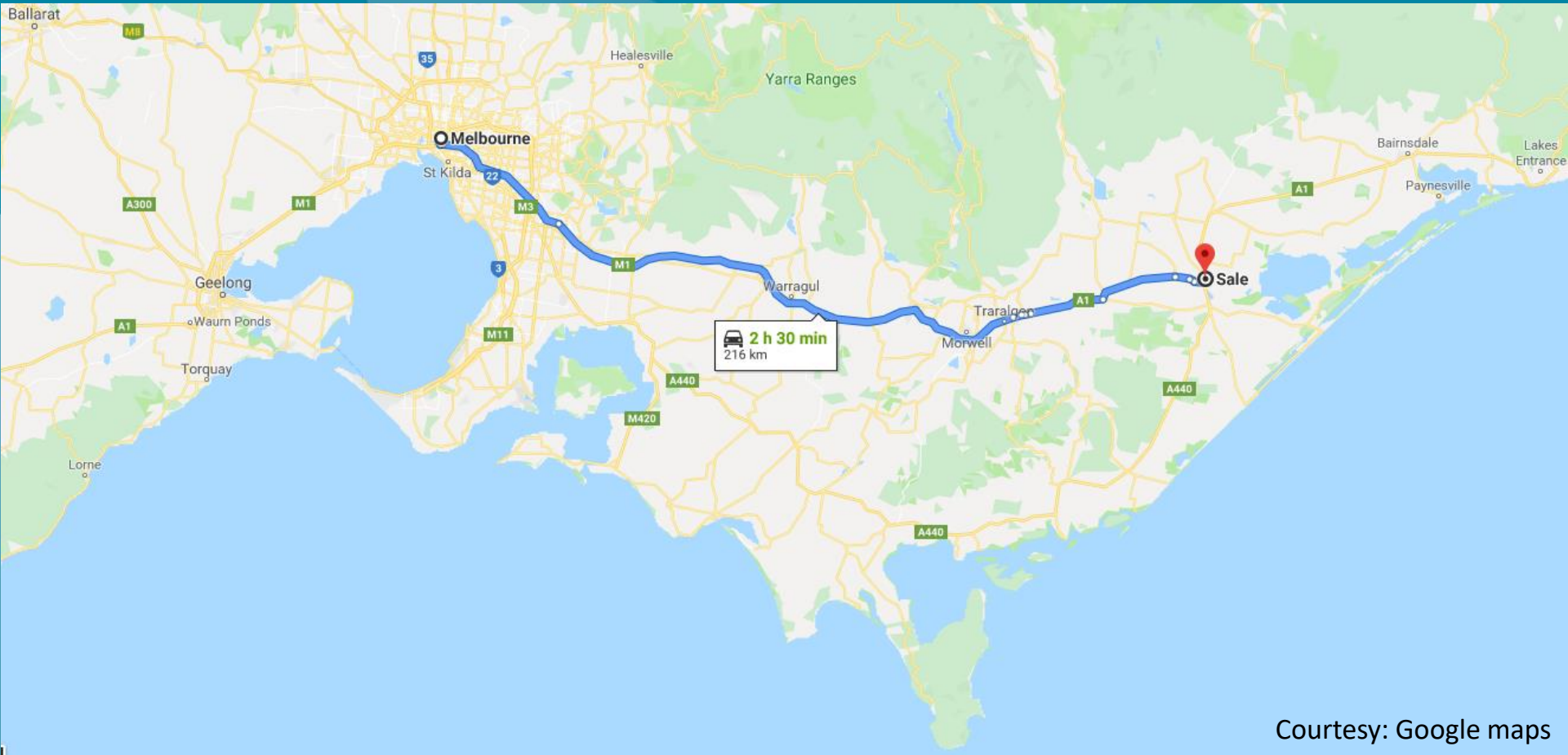
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GIPPSLAND
HEALTH

Sale Hospital - Central Gippsland Health



Courtesy: Google maps

Overview

- Safer Care Victoria for Quality Improvement
- Improving emergency paediatric care provision in our Hospital



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About Safer Care Victoria

Safer Care Victoria (SCV) is the state’s healthcare quality and safety improvement agency. We work with patients, families and carers, clinicians and health services to monitor and improve the quality and safety of care delivered across our public health system.

Our mission

Outstanding healthcare for all Victorians. Always.



ViCTOR – Keeping kids safe in their zones

In 2013 the [Victorian Paediatric Clinical Network \(VPCN\)](#) funded a joint proposal by [The Royal Children's Hospital \(RCH\)](#) and [Monash Children's Hospital](#) to develop a set of Statewide Paediatric Observation and Response Charts, now known as ViCTOR (Victorian Children's Tool for Observation and Response).

The ViCTOR charts utilise the most recent evidence in newborn and paediatric vital sign parameters as well as human factor elements such as colour, font and layout to assist clinicians to recognise and respond to clinical deterioration in newborn and paediatric patients.

The ViCTOR charts are available for any Victorian health service with newborn and/or paediatric patients up to the 18th birthday and are designed to be used in conjunction with the health services local paediatric procedures.

There are 8 types of ViCTOR charts as detailed below.



CHART	LAUNCH DATE	INTENDED AREA OF USE
ViCTOR	October 2014	Inpatient settings
ViCTOR Urgent Care	November 2015	Urgent Care Centres, specifically in rural hospitals
ViCTOR Neurological	November 2015	As an accompaniment to ViCTOR and ViCTOR Urgent Care Charts
ViCTOR BirthSuite / Postnatal	May 2017	Birth Suite Settings and Postnatal Units
ViCTOR Special Care Nursery	May 2017	Special Care Nursery environments
ViCTOR Paediatric Fluid Management Chart	July 2018	Paediatric Inpatients, Emergency Departments and Recovery units
ViCTOR SCN Fluid Management Chart	July 2018	Special Care Nursery environments
ViCTOR Paediatric Medical Emergency Metrics Form	July 2018	A minimum medical emergency dataset

Orange zone

CLINICAL REVIEW RECOMMENDED

Response criteria

- Staff member is worried about the child's clinical state
- A family member is worried about the child's clinical state
- Any observation in the orange zone

Actions required

1. Initiate appropriate clinical care
2. Consider what is usual for the child and if the trend in observations suggests deterioration
3. Consult with nurse in charge, decide if a medical review is required. If no medical review, document rationale and plan of care in Events/Comments
4. Medical review
 - Increase frequency of observations as indicated by the child's condition
 - If not attended within 30 minutes, escalate to emergency call
 - Medical officer to document management plan

Purple zone

MANDATORY EMERGENCY CALL

Response criteria

- Staff member is very worried about the child's clinical state
- A family member is very worried about the child's clinical state
- Apnoea or cyanosis
- Cardiac or respiratory arrest
- Airway threat
- Prolonged convulsion
- Sudden decrease in conscious state
- Any observation in the purple zone
- 3 or more simultaneous orange zone criteria

Actions required

1. Place emergency call
2. Initiate appropriate clinical care until the arrival of the emergency respondent/s
3. Emergency respondent/s to attend immediately, stabilise patient and/or provide advice
4. Emergency respondent/s to document management plan

UR NUMBER
SURNAME
GIVEN NAME(S)
DATE OF BIRTH
AFFIX PATIENT LABEL HERE ↑

Call location: Ward: _____ ED Other: _____

Admission diagnosis: _____ <48 hours postoperative Yes No

Type of call: MET call Upgraded to Code Blue Code Blue Other: _____

Date of call: ____/____/____ Time of call: _____ a.m./p.m. Call finished: _____ a.m./p.m.

Call made by: Doctor Nurse Family Other: _____

In the last 4 hours prior to call was the patient transferred from: ED ICU Recovery N/A



Reason(s) Call was Made (Tick all applicable)

Staff worried Family worried Airway compromise Low SpO₂ Reduced consciousness

High RR Low RR Respiratory distress Respiratory arrest Seizure

High HR Low HR Hypotension Cardiac arrest Other: _____



VICTOR Purple Parameter Breached?			Existing Modification(s) at Time of Call	
Tick all applicable <input type="checkbox"/> N/A			<input type="checkbox"/> N/A	
<input type="checkbox"/> High RR	<input type="checkbox"/> High HR	<input type="checkbox"/> Hypotension	<input type="checkbox"/> High RR	<input type="checkbox"/> High HR
<input type="checkbox"/> Low RR	<input type="checkbox"/> Low HR	<input type="checkbox"/> Level of consciousness	<input type="checkbox"/> Low RR	<input type="checkbox"/> Low HR
<input type="checkbox"/> Respiratory distress	<input type="checkbox"/> Low SpO ₂	<input type="checkbox"/> Level of sedation	<input type="checkbox"/> Low SpO ₂	<input type="checkbox"/> Hypotension



Significant Event (During or immediately prior to the call) Yes (Tick all applicable) No

Acute Respiratory Compromise

Bag mask ventilation Intubation and ventilation Initiated high flow O₂ Initiated/Escalated CPAP or BiPAP

Cardiac Arrest

Chest compressions Defibrillation Initial Rhythm: _____

Other

Reversal of opioid toxicity (Naloxone) IM or IV adrenaline Initiated/ Escalated inotropes

Reversal of sedation (Flumazenil) Extensive fluid resuscitation (≥40mL/kg) OR Smaller fluid bolus



Patient Outcome Post Call (Up to four hours)

Resolved without intervention Remained on ward with advice/intervention Died

HDU ICU ED Theatre Other: _____

Transferred to: Monash Children's RCH Other: _____

Contacted PIPER: Parameters modified, list: 1 _____ 2 _____ 3 _____

Presumed reason/diagnosis for emergency call: _____



Does this case require a more detailed review?

Yes No Unsure

VICTOR Medical Emergency Response Metrics (VPM001)

ViCTOR Medical Emergency Response Metrics

Victorian Managed Insurance Authority and
Victorian Paediatric Clinical Network

Final Report June 2018

CGH Paediatric MET call Analysis

Aim of our Quality Improvement project

- To compare our hospital paediatric emergency response metrics with the Victorian state wide results
- To identify & improve aspects of paediatric emergencies management in our setting

CGH Paediatric MET call Analysis

Study details

- Retrospective cohort analysis of Paediatric MET codes
- Incidents over 24 months (Jun 2016 to May 2018)
- Using Victorian Childrens Tool for Observation and Response (ViCTOR) Medical Emergency Response Metric tool
- Data was curated in excel and analysed utilising the R statistical environment
- Ethics approval from Regional HREC

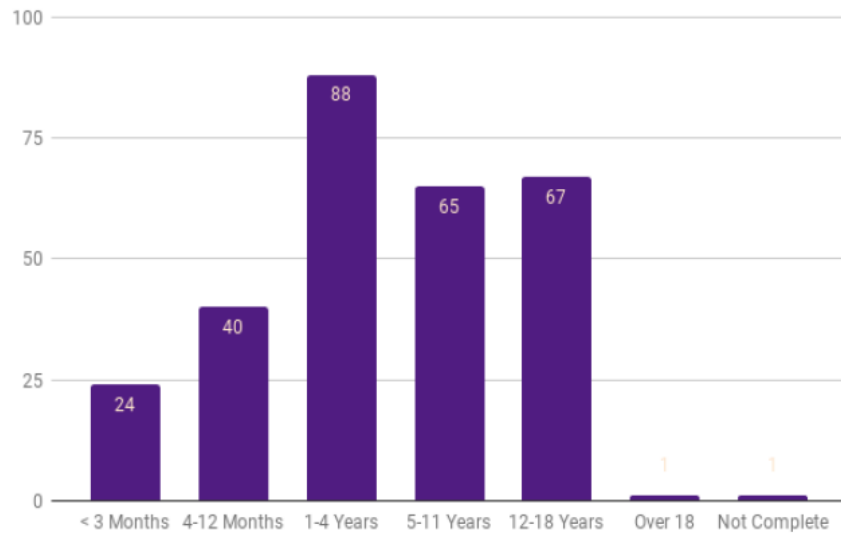
Average MET calls per month

Hospital	Estimated medical emergency calls per month (n)
Metropolitan	
Austin Health	2
Cabrini Health (Private)	2-3
Epworth Health Care (Richmond) (Private)	0-2
Monash Children's	30
Northern Health	29-75
Peninsula Health	1
Royal Children's Hospital	50 - 60
Regional	
Ballarat Health Services	2-3
Barwon Health	20
Bendigo Health	3
Latrobe Regional Hospital	0-1
Northeast Health	0-2

Sale Hospital Average = 2/month

Age of Children where MET code initiated

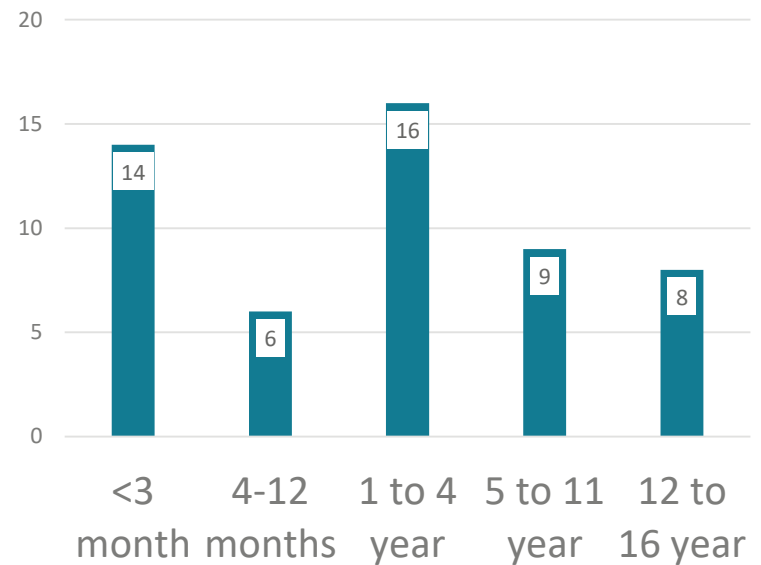
State pilot project



Total = 286

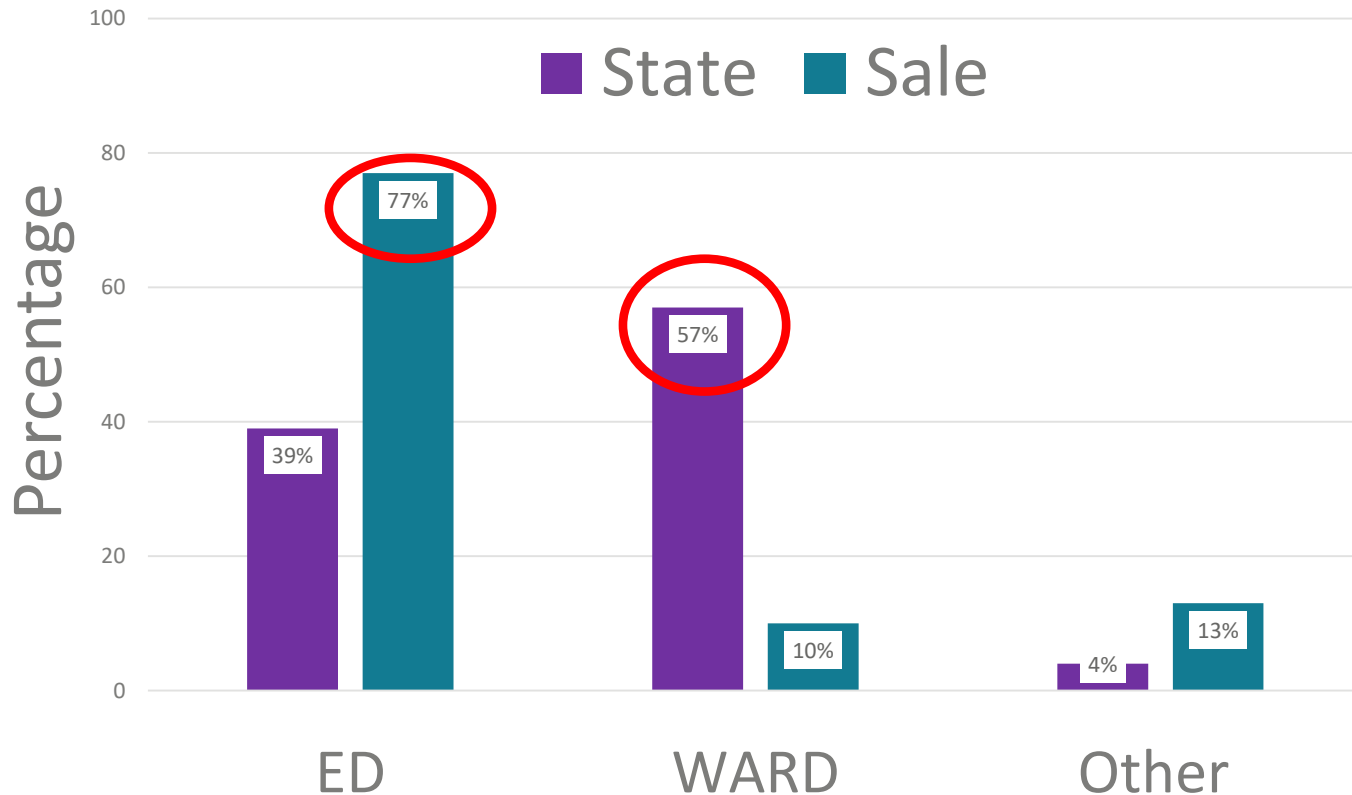
Sale Hospital

Number of patients

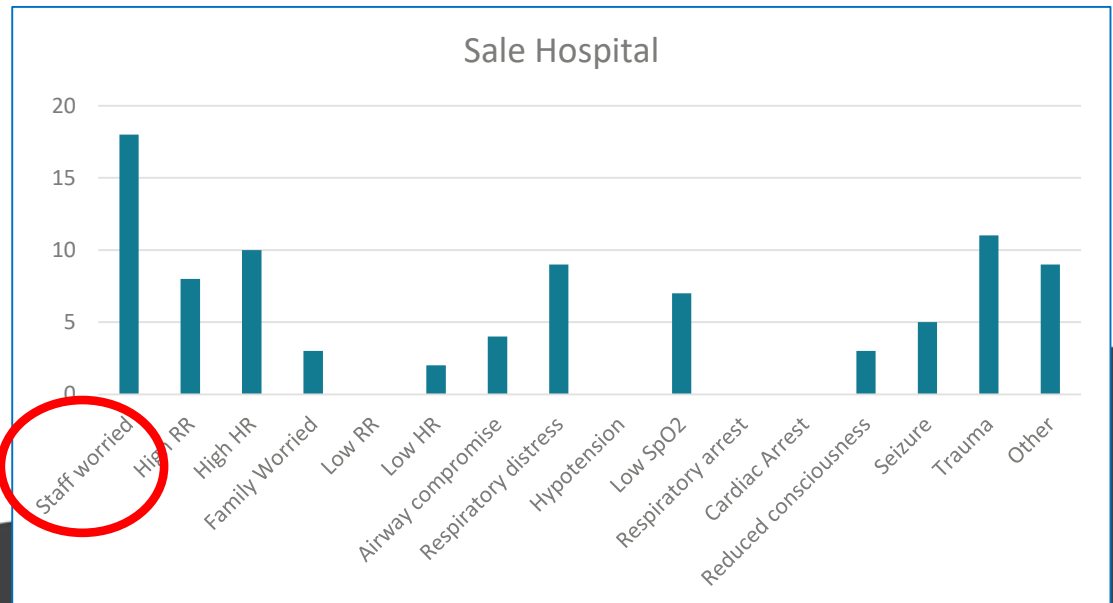
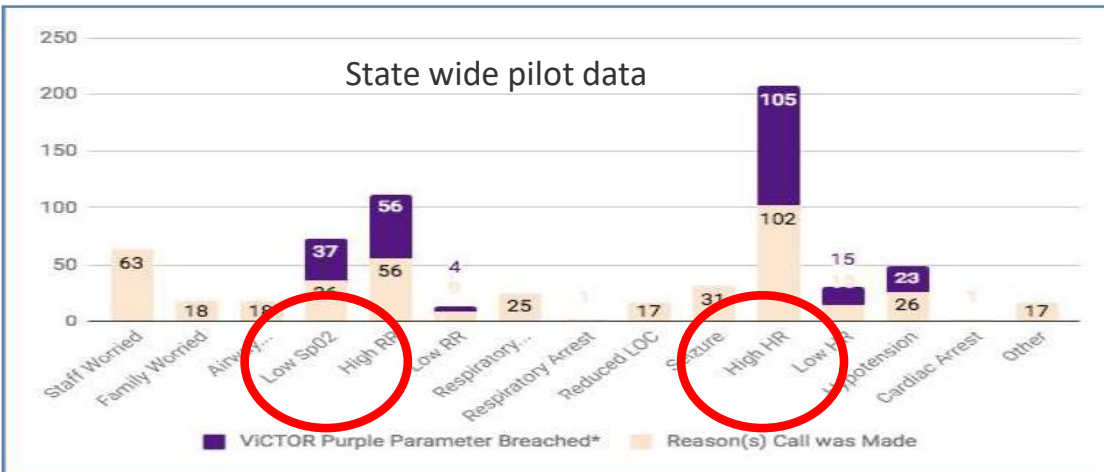


Total = 53

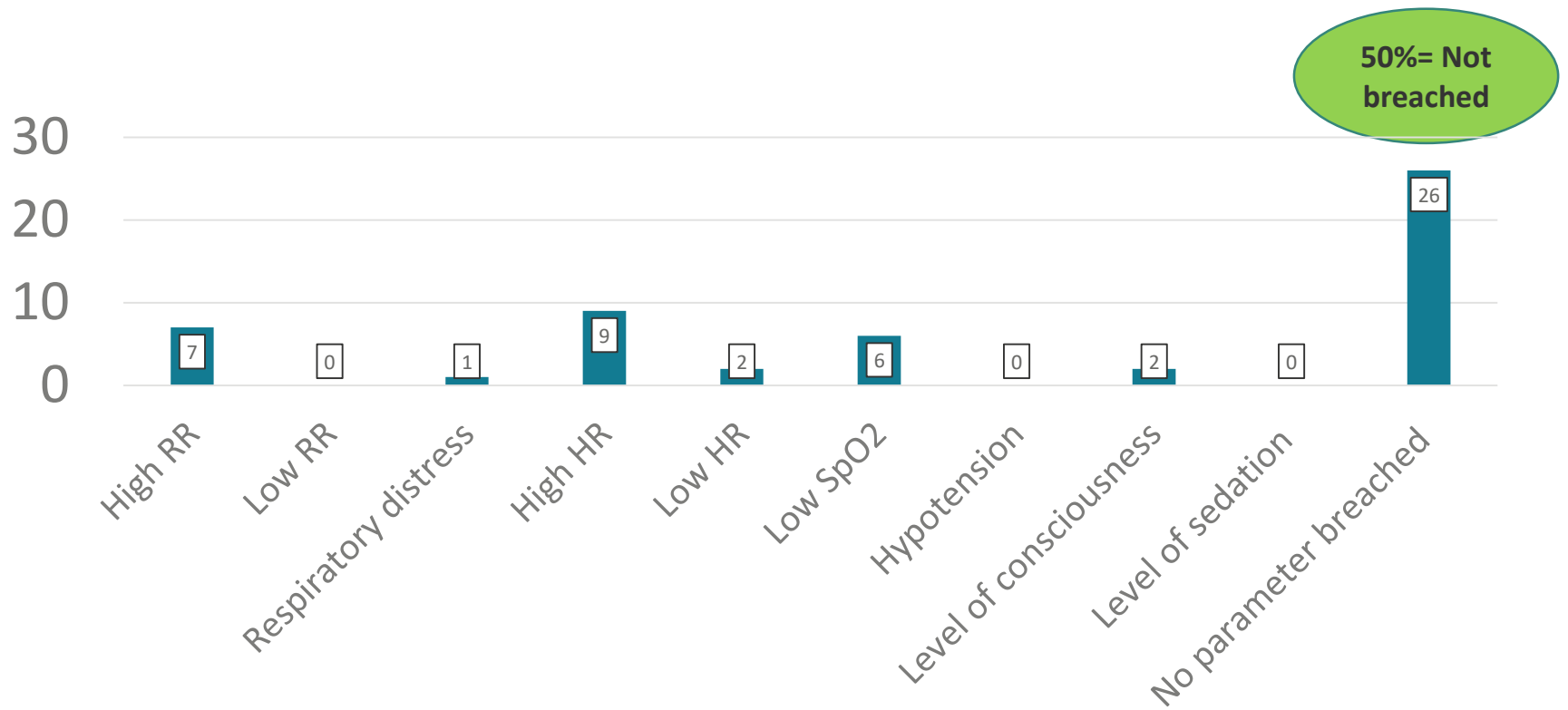
Source of MET Call



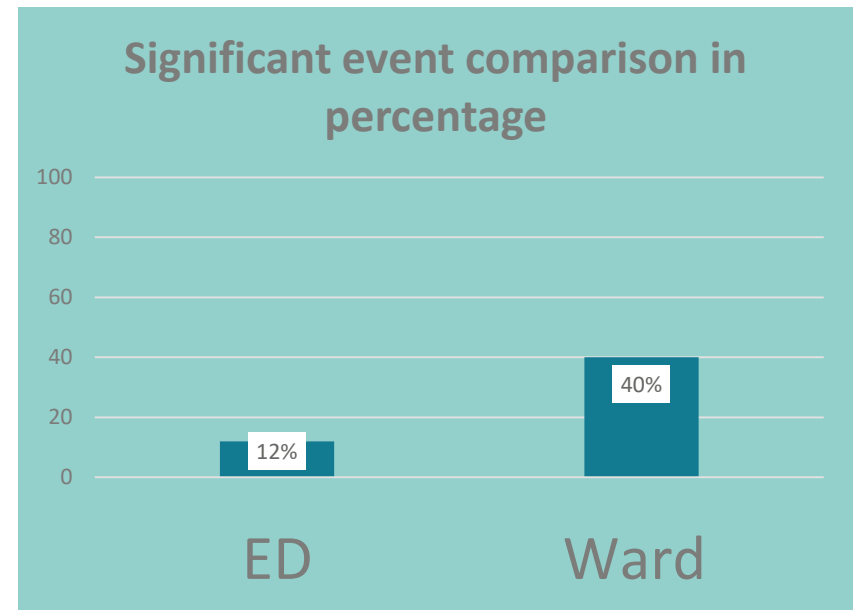
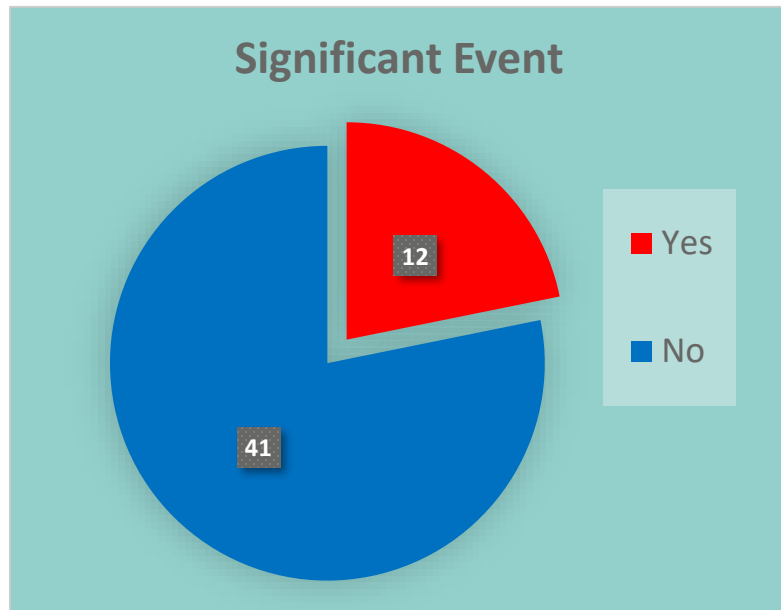
Reason for MET call



MET call Purple parameter breached



Significant Event following MET call



Results

- Paediatric MET call average 2 per month
- The majority of the calls, 77% (41/53) calls originated from the emergency department
- In 50% of the calls, the purple parameter was not breached
- The proportion of MET calls leading to significant events are smaller in ED when compared with Ward

Limitations

- Retrospective data collection
- Multiple data collectors used
- Data inaccuracy/verification difficulty
- ViCTOR pilot study not a bench marking exercise

Summary

- A high percentage of calls originate from the emergency department with a lower proportion of significant events
- The most frequent reason for activating METs in our emergency department was 'staff concern'
- Emergency department and ward presentations differ in both the proportion of diagnoses and clinical need
- Training to improve staff comfort levels in dealing with acute paediatric presentations is warranted

What's next



Presentations



Stakeholder Discussion



Meetings



Monash Medical Student Simulation Program

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Emergency department based multidisciplinary
team simulation program
to reduce staff anxiety and
improve patient preparedness

Conclusions: An in situ pediatric simulation program can be implemented effectively in CAH EDs and results in increased comfort with pediatric patients. Such a program could be used as the core feature of a CAH education program aimed at improving the quality of pediatric emergency services provided at these safety net institutions.

TABLE 4. Comfort Among Providers With 6 Procedures

	All Providers		
	Survey 1 Mean (SD)	Survey 2, Change From Survey 1, Mean (SD)	Survey 3, Change From Survey 1, Mean (SD)
Assessing patient	81.1 (21.4)	+4.4* (15.6)	+3.7 (14.1)
Drawing blood	65.0 (33.2)	+8.1* (21.1)	+9.5* (25.1)
Placing an IV	64.2 (33.5)	+6.8* (19.7)	+7.8 (23.0)
Placing an NG	52.9 (33.6)	+9.9* (19.9)	+7.7 (27.9)
Placing a urinary catheter	66.7 (32.1)	+4.9 (19.2)	+5.8 (24.7)
Recognizing abnormal vitals	83.7 (19.6)	+2.1 (15.1)	+4.8 (16.8)
Column mean	69.0 (24.6)	+6.0* (12.7)	+6.5* (17.3)

* $P < 0.05$.

Improving Pediatric Preparedness in Critical Access Hospital Emergency Departments

Impact of a Longitudinal In Situ Simulation Program

Jessica H. Katznelson, MD,*† Jiangxia Wang, MS,‡ Martha W. Stevens, MD,* and William A. Mills, MD, MPH§

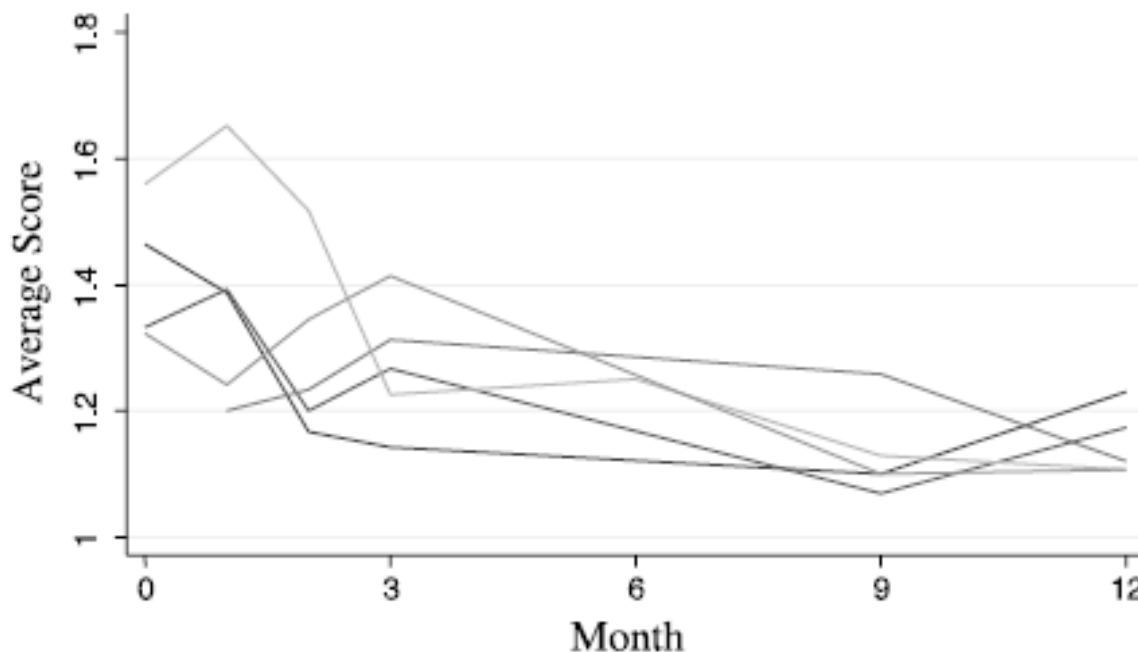
Objectives: Critical Access Hospitals (CAHs) are often understaffed and have limited resources. Many of these hospitals do not have pediatric training. We sought to improve pediatric preparedness through a simulation program in the CAH setting. We evaluated performance during resuscitation tasks using a 35-item checklist. **Methods:** Five CAHs participated in the program over a 12-month period. We used a 35-item checklist to evaluate performance on resuscitation interventions. Checklist scores were 1 point for "no". A total score of 35 was completed. The Kruskal-Wallis test was used to compare scores among institutions in average scores and over time. $P < 0.05$ was considered significant.

Results: The Kruskal-Wallis test showed a significant downward trend over time ($P < 0.01$). One hundred percent of providers stated they would be willing to participate in the program.

Conclusions: Regularly scheduled pediatric simulations in the CAH emergency department setting improved team performance over time on expected resuscitation tasks. The program was accepted by providers. Implementation of simulation-based training programs can help address concerns regarding pediatric preparedness in the CAH setting. A future project will look at the impact of the program on patient care and safety.

Key Words: pediatric resuscitation, rural, simulation, critical access hospital

(*Pediatr Emer Care* 2018;34: 17–20)



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performing common pediatric procedures fewer than 5 times in the prior year. Seventy-nine percent of nurses reported starting fewer than 5 infant intravenous lines, and more than 90% of physicians reported fewer than 5 pediatric bag mask ventilations or intubations.⁸ Nearly 3 quarters of these same respondents felt there was inadequate focus on pediatrics in their continuing education programs.

The Institute of Medicine has expressed the need for improved continuing medical education (CME) for ED providers, stating specifically that pediatric emergency care competencies need to be established and maintained.⁹ The Rural Health Re-

Organisati

High-reliability emergency response teams in the hospital: improving quality and safety using in situ simulation training

ovement

Derek S Wheeler,^{1,2,3} Gary Geis,^{2,4,5} Elizabeth H Mack,⁶ Tom LeMaster,⁵ Mary D Patterson^{7,8}

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ABSTRACT

Introduction In situ simulation training is a team-based training technique conducted on actual patient care units using equipment and resources from that unit, and involving actual members of the healthcare team. We describe our experience with in situ simulation training in a major children's medical centre.

Materials and methods In situ simulations

as part of an organisation-wide safety programme.

INTRODUCTION

The Institute of Medicine's (IOM) report entitled *To Err Is Human: Building a Safer Health System* estimated that as many as 98 000 people die in the USA each year due to medical errors—most of which are

Conclusion: In situ simulations can identify latent safety threats, identify knowledge gaps, and reinforce teamwork behaviours when used as part of an organisation-wide safety programme

in situ simulations, which we categorised as medication, equipment, and/or resource/system threats. Identification of these errors resulted in modification of systems to reduce the risk of error. In situ simulations also provided a method to reinforce teamwork behaviours, such as the use of assertive statements, role clarity, performance of frequent updating, development of a shared mental model, performance of independent double checks of high-risk medicines, and overcoming authority gradients between team members. Participants stated that the training programme was effective and did not disrupt patient care.

Conclusions In situ simulations can identify latent safety threats, identify knowledge gaps, and reinforce teamwork behaviours when used

management (CRM) training. CRM training, when used in conjunction with simulation, demonstrates increasing promise as an effective method to reduce medical errors and improve patient safety, particularly when focused on non-technical skills, such as teamwork, leadership and communication. However, CRM training typically occurs in a simulation laboratory designed to replicate the characteristics of an operating room (OR) suite, the emergency department (ED), intensive care unit (ICU), hospital ward, or labour/delivery room.

Conversely, in situ simulation training is a team-based training technique conducted on actual patient care units using

To cite: Wheeler DS, Geis G, Mack EH, et al. *BMJ Qual Saf* 2013;**22**:507–514.

Outcome and Benefits (CGH and Monash)



Introduction of simulation sessions in ED
Enhanced team work & better stabilisation of care for acute paediatric presentations in ED



Participation in a clinical governance activity
The students gaining knowledge on paediatric acute presentations

Reference

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Thank
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