

Importance of non-measurable methods of nursing assessment of infants and children to monitor for clinical deterioration

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Introduction

- Recognising deterioration in hospitalised children is an ever-present concern for parents and paediatric healthcare organisations.
- It requires specialist knowledge, skills, and clinical experience.
- There is little evidence to exemplify the recording of vital signs and calculating Paediatric Early Warning Scores (PEWS), despite being fundamental to patient safety.
- Assessment and monitoring for deterioration is relatively unexplored
- Age-specific vital sign parameters, compensatory mechanisms, nuanced behavioural and developmental patterns and parental influence all inform the paediatric patients' clinical picture

Aim

1. To investigate why paediatric patients deteriorate in specialised health services, such as Paediatric Early Warning System (PEWS), despite embedded safety mechanisms.
2. To develop a framework that can be used by paediatric nurses to improve the recognition of deterioration in hospitalised children leading to fewer adverse events:
 - That are relevant to use with babies, children and adolescents that lead to better patient outcomes
 - Enhance professional skills for paediatric nurses.

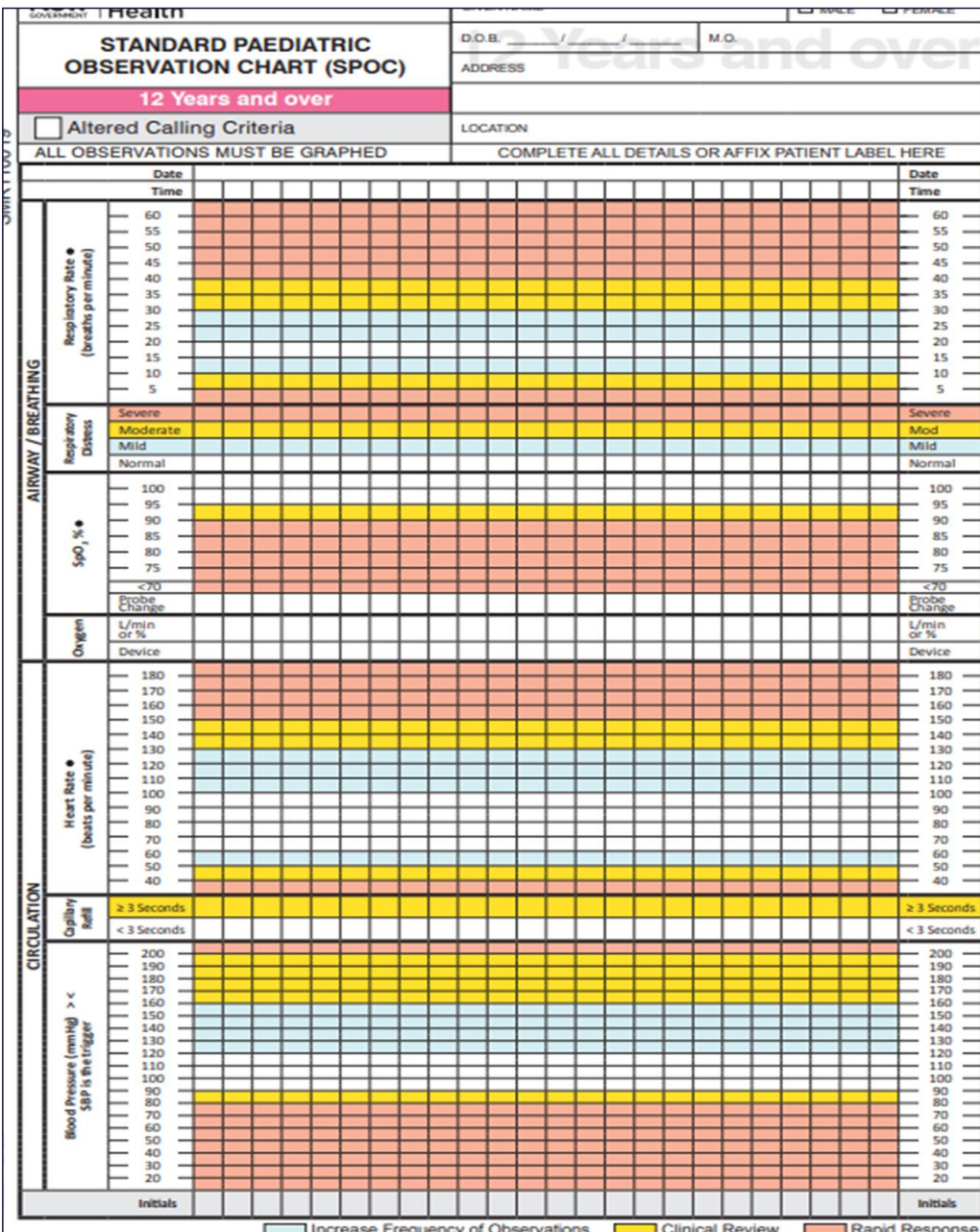


Figure 1: Example of age specific Between the Flags* Standard Paediatric Observation Chart

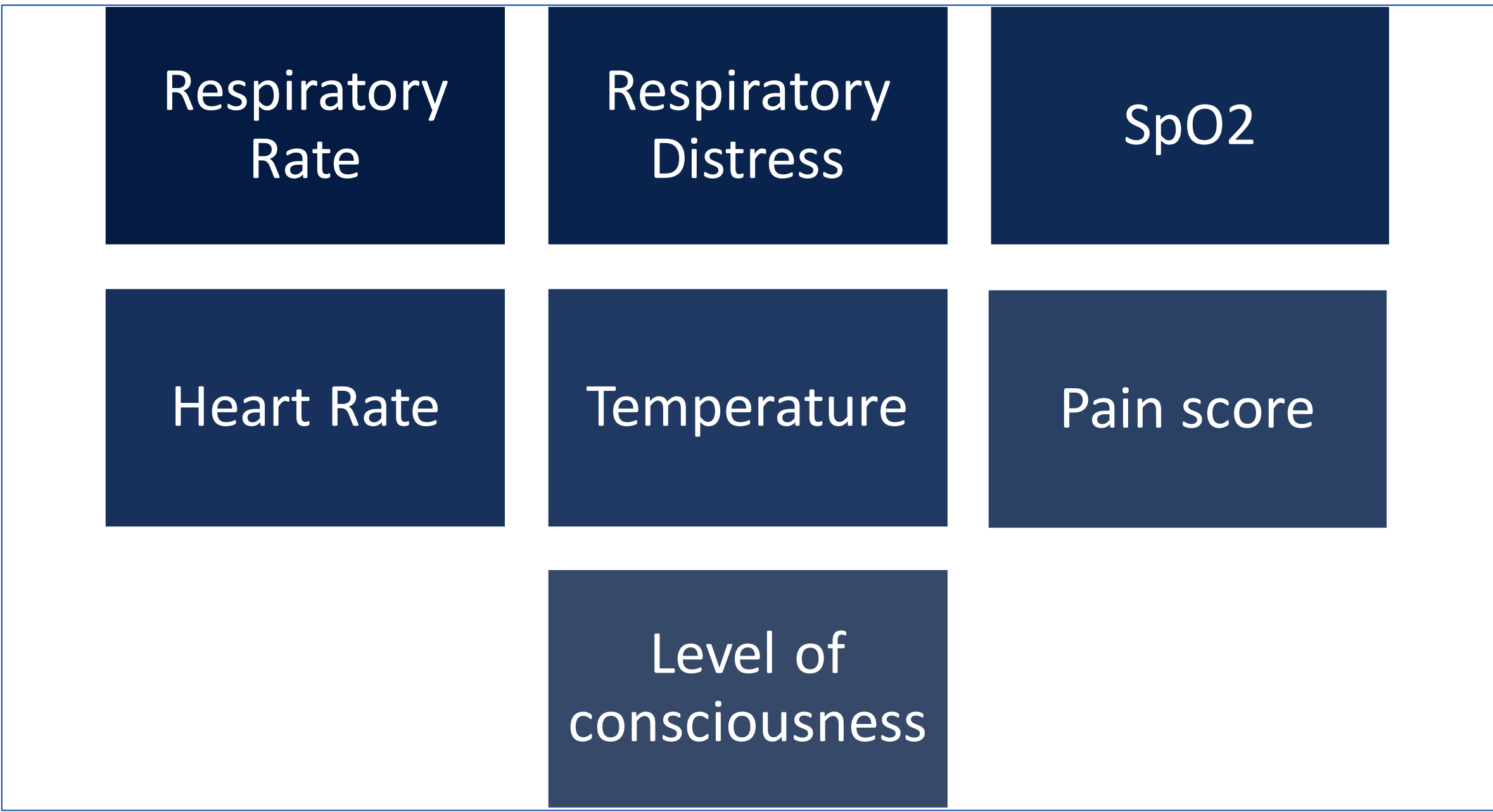


Figure 2: Seven vital signs included in the set of observations

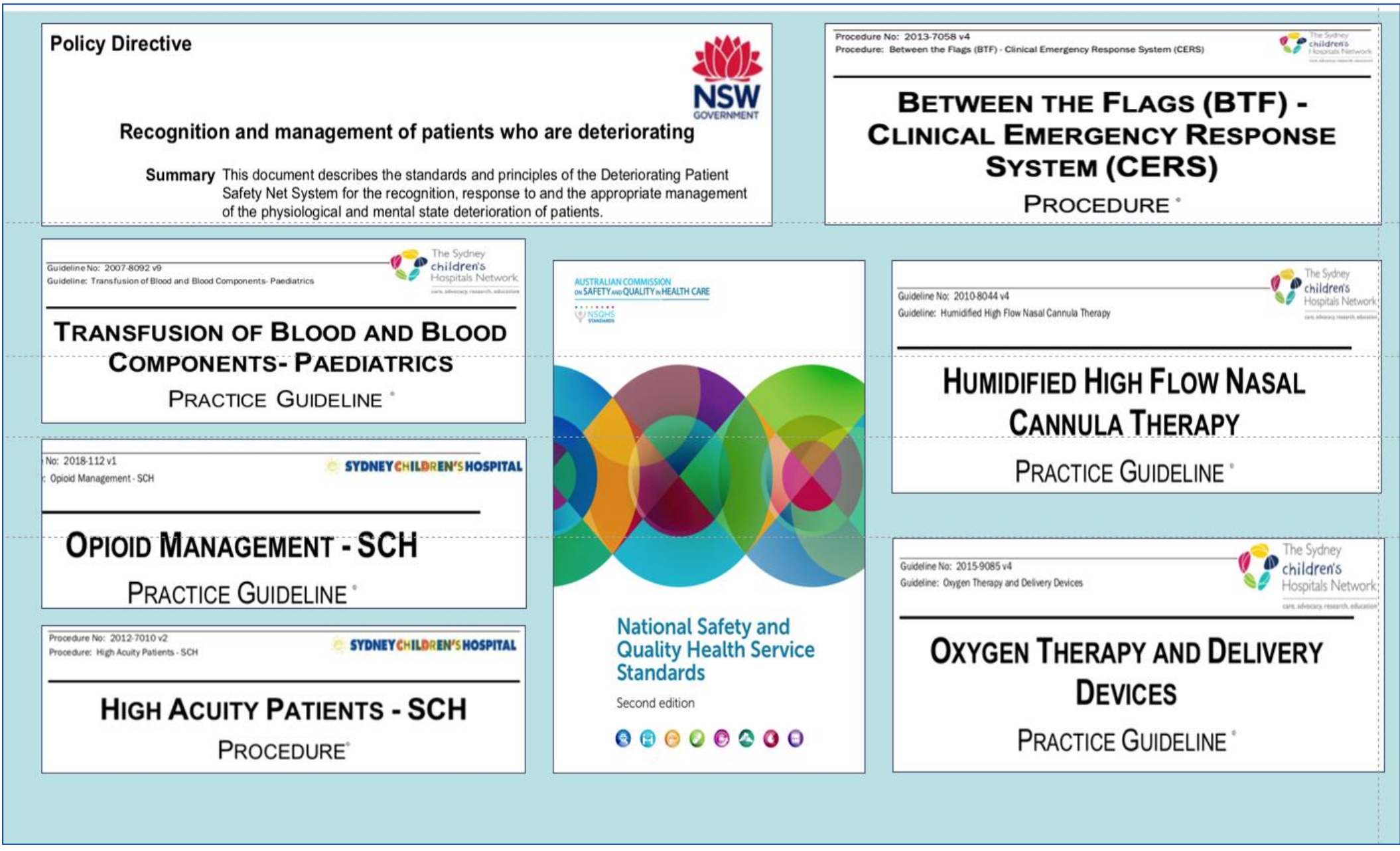


Figure 3: Examples of policies directing the measuring and documenting of vital signs in hospitalised children

Results (1) Scoping literature review

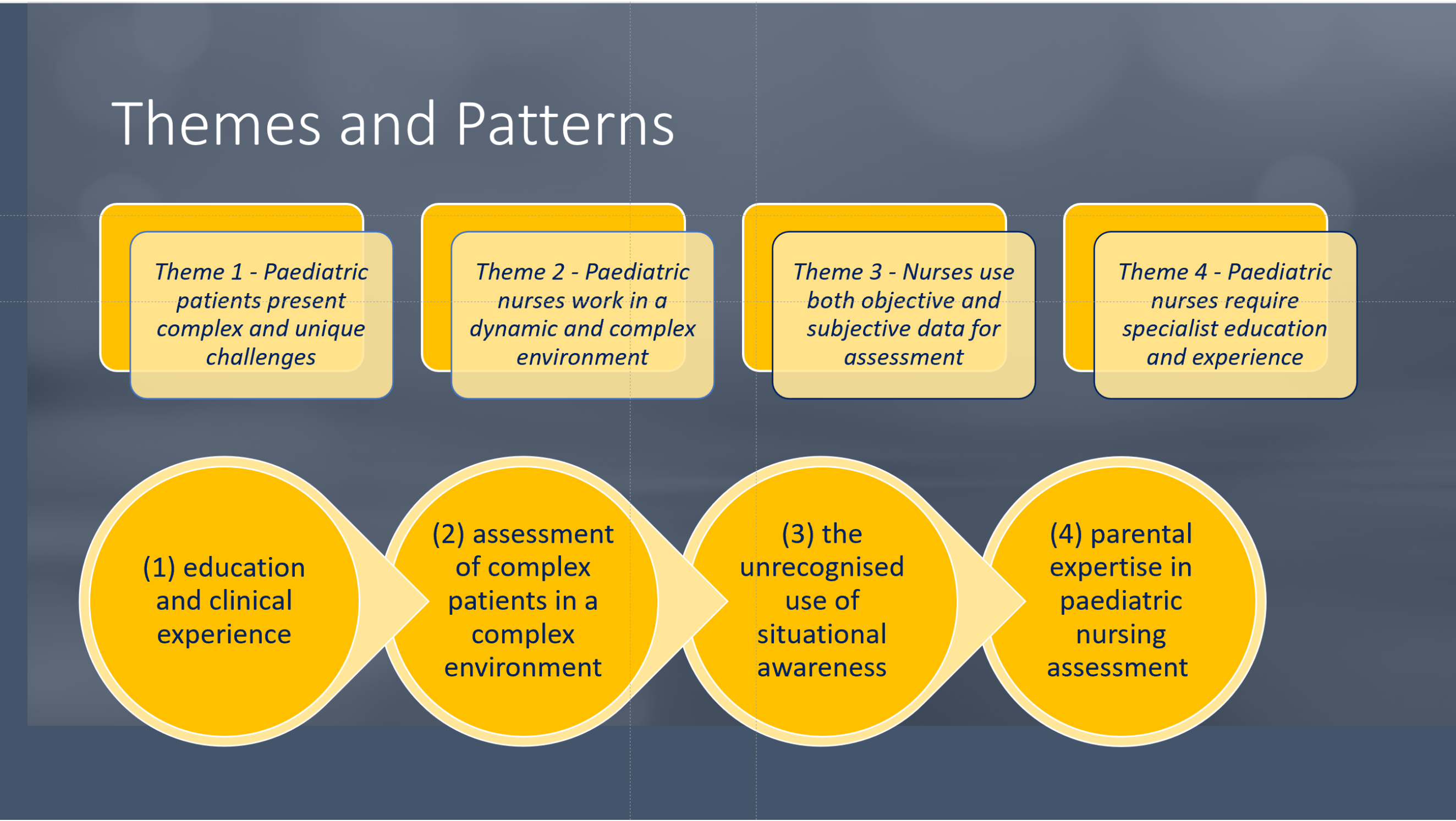


Figure 4: Vital sign parameters in children are ill-defined and not based on evidence. Changes in vital signs can be a late sign of deterioration, thus PEWS may be poor indicator, especially in early stages when action could make a difference to outcome.

Results (3) Observational study (qualitative)

- Observations taken manually are not frequently performed
- Common practice to use electronic/automatic vital sign equipment
- Documentation is inconsistent and does not always reflect practice

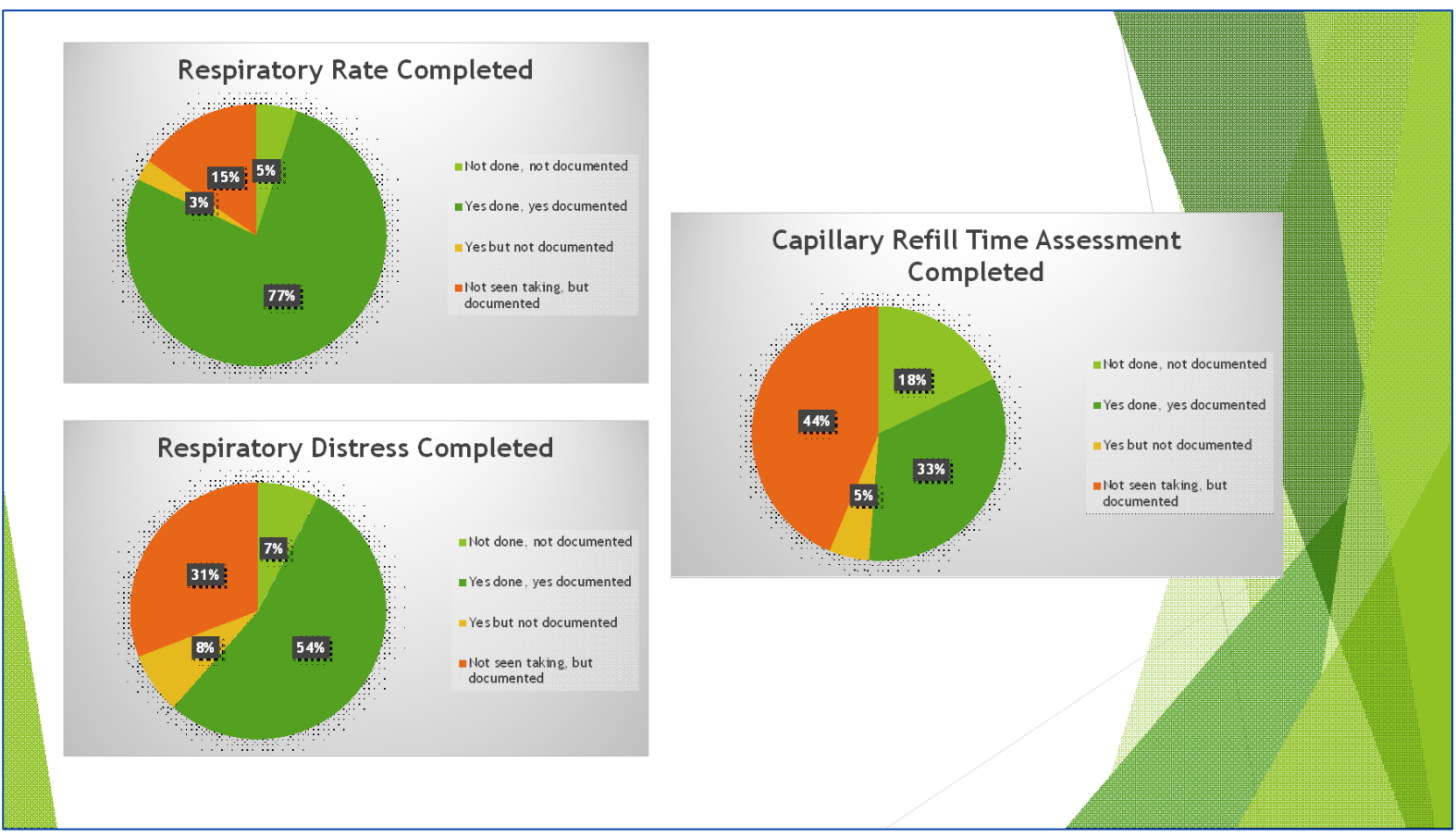


Figure 5: Examples of findings examining differences between observed nurse practice during physical assessment/vital sign collection & documentation

Background

- Australian studies in adult hospitals have demonstrated that using a structured patient assessment framework can enhance clinical performance and improve patient care outcomes.
- Consensus on core physical assessment skills has been developed and validated for adults in acute hospitals
- Timely recognition of deterioration is critical as outcomes for children who arrest in hospital are catastrophic; only 15-40% survive; of those who do survive, 25% are neurologically impaired.
- Safety data demonstrated that between January-July 2020 41% (n=437) of deteriorating paediatric patient incidents were related to incomplete monitoring of vital signs (VS) and 18% (n=193) from failure to recognise deterioration.

Method

A mixed methods study was undertaken across two Australian tertiary children's hospitals:

1. A systematic scoping literature review (Arksey and O'Malley, 2005)
2. Quantitative retrospective chart review of 512 patients aged 0-17 years
3. Observational study of 50 episodes of vital signs undertaken in 10 acute paediatric wards

Results (2) Retrospective chart review (quantitative)

Significant findings ($p < 0.05$) include:

- 0-3 month age group
 - more likely to have >75% of vital signs complete.
 - more likely to have deterioration event with no vital signs documented.
- 1-4 year age group
 - more likely to have more than three policies (figure 3) associated with care.
- 12-15 year age group
 - more likely to have a missed observation set.
 - associated with having <50% of vital signs documented.
- 3-12 month and >16 year age groups
 - associated with having a deterioration event where the patient spoke a language other than English.

Conclusion

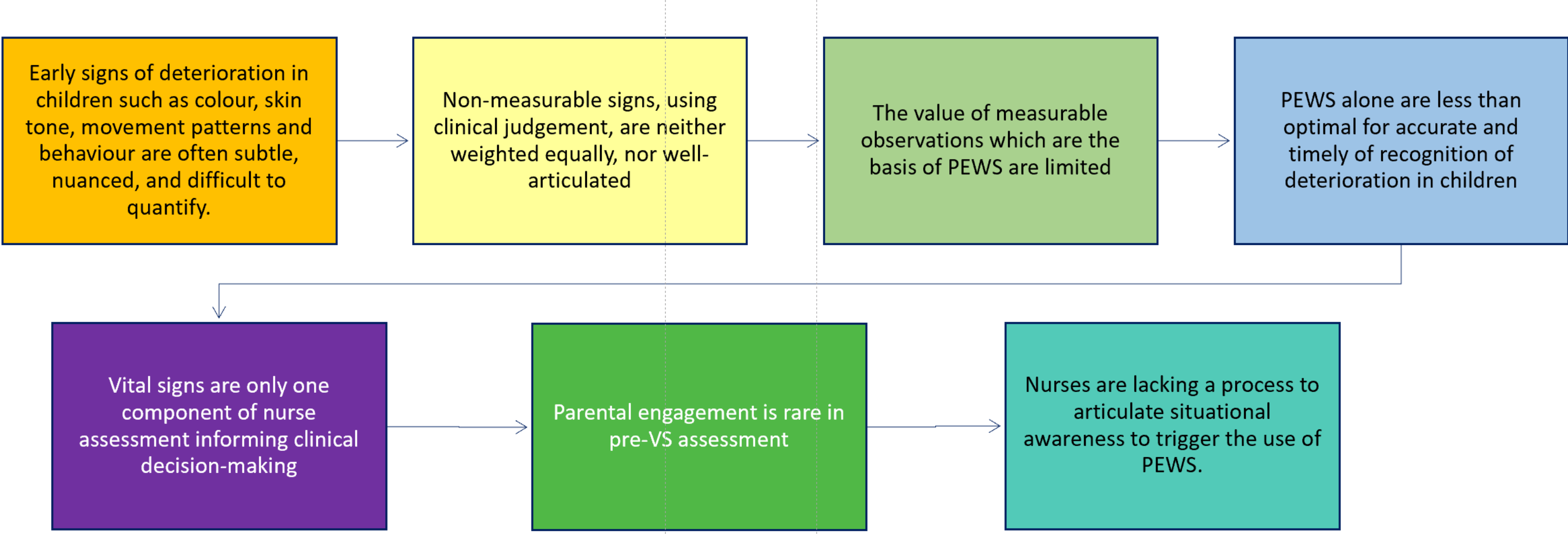


Figure 6: Data from a mixed method study of nurse clinical decision-making and a literature review found that early recognition of clinical deterioration in infants, children and adolescents relies on "situational awareness" ie, recognising subtle changes in a child's condition before changes in vital signs are apparent.