

**ESCALATION Project: Development and trial implementation of a uniform system
for recognition and response to paediatric clinical deterioration in
Western Australia**

funded by the WA Health Translation Network and Curtin University



Project Report
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- ESCALATION Stakeholder group, Site Champions, Working Group, Educators group and PCH Chart development group
- ESCALATION Pilot Sites: Broome Hospital, Joondalup Health Campus, Fiona Stanley Hospital, Perth Children's Hospital, Narrogin Hospital, Albany Hospital.

ESCALATION Project Summary

Failure to recognise and respond to clinical deterioration in a timely manner can result in serious adverse outcomes with devastating consequences, particularly in children. In WA, there is not a uniform approach to recognising and responding to acute deterioration in children and this may contribute in failure to recognise or respond in a timely manner to critical changes in a child's condition. The ESCALATION Project aimed to develop an evidence based state-wide system for recognising and responding to clinical deterioration (RRCD) in WA paediatric settings inclusive of family participation and to evaluate the feasibility and factors necessary to ensure successful implementation. It was conducted from November 2018 to February 2020 with funding from the WA Health Research Translation Network and Curtin University as a 2019 Early Career Fellowship in Research Translation awarded to A/Professor Gill.

The project objectives were:

1. To identify the evidence for core elements of an effective RRCD system
2. To understand contextual factors in WA health setting impacting on requirements for RRCD
3. To develop a set of age appropriate observation and response charts incorporating evidence-based human factors principles, nurse concern, family concern that takes into consideration WA health settings requirements
4. To develop escalation of care plans that incorporate structured communication tailored to WA health setting requirements
5. To develop a uniform process for family involvement in escalation of care that meets the needs of WA families
6. To implement the RRCD system in a range of contexts in WA paediatric settings
7. To assess for feasibility and acceptability and evaluate the RRCD system
8. To understand key factors required for successful implementation

The Project Design, Implementation and Findings

The project was conducted using a mixed methods implementation design. A key element for the success of implementation research is collaboration (co-production) between researchers and stakeholders and users of the research throughout¹. The theoretical approach was underpinned by the UK's Medical Research Council's framework for process evaluation of complex interventions². The project was organised into a four part process adapted from a framework described by Hawkins et al. for co-production and prototyping of public health interventions³ – see Figure 1.

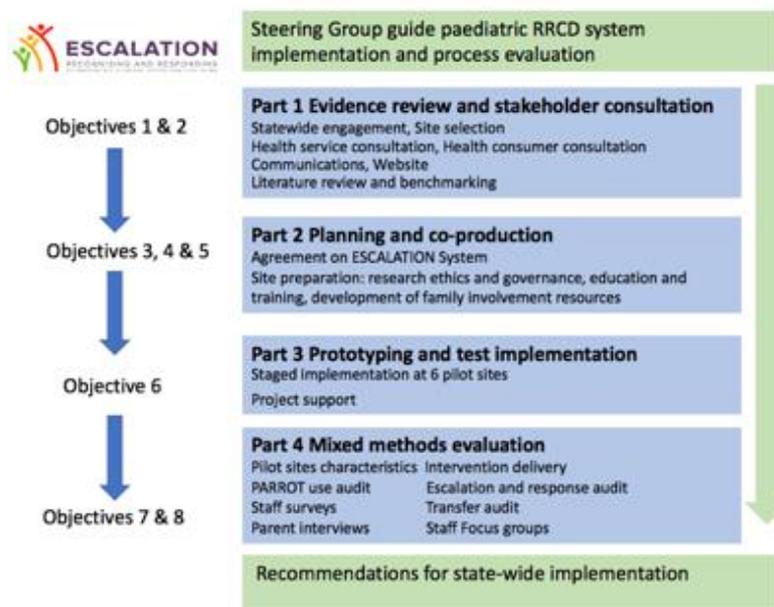


Figure 1 ESCALATION Project Four Part Process.

The Standards for Reporting Implementation Studies (StaRI) Statement⁴ was used to guide the project conduct and reporting.

Part 1 Evidence review and stakeholder consultation

This involved establishing a Steering Group, developing communications including a website www.escalation.com.au, reviewing the evidence and benchmarking including examination of existing paediatric early warning systems, site selection and state-wide consultation and engagement with health services and health consumers.

Part 2 Planning and co-production

The co-production took the form of an action research cycle of a series of meetings between the researchers and the working group of stakeholder representatives that included nurses, doctors, health consumers and a human factors principles expert. Findings from Part 1 were considered, ideas were presented, feedback on ideas sought, refinements made and presented again until the final content of the draft ESCALATION System was agreed, combining 3 main features, charting, communication and family engagement. The co-production process resulted in the agreed ESCALATION System that included the following:

- A composite scoring system - 10 weighted variables; assessment of respiratory distress, respiratory rate, oxygen saturations, oxygen therapy, heart rate, central capillary refill time, blood pressure, level of consciousness (or level of sedation), pain score and clinician/family concern
- 5 charts including a specific chart for < 3 months old.
- Temperature variable not weighted – use of red lines to indicate acceptable parameters
- Blood pressure variable to remain weighted
- A weighted family/clinician concern variable
- Space on the chart to write in abnormal numbers
- All documentation to be made on PARROT with no additional comments sheet
- Age appropriate pain assessment
- Conscious level assessment or conscious sedation assessment
- Modifications located alongside the observations section
- Assessor to initial after completing assessment
- Respiratory distress assessment and oxygen delivery succinct and objective
- Standardised, clear escalation pathway appropriate for different contexts
- iSOBAR NOW communication tool (used with permission from the ACSQHC).
- Adapting 'Listening to you' posters and flyers (used with permission from Birmingham Children's Hospital)
- PCH to change to CARE Call to achieve a uniform family escalation of care process across WA health services

Graphic design and multiple revisions to the chart layout followed before the draft ESCALATION system was tested by the educators group and PCH chart development group using case-based scenarios. The finalised system including the Paediatric Acute Recognition and Response Observation Tool (PARROT) was endorsed for trial implementation by the CAHS Forms Committee and CAHS RRCD Committee. See Figure 2.

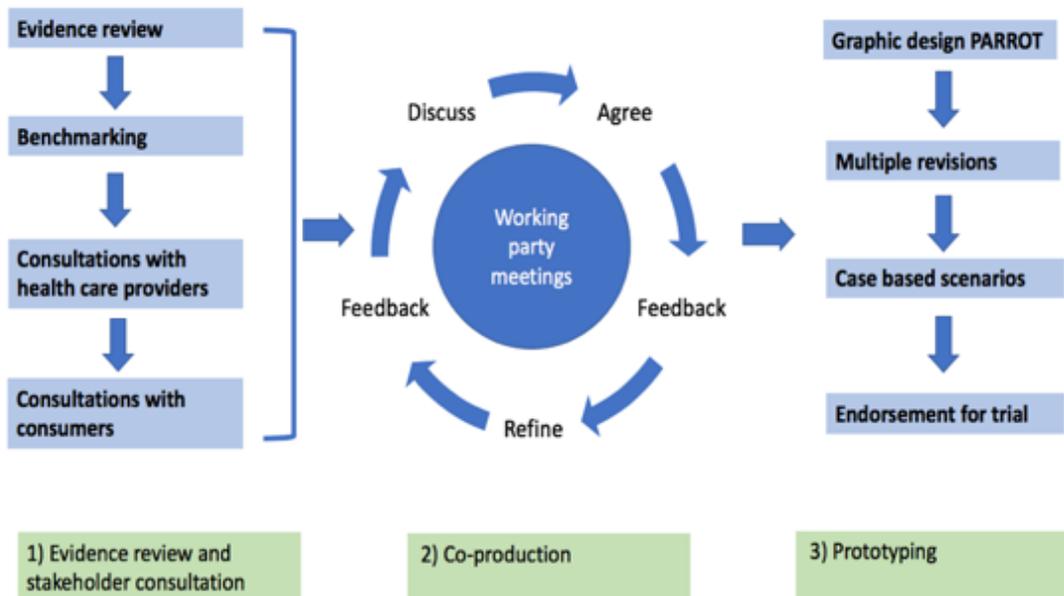


Figure 2 Framework for ESCALATION System co-production and prototyping (adapted from Hawkins et al.³)

Six trial sites were selected (PCH, Joondalup Health Campus, Fiona Stanley Hospital, Broome Health Service, Albany Hospital and Narrogin Hospital). Research ethics and governance approvals were obtained. Education and training for staff and site support were delivered using multiple strategies including; a site champions' workshop, website resources, onsite and telehealth education and support, site specific information packages. The researchers worked together with a group of educators from each pilot site to develop educational materials and the implementation schedule. Telehealth education sessions included debriefs and real time feedback.

In addition to the prompt on the PARROT for clinicians to check for parent concern, consultation with families confirmed they wanted information on posters to be displayed in patient rooms. The information was to assist families in initiating a dialogue with nurses or doctors if they were concerned about clinical deterioration. The content and style of the posters and flyers were adapted from Birmingham Children's Hospital 'Listening to You' resources (with permission) and developed in consultation with the health consumer groups with the graphic design work approved by the CAHS Communications team. The materials were approved by the CAHS Consumer Advisory Council and endorsed by the CAHS RRCD Committee.

At PCH the existing family escalation of care process (Calling for Help) was changed to CARE Call. This involved collaborating with a group of stakeholders to reach agreement how the CARE Call process already in operation at the other WA health services could work at PCH. A site specific policy and brochure was developed and endorsed by CAHS RRCD Committee and approved by the CAHS Consumer Advisory Committee. The CARE Call brochures included the same messaging for parents to know what to look for as the 'Listening to You' posters.

Part 3 Prototyping and test implementation

Implementation was staged at the pilot sites to allow upcoming sites to benefit from preceding site experiences and facilitate evaluation processes with a schedule also developed to accommodate context specific events. Based on the anticipated numbers of paediatric patient ED presentations and hospital admissions, implementation was for 4 weeks at specialist and metropolitan hospitals and for 12 weeks at the country sites. Support during the trial implementation included further provision of education materials, debriefs and case studies, chart distribution and weekly communication with each site. Support via

teleconference and phone was also provided to site champions to develop local case studies that were relevant for use within their areas and provided real-time staff feedback. Implementation of the PCH CARE Call consisted of communications to staff about the change and communications to consumers including inpatient families.

Part 4 Evaluation

The mixed methods evaluation was guided by the UK Medical Research Council's framework for process evaluation of complex interventions² to examine to what extent the ESCALATION System (the intervention) was delivered in a uniform way, whether the target population received the planned activities, the impact of contextual factors and the experiences of participants. The evaluation included a description of the context (the pilot site characteristics), assessment of implementation (whether the intervention was delivered as intended) and outcomes via PARROT use audits, escalation and response audits, and staff surveys. Understanding the mechanisms of impact was assessed by qualitative methods; staff focus groups and interviews with parents.

Project Outcome

The project was successful in developing and trialling a proposed uniform system (ESCALATION System) for a state-wide approach to the recognition and response to clinical deterioration in children. The ESCALATION system was a product of widespread stakeholder and consumer input and review. This system is unique in incorporating a track and trigger chart - PARROT, a framework for escalation communication (iSOBAR NOW) and integrated parent concern. At the six pilot sites the approach was well received, with feedback provided to further fine tune the system prior to final implementation and evaluation.

Recommendations

Taking into account the considerations provided by individual sites, stakeholders and consumers at a group and individual level the following is recommended:

1. Revision to the design and refinement of PARROT v2.0 using the evaluation findings and continued engagement with and input from stakeholders.
2. Final testing of PARROT v2.0 prior to implementation. It will be useful to include a new trial clinical area to evaluate additional education and implementation strategies to address the inconsistencies in education, training and implementation identified through this project.
3. State-wide implementation of the ESCALATION system including PARROT v2.0. A concurrent comprehensive implementation and evaluation using Implementation Science Principles will ensure consistency and fidelity of use to optimise the system.
 - a. This will be best achieved by a centralised team to coordinate implementation and evaluation linking to site champions to facilitate a 2 year implementation and review cycle.
 - b. A standardised yet tailored approach to education to address assessment and recognition of paediatric clinical deterioration, escalation of care and communication.
 - c. Staff educational requirements do not only encompass the performance of paediatric observations, but should also include interpretation of observations, assessment of children, and involvement of families and structured, standardised communication.
 - d. Development and maintenance of easily accessible resources using educational videos, a website and consideration of an app for personal devices.
 - e. Training, support and recognition of site champions.
 - f. Education, assessment, feedback and support should be received by 80% of the staff who will use the ESCALATION System.
 - g. A comprehensive promotional campaign and communications plan.

- h. Evaluation to measure fidelity, reach, adoption, effectiveness.

- 4. State-wide printing and maintenance of PARROT charts. The ESCALATION system has been specifically designed using best available evidence and human factor principles to enhance usability and performance. To ensure the benefits of the uniform state-wide system and these features it is crucial that the PARRROT charts are not modified by individual health services or sites. A centralised process for ordering and distribution of PARROT charts will be required.

- 5. State-wide coordination group to monitor auditing, feedback and agree on future improvements to the system including addition of assessment of mental health deterioration and development and integration of digital format for the ESCALATION System.

- 6. Consideration is given to unifying and aligning WA newborn services escalation of care systems with the paediatric ESCALATION System

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