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Exploring Factors that Influence the Use of the Paediatric Early Warning System

A mixed method study within the paediatric inpatient
setting at Te Whatu Ora Waikato

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Abstract

Background

The paediatric early warning system (PEWS) was introduced as a nationally standardised tool in New Zealand to identify and escalate clinical deterioration in the paediatric population. Although the PEWS is implemented across the country, audit data at Te Whatu Ora, Waikato indicate that there is variability to adherence to the mandatory escalation pathway. There is limited research from the New Zealand context that explores the experiences of nurses using the PEWS in practice and what factors influence decision making when using the PEWS.

Objective

To explore the factors that influence nurses' use of the PEWS assessment tool and mandatory escalation pathway in a paediatric inpatient ward at Te Whatu Ora, Waikato, and to identify any educational requirements to support the use of the PEWS.

Participants

Participants were registered nurses employed in the paediatric medical ward (E5) and paediatric surgical ward (E4) at Waikato Hospital. Thirteen nurses participated in three focus groups and 31 nurses completed a quantitative survey.

Methods

This research is a pragmatic exploratory mixed methods design. Phase One involved three semi structured focus groups, with data analysed using Braun and Clarke's (2022) thematic analysis. The focus groups findings informed the development of a quantitative Likert scale survey used in Phase Two. Descriptive statistics were used to analyse the surveys, and the qualitative and quantitative findings were integrated to provide a comprehensive understanding of the factors that influence use of the PEWS.

Results

Five key themes were identified: Clinical Judgement and Experience, Time Pressures, Professional Responses and Communication, Unique Factors Presented by Children, and Adherence to PEWS and Education. The survey findings validated these themes, highlighting how workload pressures, communication processes, clinical judgement, and paediatric-specific factors influence nurses' use of the PEWS.

Conclusion

Nurses view the PEWS as a valuable tool that supports patient safety, communication, and recognition of deterioration in paediatric patients. However, the use of the PEWS was influenced by factors that include the balance between clinical judgement and mandatory escalation, workload and time pressures, interprofessional communication, paediatric assessment challenges, and documentation requirements. While participants felt adequately educated in the PEWS use, education alone was not enough to ensure consistent adherence to the PEWS escalation pathways. Successful implementation requires ongoing simulation-based and interprofessional education, organisational support, adequate staffing, and understanding how clinical judgement can be utilised with the standardised pathway. These findings highlight the need for a systems-based approach to improve the use of the PEWS and enhance paediatric patient safety.

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Contribution

I, the researcher, undertook all aspects of this study under the direct supervision of my advisor. This encompassed the design of the study, conducting a comprehensive literature review, securing ethical approval, developing the interview guide and survey instruments, coordinating participant recruitment, and collecting and analysing both qualitative and quantitative data. I also integrated the findings and prepared this thesis. I collaborated with stakeholders from Te Whatu Ora, Waikato to organise and conduct focus groups with nursing staff from Wards E4 and E5. The interpretation of findings and all written work presented in this thesis are solely my own. I used Grammarly and AI-assisted writing tools to support proofreading, grammar correction, spelling, and improvements to clarity and readability. These tools were not used for data collection, data analysis, interpretation of findings, or the generation of original research content. All intellectual contributions, interpretations, conclusions, and the final written work presented in this thesis are my own.

Dedication

To Ken, though you were only part of the final 8 months of this journey, your support and encouragement gave me the drive to reach the finish line. Thank you.

Chapter I: Introduction

Research is formalised curiosity. It is poking and prying with a purpose.

(Zora Neale Hurston, 1903–1996)

1.1 Early Warning Systems

Early Warning Systems (EWS) have been widely adopted at both local level, such as Te Whatu Ora in Waikato, and national scale. Different versions of EWS are utilised to cater to various populations, each with distinct needs and physiological parameters. This includes adaptations for adults, maternity, neonatal, and neurological variations. While this thesis primarily centres on the paediatric version of the early warning system, it is essential to recognise the rationale behind the broad implementation of the standardised early warning system at both local and national levels. This first chapter introduces the EWS and PEWS, along with their respective purpose. This description will help explain the reasons behind the initiation of the current research.

1.2 Background

The Paediatric Early Warning System (PEWS) is a rapid response mechanism employed both nationally and internationally to address the clinical deterioration of paediatric patients. It was designed to provide health professionals with a systematic framework for assessing and responding to indicators of potential deterioration in paediatric health. Variations of the system exist worldwide; however, the core principles remain consistent. The implementation of an early warning system in any clinical environment is considered the gold standard. While there may be local variations in the escalation pathways associated with the parameters of PEWS charts, the fundamental application of the tool is unchanged. At Te Whatu Ora Health New Zealand, the version currently in use has been implemented under the guidance of Health Quality and Safety New Zealand (Health Quality and Safety Commission New Zealand [HQSCNZ], 2022a). Drawing on both local and international literature, this research examines the application of PEWS across various settings and highlights the barriers to its effective use. This exploration will delve further into the functionality of the early warning score tool and its efficacy in enhancing health outcomes, with a

specific focus on its national and international utilisation and the obstacles encountered in its deployment.

1.3 Definitions of Terms

Vital Signs are physiological signs used to assess and monitor a patient. They include work of breathing, oxygen saturations, oxygen requirement, heart rate, capillary refill, blood pressure, and level of consciousness. When these signs are assessed together, they can aid in diagnosis and determine how unwell the patient is. The physiology of children change as they get older; therefore, there are four different charts according to age that recognise these physiological differences (HQSCNZ, 2022a).

EWS are used to detect potential deterioration of a patient through gathering physiological data (Flenady et al., 2024). The system gives the physiological data collected from a patient a numerical score which correlates to an escalation pathway. A higher number indicates the need for more rapid movement through the escalation pathway to minimise further deterioration for the patient (HQSCNZ, 2025). At Te Whatu Ora, Waikato there are various applications of EWS. This research focuses on the PEWS which is the paediatric version of EWS.

Escalation Pathway is part of the early warning system and uses the numerical score. In New Zealand the escalation pathway is set by the local regions which utilise the resources available (HQSCNZ, 2025); hence, it can differ from region to region. The escalation pathway usually indicates the need for escalation to senior nurses; medical doctors; intensive care; or, in the rural settings, escalation to the closest tertiary hospital. They often indicate timeframes for response, vital sign frequency, other assessments to carry out, and documentation requirements. In New Zealand it is mandatory for the escalation pathway to be followed in its entirety.

1.4 Compulsory Audit

The implementation of the nationally recognised PEWS charts at Te Whatu Ora, Waikato represents a significant innovation in paediatric patient assessment, with full rollout in June 2023. Prior to this transition, a locally developed PEWS chart was

utilised; however, its application was characterised by minimal auditing and review processes. Notably, the evaluation of this previous chart predominantly occurred only in response to adverse events or outcomes, underscoring a reactive rather than proactive approach to patient monitoring and safety.

As part of implementing the national chart, there has been compulsory auditing to measure adherence to its use. (See Appendix A for HQSCNZ auditing tool templates.) The audit results have shown some areas to improve for Te Whatu Ora, Waikato. The measure from the auditing that has driven this research is the question “Did the escalation occur according to the pathway?” Given the escalation pathway is mandatory, the expectation for this measure would sit closer to 100%; however, the national average sits well below expectations, with the escalation following the mandatory pathway consistently around 50%. Concerningly, when benchmarked against national data, Te Whatu Ora, Waikato consistently sits below the national average. (See Appendix B for quarterly reported audit data post implementation.)

1.5 What are EWS

EWS employ a scoring mechanism that assigns numerical values to various physiological measurements. According to the Te Whatu Ora New Zealand PEWS chart, seven physiological parameters are scored: respiratory rate, respiratory distress, oxygen requirement, oxygen saturation, heart rate, central capillary refill, and systolic blood pressure.

It is important to recognise that physiological differences between adults and children are accounted for in the scoring of the early warning system. During the development of the national charts, significant data were collected from a national trial and evaluated alongside international research to establish normal parameters for each age group (HQSCNZ, 2022b). Presently, there are four age-specific variations of the PEWS chart utilised nationwide: 0-11 months, 1-4 years, 5-11 years, and 12 years. These charts are implemented across all inpatient settings for paediatric patients. The only nationally recognised exception to the use of PEWS occurs in intensive care and high-dependency units, where specific unit charts for vital sign monitoring are generally employed. However, the Health Quality & Safety Commission’s user guide specifies

that before transferring a patient to another inpatient unit, the most recent set of vital signs must be documented on a PEWS chart (HQSCNZ, 2022a). The implementation of the PEWS was a national initiative aimed at ensuring consistency in the application and messaging surrounding the charts. The HQSCNZ provided educational support for the nationwide rollout of PEWS. Local hospital leaders received resources to aid in training staff on the proper use of the chart.

1.6 Why EWS are Used

In the paediatric population, clinical features often precede deterioration; thus, the purpose of using EWS is to detect and escalate early signs of clinical deterioration to avoid admission to a higher level of care, such as an intensive care unit (ICU) or high dependency unit. Roland et al. (2021) suggested that not using a standardised, age-appropriate EWS creates a safety risk when responding to an acutely unwell child. In the New Zealand setting, the paediatric version was developed as a systematic approach for clinicians to escalate concerns of deterioration of a paediatric patient. There is limited local data on the correlation between missed deterioration and vital signs recording. However, after a review of adverse events and assessment of what was being used nationally, the HQSCNZ (2022a) deemed the development of national PEWS an opportunity to provide a consistent system and language.

Benefits of the PEWS is mostly seen in the reduction of admissions to higher level care settings such as paediatric intensive care or high dependency units. It is also suggested to reduce the chance of death due to late detection of deterioration and delays in care. In adult settings, EWS have been demonstrated to effectively reduce mortality when utilised correctly (Ye et al., 2019). However, research conducted by Parshuram et al. (2018) revealed that this level of accuracy does not extend to the paediatric population. Their international clinical trial, which compared 10 hospitals employing the use of PEWS with 11 hospitals lacking such a system, evaluated outcomes such as mortality rates, significant deterioration, and late admissions to ICUs. The findings indicated no significant difference in mortality rates for children in hospitals that used a standardised PEWS compared to those without it. Nonetheless, the study highlighted a statistically significant reduction in ICU admissions in inpatient settings where a PEWS was implemented. Consequently, the research concluded that

while the PEWS may not serve as an effective tool for strictly reducing mortality in paediatric patients, it still offers advantages, particularly in lowering the rate of ICU admissions. Similarly, McBride's (2018) study indicated a significant reduction in mortality among patients admitted to the Paediatric Intensive Care Unit (PICU) as a result of utilising the PEWS.

An identified purpose of using the PEWS is to effectively communicate clinical deterioration to the wider healthcare team. When the PEWS is standardised, well socialised, and used correctly, it serves as an effective communication tool. It supports a professional language for both communication and documentation (Jensen et al., 2018), and can be utilised for discussions between nurses and doctors as well as among nursing colleagues to indicate the need for support. Furthermore, when the concept of PEWS is explained to caregivers and patients, it allows nurses to convey their level of concern (Gillipelli et al., 2022), the actions they will take, and the expected responses to these actions, providing reassurance to caregivers. It has been identified that after a serious deterioration in a paediatric patient, caregivers need to be listened to and to have their clinical concerns understood in a language they comprehend. When explained well, the PEWS can support caregivers' concerns, leading to a greater understanding of what is happening with their child (Heath et al., 2016). On a national and local level, the standardisation of the PEWS is critical for ensuring consistent communication and care.

Additionally, the standardisation of charts is necessary so that when a child is transferred between hospitals or regions, the charts are the same. In a nationwide review prior to the national implementation, it was found that most hospitals had a local version of the PEWS, but the physiological parameters, scoring, and escalation requirements were all very different (HQSCNZ, 2022a). At Waikato Hospital there are various flows of patient admitted and transferred from the paediatric space. For example, a common path for inter-hospital transfers to occur is between Waikato Hospital and Starship Children's Hospital in Auckland for specialised paediatric care. Another example is patients who are frequently transferred from smaller regional hospitals to Waikato Hospital for specialist care. In these instances, the common language helps with assessing the paediatric patient's clinical status and the

appropriateness and safety of transferring a paediatric patient (Luijmes et al., 2025) as a directive from HQSCNZ is used in all inpatient settings across the country.

The national standardisation is achieved by each chart being formatted the same, with identical vital sign parameters having the same scoring criteria. The only point of difference is the escalation pathway which is tailored to the local setting. Having the same parameters, appearance, and scoring make recognising trends or deterioration more consistent nationwide. Using it as a consistent and familiar tool when completing handovers between wards, intensive care, emergency departments, and other healthcare settings reduces the risk of inconsistency and miscommunication, and increases the detection of deterioration (Romaine et al., 2021). Furthermore, when staff are moved between departments and hospitals, having a nationally standardised tool increases the ability to educate widely and support familiarity with the tool to improve patient outcomes (Brangan et al., 2018).

A report regularly cited in the literature as a seminal work is “Why children die: A pilot study” (Public Health Agency, 2008). This research was an independent inquiry and one of the initial pieces of work that initiated the implementation of the PEWS system internationally. Carried out in the United Kingdom by the Confidential Enquiry into Maternal and Child Health, the inquiry supported the National Health System to make informed changes, and improve outcomes for women and children. It involved a quantitative analysis of 957 deaths of children from 28-days-old to 18-years-old, including children with pre-existing life-limiting illnesses and suicide. Most of these children’s deaths were in a hospital setting, with 66% of these deaths certified in hospital. The enquiry concluded that 26% of the deaths were avoidable and 43% were deemed to be potentially avoidable. The report identified patterns for those children that died in hospital, including poor assessment due to lack of experience of medical staff working with paediatric patients and a lack of recognition of a paediatric patient who presents seriously unwell. The recommendations from the research created the basis for the introduction of the PEWS as a tool when working with acutely unwell children.

Overall, the implementation of the PEWS in New Zealand by the Health Quality and Safety Commission has aimed to have a systematic approach to respond to deterioration of a paediatric patient and improve the outcomes for paediatric patients in the healthcare setting. Having a unified nationalised tool creates a common language for communication of escalation and response as well as when paediatric patients move between healthcare locations (HQSCNZ, 2022a).

1.7 Te Whatu Ora Waikato Patient Population

Te Whatu Ora, Waikato serves a large and diverse population, with the region's population estimated at 479,700 (Health New Zealand, 2025). Waikato Hospital acts as the primary tertiary facility for this community. Approximately 20% of the population resides in rural areas, surpassing the national average of 15%. In addition to Waikato Hospital, four rural hospitals located in Thames, Te Kuiti, Tokoroa, and Taumarunui are part of Te Whatu Ora (Hauora Taiwhenua Rural Health Network, 2025). Each of these hospitals includes an emergency department capable of assessing and treating children, utilising the PEWS chart. This chart is consistent with the one used at Waikato Hospital, albeit with some variations in escalation procedures based on the available services at each centre.

When a child requires ongoing assessment in an inpatient setting, they are usually referred to Waikato Hospital. Populations in rural areas often face disproportionately poorer health outcomes compared to those in urban settings. Interestingly, despite these disparities, rural residents are 37% less likely to experience a hospital admission over the course of a year. While this trend might initially suggest a healthier population, it is contradicted by significantly higher mortality rates documented in rural communities, indicating that lower rates of hospital utilisation may reflect barriers to access rather than an actual improvement in health status (Nixon et al., 2024). Furthermore, the region has a younger average population compared to the national age distribution, resulting in a higher rural paediatric population than the national average (Health New Zealand, 2025). These distinctive demographic factors contribute to the examination of PEWS charts in the region, aimed at enhancing the continuity of care for this group of patients.

1.8 Background and Context of Working with Children

1.8.1 Developmental Stages and Vital Sign Monitoring

Children respond differently to medical procedures and interventions based on their developmental stages. Experiences such as vital sign monitoring can often be stressful for them (Hockenberry, 2023); infants may cry and move away from what is causing their discomfort. Typically, toddlers and preschoolers also cry and may resist or refuse the procedure, often clinging to their parents. School-age children might not resist as overtly as younger children, but they often experience anxiety, especially if they have previous negative encounters with healthcare. For these older children, the anticipation of a painful procedure can be significant (Olweny, 2023). A child's developmental level influences both their understanding of and reactions to vital sign monitoring, as they might associate it with past negative experiences, fear of pain, or a sense of loss of control. It can be challenging for a child to distinguish between routine procedures and those that may be painful. Additionally, the unfamiliar healthcare environment, along with new people, can be intimidating (Wojciechowska-Urbaneck et al., 2026).

These anxiety responses can trigger physiological changes. The activation of the sympathetic nervous system can lead to the fight-or-flight response, resulting in the release of hormones such as adrenaline, noradrenaline, and cortisol. These hormones can cause noticeable physiological changes, including increased heart rate, respiratory rate, and blood pressure (Bruce, 2007). Consequently, these physiological responses can affect the PEWS, leading to elevated scores without any actual clinical deterioration in the child (Chapman et al., 2016).

1.8.2 Pathophysiology: Paediatrics vs. Adults

There are significant physiological differences in an infant or child compared to an adult (Berdambetova, 2025). The different parameters and inclusions in the scoring section of the PEWS are based on the changing physiology of patients. In New Zealand, there are four distinct PEWS charts designed to reflect these changes as an infant grows through childhood into adolescence (HQSCNZ, 2022a). Respiration rate, heart rate, capillary refill, and blood pressure are the vital signs that have different set parameters as the patient moves from infancy to adolescence. Table 1 outlines the

specific physiological differences between the adult EWS and the paediatric PEWS and the subsequent impact for the charts.

Table 1.

Physiological differences between children and adult.

Physiological Parameter	Paediatric Physiology	Impact for PEWS vs. EWS
Respiration Rate	Infants have higher metabolic rate due to rapid growth and increase oxygen demand. This creates an increased oxygen demand, which results in a higher respiratory rate. As children grow the respiratory rate decreases.	For PEWS age specific respiratory rates are required. Adult EWS uses lower, fixed ranges.
Heart Rate	Infants have lower stroke volume due to smaller cardiac structures and immature myocardial tissue. To maintain cardiac output, an increase heart rate is required.	PEWS uses higher heart rates for younger children. Heart rate changes are often an early indicator for deterioration in children compared to adults.
Blood Pressure	Infants have lower blood pressures due to smaller body size and reduced vascular resistance. While blood pressure is an indicator for deterioration, in the paediatric population increased heart rate is an earlier indicator of deterioration.	Blood pressure is a late sign of deterioration in paediatrics and may be difficult to obtain. It is sometimes omitted or deprioritised in PEWS compared to EWS. HQSCNZ emphasise its importance for trend recognition in a deteriorating patient.
Capillary Refill	Central capillary refill time is the preferred method of assessment over peripheral refill in the paediatric patient. Peripheral refill time is influenced by environmental conditions, developmental stages and skin characteristics.	PEWS uses central capillary refill as the perfusion indicator. Adult EWS rely on peripheral refill as the perfusion indicator.

Physiological Parameter	Paediatric Physiology	Impact for PEWS vs. EWS
Temperature	Temperature has low specificity for recognising deterioration in children because benign causes such as teething and viral illnesses are common.	Temperature is recorded but excluded from scoring in the PEWS; whereas for adults it is included in the EWS.
Level of Consciousness	Assessing level of consciousness in infants and young child is complex and requires clinical judgement. Any change is clinically significant.	PEWS emphasises escalation for any change in consciousness regardless of the score. Whereas the adult EWS incorporates the Glasgow Coma Scale (GCS) into scoring.
Respiratory Distress	Children are more prone to respiratory compromise due to smaller airways, immature respiratory muscles, and compliant chest walls. Respiratory deterioration is often an early sign of clinical decline.	PEWS includes respiratory distress and effort as a scored parameter, unlike adult EWS where it is less explicitly captured.

Table 1 above illustrates that children are not merely smaller versions of adults. There are significant anatomical and physiological differences that affect how vital signs are assessed and interpreted in clinical practice. For instance, the higher metabolic rate observed in infancy leads to increased respiratory and heart rates. Additionally, due to immature cardiac physiology, cardiac output is dependent on heart rate rather than stroke volume. As a result, children can maintain blood pressure until they have significantly deteriorated, making parameters such as heart rate, respiratory effort, and capillary refill more sensitive indicators of deterioration compared to adults. These physiological differences highlight the necessity for paediatric-specific warning systems that are age-adjusted to effectively signal deterioration (Berdambetova, 2025; Fleming et al., 2016; Peate, 2021; Romaine et al., 2021).

1.8.3 Communication and the Paediatric Population

Communication represents one of the most intricate aspects of working with the paediatric population. Much of healthcare revolves around effective communication,

encompassing the patient's ability to express their needs and health professionals' capacity to convey treatment options and ensure informed consent. However, practitioners must navigate the diverse developmental stages and communication abilities of children (Paquita, 2010).

Children often lack the cognitive understanding necessary to grasp the reasons behind medical interventions; instead, their focus tends to be on their immediate reactions to procedures. A typical example in the current context is the child's discomfort during a blood pressure measurement, where they may not comprehend the essential nature of the procedure for their care (Hockenberry, 2023). Therefore, communication strategies and language geared towards adults need to be adapted to suit children's needs. This adaptation may involve using simple, concise explanations, incorporating play in discussions, and providing reassurance tailored to the child's developmental level (National Institute for Health and Care Excellence, 2021). For the PEWS, modified communication might involve utilising play, distraction methods, or waiting until the child is less anxious before completing the assessment. However, modifying communication techniques to align with developmental stages can increase the time and resources required to accomplish a task (Hockenberry, 2023).

Children's ability to articulate their symptoms fluctuates with their developmental stages. For instance, they may struggle to express feelings of pain, nausea, or shortness of breath, often resorting to physiological and behavioural indicators such as crying, irritability, lethargy, or decreased activity. Additionally, distress can hinder a child's ability to communicate, further complicating interventions (Wojciechowska-Urbanek et al., 2026). These various cues can influence physiological responses, impacting the PEWS. As previously noted, such physiological responses can lead to elevated scores on the PEWS without indicating any actual clinical deterioration in the child. (Chapman et al., 2016)

1.8.4 Family Centred Care

Family centred care is a cornerstone approach to healthcare in paediatric nursing. It is centred on the partnership of decision making between family and healthcare providers

(Kuo et al., 2011). This approach contrasts with the adult model of care, which is centred on the individual patient. A key principle of family centred care is that families are considered the experts regarding their child's needs. With respect to the PEWS, it means enabling families to identify subtle changes in their child's condition before any physiological signs emerge that would typically activate the PEWS (Lambert et al., 2017).

When a child is hospitalised families often experience stress and anxiety through the admission (Bloxham et al., 2023) and heightened emotions when there are procedures, any deterioration, or emergency situations. Nurses and healthcare professionals need to recognise and support family members to reduce stress and anxiety. Having a family that is well supported will contribute to a more positive experience within the healthcare setting and assist with supporting positive engagement with the child (Hodgson et al., 2024). The presence of family during procedures can alleviate anxiety and stress, while also providing emotional support. However, intense emotions can sometimes lead to the transfer of anxiety and distress onto the child. Additionally, separation from family members can exacerbate feelings of anxiety and stress in the child (Eichner et al., 2012). For nurses, this highlights the importance of understanding the balance between family involvement and its impact on the child's experience and responses to the PEWS.

In the New Zealand context, the acknowledgment of family voice has been illustrated in one of the workstreams focused on deteriorating patients at the Health Quality and Safety Commission. This initiative, known as Korero Mai, was designed to empower patients and their families to express concerns when they feel their needs are not being adequately addressed (Te Tāhū Hauora Health Quality & Safety Commission, 2026). The implementation of this programme is grounded in literature highlighting the essential role families play in recognising issues, emphasising that their voices should be heard. A systematic review by Gill et al. (2016) found that when there was the ability for family members to escalate clinical concern, it improved communication between families and healthcare professionals. It improved the consumer experience with the health services as well as provided yet another safety mechanism for detection of deterioration.

1.9 Researcher Background

I graduated from Otago Polytechnic in 2009 with a Bachelor of Nursing degree. I then pursued a postgraduate certificate in health science at the University of Auckland while participating in the Nursing Entry to Practice programme. I served as a registered nurse during my second-year placement at Waikato Hospital. After 2 years of nursing practice, I travelled overseas to gain experience in various healthcare roles. Upon returning to New Zealand in 2014, I joined Starship Children's Hospital. During this time, I began a postgraduate diploma in health science, which I completed in 2016 after returning to Waikato Hospital. Initially, I worked as a registered nurse in the oncology department before transitioning to a paediatric medical inpatient ward as a registered ward nurse in 2017. By 2019, I took on the position of Nurse Educator for paediatrics, which is my current role. In this capacity, I also served as the clinical nursing lead for the rollout of the national PEWS, which involved intensive auditing before, during, and after the implementation

1.10 Summary

The EWS and PEWS are extensively utilised in healthcare to aid in the recognition and escalation of patient deterioration. This current study specifically examines the PEWS, a tool that has been nationally standardised across New Zealand. Despite its implementation throughout the country, audit data from Te Whatu Ora, Waikato and nationally has revealed ongoing challenges with adherence to the escalation pathways. Following the introduction of the PEWS at Waikato Hospital in 2023, these findings prompted me to investigate the factors that influence the implementation of PEWS in clinical practice. As the Paediatric Nurse Educator and clinical lead for the PEWS implementation, my involvement in education and auditing has been the foundation for this study.

Chapter II: Literature Review

2.1 Introduction

This chapter examines the literature pertaining to the PEWS and its application in detecting and responding to clinical deterioration. The review aims to highlight gaps in the existing literature and establish the necessity for the current research. It will explore the development and objectives of using the PEWS, as well as its impact on communication, patient outcomes, and the barriers that have been identified regarding its implementation.

2.2 Search Methodology

A thorough review of the literature revealed several studies with similar objectives. The current mixed-method study examines the factors that influence registered nurses' use of the PEWS in two paediatric inpatient wards at Waikato Hospital. By understanding what drives the use of the PEWS chart, the educational needs or necessary changes for nurses to effectively utilise these charts can be assessed. Common themes emerged that highlighted the factors influencing both nurses and broader healthcare teams in their use of EWS. While there is considerable literature supporting the implementation of the PEWS, specifically, including local and international case studies that illustrate instances of missed care due to failure in escalation, the literature also sheds light on various barriers and perceived negative consequences associated with use of the tool.

When conducting a comprehensive literature search, the terms used were: 'pediatric or paediatric or children', 'PEWS or paediatric early warning system or pediatric early warning signs', 'vital signs or vital sign monitoring or vital sign assessment', and 'nurse or nurses or nursing'. Entering these terms into the databases did not yield a significant number of results for paediatric specific early warning scores, so the term 'early warning score or national early warning score or early warning tool' was incorporated into the search to expand on nurses' experiences with using an early warning score tool. These terms were entered across the databases CINAHL Ultimate, Medline Ultimate, and PubMed.

The search returned 10 articles across all databases for title and abstract screening. Research abstracts returned from subsequent searches were assessed for relevance to the research topic, study design, population, and key outcomes. Articles that were not in English or if the article was published before 2016 were excluded. The majority of the literature was mostly observational with an emphasis on retrospective and prospective designs.

Following the review of full text, four articles were included in the final literature review. The literature was analysed to identify the key themes related to the implementation of the PEWS, perceived benefits, barriers to the effective use and adherence to escalation pathways. These themes informed the development of the current study and used the context to interpret the findings.

2.3 Cultural Safety and Equity in Escalating Care

Cultural safety is a vital component of nursing practice in New Zealand, significantly influencing various aspects of care, particularly in the recognition and escalation of patient deterioration. The concept was initially introduced by Irihapeti Ramsden (2002), a Māori nurse, specifically for nursing within the New Zealand context. The guiding principles of cultural safety that Ramsden highlighted were the importance of nurses engaging in critical self-reflection, addressing power imbalances, pursuing transformative or decolonial actions, and acknowledging that cultural safety is defined by the individuals or communities receiving health services. More recently, Curtis et al. (2025) emphasised that cultural safety requires health professionals to examine their own identities and cultural influences in their practice. They advocated for health professionals to confront their own power dynamics, biases, attitudes, assumptions, and prejudices that may affect the quality of care provided. Health professionals must practice self-reflection and take accountability for providing culturally safe care as defined by their patients and communities. The overarching goal is to minimise bias and inequities within the workforce and working environment. The Nursing Council of New Zealand (2025) provides guidance on integrating cultural safety into both nursing education and practice. Key recommendations include focusing on individual and family experiences to enhance care and encouraging nurses to reflect on their own

biases and attitudes during interactions with individuals and families in healthcare settings.

Cultural safety and equity are interconnected within the New Zealand healthcare system. Equity is defined as the recognition that different populations require varying levels of support and resources to achieve comparable health outcomes (Manatū Hauora, 2019). This concept is particularly relevant when examining the context of the PEWS. In New Zealand, there are persistent inequities in health outcomes for Māori children, highlighting the importance of including the concept of cultural safety and equity when examining the use of PEWS (Curtis et al., 2019). Much of the existing literature concentrates on the tool's validity, accuracy, compliance, and outcomes related to escalation. However, cultural safety and equity can significantly influence how responses to deterioration are managed. Understanding who feels empowered to voice their concerns and trusts that these concerns will be addressed is crucial, as it can affect the escalation of the PEWS. This is especially pertinent in paediatric settings, where patients, caregivers, nurses, and medical staff all play a role in making decisions about escalation (Curtis et al., 2019).

In New Zealand, Te Tiriti o Waitangi serves as the framework for healthcare delivery. Health professionals are required to collaborate with Māori to ensure their inclusion in decision-making processes and to address health inequities. The principles of partnership, participation, protection, and equity are emphasised in this context (Manatū Hauora, 2019). Cultural safety supports these principles by encouraging health professionals to examine and reflect on how power, privilege, and institutional structures can influence health outcomes for Māori (Curtis et al., 2019). PEWS is often regarded as an objective physiological tool; however, it necessitates a social and cultural framework for effective utilisation. Although it is presumed that the recognition of deterioration relies solely on physiological indicators, the concerns raised must be communicated and acted upon. Nurses and caregivers need to feel empowered to voice these concerns, especially when escalation is required. In addition, one of the assessments included on the PEWS chart is the documentation of whānau (family) concerns. It is essential for nurses to evaluate the family's concerns each time vital signs are recorded. While this section does not contribute to the numerical PEWS

score, it is recognised that any concerns expressed by the family regarding their child should be addressed and escalated appropriately. This aligns with international research that acknowledges family involvement in the recognition of deterioration and escalation process (Gillipelli et al., 2022).

Professional hierarchies may reveal cultural and structural inequalities that can affect communication. Literature on cultural safety highlights that healthcare interactions can be marred by institutional racism, discrimination, and unsafe care, all of which can diminish the willingness to speak up when issues arise (Curtis et al., 2019). In the context of the PEWS, recognising and escalating deterioration cannot be considered culturally neutral. The efficacy of the PEWS hinges both on physiological parameters and the quality of communication, professional relationships, and level of trust within the healthcare environment (Saron et al., 2022).

Similar Research

Almblad et al. (2018) aimed to evaluate the implementation of the PEWS by reviewing clinical adherence to guidelines. This research was conducted in a Swedish children's hospital where the PEWS had been implemented across three wards. The study retrospectively examined electronic patient records to assess adherence to the guidelines. Following this review, the researchers utilised the Alberta Context Tool, a survey instrument designed to explore individual healthcare providers' perceptions of the organisational context. The findings highlighted that effective leadership and thorough training significantly influenced adherence to the guidelines. It was observed that stronger leadership and more comprehensive training led to a higher likelihood of nurses following the established protocols. Furthermore, the study emphasised organisational factors when assessing the use of PEWS, providing valuable context for the current research. While the data from electronic records were largely irrelevant for this specific study, it did offer insights regarding healthcare providers' contexts. Additionally, a limitation to the research was that it focused on three paediatric inpatient settings, resulting in a relatively small sample size.

A relevant study that shares similar research aims with the current investigation is by Thekkan et al. (2023). Their research examined nurses' attitudes towards monitoring

vital signs and the association between their attitudes and practices in relation to organisational characteristics. Conducted across 10 Italian hospitals, the study employed a correlational multi-centred cross-sectional design and unfolded in phases. The initial phase focused on understanding the hospital characteristics regarding the utilisation of the PEWS. The second phase, particularly pertinent to the current study, involved surveys that assessed nurses' attitudes and practices in using the PEWS. The findings highlighted the significance of leadership and education in shaping nurses' attitudes and experiences with the PEWS, suggesting that providing support to enhance practice would keep nurses well-prepared and motivated. Furthermore, it was noted that workload and time constraints negatively impacted timely observations, prompting a recommendation to evaluate workload and safe staffing levels. However, this study faced limitations, including inconsistent implementation and usage of the PEWS system across some test sites. Additionally, the response rate was below 80%, indicating a potential bias among responding nurses who may have provided more favourable responses.

Jensen et al. (2018) examined the experiences of nursing staff when using the PEWS and identified factors that support or hinder its use. This research employed an exploratory qualitative design, utilising focus groups to gain deeper insights into nurses' experiences. The study identified seven key themes. The first theme highlighted the lack of interdisciplinary awareness, indicating that the tool was primarily used by nurses without sufficient support from doctors. The second theme focused on clinical judgment, with some participants suggesting that PEWS diminished clinical judgment, while others felt it enhanced it. The third theme discussed how the PEWS facilitated a professional language when escalating care. The fourth theme emphasised the ability to monitor patients, particularly addressing challenges related to equipment and the difficulties of taking vital signs in children. The fifth theme noted that PEWS helped visualise the need to escalate care. The tool assisted nurses in understanding the level of observations required for a child and the threshold for escalating care. The sixth theme pointed out that PEWS is inflexible and challenging to use; due to this rigidity, there were instances when nurses did not adhere to the tool. Finally, the seventh theme involved the use of additional tools that complemented PEWS, enhancing the nurses' experience.

During the study, participants used a digital platform to record PEWS, although real-time documentation was often hampered by workload issues. To address this issue, a paper resource was developed to support real-time identification, which ultimately led to a more positive experience for the nurses. This research provides valuable insights into themes for consideration in the current study. However, it is important to note the limitations: the principal researcher was instrumental in developing, implementing, and educating nurses about the PEWS chart, which may have led to a risk of social desirability bias. Additionally, the use of focus groups restricted the number of participants in the study.

Another research with a similar aim is a qualitative study evaluating the perspectives of providers using the PEWS when caring for deteriorating patients (Garza et al., 2021). Additionally, it explored the differences between a highly resourced facility and one with limited resources. The findings revealed five themes that negatively influence nurses' perceptions of care during deterioration while utilising the PEWS. The first theme identified a lack of communication, highlighting instances of ineffective communication between nurses and doctors. The second theme addressed inexperience with deterioration, noting that both nurses and doctors have had negative experiences when unfamiliar with paediatric deterioration scenarios. The third theme focused on the lack of resources and challenges related to technology; including issues with the infrastructure of the clinical setting and difficulties in reaching the appropriate personnel to support escalation. The fourth theme was the occurrence of false positive scoring, where the tool prompted a higher level of care without a perceived necessity for such escalation. Lastly, the study concluded that the PEWS were considered objective—an automated tool that could detract from clinical judgment. Study limitations included potential social desirability bias, as the interviewers were external to the clinical setting. Furthermore, the research was conducted in both English and Spanish, which raises the possibility of errors in the translation process to English.

Graetz et al. (2020) conducted a qualitative study using semi-structured interviews to explore the PEWS and its role in interdisciplinary communication. The research involved a comparison between two paediatric oncology hospitals with differing

resource levels. The findings highlighted several barriers to the effective use of the PEWS. The first identified theme was the prevailing medical culture and hierarchy which, despite the universal language of PEWS, continued to create a sense of hierarchy that adversely affected its implementation. Another theme was team dynamics, as the need for escalation through various teams occasionally resulted in poor communication, particularly with unfamiliar teams. This miscommunication led to inconsistencies in the application of the PEWS. Additionally, the study noted that reliance on technology contributed to communication challenges. The use of pagers and other non-verbal forms of communication fostered feelings of inadequate interaction among team members. Furthermore, the automation of the PEWS raised concerns about diminished clinical judgment, especially in resource-limited environments, negatively impacting participants' experiences. The study acknowledged social desirability bias as a potential limitation. The two hospitals were located in different countries, one English-speaking and the other not, necessitating translation of interviews from the non-English speaking site, which could have introduced variations in data interpretation. Furthermore, the implementation of the PEWS differed between the two settings, leading to variations in education, training, and local support.

Pedersen et al. (2025) conducted research on nurses' experiences with the barriers and enablers of using the PEWS in practice. This exploratory qualitative study utilised semi-structured interviews with nurses from a paediatric emergency department to reveal the nurses' experiences regarding knowledge and skills, social influences, as well as motivation and goals. Regarding knowledge and skills, the first theme identified was the impact of formal and informal training on nurses' experiences with the PEWS. This was particularly significant for those with limited experience in caring for paediatric patients. The study highlighted that the department examined lacked a structured education programme, which adversely affected the nurses. The second theme centred around varying beliefs about the use of the PEWS and its consequences, which depended on the context and the experience of the individual nurse.

In terms of social influences, one theme to emerge was the culture of the department. Some nurses reflected on how clinical judgment, especially that of more experienced

colleagues, often influenced their adherence to the PEWS. Reliance on experienced clinicians was ingrained in the department's culture and practice. Additionally, there was concern about potential repercussions for not adhering to the PEWS, such as complaints or scrutiny of documentation processes. Consequently, adherence to the PEWS was affected by accountability pressures. Finally, the theme of motivation and goals described how nurses' use of the PEWS was dependent on its perceived meaning and alignment with clinical objectives. This was heavily influenced by how the PEWS impacted teamwork and interprofessional communication. If the PEWS was viewed as a useful tool for facilitating communication, it was utilised more effectively. Limitations of the research included a small sample size, as participants were only from the field of emergency nursing. Furthermore, the analytical framework used may have restricted the emergence of other themes.

Research by Foley and Dowling (2018) examined how nurses use the EWS in practice. Although the study focused on adults, its aim was to describe how nurses interact with the EWS and to assess their compliance with its guidelines, as well as explore their views and experiences with the tool. The study employed a data triangulation method which involved observing nurses using the tool in practice followed by interviews with those nurses. Three main themes emerged, the first being "protocol adherence versus clinical judgment". Nurses reported that they often relied on their clinical judgment with patients who had elevated EWS scores. In these situations, nurses described taking initial care actions within their scope before escalating the issue further. However, this approach sometimes meant that they were not fully adhering to the EWS guidelines. The second theme, "parameter adjustment and escalation" addressed patients whose observations deviated from normal EWS parameters despite being stable. This was particularly common among patients with chronic underlying conditions. In such cases, the EWS was not adjusted to reflect these atypical baseline observations. In a paediatric setting, these variations are less frequent, as fewer children have abnormal baseline observations (Li et al., 2024). The final theme, "the culture of the setting" indicated that nurses often viewed the EWS as a task rather than a useful tool. During busy periods, using the EWS was not prioritised. Furthermore, even when nurses did use the EWS to escalate a situation, they found that communication with the medical team lacked a structured framework to facilitate effective exchanges.

The study had some limitations, including the fact that nurses were aware they were being observed, which could have influenced their behaviour. Additionally, the research was conducted during a particularly busy time in the hospital, suggesting that staff were under pressure and stress. It is also important to note that this study was conducted in an adult ward using an adult chart, potentially limiting its applicability for comparison with the PEWS usage.

Bonafide et al.'s (2013) qualitative study explored how nurses and doctors utilise the PEWS to inform their decision-making. The first theme identified indicated that the PEWS encourages healthcare professionals to think critically about changes in a patient's condition and the associated risks of deterioration. It also aids less experienced health professionals in recognising age-based parameters for vital signs. The second theme revealed that the PEWS provides a scoring system that empowers nurses to communicate and escalate concerns when a paediatric patient shows signs of deterioration. However, the final theme presented a more negative perspective; suggesting that PEWS may not be effective in decision-making, particularly in cases where patients have an abnormal baseline and therefore a high PEWS score does not necessarily indicate clinical deterioration. This theme also highlighted that the PEWS lacks sensitivity for patients experiencing neurological deterioration. The research has limitations, including social desirability bias. Although the researchers were not directly involved in the practical use of the tool, there was familiarity with the researchers. Additionally, the study noted gaps in some doctors' knowledge of the PEWS. Nevertheless, this limitation was not pertinent to the research focus, which centred on the nursing response. While this research falls outside the date range for inclusion; due to the comparative nature to the current research it has been included.

Themes from the Literature

The current research draws upon literature that shares similar objectives and has produced common themes. A key concept underpinning much of the literature is afferent limb failure, which refers to a failure to recognise, escalate, or respond appropriately to signs of patient deterioration, resulting in delays in treatment and potentially adverse patient outcomes (Jones et al., 2009). Guided by Braun and Clarke

(2006), four key themes were identified within the literature. A more in-depth examination of these themes was conducted to further investigate the potential impacts highlighted in the literature.

2.5.1 Clinical Judgement and Tool Inflexibility

One of the themes identified was the inflexibility associated with the tool. This limitation restricts nurses' ability to employ their clinical judgment (Bonafide et al., 2013; Foley & Dowling, 2018; Garza et al., 2021; Graetz et al., 2020; Jensen et al., 2018; Pedersen et al., 2025). When utilising the PEWS, there is limited flexibility for nurses to exercise their own clinical judgment. Research surrounding the PEWS highlights a significant limitation where experienced nurses find themselves compelled to escalate the care of a child even when they have no genuine concerns about the child's condition (O'Neill et al., 2021). Nursing experience which translates into clinical judgment, is extensively researched and highly valued in healthcare. Clinical judgment is defined as a nurse's capacity to assess patient needs, identify problems, and prioritise care effectively. This process relies on critical thinking, decision-making, and problem-solving skills (Benner, 2009).

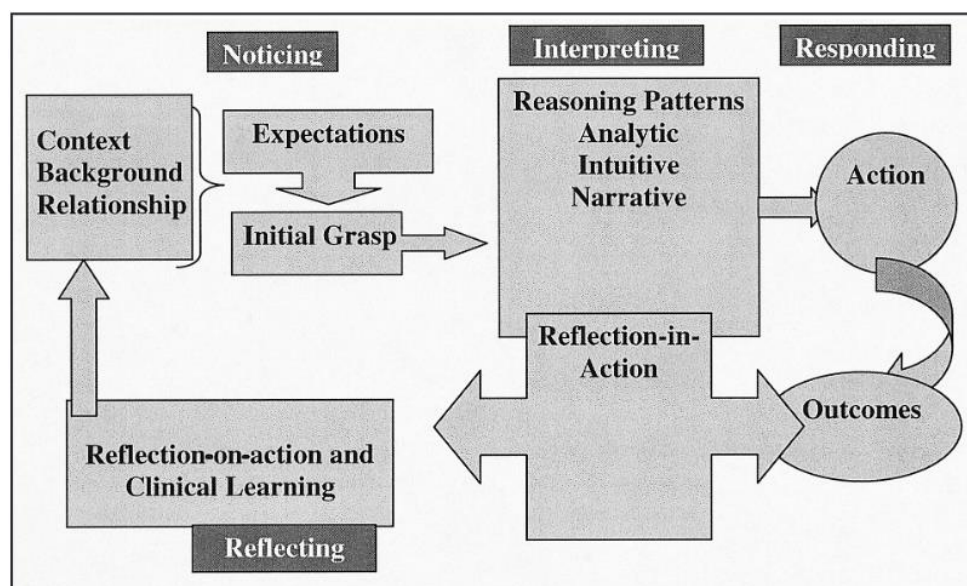
A systematic review by Trubey et al. (2019) examined the effectiveness of validated PEWS tools in predicting outcomes for children and their ability to reduce adverse outcomes in hospitalised paediatric patients. The findings suggest that there is excessive reliance on the tool alone. The strength of the evidence supporting its use is not commensurate with the level of dependence placed on it. Additionally, concerns have been raised regarding false positives in escalation processes and the tool's applicability in complex clinical situations. Given these limitations, nurses may need to rely on their clinical judgment to navigate the clinical setting effectively, rather than strictly adhering to the mandated pathways. This was further explored by Allen et al. (2022) in the Paediatric early warning system Utilisation and Morbidity Avoidance (PUMA) study. This study employed an interrupted time series along with ethnographic case studies to evaluate the PUMA programme. Qualitative methods were utilised for a process evaluation. The findings indicated that the tool, by itself, demonstrated limited effectiveness and exhibited numerous areas of failure. The authors conclusion that a comprehensive framework is necessary to provide support

for the system, taking into account an organisational level examination. In terms of clinical judgment, the results reinforce the notion that the PEWS should not be used in isolation; rather, it is essential to integrate clinical judgment into the process.

Tanner (2006) developed a widely referenced framework that explores the process of clinical judgment, encompassing four essential elements (see Figure 1). The first element, noticing, involves recognising cues or changes in the patient being cared for. Recognition may stem from the caregiver's knowledge of the patient or from past experiences where similar changes or responses occurred. Caregivers are often the first to indicate critical concerns about the child (Mills, 2025). The second step in the framework is interpreting, where the nurse makes sense of the presented data and employs clinical reasoning to analyse it. The third key element, responding, entails taking appropriate action based on the interpretation of the patient's condition. Finally, reflecting involves evaluating the effectiveness of the interventions and identifying opportunities for further learning. This process of clinical judgment emphasises the vital role that experience and knowledge play in making informed clinical decisions.

Figure 1.

Tanner (2006).



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Tanner's framework aligns with the concept of afferent limb failure. The PEWS relies on clinicians recognising deterioration and understanding its significance when creating a response. When nurses rely solely on the PEWS, or if they use clinical judgement, failures may happen at the stages of noticing, interpreting, or escalating deterioration. This means that balancing the standardisation or use of clinical judgement may be critical to reducing afferent limb failure.

The escalation process in Te Whatu Ora, Waikato is mandatory, meaning that when triggers arise that warrant escalation, they must be acted upon. Consequently, experienced nurses with strong clinical judgment may find their ability to assess the necessity for escalating a patient's care somewhat restricted. Conversely, for nurses with limited experience in working with children, this process provides an additional layer of support in recognising and managing patient deterioration.

When discussing the PEWS and clinical judgment, it is evident that the PEWS can enhance clinical decision-making. Utilising the PEWS is thought to elevate nurses' higher-order thinking for those who are newly qualified or new to the paediatric environment. (Flenady et al., 2024). Le Lagadec et al. (2025) examined whether the mandated use of the EWS in an adult setting affected nurses' higher-order thinking skills through a mixed-methods study utilising an online survey with additional qualitative questions. There were 305 respondents to the survey, and 91% of them had more than 5 years of experience in nursing. The research aimed to have a mix of novice to expert nurses but there were limited responses from the novice nurses. The research suggested that this limitation was due to that fact that more experienced nurses had stronger feelings about the impact of the EWS in practice. The results indicated that while nurses support the use of the EWS in clinical practice, senior nurses prioritise patient safety and would prefer to rely on their higher-order thinking rather than solely on the mandated tool. This research suggested that a heavy reliance on tools like the PEWS and algorithmic practices may hinder the development of critical thinking and clinical judgment.

When examining the PEWS and its effect on clinical judgment, there is tension between the standardisation of this mandatory tool and its utilisation of clinical

judgment. Ferguson et al. (2025) completed an integrative review to examine how nurses and midwives utilise the EWS tool when caring for acutely unwell adults. Although this research reviews EWS in adults, the findings are applicable to the paediatric setting from a processes and organisational perspective. One key recommendation from this review emphasised the need to balance the standardisation of the tool with the encouragement of nurses' and midwives' autonomy and clinical judgment in its application. Acknowledging that achieving this balance is challenging, the review highlighted the importance of incorporating feedback from the practitioners using the tool while ensuring patient safety. Additionally, alongside professional autonomy, there is the critical consideration of professional accountability, especially in relation to the mandatory escalation procedures outlined by the PEWS.

Dwyer et al. (2024) completed a cross-sectional survey that revealed that while nurses recognised the importance of completing the EWS, as required by policy and as part of their professional accountability, some nurses manipulated the EWS results to delay escalation or to exercise their clinical judgment. This research employed an online survey featuring both closed and open-ended questions, with a total of 291 nurse participants employed in public hospitals in Queensland. Although the study was focused on the adult population, the insights gained are relevant for the paediatric setting as they centre on understanding policies and exercising clinical judgment, which are not influenced by the differences inherent in paediatric care. The research recommended shifting the focus from strict compliance with policy to embracing clinical judgment at an organisational level to enhance adherence to the use of the tool.

The New Zealand context introduces an additional layer of professional accountability. Following serious adverse events investigated by the Health and Disability Commissioner, it is often noted that recommendations may be directed at specific clinicians or services based on their roles. Additionally, the New Zealand Nursing Council holds authority over professional conduct and competence. This may explain why nurses adhere to the PEWS system, even when their clinical judgment suggests an alternative course of action.

The use of the PEWS can lead to over-reliance, resulting in diminished clinical judgment and critical thinking when the tool is followed blindly. Using interpretive phenomenological interviews, Nadaf et al. (2025) examined the perspectives of 16 nurses within the National Health System (UK) regarding the use of the EWS in the adult population for recognising and escalating clinical deterioration. The research found that junior nurses often relied on the EWS as a safety net to compensate for gaps in their clinical knowledge. Utilising the tool provided them with a sense of professional control and minimised criticism regarding the quality of care, so long as they adhered to its guidelines. Furthermore, the study employed Tanner's (2006) framework, highlighting that junior nurses are still in the process of developing their ability to notice critical changes. While the EWS assists in enhancing clinical judgment, it is important to strike a balance between using the tool as a guide and following it without critical thinking.

While literature highlights the importance of exercising clinical judgment in the use of the PEWS tool for recognising and escalating the care of a deteriorating patient, evidence suggests that prioritising clinical judgment over strict adherence to the PEWS may compromise patient safety (Al Zaher et al., 2025). Further, there is evidence from a retrospective cohort study of patients admitted to PICU to suggest that there is an improvement in patient outcomes, particularly in reduced rates to higher care settings such as PICU when the PEWS is strictly adhered to (Kowalski et al., 2021).

At a local level a critique of the decision to override strictly following the PEWS in favour of clinical judgment was highlighted in a Health and Disability Commissioner (2022) case. At the time of this case, the PEWS were already in use in the local areas, but was not standardised or deemed mandatory in the clinical settings. The case involved a 6-year-old girl presenting with pneumonia symptoms. She was initially admitted to a large secondary hospital but was subsequently transferred to a smaller local hospital. Prior to her transfer, there were changes in her PEWS scores that indicated deterioration, yet these changes were neither recognised nor acted upon. The investigation pointed to the nursing team's reliance on their own clinical judgment in deciding to proceed with the transfer despite the evidence of an increased PEW. Upon arrival at the local hospital, the girl experienced further deterioration, necessitating her

transfer back to the larger hospital. Unfortunately, upon her return, she was admitted to intensive care and ultimately succumbed to her illness. This case demonstrates afferent limb failure. Signs of deterioration were present and documented through increased PEWS scores, yet these changes were neither recognised nor escalated appropriately. The recommendations stemming from this case emphasised the need for strict adherence to PEWS protocols (Health and Disability Commissioner, 2022).

Mandatory use at an organisational level can impact nurses' clinical judgment when using the PEWS. Almblad et al. (2018) recognised the significance of establishing mechanisms to support staff in the use of the PEWS at an organisational level leads to improved outcomes with the tool. This involves the support of leadership in clinical practice to ensure adherence to mandatory escalation while incorporating clinical judgment into practice. In organisations that conduct ongoing audits of compliance with EWS, there is a tendency for nurses to strictly follow the EWS without applying their clinical judgment to demonstrate compliance (Langkjaer et al., 2021).

2.5.2 Workload Constraints to Complete in Accordance to the Guidelines

One of the themes from the literature was the common issue of workload constraint in relation to completing the PEWS (Foley & Dowling, 2018; Garza et al., 2021; Graetz et al., 2020; Thekkan et al., 2023). Multiple factors can impact nurses' workload in practice, making it important to assess and understand how workload can impact the effective use of the PEWS in practice. Nursing workloads have various implications and it is important to consider both the volume of work involved, and the complexity of care needed to manage patients and address their acuity. A concept analysis of what workload means in nursing, showed that as acuity and complexity rise, there is greater demand for enhanced clinical judgment (Alghamdi, 2016). Another factor affecting nursing staff workload is competing demands which include interruptions that hinder their ability to complete necessary tasks as well as organisational compliance demands in practice, according to a cross-sectional correlational study of 472 acute care nurses by MacPhee et al. (2017).

Al Zaher et al. (2025) examined how nurses experienced using the PEWS and where quality improvement can be initiated to support the use of the PEWS. They concluded

that nurses perceive insufficient staffing levels as a barrier to using the EWS as it impacts on nursing workload. Yuan et al. (2023) presented a meta-analysis that examined the mental load experienced by nurses in clinical settings. It was found that when nurses perceived their mental workload as overwhelming, their ability to perform expected nursing tasks diminished. This meta-analysis highlighted that younger and less experienced nurses viewed cognitive workload as a barrier to their practice, citing a lack of confidence and understanding of nursing principles as contributing factors. Along with this, Ball et al. (2013) conducted a cross-sectional survey about the care that nurses leave undone. This had a direct link to workload and staffing levels. These nurses rationed care, delayed documentation, and escalated care over direct patient contact.

Areas with higher workloads due to staffing levels tend to be less consistent in completing tasks like monitoring vital signs. Chapman et al.'s (2019) analysis of retrospective, case-controlled study data indicated that when the patient-to-nurse ratio is higher, the completion of vital sign monitoring decreases. This includes partial completion and observations that are not completed in a timely manner. Because the PEWS relies on a complete set of vital signs, missed observations may prevent accurate calculation which in turn can hinder recognition of deterioration. The Health Quality and Safety Commission New Zealand (2025) emphasised that recording the complete set of vital signs is crucial for ensuring accurate escalation of the PEWS and incomplete vital signs are identified as a barrier to its proper escalation of care once a high PEWS score has been identified.

There are challenges to adherence to the PEWS and the time that it takes to complete the associated documentation. It has been evaluated that there is significant variability in the time taken to complete both the vital signs and associated documentation. Dall'Ora et al.'s (2020) systematic review assessed the nursing time and workload involved in taking and recording vital signs. The review was focused on the adult setting and excluded research explicitly focused on paediatrics. The review found that a lack of robust and consistent evidence regarding the time and workload associated with recording adult EWS. This inconsistency is attributed to the varying individual needs of patients and the expectations surrounding documentation, making

it challenging to quantify the requirements effectively. Despite this being an adult focused review, previous research has indicated that there are unique challenges working with children that can impact the time that it takes to complete the PEWS. In New Zealand, the expectation regarding the PEWS is that documentation should be completed in real time. Timely and high-quality documentation is crucial for ensuring quality patient care and enhancing patient outcomes. However, Bjerkan et al.'s (2021) qualitative explorative study involving six focus groups of nurses that looked at the nursing perspective on the barriers to documentation practices, found that documentation is influenced by the availability of nursing resources.

In patients presenting with elevated EWS, existing evidence indicates that such heightened scores necessitate the allocation of nursing care resources commensurate with the assessed level of risk. This suggests a proactive approach to patient management, ensuring that appropriate nursing interventions are mobilised in response to the increased likelihood of clinical deterioration associated with elevated EWS (Turcato et al., 2024). At Te Whatu Ora, Waikato, no additional resources are allocated for patients who are deteriorating. Instead, it is the responsibility of colleagues to support the nurse caring for a deteriorating patient.

Nurses' ability to interpret and make decisions based on the PEWS escalation system can be significantly affected by their perceived workload. Factors such as staffing pressures, emotional stress, fatigue, and ongoing interruptions during task completion hinder nurses' effectiveness in utilising tools like the PEWS framework (Yuan et al., 2023). Although the system offers a structured approach to recognise clinical deterioration in patients, the perception of a high workload with competing demands can delay timely escalation and documentation of any deterioration (Surendran et al., 2024). Inadequate staffing and a high cognitive workload may increase the risk of afferent limb failure by delaying the recognition of deterioration and decreasing adherence to escalation procedures (Jones et al., 2009).

Organisational factors related to workload significantly influence the escalation process. This includes the staffing levels and skill mix in the clinical environment, which directly affects clinical staff's ability to access training on the use of the PEWS

and the management of patient deterioration (Al Zaher et al., 2025). Adequate organisational support is essential to empower nurses to adhere to the escalation process and enhance clinical decision-making in practice. This can be achieved by ensuring appropriate staffing levels and providing ongoing educational support. Additionally, competing demands at the organisational level can heighten the mental workload of nurses, thereby reducing their capacity to effectively implement the PEWS (Swiger et al., 2016).

2.5.3 Interprofessional Communication

The PEWS serves as a structured communication resource that establishes a professional vocabulary for nursing and healthcare staff to utilise (Almblad et al., 2018; Bonafide et al., 2013; Foley & Dowling, 2018; Garza et al., 2021; Graetz et al., 2020; Jensen et al., 2018). In addition to the structured and professional language that supports the tool, literature highlights other advantages of interprofessional language.

One benefit of interprofessional communication is that the PEWS enhances situational awareness within the healthcare team by providing a standardised framework for recognising and communicating patient deterioration. Endsley (1995) created a theoretical model centred on situational awareness, defined as the perception of environmental elements, the comprehension of their significance, and the projection of future conditions. Although Endsley was an industrial engineer and did not initially link her work to healthcare, her research has been widely referenced in that domain. It plays a crucial role in enhancing understandings of how healthcare professionals identify and respond to patient deterioration.

Rosen et al.'s (2018) systematic review explored teamwork in healthcare to identify factors that lead to safer, higher-quality care. Communication failures are often referred to in rapid response literature as instances of afferent limb failure. Even when signs of deterioration are identified and documented, the afferent limb remains ineffective if concerns are not communicated effectively or if escalation efforts are not appropriately addressed by the receiving clinician (DeVita et al., 2010). The findings revealed that breakdowns in interprofessional communication significantly contributed to patient harm. Miscommunication about patients' conditions and care

planning caused delays in treatment and the adoption of inappropriate therapies. Furthermore, it was found that cultivating and promoting multidisciplinary relationships enhanced communication and fostered a shared awareness among nurses and doctors.

The PEWS is not solely a tool for nurses; it involves a collaborative effort. Nurses collect vital signs and escalate any concerns following the established escalation pathway. The medical team is responsible for responding to these escalations within the specified timeframes. A review by Roland et al. (2023) noted that while the PEWS serves as a standardised framework promoting effective communication among nurses and the medical team, there are several documented barriers to its utilisation in practice. Factors such as professional hierarchies, team culture, and the psychological safety surrounding escalation play a significant role in this issue. Research conducted by Jensen (2018) indicated that when the medical team is not adequately engaged with the PEWS, communication issues regarding patient escalation can arise, even in the presence of clear objective data and scoring outcomes.

Additionally, professional hierarchy has been identified as a barrier to effective communication. In the context of PEWS, this hierarchy can affect the process of escalating care in response to patient deterioration. Hickson et al. (2025) evaluated the implementation of the PEWS in a Botswanan hospital involving both nurses and doctors. This mixed-methods study included a survey assessing acceptability and feasibility after implementation, as well as semi-structured interviews. An identified barriers to using the PEWS was the existing hierarchical dynamics, which hindered effective communication. Nurses reported that doctors were not always receptive to escalation based on PEWS criteria, leading to discomfort among nurses when it came to raising concerns.

Further, the concept of psychological safety has been recognised as a crucial factor that can either facilitate or impede effective communication. A systematic review examining the enablers of psychological safety found that when teams experience a sense of psychological safety, they are more inclined to speak up, ask questions, and share ideas. In contrast, limited psychological safety within the team can inhibit these

behaviours (O'Donovan & McAuliffe, 2020). The use of the PEWS does not guarantee psychological safety when it is being used.

In New Zealand, a case investigated by the Health and Disability Commissioner (2021) highlighted serious issues related to communication between the nursing and medical teams. A 3-year-old boy was admitted to a large public hospital with pneumonia. Unfortunately, his condition deteriorated during his stay, leading to his death. A review of the case revealed significant concerns regarding the use and escalation of the PEWS. It was discovered that the PEWS was not completed in a timely manner, not recorded accurately, and not escalated appropriately. The review recommendations urged the hospital to reassess their PEWS charts. The report explicitly indicated that a culture had developed within the service that adversely affected the utilisation and escalation of PEWS. Consequently, it was recommended that both nursing and medical staff undergo specific training focused on the proper use of PEWS and the necessary communication protocols for escalation.

2.5.4 Training and Previous Knowledge and Experience

One of the recurring themes in the literature highlighting nurses' experiences with the PEWS tools is the variation in nursing training, knowledge, and experience related to their use (Almblad et al, 2018; Foley et al, 2018; Jensen et al, 2018; Thekkan et al, 2023). The paediatric population represents a vulnerable group with unique needs that distinguish them from adults, encompassing differences in physiology, developmental requirements, and emotional considerations. Education about these differences is often not prioritised in undergraduate and continuing education. In New Zealand, the undergraduate nursing programmes differ in the content delivered regarding child health. Collins (2011) reviewed the child health curriculum within the Bachelor of Nursing programmes in New Zealand. The assessment revealed that child health is frequently incorporated as a component of various papers. Consequently, this has led to a lack of leadership in the delivery of child health education. Carey et al.'s (2024) narrative review protocol highlighted the lack of evidence regarding the adequacy of paediatric education in pre-registration nursing and its impact on nurses' preparedness to work in the specialty.

In New Zealand the curriculum of the Bachelor of Nursing is guided by the Nursing Council of New Zealand (2022). The current pre-registration guidelines do not specify requirements for integrating child health into the institute's curriculum. While there is an expectation for the delivery of lifespan education, there is practically no requirement for undergraduate nurses to gain direct paediatric clinical experience. Another relevant document is the Child Health Nursing Framework provided by the New Zealand Nurses Organisation. This framework incorporates the Nursing Council's competencies to create descriptors that specifically address the needs of the paediatric population. It has been designed for nurses already working in child health settings. For those entering the field as new graduates or transitioning from other areas lacking child health experience, there is minimal instruction during their undergraduate education on how to manage the unique needs of children. Any further knowledge on this population would need to be pursued independently by the nurse. Differences in paediatric knowledge and PEWS training may lead to afferent limb failure. Nurses need adequate knowledge and experience to recognise deterioration, interpret clinical findings, and initiate escalation following established pathways (DeVita et al., 2010).

New Zealand boasts a distinct nursing workforce, with a significant proportion of nurses (47%) holding international qualifications (Buchan, 2025). Internationally qualified nurses face additional challenges with escalation due to communication expectations, professional hierarchies, and differing communication styles across healthcare systems (Clubb et al., 2024). For internationally trained nurses to gain registration in New Zealand, they must meet certain competency requirements. The Competency Assessment Process (CAP) is currently utilised to evaluate the capabilities of these nurses to work as registered nurses in the country (Nursing Council of New Zealand, n.d.). Although this programme has recently undergone a review, the existing requirements stipulate that nurses must demonstrate competency against the New Zealand Nursing Council's standards. Notably, there is no mandate for these nurses to possess experience working with children or any specific education related to paediatric care. Consequently, due to the absence of educational requirements at the undergraduate level, or for those entering the workforce with international credentials, the expertise of those working with children may vary significantly.

An investigation into a national Health and Disability Commission case revealed that a lack of training and education regarding the PEWS contributed to the death of a 13-month-old boy. This young patient presented at a rural emergency department with symptoms indicative of meningitis septicaemia. During his admission, he exhibited signs of deterioration but, despite the availability of PEWS charts, they were not utilised for his care. The report highlighted that these charts were not regularly employed in the department and, notably, one of the primary nurses assigned to this patient had never used them, nor was she familiar with their purpose. The child's vital signs were significantly outside of normal parameters, which a PEWS chart could have detected; however, this deterioration went unrecognised by both nursing and medical staff. The investigation also pointed out that the hospital lacked sufficient paediatric education for staff, as well as the necessary paediatric expertise and systems to adequately care for young patients. This underscored significant gaps in paediatric knowledge within the New Zealand healthcare setting. Due to the delays and inadequate recognition of the patient's deterioration, there was a postponement in transferring him to a larger primary hospital. The recommendations from this review called for the hospital-wide implementation of the PEWS, along with ongoing education for both nursing and medical staff regarding the appropriate use of these charts. Additionally, continued paediatric education for staff was deemed essential. Although this case occurred in a rural emergency department, it underscores the critical importance of paediatric education and PEWS-specific training in all healthcare environments interacting with the paediatric population (Health and Disability Commissioner, 2023).

A Framework for Changing Practice: iPARIHS

Examining the implementation of evidence-based practices is a critical undertaking in the process of updating or modifying clinical practices in accordance with contemporary evidence. Effective implementation hinges on numerous factors that must be carefully considered to achieve favourable outcomes (Ominyi & Alabi, 2025). Specifically, the integration of the PEWS into clinical practice is based on evidence suggesting that its application enhances outcomes recognition of deterioration for outcomes for paediatric patients (Kowalski et al., 2021). However, demonstrating that the tool is effective does not translate to successful implementation in practice.

The challenge associated with translating evidence into practice is widely recognised, indicating that the integration of research into health settings can take years. Implementation science has increasingly focused on the factors influencing the uptake and sustainability of evidence-based practice. In the context of the PEWS, the PUMA programme identified several factors that contribute to successful implementation. These include the characteristics of the PEWS innovation itself, the traits of the nurses who will utilise it, and the organisational context along with the facilitation process. These factors align with the key constructs of the integrated Promoting Action on Research Implementation in Health Services (iPARIHS) framework.

The iPARIHS framework serves as a conceptual model for understanding factors that influence the successful implementation of evidence-based practices. The framework has evolved from the original PARIHS framework developed by Kitson et al. (1998) which suggested that successful implementation was dependent on the interaction between evidence, context, and facilitation. Following review, refinement, and critique, Harvey and Kitson (2015) revised the framework to develop the iPARIHS, which clarified key concepts and elaborated on the understanding of successful implementation. This framework has been widely utilised in healthcare implementation to examine the barriers and facilitators that influence the adoption of evidence-based practices.

The framework proposes that successful implementation comes through the interaction of innovation, recipients, and context, with facilitation acting as the active ingredient that enables and supports these elements to work together effectively (see Table 2). However, Harvey and Kitson (2015) pointed out that this representation of the framework should be viewed as heuristic rather than just a mathematical equation. Rather than solely serving in the education function, facilitation is an active ingredient that influences innovation, recipients and context to enable successful implementation.

Table 2.

iPARIHS Formula Harvey and Kitson (2015).

SI=Facⁿ (I+R+C)	
SI	Successful Implementation
Fac ⁿ	Facilitation
I	Innovation
R	Recipients
C	Context

The iPARIHS framework was chosen for this study because it offers a comprehensive approach to examining implementation in complex healthcare settings. While alternative implementation frameworks, such as the Consolidated Framework for Implementation Research (CFIR) (Damschroder et al., 2009) and Normalisation Process Theory (NPT) (May & Finch, 2009), provide valuable insights into organisational determinants and the embedding of change, iPARIHS was deemed particularly relevant to this study due to its emphasis on facilitation and its applicability to the implementation of evidence-based interventions, such as the PEWS, in clinical settings.

When implementing changes or improvements informed by evidence-based research, facilitators play a pivotal role in advocating for transformative initiatives. In the specific case of the implementation of the PEWS at both national and local levels, designated individuals were recognised as key facilitators of change. The implementation of the PEWS nationally involved establishing a central implementation team by the Health Quality and Safety Commission to support the programme's rollout and the development of local implementation leads across participating organisations (HQSCNZ, 2022a). These individuals were entrusted with the responsibility of fostering the implementation process at the local level, ensuring that the principles and practices of PEWS were effectively integrated into their respective healthcare environments.

The implementation of innovation necessitates careful consideration of several critical characteristics. Key factors to evaluate include the source of underlying knowledge; clarity of the innovation; degree of alignment with existing practices and values; level of novelty, usability, relative advantage, trialability; and the observable outcomes associated with its adoption. A thorough examination of these elements is important for stakeholders to grasp the extent to which the innovation integrates with current practices, an understanding vital for the effective execution of change. Within the context of the PEWS, the innovation involved the integration of structured charts into clinical practice. The PEWS framework offers a systematic approach for recognising and responding to clinical deterioration in paediatric patients. Evidence supports the effectiveness of the PEWS in identifying deterioration and enhancing patient outcomes, while simultaneously facilitating a common language for communication among healthcare professionals. This shared understanding fosters confidence in the identification and management of deterioration within the paediatric population. At a local level, a PEWS tool was already in use prior to the adoption of the PEWS. From an iPARIHS perspective, this may have increased the compatibility and trialability of the innovation while reducing its novelty. These characteristics are considered to support implementation by aligning the innovation with existing clinical practice and reducing disruption to established workflows.

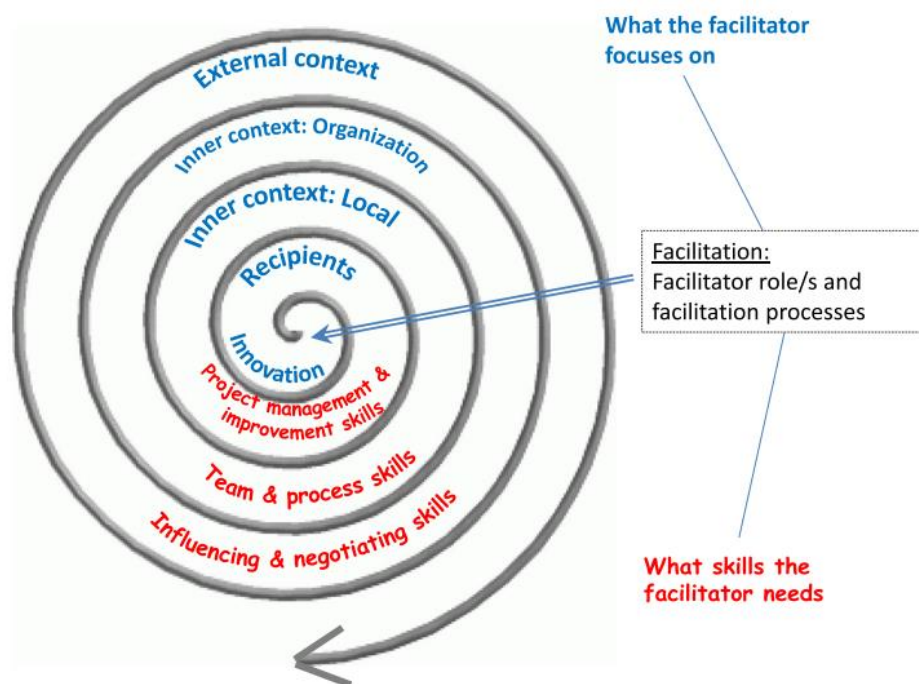
In a healthcare setting, the recipients of a proposed change include the staff, services, and patients directly affected by the implementation. It is imperative for the facilitator to assess the motivation and capability of these stakeholders to engage with the change, taking into consideration their intrinsic values and beliefs. Furthermore, evaluating the level of support for the proposed change among the broader community, including the perspectives of local leadership, is essential to facilitate a successful transition. In the implementation of the PEWS, the clinical nursing staff serve as the primary users of the assessment charts. Meanwhile, the medical and wider healthcare teams are tasked with comprehending and responding appropriately to the escalations indicated by these assessments. Specifically, the nursing staff have the responsibility for conducting vital sign assessments, calculating the corresponding scores, and initiating escalation according to the mandatory pathway. Consequently, it is crucial for facilitators to identify the factors that bolster the nursing staff's capacity to implement

these changes effectively, as well as to recognise and address any potential barriers that may hinder this process. The application of these recipient characteristics to the PEWS implementation within this study will be explored in later chapters.

The context for the iPARIHS framework is divided into three areas (see Figure 2). Inner Context – Local refers to the immediate work environment of the recipient, which could be a ward, unit, or department. Multiple areas may be involved at this level. The second level, Inner Context – Organisational involves factors at the organisational level that can influence the implementation process. The final level, Outer Context, includes the broader health system awareness and examines how politics, economics, and cultural factors can impact change. The three contextual levels provide the structure for examining the implementation of the PEWS in this study, recognising that implementation outcomes are influenced by factors operating at local, organisational, and wider health system levels.

Figure 2.

The facilitation role and process (Harvey & Kitson, 2015)



The implementation of the PEWS necessitates comprehensive evaluation and active involvement of key stakeholders across various contextual levels. At the local level, it is imperative to examine the disparities in the application of PEWS among paediatric wards, emergency departments, and rural hospitals. This should encompass variations in healthcare professionals' experience with paediatric patients, as well as their proficiency in recognising clinical deterioration. Additionally, the availability of support systems for clinicians utilising the PEWS charts is a critical factor to consider. It could be argued that the infrequent presentations of paediatric patients in some rural settings, coupled with reduced access to specialist paediatric support, may create contextual challenges for the PEWS implementation. Nixon et al. (2024) demonstrated that it is important for rural-urban differences in healthcare access and outcomes, reinforcing the need to consider setting and a determinant of PEWS implementation. This is relevant given that there are Health and Disability Commissioner (2021, 2023) complaints that have deterioration of a paediatric patient in a rural or secondary setting. All these factors can affect the opportunities to develop and maintain confidence in the recognition and escalation of paediatric deterioration (Allen et al., 2022).

In examining the organisational context of implementing the PEWS, several critical factors emerged, including leadership dynamics, organisational culture, and the availability of resources necessary to support this initiative. From a nursing perspective, effective implementation necessitated the active involvement of nursing leaders from inpatient wards, the emergency department, and rural nursing sectors. Their engagement was vital for providing feedback and support, thereby facilitating a successful transition to the PEWS framework. Furthermore, the inclusion of leadership from these diverse areas was instrumental in fostering a positive organisational culture surrounding change initiatives. In this instance, the successful execution of the PEWS was seen as both a procedural adjustment and a vital measure to enhance patient safety through the early detection and prompt escalation of patient deterioration. To ensure a cohesive and consistent approach to the implementation across the organisation, it was essential to allocate resources strategically. A key organisational resource supporting implementation was the allocation of dedicated Nurse Educator time (8 hours per fortnight for 6 months). Within the iPARIHS framework, this represents a facilitation resource, enabling education, stakeholder

engagement, problem-solving, and ongoing support throughout the implementation process (Harvey & Kitson, 2015).

The final context to be examined is the broader, outer context of the PEWS, which encompasses national and systemic influences. As previously articulated, the adoption of PEWS at the national level was facilitated by the Health Quality and Safety Commission of New Zealand. This initiative aimed to rectify the existing disparities in the care provided to paediatric patients across various healthcare services throughout the country via the successful implementation of the PEWS, which can be evaluated through four critical indicators. The first indicator assesses the attainment of the predefined implementation goals. The second indicator evaluates the extent to which this innovative system is adopted and integrated into nursing practice. The third indicator examines the engagement, motivation, and ownership of the innovation among recipients, which should be demonstrable at the individual, team, and stakeholder levels. Finally, the fourth indicator addresses the contextual factors, aiming to ensure consistency and minimise variability in implementation across different healthcare settings.

In the context of the PEWS, the primary goal was to ensure that the monitoring chart was consistently and accurately completed, and that recognition and escalation of care followed the established pathway in a timely and appropriate manner. Following the implementation of PEWS, routine organisational audit data were collected through an ongoing auditing process of 12-months duration to evaluate its usage. The audit results revealed significant variability including, as outlined in the background of this study, variation in compliance with the PEWS documentation and escalation processes. These findings provided the basis for this present study and will be explored through the lens of the iPARIHS framework.

When examining the other indicators of successful implementation, including the uptake and embedding of the innovation into practice and the engagement and motivation of recipients, the audit results indicated variability. The diverse outcomes suggest that nurses may not have fully integrated these changes and processes into their practice. The final indicator of successful implementation pertains to the

contextual variation across different implementation settings. While PEWS was rolled out in all recommended environments within Te Whatu Ora, Waikato, demonstrating broad organisational allocation, this does not guarantee consistent implementation (HQSCNZ, 2025). The variation is consistent with the iPARIHS framework and with the findings of the PUMA programme that implementation outcomes are influenced by local contextual factors rather than the innovation alone (Allen et al., 2022; Harvey & Kitson, 2015). Consequently, the achievement of this indicator remains unclear and requires further investigation using the iPARIHS framework.

For this research, the iPARIHS framework was utilised to identify and analyse the barriers that impede the successful implementation of the PEWS. This framework will facilitate a deeper discussion regarding the necessary changes or support mechanisms required to ensure that PEWS is effectively established as a best practice for the paediatric population. By applying the iPARIHS framework, the research aims to provide a comprehensive understanding of the factors influencing implementation outcomes and to inform strategies that promote the integration of PEWS within paediatric care settings

Gaps in the Literature

There is a substantial body of evidence supporting the use of the PEWS in clinical practice to recognise and escalate the deterioration of paediatric patients (Chapman et al., 2016). Most existing literature concentrates on the validity, implementation, and effectiveness of the tool (Lambert et al., 2017). However, the research implies that the PEWS scores conflict with nurses' ability to utilise their clinical judgement. This means there may be a reliance on clinical judgement as a representation of limitations of the tool rather than not adhering to protocols. At present there is a notable scarcity of research that explores the experiences of nurses using PEWS in practice, particularly in identifying barriers and potential solutions to its utilisation. This represents a gap in the literature and the need to examine the explicit relationship between the PEWS and nurses' ability to use clinical judgement.

However, a gap not addressed in the existing literature is the explicit relationship between the PEWS and nurses' clinical judgment. While PEWS is intended to aid in

decision making (Chapman et al., 2016), its incorporation has become a mandatory step in the New Zealand context. Nevertheless, research indicates that nurses frequently integrate their responses to patient deterioration with their own clinical judgment alongside the PEWS score (Lambert et al., 2017; Tanner, 2006). The implications of situations where nurses' clinical judgments conflict with the PEWS score have not been explored in the paediatric setting. Further investigation into the interplay between clinical judgment and PEWS, and its potential impact on patient outcomes during episodes of clinical deterioration, is warranted.

A significant gap exists in New Zealand based research regarding nurses' experiences with this tool. Most studies are predominantly sourced from the United Kingdom, Australia, and the United States, highlighting a lack of insight into how PEWS are applied within the unique context of New Zealand's healthcare system. The absence of local examination results in limited understanding of how the specific organisational structures, workforce composition, and decision-making processes in New Zealand influence the use of PEWS.

The absence of New Zealand-based research highlights a significant gap in understanding the cultural implications of the PEWS, especially given the country's cultural diversity. This includes the ways in which communication and escalation of the PEWS may be influenced when collaborating with Māori, Pacific, and other cultural perspectives among both patients and nurses. Additionally, it is essential to consider the perspectives of internationally trained nurses regarding the implementation of the PEWS in practice, particularly concerning their interpretation of the system and the communication related to escalation (Buchan, 2025). In the New Zealand context, there is limited research examining the influence of cultural safety and caregiver engagement on the PEWS and its role in escalating deterioration within the paediatric population.

In the literature, there is a notable lack of consistency regarding the definition of an experienced nurse, particularly in relation to clinical judgment and the use of the PEWS in paediatric settings. The literature defines experience as assessed based on years of practice, the specialty in which the nurse works, or their exposure to paediatric patients

(Tanner, 2006). Benner's (2009) Novice to Expert framework suggests that expertise is developed through clinical experiences rather than time alone. This variability complicates the discussion surrounding the definitions of experienced and novice nurses in the context of clinical judgment. This distinction has not been well explored within PEWS literature and may influence how nurses integrate clinical judgement with the standardisation of the PEWS.

The literature identifies organisational factors as an area that warrants further investigation. It discusses how elements such as staffing levels, workload, service culture, leadership, and support influence the implementation and utilisation of the PEWS in practice (Lambert et al., 2017). However, the specific aspects of these influences on PEWS have not been thoroughly examined. Notably, there is limited evidence regarding how nursing workload is assessed and evaluated in the context of PEWS. This is particularly significant in the unique paediatric setting, where various factors pose challenges for the use of PEWS compared to utilising the EWS in adult populations (Chapman et al., 2016).

The existing gaps in the literature underscore the necessity of exploring nurses' experiences with the PEWS within the New Zealand context. This exploration should encompass the influences of clinical judgment, nursing experience, organisational factors, culture, and workload. Addressing these influences will enhance understanding of PEWS usage, ultimately informing practice, identifying areas for educational development, and influencing local and national policy.

Summary of Research

The literature supports the use of the PEWS in paediatric settings to identify and facilitate the escalation of care for deteriorating patients. The aim is to enhance patient outcomes through early detection (Lambert et al., 2017; Roland et al., 2021). This review highlighted several unique aspects of working with the paediatric population, including developmental considerations, physiological differences, communication challenges, and the principles of family-centred care when applying the PEWS in practice (Hockenberry, 2023; National Institute for Health and Care Excellence, 2021).

Four key factors emerged from the literature that significantly influence nurses' experiences with the PEWS. These factors include the relationship between clinical judgment and the mandatory escalation dictated by the PEWS; nursing workload and competing demands; interprofessional communication; and the education, knowledge, and experiences of the nursing staff. These themes were evident in research with objectives similar to those of the current study, with some insights drawn from the application EWS in adult settings.

The body of literature discussed in this chapter is primarily derived from international research, which may limit its applicability to the paediatric population in New Zealand. Identified gaps include a notable lack of research specific to New Zealand. Consequently, there is limited understanding of the impact within the New Zealand health context. Furthermore, there is inadequate insight into how nurses differentiate between the PEWS and its associated outcomes, as well as how experiences are defined in relation to the use of PEWS. Additionally, the influence of organisational factors such as leadership, culture, staffing, and workload on the application of this tool remains poorly understood. There is also insufficient information on how workload is measured in relation to the usage and escalation of the PEWS.

This research aims to examine nurses' experiences with the PEWS in a paediatric setting. It will leverage themes from existing literature to investigate the integration of clinical judgment with escalation practices associated with the PEWS, rather than solely adhering to mandatory protocols. Furthermore, the study will explore the organisational and professional factors that impact the practical implementation of the PEWS. Ultimately, this research seeks to address current gaps and contribute significantly to the enhancement of the PEWS in effectively identifying and responding to deterioration within the paediatric population.

Chapter III: Methods and Methodology

3.1 Introduction

This chapter explores the theory behind the methodology and research design choices made for this study. It provides a deeper look into qualitative and quantitative research designs for data collection. Additionally, it examines the credibility and trustworthiness of these designs, along with their impact on the overall outcomes in relation to the aims of this research.

3.1.1 Research Paradigm

The research paradigm is used to examine the researcher's worldview and how knowledge is created, as well as how this understanding is used to interpret reality (Creswell & Creswell, 2018). The three commonly discussed research paradigms in health and social science are positivism, interpretivism, and pragmatism. The positivist paradigm holds that knowledge can be obtained through objective observation and measurement. Answers are often definitive, acquired through numbers, experiments, and structured methods. The interpretivist paradigm is based on the belief that reality is subjective and shaped by experiences and how others perceive the world. Research in this paradigm focuses on understanding meaning through personal experiences, with knowledge gained from people's perspectives (Creswell & Creswell, 2018). The research paradigm that underpins this research is the pragmatic paradigm.

The pragmatic paradigm is the view that there is no single correct way to study and gain knowledge about the world. Instead, it employs the most suitable methods to answer the research question and provide practical answers that are useful in real world applications (Johnson & Onwuegbuzie, 2004). The pragmatic design within the research paradigm values ontological, axiology, and epistemological philosophies in research design (Morgan, 2014). In a pragmatist design, ontology poses that reality has multiple perspectives and is shaped by what people experience; this is how knowledge is acquired (Creswell & Creswell, 2018). Epistemology in a pragmatist design involves understanding that knowledge can be derived from multiple sources. It prioritises the methods to best address the research question and provide insight into the problem being studied (Creswell, 2018; Johnson & Onwuegbuzie, 2004). Axiologically, the

pragmatic design recognises that values within the research process are an important part of the process. This means that the research outcomes are practical, ethically sound, and capable of producing meaningful impact for participants, professional practice, and the wider community (Creswell & Creswell, 2018).

The research methodology is an approach that helps define the methods used to carry out the research. The methodology supports overall framework that guides research and informs the use of a range of data collection methods to complete the research (Creswell & Creswell, 2018). These are commonly qualitative and quantitative research methods. The order and manner in which the researcher uses the different research methods are determined by what the research aims to understand (Harvey & Land, 2022).

3.1.2 Approach

To understand how the PEWS are used from a nursing perspective a two-phase approach has been developed utilising both qualitative and quantitative data. This design creates an exploratory mixed methods approach to the research to build a deeper understanding of the topic. Using the qualitative data first, gives rise to themes and ideas, and allows the quantitative data to test and validate those themes and ideas. Thus, it enables the researcher to ensure that the data collected is based off real work experiences and not the researcher's assumptions.

3.2 Mixed Methods

A mixed-methods research design is one in which the researcher gathers both quantitative and qualitative data. Combining both creates a collective strength and understanding of the research problem (Creswell, 2022). Mixed methods is a relatively newly coined and recognised methodology when it comes to research (Creswell, 2018). It is a method that enhances the validity of studies in social, behavioural, and health research. It requires the researcher to understand and have the skills to undertake both qualitative and quantitative research, and often takes more time to collect the data (Creswell, 2022).

There are various arrangements for mixed-methods design including how the qualitative and quantitative components are timed, ordered, and analysed. This research employs an exploratory mixed-methods sequence. It begins by collecting qualitative data first because the themes are not yet well defined, and current knowledge is unreliable for guiding quantitative measurement. Starting with qualitative inquiry allows the researcher to develop an understanding of participants' perspectives and identify themes or constructs. Emergent themes then serve as a basis for developing quantitative questions that can be administered to a larger sample. Using the qualitative findings to inform the subsequent quantitative phase improves clarity and enhances the validity of the overall study by ensuring that the quantitative questions directly address the issues identified during the initial exploratory work.

For this research, the qualitative data have been used to develop themes regarding the nurses' experiences, views, and perspectives when using the PEWS charts in practice. Quantitative data were then used to further enhance the validity of these themes and experiences of the nurses' working within the paediatric wards at Waikato Hospital. The combined methods intend to answer the research questions regarding the factors that influence the use of the PEWS for the nurses and what areas of education are required to support the safe use of the PEWS in the clinical setting.

3.3 Phase One: Qualitative Research

Qualitative research uses the voices of the participants to describe how they see the world, giving the researcher the opportunity to see the research topic from the perspective of individuals (Creswell, 2013). With qualitative research there is no set or prescribed sample size in the collection of the data. As a result, the sample size is often small. The balance of getting the most significant sample size varies for each individual research topic (Braun & Clarke, 2022). The primary objective of qualitative research, when considering sample size, is to gather enough data to offer meaningful insights into the research topic. Researchers continue the data collection process until they are confident that the dataset is robust enough to address the research questions and aid in the development of the theme.

The outcomes of this data collection will not yield a singular answer to the research question (Braun & Clarke, 2022). Rather, the data collected can provide the researcher with themes. These themes, defined by the data collection, are then used to address the original research question (Braun & Clarke, 2006, 2022). Sufficient sampling can also be evaluated through information power. This means that the more relevant information a sample has for the study, the smaller the required sample size (Malterud et al., 2016). In relation to this study three focus groups, with a total of 13 participants, generated a rich and detailed discussion to provide sufficient information to address the study aims.

There are many ways to gather data with qualitative research. Individual interviews, focus groups, qualitative surveys, and researcher directed dairies are some of the many methods that qualitative research utilise. The data collection process should focus on how the data will answer the research question (Creswell, 2013).

3.3.1 Phase One: Data Collection

Qualitative data for this study were gathered through small focus groups composed of nurses working on wards where PEWS documentation is used. Registered nurses employed to work within the paediatric medical ward and paediatric surgical ward at Te Whatu Ora, Waikato were the targeted participant group. Both paediatric wards exclusively use the PEWS charts on all patients that are admitted to the area.

Recruitment resulted in three focus groups involving a total of 13 registered nurses. Focus group sizes ranged from four to five participants. Focus groups were chosen as the qualitative method most suited to the pragmatic design of the research and were considered more suitable than individual interviews for generating insightful data during the initial exploratory phase. Using focus groups allowed for participant interaction to serve as a data source, enabling the exploration of shared meanings as well as areas of agreement and disagreement. These interactions helped identify concepts reflecting group consensus, alongside variations in perspectives that may relate to different characteristics within the participant group, such as levels of clinical experience (Krueger, 2015). In contrast to individual interviews, where the exploration of insights is restricted to individual perspectives, this study aimed to examine the

shared experiences of a collective group of nurses. This approach reflects the assumption that knowledge is built through individuals' understandings, experiences, and interactions within their practice environment.

The semi structured focus group interviews were conducted by an external interviewer. Prior to the commencement of the focus group interviews, participants were provided with an information sheet about the research for them to retain and review (Appendix D). They also completed the consent form regarding the participation into the research (Appendix E). I had a dual role, as both the Nurse Educator and researcher. Practitioner as researcher offers valuable contextual understanding and knowledge; however, it creates the potential for power dynamics or bias to influence the outcomes of the results if the researcher is directly involved in the interview process (Berger, 2015). Every researcher brings their own perspectives and potential biases to the research process; however, within a robust research design, strategies to mitigate researcher bias are essential to ensure accurate interpretation of participant data (Fusch et al., 2018).

In addition to researcher bias, participants' responses may also be influenced when the researcher holds a practitioner role within the area under investigation. In such circumstances, participants may feel hesitant to express certain views openly, or may consciously or subconsciously withhold, modify, or tailor their responses to align with perceived expectations, thereby potentially impacting the authenticity and credibility of the data collected (Braun and Clarke, 2022). The interviewer was provided with questions based on the themes identified in the previous literature review to support and guide the discussion of focus groups (Appendix G). The interviews were recorded using Microsoft Teams with the transcription function being enabled throughout the interview. Once the interviews were completed, I reviewed the audio recording and generated transcript to ensure accuracy of the collected data.

3.3.2 Phase One: Participant Inclusion and Recruitment

The inclusion criteria for participants to the focus groups was that they needed to be registered nurses working on Ward E4 (paediatric surgical ward) or Ward E5 (paediatric medical ward) at Te Whatu Ora, Waikato Hospital, which is where the

PEWS tool is used most frequently. Recruitment was completed through various communication methods. A poster was displayed on the paediatric wards at Waikato Hospital outlining the research, what was involved in agreeing to participate in focus groups, and how to contact the researcher (Appendix H). This information was also emailed to all nurses employed in the paediatric wards. Details of the focus group times and location were included in the emails so that participants could indicate their availability.

3.4 Phase Two: Quantitative Research

Quantitative research is systematic and often referred to as the science of numbers as it involves the collection and analysis of numeric data (Creswell & Creswell, 2018). These numeric data are often analysed via statistical methods. Data for quantitative research are gathered using standardised instruments, surveys, physiological measurements, or collected health data. Using statistical techniques, the data are analysed to determine patterns or cause and effect relationships (Walsh & Wiggins, 2003). The strength of quantitative research enables the researcher to analyse the data objectively and reduces the risk of bias; thereby increasing the overall validity of the research outcomes (Liamputtong, 2022).

3.4.1 Phase Two: Data Collection

Phase two employed a quantitative method to gather data via an online survey with a Likert scale. The Likert scale is widely used in research to assess attitudes, perceptions, and self-reported experiences in a structured manner (Hulley, 2013). As this research explored experiences, it was appropriate to measure attitudes and perceptions, as they reflect how participants interpret those experiences. This way of collecting quantitative data fits the pragmatist design of the research. It enabled wider exploration of the experiences of nurses involved in the research. Using the Likert scale supports pragmatic mixed method design by taking qualitative insights and using quantitative measures to best address the research aims. A Likert scale allows for statistical analysis by taking the subjective response and converting it to numerical data (Liamputtong, 2017). A Likert scale was selected as it allows attitudes, beliefs, and perceptions to be measured over the continuum rather than a simple yes or no response (Hulley, 2013).

This was considered important as there is variation in the degree of agreement with different statements for nurses using the PEWS.

This method was chosen over individual interviews as it enabled data collection from larger groups. It also allowed the participants to respond anonymously reducing the potential for social desirability bias (van de Mortel, 2008). Questions developed for the Likert scale survey came from the themes identified in the phase one qualitative data. The scale had 5 options: strongly agree, agree, neutral, disagree, and strongly disagree. The survey was sent digitally using Microsoft Forms. See Appendix K for the final survey questions. The data received had no identifying information to keep the participants anonymous. The only demographic information collected was the number of years the participant has worked in the speciality of paediatric nursing using the options: less than 5 years, 5 to 10 years, or 10 or more years. There was a final open text question asking the participants: What education would you like to recommend in relation to escalating PEWS scores? This question was directly associated with the objectives of the research.

3.4.2 Phase Two: Participant Inclusion and Recruitment

The overall inclusion criteria remained consistent with phase one. Eligible participants were registered nurses employed to work on paediatric Wards E4 or E5 at Te Whatu Ora, Waikato Hospital. A total of 94 registered nurses met the eligibility criteria and were invited to participate in the survey. Thirty-one nurses completed the survey, resulting in a response rate of 33%. Information regarding phase two of the research was included in the initial recruitment poster used in phase one (Appendix H). The link to the online surveys was distributed via email to all eligible nurses inviting them to participate in the survey. Upon opening the link, participants were presented with information about the research, what was involved when participating, and how the data would be used. It was clearly indicated that the completion of the survey would indicate consent to participate (Appendix I). In addition to the circulation of the email, a poster was circulated in the identified wards with a quick responses (QR) code that linked directly to the survey (Appendix J).

3.5 Data Analysis

The data for the qualitative was obtained from semi-structured interviews conducted within small focus groups and comprised verbatim transcripts of the interviews. Using the transcripts themes were derived using thematic analysis as described by Braun and Clarke (2022). To begin, the transcripts were analysed to find codes, the smallest unit in the process of thematic analysis. The codes were reviewed to identify patterns and similarities across the focus groups. Codes with related meanings were grouped together to form preliminary categories. These categories were then examined for relationships and recurring patterns, leading to the development of potential themes. The themes were refined by reviewing them against the dataset to ensure they accurately reflected participants' experiences with the PEWS. The final stage involved clearly defining and naming each theme. In this way, the themes were generated from the data rather than using existing framework.

The quantitative survey data were exported from Microsoft Forms to Microsoft Excel for analysis. Descriptive statistics were employed to summarise the responses, including frequency, percentages, and mean scores for the Likert scale items. The findings are presented in tables to illustrate the patterns indicated by the respondents and to explore the themes identified in the qualitative phase of this research.

Following the thematic analysis and integration of the quantitative data, the iPARIHS framework was applied to support the understanding of implementation influences and discuss the findings (Harvey & Kitson, 2015). This was deemed appropriate as it provides an approach that helps understand what factors influence implementation within a healthcare setting. During analysis, themes were considered in relation to the domains of the iPARIHS and provided support for understanding the barriers to the nurses' ability to follow the PEWS pathway.

3.6 Ethics and Cultural Consultation

Ethical approval for this research was granted by the Human Research Ethics Committee at the University of Waikato. Appendix L contains the completed ethics application, and Appendix M includes the approval letter. Additionally, approval to

conduct this research at Te Whatu Ora Waikato was secured (see approval letter, Appendix N).

I stored electronic data on my laptop, with confidential documents further safeguarded by password protection and two-factor authentication. After a period of 5 years, all digital files, including those in the recycle bin, will be deleted, and interview consent forms will be shredded.

Cultural consultation was conducted prior to the commencement of the research to ensure alignment with the principles of Te Tiriti o Waitangi and the implementation of culturally safe research practices. This was achieved by presenting the research proposal to the Nurse Consultant for the Cultural Workforce Development Team at Te Whatu Ora Waikato. I received guidelines to ensure the research is carried out in a culturally safe manner. It was recommended that I greet participants using appropriate language and ascertain any cultural considerations specific to the participants, including the appropriateness of performing karakia to open and close the interview. Participants were also given the option to bring a support person, and I was encouraged to be attentive to cues of distress and to check if participants wished to pause or stop the interview.

3.7 Credibility and Trustworthiness

Ensuring that mixed methods research is credible and trustworthy is crucial for accurately reflecting participants' experiences and providing results that are meaningful and reliably address the research question. This study employed strategies in both the qualitative and quantitative phases to enhance the research rigour and bolster the findings.

In qualitative research, trustworthiness is a crucial consideration and is often assessed using the criteria of credibility, dependability, confirmability, and transferability (Korstjens & Moser, 2018; Lincoln & Guba, 1985). This framework serves to evaluate the quality of qualitative inquiries and ensures that the findings accurately represent the participants' experiences. Credibility pertains to the confidence in the truthfulness of the findings and the degree to which they reflect the participants' experiences. To

enhance this credibility, focus group recordings were transcribed verbatim. Additionally, I reviewed each transcript against the corresponding recording. Employing an external interviewer further strengthened credibility by minimising researcher bias and reducing potential power imbalances between myself and the participants. This aspect is particularly important since I hold a senior nursing role within the clinical setting being studied.

Dependability refers to the consistency and transparency of the research throughout the entire process (Korstjens & Moser, 2018). A comprehensive documentation trail was maintained, encompassing methodological decisions, data collection processes, coding procedures, and theme development. Rigour was enhanced by using a systematic approach to coding and theme development using Braun and Clarke's (2022) framework. By maintaining this record, the research process can be effectively evaluated and understood by others.

Further, confirmability refers to the extent to which the research can be verified by other researchers, ensuring that the findings are not merely a reflection of the researcher's assumptions and beliefs. To uphold this standard, I engaged in reflective practice and documented personal biases, decisions, and potential influences on the interpretation of the data. Additionally, involving an external interviewer and incorporating direct quotes from participants enhanced the confirmability of the qualitative results.

The transferability of this research pertains to the extent to which its findings can be applied to other contextual settings. While qualitative research does not aim for statistical generalisation, detailed descriptions of the study environment, participant characteristics, and the research process will be provided (Korstjens & Moser, 2018). This information will enable readers to assess the relevance of the findings to other settings involving paediatric nursing patients.

For the quantitative phase, rigour was established through validity and reliability (Creswell, 2022). The content for validity was strengthened by having survey questions developed from the themes that were identified through the qualitative phase. This

ensures that the survey measures participant concepts derived from the focus groups experiences and are relevant to the objectives of the study. Reliability was enhanced by using standardised survey questions and a five-point Likert scale for all participants. The responses were anonymous, reducing the social desirability bias and encouraging participants to provide honest answers (van de Mortel, 2008).

Mixed methods design itself contributes to the trustworthiness of this study through methodological triangulation (Creswell, 2022). The integration of qualitative and quantitative data enables the findings of the focus groups to be explored and examined across a larger group of participants. The integration of quantitative themes and qualitative findings has strengthened the confidence in the results and provided a more comprehensive understanding about nurses' experiences with using the PEWS; thus, providing findings that are both credible and meaningful for nursing practice.

3.8 Summary

This chapter outlined the methodological approach employed to explore nurses' experiences with the PEWS in practice, along with the educational requirements necessary to support its effective implementation in clinical settings. The research has been guided by a pragmatic research paradigm and employs an exploratory mixed methods design, which encompasses both qualitative and quantitative data collection to achieve a comprehensive understanding of the research question.

The research was conducted in two phases. Phase one involved qualitative focus groups with registered nurses working in the paediatric medical and surgical wards at Te Whatu Ora, Waikato Hospital. This phase aimed to explore the nurses' experiences, perceptions, and factors influencing the use of PEWS. The findings from this initial phase informed the development of Phase two, which consisted of a quantitative survey designed to examine and validate the themes identified in the qualitative data.

The choice of an exploratory mixed methods approach allowed for an in-depth exploration of nurses' experiences before assessing the breadth of those experiences across a larger cohort. The integration of focus groups, surveys, and both thematic and

descriptive analyses will enhance the understanding of the factors influencing the use of PEWS and the educational support required.

Additionally, this chapter detailed the participant recruitment strategies, data collection methods, and analytical approaches employed to ensure that the research is credible and relevant to its aims. Through this methodological framework, the study aspires to generate meaningful results that are focused on clinical practice and will bolster the effective use of the PEWS.

Chapter IV: Findings

4.1 Introduction

The aim of this chapter is to present the detailed findings derived from the data sets collected during this research. The study employed an exploratory mixed methods research design. Qualitative data were gathered from small focus groups consisting of 4-5 registered nurses, allowing them to share their personal experiences with using the PEWS charts in clinical practice. Discussions among the nurses within these focus groups provided valuable insights into their experiences, perspectives, and decision-making processes. This setting also enabled the nurses to articulate perceived barriers to adhering to the escalation pathway outlined in the PEWS chart, as well as the benefits associated with using these charts and pathways.

Following the completion of this phase, the themes emerging from the transcripts were analysed to inform the quantitative aspect of this research. The quantitative research involved a survey with 12 questions utilising a Likert scale to determine whether the themes identified by the nurses in the focus groups resonated with a broader group of participants, thereby addressing the research aim. Phase two built upon the findings from the qualitative study by examining the identified themes through a quantitative lens, enhancing the understanding and quantification of the themes uncovered in the focus groups.

Part 1: Qualitative Findings

4.2.1 Introduction to Qualitative Findings

In the initial phase of the study, focus group interviews were conducted with registered nurses working in Wards E4 and E5 at Waikato Hospital. Data collection occurred over a 3-week period, involving three focus groups. The first and third focus groups each consisted of four participants, while the second group included five participants, resulting in a total of 13 participants for this phase.

All interviews were conducted in a designated meeting room located away from the clinical environment to ensure minimal disruption and maintain confidentiality. Upon arrival, participants were provided with information sheets and consent forms (Appendix D). I was present initially to address any questions, after which all participants provided written informed consent. I remained briefly to facilitate the setup of the recording equipment and to do the introductions between participants and the interviewer. However, I did not remain present for the interviews.

The interviews were conducted by a registered nurse with previous clinical experience in the emergency department at Waikato Hospital and who was, at the time of the study, employed in a research role at the University of Waikato. I developed a set of 10 exploratory questions (Appendix G) to guide the focus group discussions. These questions were informed by the results of the local PEWS audits (Appendix B), key themes identified in the literature review, and were aligned with the specific aims of the study.

For each focus group, the audio was recorded and automatically transcribed. I subsequently reviewed the audio recordings alongside the transcriptions to verify that they were accurately transcribed verbatim. Each participant was anonymised and referred to as Nurse 1 through Nurse 5 for their respective interviews. After the interviews, each participant received an email containing the transcript of their discussion, along with their assigned nurse number. They were given the opportunity to review the transcript and suggest any edits if necessary. There was a 2 week timeframe for the nurses review and submit any edits. There were no edits submitted by the participants.

4.1.2 Thematic Analysis

Data were analysed using Braun and Clarke's (2022) reflexive thematic analysis. In the initial phase, familiarisation with the data was achieved by reading the verbatim transcripts, allowing for a detailed and in-depth understanding of the participants' experiences. The second step involved generating a range of codes that captured the participants' experiences while using the PEWS. These codes represent meaningful units of data and were examined for patterns across the resulting dataset. Serving as

the building blocks for theme extraction, the codes were analysed to explore patterns and similarities between the focus groups, as well as to identify any additional potential themes. Subsequently, these codes were reviewed and grouped according to similar concepts to develop preliminary categories. In the fourth phase, the categories were scrutinised for patterns and relationships, which facilitated the development of potential themes. The themes were further refined by utilising the dataset to ensure that they accurately represented participants' experiences with the PEWS. The final phase involved defining and naming the themes that best encapsulated these experiences. See Appendix K for working document from thematic analysis.

Given the reflexive nature of thematic analysis, I acknowledge that my clinical background and experiences as a senior nurse within the study setting may have influenced data interpretation. To minimise this impact, the focus groups were conducted by an independent interviewer. This decision was made because many participants were acquainted with me, and it was deemed crucial to reduce the potential influence of existing relationships on the participants' ability to speak openly.

Table 3 illustrates the progression from codes to categories and then to themes. Following Braun and Clarke's (2022) approach, themes were developed through the process of reviewing relationships between codes and categories rather than a linear process. The five themes identified were: Clinical Judgement and Experience, Time Pressures, Professional Responses and Communication, Unique Factors Presented by Children, and Adherence to PEWS and Education.

Table 3.

Thematic analysis

Code	Category	Theme
- Using Clinical Judgement - Our Nursing Experience - Rationalise Decisions - I can look - I can tell	- Clinical experience of nurses - The PEWS theory - Decision making	Clinical Judgement and experience

Code	Category	Theme
• Junior nurse • Nursing Intuition • Senior Nurse		
• Timely Manner • Delegation • More Staff • Heavy Workloads • Time to Document • In Depth • Too Busy	• Heavy Patient Workloads • Timely Documentation • Staffing Levels • Detailed charts and processes	Time Pressures
• Pathway for doctors • Timely Manner • Further Escalation • Doctor Workload • Verbal communication • Hesitant to interrupt • Doctors Not Following Pathway • Senior Nurse contradiction • Adult Surgical Sub Specialties • Build Relationships	• Consideration of doctors' workloads • Verbal communication with no documentation • Doctors from primarily adult specialities • Senior nurses contradicting pathway	Professionals Responses and Communication
• PEWS High • Screaming Child • No Escalation • Reassessing • Disturbing the child • Parental/ Caregiver Refusal • Nurse Phobic • Inaccuracy of Vital Signs • Febrile Child	• Frequent high PEWS from distress • Challenges with accuracy of vital signs • Parental/ Caregiver Refusal due to not wanting to be disturbed • The role fever plays in PEWS	Unique Factors Presented by Children

Code	Category	Theme
• Forgotten Documentation • Verbal • Education to caregivers. • Adult nursing and Subspecialties • Doctors understanding • Combining theory and practical • The PEWS in theory • Mandatory Pathway • Adherence • Decision Making • Experience • Continuous Monitoring	• Poor and forgotten documentation • Non paediatric experience and knowledge • Doctors' understanding	Adherence to PEWS and Education

4.1.3 Clinical Judgement and Experience

Nurses expressed concerns that the escalation pathway restricted their ability to exercise clinical judgment. During discussions about working with the PEWS, they felt that the tool did not enhance their decision-making; instead, it constrained it. Many nurses noted that the PEWS seemed to override their intuition and simplified complex assessments into numerical triggers. One nurse specifically mentioned that using the PEWS limited their ability to rely on their nursing instincts, *“Sometimes I feel like the PEWS is a little bit nursing by numbers and you can’t use your nursing intuition”* (RN, FG3). Another example where a participant identified that their own professional clinical judgement is removed when using the PEWS was: *“You don’t get to use your brain. You don’t get to figure it out yourself. Or actually think about it, or rationalise what’s happening. It’s a no, this is what’s happening. You’ve got to do this now”* (RN, FG 1). When brought together, these narratives show that PEWS could be felt to be undermining their professional autonomy as opposed to being a tool to support clinical judgement. Rather than being able to make clinical decisions, nurses were rather following the rules and numbers.

The focus groups highlighted the importance of clinical judgment in nursing, particularly when working with the paediatric population. The pathway is mandatory, and the auditing and reporting processes do not account for clinical judgment when the PEWS score is elevated. Participants also suggested that as nurses gained more clinical experience, they placed greater emphasis on clinical judgment in the decision-making process related to the escalation of the PEWS. One nurse reflected that when they use the PEWS their hesitation to adhere to the pathway is related to their own years of clinical experience: *“There’s parts of it that you sort of hum and ha about but that’s more because you’ve been nursing for so many years”* (RN, FG3). Another nurse highlighted that senior nurses were able to contextualise elevated scores within a full clinical assessment: *“They’re just so good using clinical judgement to be like, actually this child will be fine”* (RN, FG2).

It was also articulated that senior nurse clinical judgement was built from a wide spectrum of skill and that using the PEWS that narrows these skills reducing and not recognising clinical judgement. A registered nurse from focus group one said, *“Because our clinical judgement is not just a box and a counting up of numbers. You know our clinical judgement, our experience, our assessment skills, our observations and all of that. We’re nurses that are doing this every day”*. Bringing these accounts together suggest that the participants feel the use of the PEWS does not value nursing experience and expertise. Despite the system being designed to support clinical assessment, it leaves experienced nurses balancing what their professional judgement is telling them with what the process of using PEWS is telling them to do.

Participants noted that newly graduated registered nurses with limited clinical experience in paediatrics found the PEWS beneficial when used as recommended. In contrast, more senior, experienced nurses felt restricted by the PEWS guidelines. Newly graduated nurses were identified as a specific subgroup that particularly benefited from accurately following the pathway. Participants suggested that these nurses were more likely to adhere to the pathway rather than rely on clinical judgment to justify not escalating care for a child with an elevated PEWS score. One participant described that early on in their career, when they were lacking confidence and experience with assessing children, the PEWS provided clarity and direction for their

assessment: *“Even coming in as a new grad. Because that is pretty much telling you exactly what you need to do when you first off don’t have that clinical judgement”* (RN, FG3). This perspective was reinforced by another nurse when they suggested that the tool was useful when navigating paediatric assessment: *“So especially for juniors it’s useful”* (RN, FG1). While the PEWS may appear restrictive to experienced nurses, it serves as a foundational tool for those new to paediatrics. It helps build both confidence and competence as these nurses develop their clinical judgment and reasoning skills

Together, the nurses expressed that using the PEWS is not a straightforward process and varies based on each nurse’s level of experience. Experienced nurses find it somewhat restrictive, as it limits their ability to exercise clinical judgment. In contrast, new nurses see it as a valuable tool that enhances safety and supports clinical decision-making, helping them develop their clinical assessment skills. This discussion reflects the broader tensions between the standardisations and professional expertise. The tool is designed to enhance patient safety yet it may also be perceived as restricting the application of nurses’ clinical knowledge and experience. Whereas nurses with less clinical experience valued the PEWS to guide assessment and escalation.

4.1.4 Time Pressures

During the focus groups, participants discussed various time-related challenges that nurse’s encounter when using PEWS charts. These challenges were particularly evident when the interviewer inquired about the barriers to incorporating PEWS charts into their practice.

When using the charts, it is expected that record-keeping will be done in real time. Participants indicated that accurately documenting the PEWS takes a considerable amount of time, particularly when a child has a high PEWS score, which demands more frequent monitoring and significant intervention. One participant highlighted the challenge of managing time in this context. *“Time to document. Especially if you’re juggling other loads and priorities. And time to fill it out properly and add the score properly. And then the documentation involved with that”* (RN, FG2). Not only did they highlight the impact of completing the PEWS they also noted the added complexity of clinical responsibilities: *“But then actually other patients missing out because you’re focusing on pathway which is quite*

sometimes quite in depth” (RN, FG3). These examples indicate that the PEWS can significantly affect nurses’ time management. Nurses often need to redirect their time and attention in ways that are immediate and unplanned. This change in demand can impact both the nurse involved and the patients and other staff members.

Participants also identified staffing levels and heavy workloads as factors that hindered nurses from accurately completing the PEWS assessments and escalation processes. Although Te Whatu Ora, Waikato has implemented systems designed to mitigate the effects of staffing shortages and high workloads on patient outcomes, there are instances when these systems prove ineffective from the nurses’ perspectives. One participant talked about the impact winter has on acuity of patients and the challenges of using the PEWS in practice:

So in winter we obviously get higher PEWS. We also get heavier workloads. Our staffing is OK, probably could be greater considering our workloads and our high PEWS. So I think it’s hard to follow it perfectly and to a tee. (RN, FG1)

Another participant described that while the design and purpose of the PEWS was good, the expectations of using the PEWS were challenging because of workforce demands. *“I think is really good, that it’s streamlined, but if they actually wanted this perfectly followed in every case for every patient help, you’d need double the staff”* (RN, FG1). The responses provided suggest that adherence to the PEWS is not always related to the design; rather a mismatch between the requirements of the PEWS and the workforce demands and pressures. Participants reviewed the PEWS as time intensive and when experiencing high workloads noted there is a deviation from the expected adherence to the PEWS when working towards prioritisation.

Time pressures have a significant impact on the support available to nurses caring for deteriorating patients. This situation also affects the ability of senior nurses to assist colleagues when they have a child with an elevated PEWS or when another nurse is managing a child whose PEWS is escalating. This assistance is particularly crucial because, according to the PEWS chart used at Te Whatu Ora, Waikato, one of the steps for escalation involves the identifying nurse discussing the situation with the nurse in charge. A participant from Focus Group 2 noted that while nurses can request

support during an escalating PEWS situation, there often is not enough time for senior nurses to respond, “*Yes, you can ask for help, but when they also have heavy workloads it makes it a little bit difficult to follow the pathway to a tee*”.

One participant pointed out that managing their own patient load while supporting others with PEWS is challenging, especially when doctors’ plans are occurring at the same time

That can be a challenge sometimes as a coordinator when you’ve got a workload and also managing the PEWS and supporting the staff. Because when you’re following that pathway, there’s quite a bit to do. And then that’s on top of once the doctors have seen them and then you’ve got a plan to do. (RN, FG3)

One nurse reflected on the impact of supporting others while dealing with the challenges of having a child requiring escalation due to elevated PEWS, highlighting the negative effects this situation can have. “*If you’re coordinating someone has a high PEWS and you need to come and see them. But I haven’t got time to actually go back to mine*” (RN, FG1).

Participants noted that time pressures significantly affected their use of the PEWS when caring for deteriorating patients. They discussed how factors such as time constraints, workload, and staffing impacted their ability to follow the PEWS pathway effectively. While the participants understood the principles of the PEWS, they acknowledged that the lack of time hindered their ability to implement the PEWS pathway correctly in practice. These findings indicate that time pressure significantly influences the implementation of the PEWS in practice. Nurses adjust their use of this tool in response to workload demands, staffing limitations, and competing clinical priorities. This suggests that the challenges associated with PEWS are not solely tied to knowledge or understanding but are also shaped by the clinical environment in which nurses operate.

4.1.5 Professionals’ Responses and Communication

The PEWS was created as a tool to identify early signs of deterioration in paediatric patients and to aid in escalation and communication with healthcare professionals. However, analysis from the focus groups revealed that nurses had varying experiences with the escalation process, which influenced how they adhered to the established

pathway. This variation stemmed from their experiences and interactions with doctors and senior nurses in the workplace.

One barrier identified by the participants when using the PEWS was their reluctance to disturb the medical team, particularly when they had used their clinical judgment to determine that a child was clinically stable. The participants talked about how at Waikato Hospital there are only two paediatric doctors on duty after 10PM: one registrar and one house officer. These doctors also cover the emergency department and serve as a resource for community and rural hospitals via phone. One participant explained their reluctance to escalate due to the medical team's perceived availability, choosing to exercise clinical judgment over strict adherence to the PEWS pathway.

So we are aware of our medical colleagues. You know if they're seeing kids down in ED. Of course our kids in the ward are a priority too. But if I've got a high PEWS, but if I'm thinking they're upset or they've got a temperature or whatever. I'm honestly a little bit hesitant to interrupt them. And what they're doing down there. (RN, FG1).

Another participant highlighted the hesitation to interrupt the medical team:

It's just interrupting what they're very busy with down in ED. And sometimes I think that I don't need to do that. And I don't want to interrupt them because they're busy when I'm going to assess this child again. (RN, FG1).

These comments suggest that the nurses are anticipating the workloads of the medical teams, and base their decision to follow the PEWS accordingly.

Some nurses reported that doctors' responses were not aligned with the PEWS and the escalation process. Despite PEWS being designed as a standardised tool for escalating care, participants noted that, in practice, medical staff did not always follow the established guidelines. Participants reported that many verbal communications between the medical team were not clearly documented by either the nurses or the doctors. This indicates that these interactions lacked rigour and were not consistent with the intended operation of the PEWS. One nurse reflected: *"Most of the time, it's more Hey, doctor, they are this. Do you want me to change anything?" No. They're all right'. Verbally. But it's, it's not as official. It's not as following the system"* (RN, FG1).

There were other instances described where the medical team did not prioritise elevated PEWS. The nurses would attempt to raise concerns, but the lack of response created tension in the interprofessional relationships. One participant shared their perspective on this situation:

I think a lot of the time, I think they don't look to unwell or we'll start escalating and the doctors won't follow the chart. And so they, they just keep PEWSing. And you have to keep calling every time they PEWS and be like, hey, this is according to the child. Then they just get annoyed at you. (RN, FG2)

The findings indicate that the effectiveness of the PEWS depends on how the clinical team collectively uses and interprets the pathway. This underscores the importance of understanding interprofessional relationships within an organisation and how these relationships influence the use of the chart.

At Waikato Hospital, children who undergo surgery are admitted under the surgical team. Most surgical teams at the hospital primarily work with adults, so the paediatric population represents a small portion of their cases. This situation means that in the paediatric surgical ward, E4, children may be cared for by doctors who do not have extensive experience working with young patients. Nurses have identified this as a perceived challenge when utilising the PEWS charts.

The participants noted a distinction between their paediatric-focused tool, the PEWS, and the responses received from the surgical teams. They observed that some doctors tended to view the children's PEWS and physiological data through an adult-focused lens, which led to a minimisation of the PEWS' significance. One participant's experience illustrates this point:

I think sometimes as well with the specialties like ortho and plastics that are usually with adults. You call them and they are like that's fine. You're like, yeah, but this is a 3-year-old kid. This isn't an 80-year-old man. (RN, FG1)

The participants compared their experiences with the paediatric teams to those with the adult surgical teams. They noted a perceived difference in the use of the PEWS between the two groups. The paediatric teams were seen as being more responsive. This difference is highlighted by the following comment: “For the paediatric like

medical, it's easier for them because they see it quite often. There's a pattern especially for respiratory distress. For the paediatric surgical, downstairs it's quite hard' (RN, FG3). When navigating these experiences, it has become evident that nurses' experiences with using the PEWS vary depending on their specialty practice regarding escalation. This indicates that, according to the participants, the intended purpose of the tool is not consistently applied across different practices

The PEWS response requires issues to be escalated to the senior nurse on duty. However, focus groups highlighted challenges when interacting with senior nurses regarding the PEWS charts. Participants noted that senior nurses often relied on their clinical judgment, which sometimes conflicted with the recommendations outlined in the PEWS pathway. This created tension and uncertainty, particularly for less experienced nurses. One participant shared their experience as a graduate nurse, illustrating this point.

I think one thing for me as well, being, more being a new grad is that bringing it up to senior nurses, and sometimes they'll be like nah that's fine. And in my head, I'm like that is what I'm supposed to do. But then someone who's higher up than me is telling me I don't need to do that. And it's that contradiction of what do I listen to? Do I listen to the senior nurse that's telling me one thing? Or do I listen to the paperwork that's telling me another thing. (RN, FG1)

Participants noted that the experience of senior nurses can sometimes dismiss or downplay concerns raised through using the PEWS. While clinical judgment is important, this can act as a barrier to the consistent application of the PEWS tool. One participant described this phenomenon as *"Escalating to other senior nurses, they've had a lot of experience. And they say don't call. And then you're like I'm not sure. So I think that's another barrier"* (RN, FG2). The uncertainty puts nurses in a challenging position on how to act upon the PEWS, with participants perceiving a risk of undermining a collegial relationship. *"I don't want this person I'm going to have to work with for however long to hate me for not listening to them, but then I know what the paper says"* (RN, FG3).

Across the focus groups, it became clear that the correct application of the PEWS was influenced by the interprofessional relationships and professional hierarchies among

participants. The discussion highlighted the challenges they faced, including the need to adjust their responses to the pathway based on their working environment. Participants noted that the application of the PEWS is not consistently implemented throughout the organisation. These findings demonstrate that PEWS is utilised in a complex setting where the organisational environment, communication patterns, professional hierarchies, and competing workload demands, influence how the pathway is interpreted and used in clinical practice.

4.1.6 Unique Factors Presented by Working with Children

The PEWS escalation charts do not allow for the documentation of challenges that may arise when taking a set of vital signs. Focus groups have identified situations where observations were made and some children became upset, which impacted the overall PEWS score. In these cases, the PEWS score increased, triggering the mandatory escalation pathway. However, nurses indicated that in such circumstances, they would opt not to escalate and would instead reassess the situation later. Some participants pointed out that measurements such as blood pressure and heart rate can be inaccurate when a child is distressed. These inaccuracies are often viewed as artefacts rather than indicators of clinical deterioration. One participant explained it as, *“I know they’ve got a high blood pressure right now because they’re kicking and screaming because they don’t like it. Yeah, I’m not going to escalate that because they’re angry at you. It’s not accurate”* (RN, FG1).

The participants described that they deviated from the pathway in favour of reassessment to allow the child to settle and have the clinical data from the PEWS be more representative of what was happening physiologically for the child. One participant described this clinical decision and reassessment: *“But typically, I have to wait 5-10 minutes to do it again to try and hopefully get great numbers, but they’ve just had a high PEWS and I technically haven’t escalated that. That’s what I find really difficult”* (RN, FG2).

Participants described how crying, fear, and fever are common responses in paediatric patients. However, these factors can affect vital signs and PEWS scores. *“It’s so hard to get accurate blood pressure on a kid unless they’re really unwell. And then you’ve like probably missed the signs of seeing their blood pressure deteriorate”* (RN, FG2). Participants described how some children consistently experience distress when in the presence of a

healthcare professional. This distress leads to elevated PEWS that do not accurately reflect their illness. *“Sometimes they are nurse phobic. And as soon as you walk in the door, they are elevated and don’t want you there”* (RN, FG3).

There are physiological differences between adults and children that can present challenges in assessing their condition. In children, a fever is not always a primary concern when monitoring their deterioration; they can have elevated temperatures and still appear clinically well. However, a fever can impact other vital signs, such as heart rate. According to feedback from focus groups, nurses indicated that while a child’s fever may not be alarming, they will treat the fever and then reassess the situation. This means that a child’s PEWS may show an elevated score that has not been addressed. A participant described assessing their response to fever and approach to reassessing: *“But if you have a patient and you do obs and they’re crying or they’re febrile, the numbers are expected to be elevated. So then your PEWS is going to be elevated. So sometimes it’s waiting and maybe reassessing”* (RN, FG1). This quote highlights how nurses will respond to the context for the physiological change rather than use the PEWS pathway. *“But then I think also some of our escalation would be the just the temperature and screaming children. I think sometimes we’re like, actually this child give them 30 minutes and they’ll be fine”* (RN, FG2).

In addition to child-related factors, parental influence also played a significant role in the adherence to the PEWS pathway. This influence often took the form of requests from parents and caregivers to either delay the taking of vital signs or to skip them altogether. Such requests added complexity to the nurses’ ability to follow the pathway. *“And sometimes it’s actually the families as well. They don’t want you in there. They are like you’re not coming in. You are not doing it this time. These are barriers that you find”* (RN, FG2) or *“The families and the parents and the caregivers, they sometimes are just like don’t let them sleep. And they’re just terrified we’re going to disturb the baby”* (RN, FG3).

Family-centred care is essential to paediatric nursing practice. However, this approach can sometimes create tension and pressure for nurses when utilising the PEWS pathway. Nurses must skilfully navigate the balance between family-centred care and adherence to the PEWS protocol, often viewing this balance as a barrier to following the pathway effectively. This situation highlights the practical and ethical complexities

of merging family-centred care with clinical guidelines. The participants noted that they need to address the needs of both the patient and their families while also adhering to the requirements of the PEWS pathway.

Overall, these findings indicate that the PEWS pathway does not fully accommodate the nuances involved in caring for paediatric patients. Consequently, nurses are adapting its application by incorporating contextual judgment when interpreting and responding to the PEWS assessments.

4.1.7 Adherence to the PEWS and Education

Nurses who participated in the focus groups conveyed that they understood how to use the PEWS. However, they raised concerns regarding documentation related to the chart. Documentation was often described as the aspect of PEWS that would be delayed, omitted, or not completed at all. Participants noted a reliance on verbal communication that was not formally recorded. One participant highlighted this issue, emphasising the importance of proper documentation: *“I think along with it is we do a lot of verbal stuff and its poorly documented”* (RN, FG1).

Nurses noted that while they had communicated escalations with the appropriate respondents, these conversations were not always documented in the clinical notes. This situation underscores the tendency to prioritise direct patient care over proper documentation. One participant shared their observations on this issue: *“Because sometimes we do actually do it because a lot of our registrars are often on the floor and in the office. We let them know, but then our documentation doesn’t always reflect it”* (RN, FG3).

A barrier that one of the nurses described is the challenge of maintaining accurate clinical documentation of PEWS when the patient is being consistently monitored.:

We’re not always good at doing it and documenting as frequently as required. And recently I’ve gotten the habit of like documenting and the notes that they’ve been on a continuous monitor. Because you’ll visualise them. But I don’t always document and sometimes I think that’s it. (RN, FG2)

There was also discussion regarding the challenges associated with the charts. As mentioned earlier, there are four different charts, each with distinct physical

parameters. To obtain accurate PEWS, it is essential to have the correct charts documented properly and to add the scores accurately.

The biggest thing that happens I think is people don't look and necessarily put the right figure in the right box. And so then your scores aren't true. Or they use the wrong age bracket and then your scores don't align with the expected normal for that age range. (RN, FG2)

The focus group participants discussed the perceived ease of the chart is not always reflected in the reality of application: *"It can be a lot harder than it should be. It's a lot harder than they make it sound"* (RN, FG3).

This theme illustrates that documentation is a crucial element of using the PEWS charts; however, it is not always implemented correctly. It highlights the gaps and complexities associated with using the PEWS pathway in practice, particularly in relation to the demands of nurses' clinical work. The findings indicate that adherence to the PEWS is not solely influenced by an individual's knowledge, education, or compliance. Instead, it is shaped by the interplay of workflow pressures and competing clinical demands. This highlights the importance of comprehending how the PEWS pathway operates within the context of real-world clinical practice.

4.1.8 Summary of Qualitative Data

The first part of this chapter has presented the findings from three semi-structured focus groups conducted with registered nurses from two paediatric inpatient wards at Waikato Hospital. All participants reported the use of PEWS charts in their practice. A thematic analysis of the interview data resulted in the creation of codes that were later refined into categories. From these categories, five key themes were developed: Clinical Judgement and Experience, Time Pressures, Professional Responses and Communication, Unique Factors Presented by Children, and Adherence to PEWS and Education.

When interpreted together, these themes illustrate that the use of PEWS is influenced by competing priorities, organisational processes, and the realities of paediatric clinical practice, rather than merely individual compliance with the pathway. Participants described tensions between the standardisation of the protocol and professional judgment, as well as between family-centred care and pathway adherence versus patient

safety amid competing workload demands. Time pressure was identified as an organisational constraint affecting their use of PEWS, while communication dynamics and professional hierarchies also impacted decision-making and escalation processes. Additionally, participants noted that challenges often arise when working with paediatric patients, including distress, parental preferences, and the unique experiences associated with paediatric care.

Overall, these findings suggest that PEWS operates within a complex clinical environment characterised by multiple layers of influence. The successful implementation of PEWS depends not only on nurses' understanding of the pathway but also on their workload, interprofessional relationships, staffing pressures, and the intricate realities of caring for paediatric patients. These themes guided the next phase of the study, focusing on the development of questions to further investigate these factors.

Part 2: Quantitative Findings

4.2.1 Introduction to Quantitative Findings

The quantitative phase of this research aimed to determine whether the themes identified in the focus groups apply to the broader nursing workforce. The goal was to strengthen the evidence and understand the factors influencing nurses' use of the PEWS and its associated mandatory pathways. A survey was distributed to 94 registered nurses, resulting in 31 responses ($n = 31$), which corresponds to a response rate of 33%. The survey included 12 questions that utilised a Likert scale for responses. Each question was related to the themes developed in the qualitative research. The responses to the Likert scale items were analysed using descriptive statistics. Each response option was assigned a numerical value, ranging from 1 (strongly disagree) to 5 (strongly agree). The mean scores were calculated by multiplying each response category by its frequency, summing these values, and dividing by the total number of responses ($n = 31$).

The demographic information included in the survey was the nurses' years of clinical experience in paediatrics (see Table 4).

Table 4.

Respondent's demographics

Years of Experience	Number of Respondents
Less than 5 years	13
5 to 10 years	8
Over 10 years	10

4.2.2 Clinical Judgement and Experience

The results from the first question, I base my decision to escalate my patients solely on the PEWS are shown in Table 5.

Table 5.

I base my decision to escalate patients solely on PEWS.

I base my decision to escalate my patients solely on PEWS	n	%
Strongly Disagree	1	3.23
Disagree	14	45.16
Neutral	4	12.9
Agree	10	32.26
Strongly Agree	2	6.45
Mean Score	2.93	

The results in Table 5 indicate that participants do not rely solely on the PEWS as a tool for indicating when to escalate care. Nearly half of the respondents (48.38%, $n = 15$) disagreed or strongly disagreed with this statement, while 38.71% ($n = 12$) agreed or strongly agreed. Additionally, 12.9% of the respondents ($n = 4$) remained neutral on this issue. The mean score for this statement was 2.94, suggesting a slight tendency towards disagreement. Overall, there is considerable variation in the nurses' responses regarding their practice; however, the predominant trend indicates disagreement with the statement. This suggests that nurses primarily rely on their clinical judgment and experience in conjunction with the PEWS when making decisions about escalation of care.

Building on the previous question, the participants generally did not view the PEWS as a limitation to their clinical judgment (see Table 6). Specifically, 61.29% ($n = 19$) disagreed or strongly disagreed with the statement that PEWS leaves no room for clinical judgment, while only 22.6% ($n = 7$) agreed with this statement. Additionally, 16.13% ($n = 5$) of respondents chose a neutral response. The mean score for this data is 2.48, indicating that respondents tend to disagree with the statement. These results suggest that nurses believe the PEWS does not hinder their ability to apply clinical judgment when escalating concerns for a patient in deterioration.

Table 6.

The PEWS leaves no room for clinical judgement.

The PEWS leaves no room for clinical judgement	n	%
Strongly Disagree	5	16.13
Disagree	14	45.16
Neutral	5	16.13
Agree	6	19.35
Strongly Agree	1	3.23
Mean Score	2.48	

Nurses expressed that their experience qualifies them to make decisions regarding clinical escalation (Table 7). Over half of the respondents, specifically 58.07% ($n = 18$), agreed with this statement. In contrast, only 29.03% ($n = 9$) disagreed. The mean score for this response was 3.29, indicating a general agreement among respondents.

Table 7.

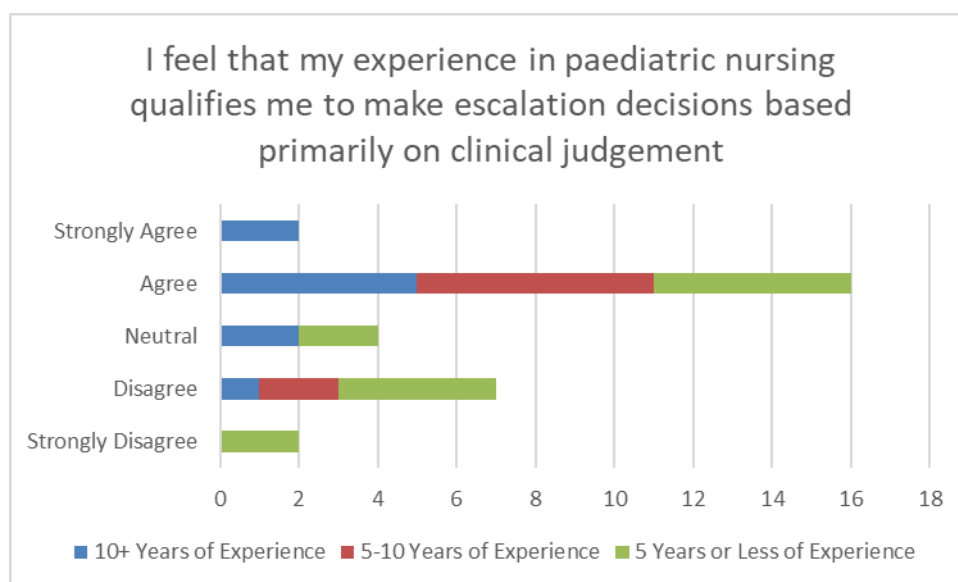
My experience in paediatric nursing qualifies me to make escalation decisions based primarily on clinical judgement.

I feel that my experience in paediatric nursing qualifies me to make escalation decisions based primarily on clinical judgement.	n	%
Strongly Disagree	2	6.45
Disagree	7	22.58
Neutral	4	12.9
Agree	16	51.62
Strongly Agree	2	6.45
Mean Score	3.29	

When examining the demographics based on years of experience, it became clear that greater clinical experience correlates with increased confidence in clinical judgment. Specifically, 70% ($n = 7$) of nurses with 10 or more years of experience agreed with the statement, whereas only 38.5% ($n = 5$) of nurses with 5 or fewer years of experience shared this view (see Figure 3).

Figure 3.

My experience in paediatric nursing qualifies me to make escalation decisions based primarily on clinical judgement.



The findings from these statements related to the clinical judgment and experience of a nurse indicate that nurses place a high value, and rely heavily, on clinical judgment in their practice. The PEWS was not seen as a barrier to exercising clinical judgment.

4.2.3 Time Pressures

Time barriers have a significant impact on nurses' ability to complete the PEWS process (see Table 8). A substantial percentage of respondents (74.2%, $n = 23$) agreed that their workload negatively affected the real-time completion of PEWS documentation, while only 12.9% ($n = 4$) disagreed with this statement. This is further emphasised by a mean score of 4.03, indicating strong agreement among respondents regarding the negative effect of workload on documentation completeness.

Table 8.

Competing workload makes it difficult to complete escalation documentation in real time.

Competing workload makes it difficult to complete escalation documentation in real time	n	%
Strongly Disagree	0	0
Disagree	4	12.9
Neutral	4	12.9
Agree	10	32.26
Strongly Agree	13	41.94
Mean Score	4.03	

When examining how nurses felt about the impact of time constraints on contacting the appropriate individuals according to the PEWS, the responses were mixed (Table 9). Specifically, 51.62% ($n = 16$) of respondents disagreed or strongly disagreed with the statement, whereas 29% ($n = 9$) agreed with it. Additionally, 19.35% ($n = 6$) indicated a neutral response.

Table 9.

I struggle to contact the required people according to the PEWS due to time constraints.

I struggle to contact all the required people according to the PEWS due to time constraints	n	%
Strongly Disagree	3	9.68
Disagree	13	41.94
Neutral	6	19.35
Agree	8	25.81
Strongly Agree	1	3.23
Mean Score	2.70	

The findings regarding time pressures suggest that workload significantly affects nurses' ability to complete documentation in real time. Furthermore, the communication of escalation under conditions of workload and time pressure was not consistently experienced by the survey respondents.

4.2.4 Professional Responses and Communication

Analysis of the relationship between medical reviews and nurses' perception of barriers to adhering to PEWS timelines revealed that 77.42% of respondents ($n = 24$) agreed that medical reviews posed a barrier. In contrast, only 12.9% ($n = 4$) disagreed with this statement. The mean score for this question was 3.87, indicating that respondents were more likely to view delays in medical reviews as a significant barrier to following the PEWS timeline (Table 10).

Most of the nurses reported that they continued to adhere to the PEWS even when faced with differing advice from their colleagues (Table 11). Specifically, 70.96% ($n = 22$) of respondents agreed or strongly agreed with the statement that they follow the PEWS despite differing opinions. Only 6.45% ($n = 2$) disagreed with this statement, while 22.58% ($n = 7$) felt neutral about it.

Table 10.

Delays in medical review are a barrier for nurses to follow PEWS timelines.

Delays in medical review are a barrier for nurses to follow PEWS timelines	n	%
Strongly Disagree	0	0
Disagree	4	12.9
Neutral	3	9.68
Agree	17	54.84
Strongly Agree	7	22.58
Mean Score	3.78	

When working with specialty teams that were not familiar with paediatric triggers for PEWS, respondents reported varying experiences (Table 12). While 54.7% ($n = 17$) of respondents agreed or strongly agreed that these teams underestimated PEWS triggers, a significant number, 29.03% ($n = 9$), selected a neutral response. This indicates a variation in experiences among the respondents.

Table 11.

When nurse colleagues advise against escalating according to the PEWS, I still follow the documented pathway.

When other nurse colleagues advise against escalating according to the PEWS, I still follow the documented pathway.	n	%
Strongly Disagree	0	0
Disagree	2	6.45
Neutral	7	22.58
Agree	18	58.06
Strongly Agree	4	12.9
Mean Score	3.77	

Table 12.

Speciality teams accustomed to adult care sometimes underestimate paediatric PEWS triggers.

Speciality teams accustomed to adult care sometimes underestimate paediatric PEWS triggers	n	%
Strongly Disagree	0	0
Disagree	5	16.13
Neutral	9	29.03
Agree	10	32.26
Strongly Agree	7	22.58
Mean Score	3.61	

Overall, the quantitative data regarding professional responses and communication highlight that both interpersonal and systematic factors affect nurses. These factors influence their ability to adhere to PEWS and to initiate timely escalation when necessary.

4.2.5 Unique Factors Presented by Working with Children

One factor examined in understanding the unique challenges children present was the impact of distress during the collection of vital signs for the PEWS and how this serves as a barrier to its implementation. Nearly all respondents reported that child distress when taking vital signs made the PEWS more challenging to use (Table 13). Specifically, 96.78% ($n = 30$) agreed or strongly agreed that this was a significant challenge they faced. None of the participants disagreed, and only 3.23% ($n = 1$) expressed a neutral opinion on the matter.

Table 13.

Nurse-phobic or distressed children make taking vital signs (and hence PEWS) difficult

Nurse-phobic or distressed children make taking vital signs (and hence PEWS) difficult	n	%
Strongly Disagree	0	0
Disagree	0	0
Neutral	1	3.23
Agree	10	32.26
Strongly Agree	20	64.52
Mean Score	4.61	

Responses to the statement ‘I will choose not to escalate a PEWS score when I believe the child’s elevated observations are due to factors such as distress or fever’ were varied (Table 14). A total of 48.39% ($n = 15$) disagreed or strongly disagreed with the assertion that they would refrain from escalating a PEWS score despite elevated observations attributed to distress or fever. In contrast, 29.03% ($n = 9$) responded neutrally. With a mean score of 2.64, there is a tendency toward disagreement; however, the significant number of neutral responses reveals uncertainty or differing interpretations among the respondents.

Table 14.

I will choose not to escalate a PEWS score when I believe the child’s elevated observations are due to factors such as distress or fever.

I will choose not to escalate a PEWS score when I believe the child’s elevated observations are due to factors such as distress or fever.	n	%
Strongly Disagree	3	9.68
Disagree	12	38.71
Neutral	9	29.03
Agree	7	22.58
Strongly Agree	0	0
Mean Score	2.64	

4.2.6 Adherence to the PEWS and Education

When evaluating respondents' feelings about the education provided on the PEWS and its application, the feedback was overwhelmingly positive (Table 15). A total of 77.42% ($n = 24$) agreed or strongly agreed that the local education adequately supported them in using the PEWS. In contrast, only 3.23% ($n = 1$) expressed disagreement with this statement. This suggests that the nurses felt sufficiently educated to understand how to use the PEWS correctly.

Table 15.

Local education (e.g., Ko Awatea modules/in-service) prepared me to use the PEWS effectively

Local education (e.g., Ko Awatea modules/in-service) prepared me to use the PEWS effectively	n	%
Strongly Disagree	0	0
Disagree	1	3.23
Neutral	6	19.35
Agree	17	54.84
Strongly Agree	7	22.58
Mean Score	3.96	

The final Likert question focused on the use of the PEWS and the nurses' ability to complete the necessary documentation and timing (Table 16). The respondents indicated that 38.71% ($n = 12$) agreed or strongly agreed that they struggled to capture the required documentation and timing related to the PEWS. Additionally, 35.48% ($n = 11$) were neutral on the subject. These findings suggest that even though nurses believe they have received adequate education to use the PEWS charts correctly, the practical implementation remains a challenge.

Table 16.

I struggle to capture all required documentation and timing regarding the PEWS.

I struggle to capture all required documentation and timing regarding the PEWS	n	%
Strongly Disagree	0	0
Disagree	8	25.81
Neutral	11	35.48
Agree	8	25.81
Strongly Agree	4	12.9
Mean Score	3.25	

4.2.7 Open Text Question

Upon completing the Likert scale questions, respondents were asked to recommend educational topics related to addressing escalating PEWS scores. Several themes emerged from their responses, highlighting the need for more specific clinical education, training in the escalation process and communication, as well as scenario-based learning.

The respondents expressed a desire for more education regarding the clinical aspects of the PEWS charts. They emphasised the importance of understanding vital sign monitoring and recognising deteriorating patients. One respondent specifically mentioned the need for education on “*understanding paediatric vital signs*”. Others pointed out the need for more focused training on respiratory assessment and the identification of deterioration in paediatric patients.

A common theme identified by respondents was the need for education about the escalation process and communication related to the PEWS. This included support for using communication tools, such as SBARR (Situation, Background, Assessment, Recommendation, Recall). One respondent expressed a desire to learn “*how to SBARR effectively*”. Others indicated a need for “*more education regarding the mandatory escalation process to ensure that everyone is on the same page*”. Additionally, respondents wanted more information about the roles of other members of the healthcare team in using the

PEWS charts, particularly the roles of the Patient at Risk Service (PARS) team and emergency staff.

The final theme identified was the desire to incorporate more PEWS education into simulation and scenario-based training. One respondent suggested including “*mock codes, scenarios, and case presentations/studies*” to enhance education around PEWS. Another participant mentioned that “*workshops on managing critically ill children are useful*”. Existing educational programmes, such as Ko Awatea modules and in-service training, were viewed positively. One participant noted, “*PEWS training on Ko Awatea and the managing critically ill child workshop are beneficial*”.

Overall, these findings indicate that while current educational offerings are valued, there is a need for ongoing, practical, and context-specific training to support the effective escalation of PEWS scores.

4.2.8 Summary of Quantitative Data

The findings from the quantitative research indicate that respondents value the PEWS chart as a useful clinical tool in practice. However, they do not rely on it as the sole basis for making clinical decisions. Instead, respondents emphasised the importance of using clinical judgment in their decision-making process. Additionally, time pressures, medical responses, and the unique challenges of working with the paediatric population were identified as significant barriers to effectively utilising the PEWS.

Respondents expressed that scenario-based and simulation education would enhance their ability to use the PEWS effectively. They also indicated that specific clinical education focused on the practical application of the PEWS would be beneficial. Despite the challenges associated with its use, respondents demonstrated a strong commitment to following the escalation pathway and felt that the training they received so far has, in large, been effective.

Part 3: Integration of Findings

4.3.1 Introduction

This section integrates findings from both qualitative and quantitative data to offer a more comprehensive understanding of the factors influencing nurses' use of the PEWS. The results from both phases were compared and interpreted collectively to identify areas of agreement, divergence, and complementary insights. This approach allows for a deeper exploration of the PEWS and the experiences of nurses in clinical practice. The examination will be guided by the themes identified through thematic analysis. By analysing these areas of convergence and divergence, the integrated findings will provide a richer understanding of how the PEWS is applied in the complex context of paediatrics. See Appendix O for working of integration.

4.3.2 Clinical Judgement and Experience

When examining both the qualitative and quantitative findings regarding how clinical judgment and experience influence nurses' use of PEWS, it becomes evident that there is a complex relationship between PEWS and clinical judgment. Participants expressed a strong emphasis on clinical judgment, indicating through focus groups and surveys that they do not rely solely on PEWS when determining whether to escalate concerns about a deteriorating patient; rather, they prioritise their own clinical assessments. Respondents from both data sources concurred that their experience in working with paediatric patients allows them to integrate their judgment into the decision-making process regarding PEWS, rather than adhering strictly to a mandatory protocol.

However, an important tension emerged between the two data sets. The qualitative data revealed that some participants felt the PEWS tool hindered their application of clinical judgment. Conversely, survey responses indicated that nurses generally believe the tool does not impede their ability to exercise clinical judgment. This contradiction suggests that nurses may not view PEWS itself as limiting; instead, the tension arises when the mandatory escalation requirements conflict with the nurses' own assessments of paediatric patients.

The findings indicate that nurses do not see clinical judgment and PEWS as opposing forces; rather, they utilise both in tandem. However, the extent to which nurses rely

on PEWS is influenced by their level of experience. Less experienced nurses find that the tool supports their clinical judgment and decision-making, whereas those with more experience place greater value on their own clinical expertise. This illustrates the tension between standardisation and clinical judgment.

4.3.3 Time Pressures

Through the integration of findings, time pressures emerged as a significant barrier to the effective use of the PEWS, as evidenced by both focus group discussions and survey results. Participants frequently noted that workload, staffing levels, and time constraints hindered their ability to adequately follow the PEWS escalation pathway.

A prominent issue highlighted across both qualitative and quantitative data was the challenge participants faced in completing the escalation documentation in real time. Although both data sets indicated that participants recognised the value of the PEWS for detecting deterioration, they encountered obstacles stemming from high workloads and staffing pressures. Focus group participants expressed that in situations involving a deteriorating patient, they often prioritised direct patient care over the requirements for documentation.

A notable tension was identified between the expectations of the escalation pathway and the realities of clinical practice. The pathway assumes sufficient time and staffing to fully implement the PEWS and its escalation steps. However, participants described their clinical environment as characterised by high acuity, staffing constraints, and competing priorities, leading to a need for prioritisation rather than strict adherence to the protocol.

Overall, findings suggest that time pressures do not reflect a lack of understanding or willingness to utilise the PEWS. Rather, they illuminate the external factors present in a busy clinical setting, where competing priorities can significantly influence the processes of escalation and documentation associated with the PEWS.

4.3.4 Professional Responses and Communication

Integrating both qualitative and quantitative findings revealed that professional responses and interpersonal communication significantly impact nurses' adherence to the PEWS escalation protocol. Survey respondents acknowledged that delays in medical reviews posed a barrier to adhering to the PEWS and its associated pathway. Focus group discussions highlighted instances where participants experienced delays in medical reviews or felt hesitant to escalate cases due to the perceived workloads of medical staff. Notably, participants tended to adjust their escalation responses based on anticipated feedback from colleagues rather than strictly adhering to the protocol.

A primary tension identified was between the standardisation of the escalation pathway and the existing professional hierarchies. Participants also reported challenges arising from conflicting advice between nursing staff and medical professionals regarding PEWS escalation. Some expressed difficulties when senior colleagues discouraged adherence to the protocol, leading to tensions influenced by hierarchical dynamics. Interestingly, survey results indicated that nurses frequently followed the PEWS pathway despite facing conflicting pressures. This discrepancy may highlight a gap between nurses' beliefs about their responsibilities and the realities of navigating workplace relationships in practice.

These findings suggest that the effectiveness of the PEWS is shaped both by its design and interprofessional relationships and organisational culture. The PEWS operates within a complex professional environment where communication, perceptions of hierarchy, and interprofessional dynamics significantly influence decision-making related to its implementation.

4.3.5 Unique Factors Presented by Children

When integrated, the qualitative and quantitative findings illustrate that the unique factors associated with working with the paediatric population significantly influence the implementation of the PEWS in practice. A key tension that emerged was the standardisation of the PEWS versus the contextual realities of caring for paediatric patients. Insights from the focus group revealed the challenges of obtaining an accurate set of vital signs in this demographic. Participants noted that achieving reliable

physiological measurements can be difficult when a child is distressed or upset. Factors such as crying, fear, and fever were identified as affecting these physiological readings, potentially without indicating the child's actual condition. Rather than escalating the situation, the recommended approach was to reassess the patient. Following this, the quantitative findings indicated that respondents largely agreed that these factors significantly impact the application of PEWS, thereby creating additional challenges in practice.

Tensions were also noted in the discussions around family-centred care versus protocol-driven care. Caregivers occasionally requested that observations be postponed to avoid disturbing the child. While nurses acknowledged the importance of family-centred care, they also understood their responsibilities in the context of PEWS usage.

Overall, the findings suggest that PEWS does not fully account for the variability present in the paediatric setting. Participants recognised the importance of both physiological and behavioural responses when completing PEWS assessments and integrated contextual clinical judgment into their use of the tool. This underscores the complex balance between the standardisation of PEWS and the intricacies of paediatric care.

4.3.6 Adherence to PEWS and Education

When integrating both qualitative and quantitative findings, it became evident that the nurses felt they were adequately educated regarding the PEWS. However, the primary challenge lay in the implementation and documentation within clinical practice. Survey results indicated a strong consensus that local educational initiatives effectively prepared nurses for the use of the PEWS. Meanwhile, focus group participants expressed a solid understanding of the pathway.

A notable tension arose between knowing how to use the PEWS and being able to effectively incorporate it into practice. Despite receiving adequate education, documentation challenges were identified across both datasets. Focus group

participants noted issues with delayed, incomplete, or absent documentation, while survey respondents reported difficulties in meeting the required documentation timing.

Overall, these findings underscore that while participants believe they possess sufficient knowledge of the PEWS, they struggle to complete it to the expected standard in a clinical setting. Implementation is often influenced by workflow demands, competing priorities, the complexity of documentation, and broader organisational factors. This suggests that simply increasing education is unlikely to resolve the challenges associated with implementing the PEWS effectively.

4.3.7 Summary: Integration of Findings

The integration of qualitative and quantitative findings indicated that nurses consider the PEWS an essential tool for identifying and escalating the care of deteriorating paediatric patients. However, several tensions influence its application, extending beyond the simple understanding of how to utilise the tool. These tensions include the balance between standardisation of the tool and clinical judgment, adherence to protocols, family-centred care, documentation requirements while attending to patients directly, and organisational expectations alongside clinical realities.

When examining the themes, participants demonstrated a strong knowledge of the PEWS and expressed support for its use in practice. However, the implementation of the PEWS was affected by factors beyond individual knowledge. Participants described using the PEWS and adapting their responses due to workload pressures, staffing constraints, professional hierarchies, communication challenges, and the unique characteristics associated with caring for paediatric patients.

Overall, the findings suggest that the PEWS is utilised within a complex clinical environment, where adherence to the pathway is influenced by individual responses to professional relationships, organisational cultures, and patient-specific factors. This study aims to further explore these tensions to gain a better understanding and seek solutions to ensure that the PEWS effectively supports both patient safety and clinical decision-making.

Chapter V: Discussion

5.1 Introduction

This chapter will leverage the research findings of this exploratory mixed methods study to examine and discuss the overarching objectives of the research, and provide a comprehensive analysis of significant findings to formulate recommendations for clinical practice. The discussion will encompass the study's conclusions, limitations, implications, and suggestions for future research regarding the implementation of the PEWS in clinical settings.

The chapter is organised into four sections. Part one utilises the findings to respond to the research questions, guided by the key themes identified from the data: clinical judgment and experience, time pressures, professional responses and communication, unique factors presented by children, and adherence to PEWS and education. The research aimed to address the following questions:

- What factors influence nurses' use of the PEWS assessment scoring system and mandatory escalation pathway?
- What education is required to support effective use of the PEWS?

In part two, the themes derived from the findings will be aligned with the iPARIHS framework to provide recommendations for practice and facilitate the successful implementation of the PEWS. Part three explores the implications of the findings for clinical practice, education, and policy. Lastly, part four discussed the study strengths and limitations, draws conclusions, and highlights areas recommended for future research.

Part 1: Research Questions

5.2 What Factors Influence Nurses' use of the PEWS Assessment Scoring System and Mandatory Escalation Pathway?

5.2.1 Clinical Judgement and Experience

In the study findings, participants recognised and appreciated the significance of the PEWS for identifying and responding to patient deterioration. While nurses acknowledged the value of the PEWS, they emphasised that it should not be considered in isolation. Participants noted the importance of integrating PEWS with their clinical judgment when assessing a child. This highlights the existing tension between mandatory escalation protocols and the use of clinical judgment. Despite the PEWS' clear directive to follow the escalation pathway in every situation, nurses affirmed that they relied on their clinical judgment when deciding whether to escalate care.

Another finding from the research indicated that nurses with greater years of paediatric nursing experience were more inclined to rely on clinical judgment when making decisions regarding clinical assessment and escalation. Through their clinical experience, these nurses recognise signs indicative of clinical deterioration. Tanner's (2006) model concerning clinical judgment aligns with the findings of this research. The PEWS aids in the recognition phase by providing a framework for assessing physiological indicators of deterioration. However, Tanner's model emphasises that clinical decision-making encompasses more than mere recognition; it highlights the significance of clinical judgment in patient assessment. Furthermore, the participants noted their ability to identify other factors that may physiologically affect the PEWS score, such as fever and distress. In contrast, newer nurses using the PEWS and working with the paediatric population expressed that the tool served as a safety net for patient safety, particularly when they felt less confident in their own clinical judgment.

The findings related to clinical judgment and experience are consistent with existing literature on the PEWS. This literature indicates that the PEWS, as a standardised tool,

is effective in identifying patient deterioration and facilitating timely escalation of care (Roland et al., 2021). The widespread implementation of this tool across New Zealand underscores the rationale behind its standardisation, which aims to enhance patient safety (HQSCNZ, 2025). Additionally, the literature highlights a notable tension between the use of the PEWS and reliance on clinical judgment (Jensen et al., 2018). Concerns have been raised about an overdependence on the tool potentially diminishing the role of clinical expertise (Pedersen et al., 2025). Trubey et al. (2019) found that when paediatric track and trigger systems are used in isolation, the evidence remains limited, particularly in relation to patient outcomes. Similarly, Allen et al. (2022) suggested that the PEWS is more effective when implemented as a broader organisational system that recognises, communicates, and escalates deterioration. They recommended the PEWS should not be used in isolation, highlighting that nurses use clinical judgment as a means to navigate the limitations of the tool. Therefore, the literature emphasises the necessity of striking a balance between utilising the tool as intended and exercising clinical judgment and reasoning in its application.

The findings indicate that nurses are currently working to integrate the mandatory escalation of the PEWS with their clinical judgment during assessments. Instead of strictly adhering to the PEWS or relying solely on clinical judgment, they are combining both approaches. Supporting the literature, the findings suggest that the PEWS is more effective when used to complement clinical judgment rather than replace it. In both the literature and the New Zealand Health and Disability Commissioner (2022) investigation, it has been demonstrated that reliance on clinical judgement alone can contribute to missed recognition of deterioration and delays in escalation. Therefore, balance is crucial because relying too heavily on the tool and failing to address deterioration can lead to afferent limb failure. It is also essential to recognise the limitations of clinical judgment; thus, highlighting the complexity of balancing the standardisation of the PEWS and exercising clinical judgement.

5.2.2 Time Pressures

One of the key findings of this research was that time pressures and workload, including adherence to mandatory escalation procedures as outlined in the prescribed pathway, significantly affect nurses' ability to utilise the PEWS. Throughout the study

participants expressed a clear understanding of the PEWS' purpose in detecting clinical deterioration and facilitating escalation. However, competing demands within the clinical environment impacted nurses' capacity to escalate and document cases in accordance with the pathway. This suggests that the challenges associated with using the PEWS stem from the clinical context rather than a lack of understanding of the system itself.

The participants expressed that during periods of high workload, they tended to prioritise direct patient care over the completion of documentation and escalation responsibilities. This finding aligns with existing research suggesting that nurses often emphasise direct patient care when faced with increasing time demands and workload (Ball et al., 2013). As competition for time increases, clinical tasks are prioritised, even though accurate escalation and documentation are essential for patient safety. (Lambert et al., 2017).

Participants indicated that a high PEWS score both signifies clinical deterioration and amplifies their workload. A higher PEWS entails more steps for nurses to follow, including enhanced communication with other healthcare team members, increased frequency of patient observations, additional documentation, and more frequent patient assessments. As a result, the nurses involved in this research reported that the heightened workload associated with clinical decline adds to their existing responsibilities and challenging work environment. These findings are similar those of Chapman et al. (2019) and Jensen et al. (2018) who found that when the escalation pathway is activated, nursing workload increases. This increase can lead to delays in responding to patient deterioration.

Participants identified the ability of senior nurses to provide support during escalation situations as a significant challenge when working with the PEWS. This challenge arises because senior nurses are often balancing their own workloads alongside their responsibilities in leadership roles, suggesting a systemic issue regarding workload pressures that act as a barrier to effective PEWS escalation. These perceived obstacles often lie outside the control of nursing staff, indicating that they are rooted at an organisational level. The literature also acknowledges that factors such as staffing

levels, skill mix, and overall workload can hinder the accurate implementation of the PEWS (Lambert et al., 2017). This indicates that barriers to utilising the PEWS are not solely attributed to individual nurses; there are broader organisational factors that affect its use.

Participants noted that the distinction between completing physiological observations and escalating those observations is a source of tension. They reported that while they consistently performed the physiological assessments and understood the importance of regular reporting to avoid missing any signs of patient deterioration, the escalation of findings from the PEWS when results fell outside the normal range was impacted by the demands of their nursing workload. This finding indicates that the challenge does not lie in the use of the PEWS itself; rather, in the escalation process, which is affected by high workloads and may contribute to afferent limb failure. The literature reflects similar findings indicating that delays in escalation following an elevated PEWS are influenced both by the nurses' ability to recognise the need for escalation and factors such as staffing pressures, workload, and competing demands (Jensen et al., 2018; Reuland et al., 2023)

This research suggests that nurses recognise the purpose and value of the PEWS in practice. However, the pressures within the clinical environment present barriers to its accurate implementation. Key factors identified include workload pressure; competing demands, particularly among senior nurses; and staffing levels. Additionally, an increase in PEWS scores and patient deterioration results in an increased workload. This indicates that there are multiple influences on the use of the PEWS beyond individual nurses' behaviour or knowledge gaps, highlighting the significant impact of organisational factors on its application.

5.2.3 Professional Responses and Communication

A key finding from the research is that participants perceive the PEWS as a common language. Shared terminology allows nurses to utilise objective data to effectively communicate a patient's condition and associated concerns. The PEWS provides a structured framework that facilitates this communication as highlighted by literature which notes the common language as a significant advantage of using PEWS. Jensen

et al. (2018) found that professional language was strengthened by the PEWS and concerns raised from the PEWS were more visible. Further, Hickson et al. (2025) found that use of the PEWS strengthened communication lines between nurses and doctors. This research further supports the idea that the PEWS enhances a common language to express concerns regarding clinical deterioration.

Despite the acknowledged benefits of employing the PEWS, the current research revealed that its effectiveness largely hinges on how the healthcare team responds to escalations. Participants expressed confidence in recognising patient deterioration through the PEWS and understood the expectations of escalation pathways. However, appropriate escalation is ultimately dependent on doctors' responses. Pedersen et al. (2025) contended that a positive relationship between nurses and doctors enhances the utilisation of the PEWS. However, Jensen et al. (2018) noted that nurses felt that barriers to using the PEWS arose when medical staff were perceived to not understand their role. This research, supported by existing literature, indicates that the effectiveness of the PEWS can be hampered when doctors or those responsible for escalation do not have a clear understanding of the pathway.

In the current research, participants described delays in escalation as being linked to lengthy response times and untimely reviews. They indicated that they would often postpone escalation when aware of existing workload pressures on the medical team. In these instances, nurses tended to conduct their own clinical assessments and implement interventions within their scope of practice prior to following the escalation pathway. This finding suggests that organisational pressures affect nurses' ability to adhere to the established escalation protocols. Although the pathway aims to provide an objective framework for escalation, factors such as the workload of the medical staff significantly influence the implementation of the PEWS.

Professional hierarchy significantly influences the application of the PEWS. Participants noted that their comfort levels varied when it came to escalating concerns to senior staff, which included both the medical team and senior nursing personnel. In these situations, participants expressed apprehension about how their concerns would be received and whether their decision to escalate would be deemed appropriate. This

issue is reflected in existing literature regarding professional hierarchy and its impact on patient safety (Pedersen et al., 2025). Thus, while the PEWS may reduce subjectivity by minimising clinical judgment in identifying patient deterioration, it does not eliminate the interpersonal barriers related to escalation.

The influence of hierarchy on the use of the PEWS is closely linked to the concept of psychological safety. Participants' decisions to escalate concerns were swayed by their perceptions of support during the escalation process. When they felt supported, respected, and empowered to voice their concerns, it demonstrated a sense of psychological safety. Conversely, if they perceived a lack of support, respect, or anticipated criticism for their concerns, they felt unable to speak up and escalate matters safely. The findings indicate that nurses were more inclined to escalate the PEWS when they believed their concerns would be appropriately addressed. This observation aligns with existing literature, which suggests that fostering psychological safety enhances patient safety by facilitating the escalation of concerns (O'Donovan & McAuliffe, 2020).

Participants noted differences between paediatric and adult specialist teams concerning the escalation of the PEWS. In areas where paediatric patients receive care, the PEWS was firmly integrated into practice. Teams working specifically in these settings were more adept at using the PEWS tools and understanding the expectations surrounding their responses. They were attuned to the clinical changes that could occur in paediatric patients and knew how to respond to these often subtle shifts. In contrast, adult specialist medical teams lacked the same level of expertise and insight into the deterioration of paediatric patients. While the current research does not directly compare the responses of adult and paediatric specialist teams, it highlights the cultural differences in their reactions to the PEWS. Additionally, existing literature underscores that effective PEWS utilisation is linked to interprofessional engagement and a thorough understanding of the tool (Jensen et al., 2018; Pedersen et al., 2025).

The PEWS is a tool that extends beyond the realm of nursing responsibilities as the afferent limb function relies on the recognition, communication, escalation, and response to deterioration. Effective detection and escalation of patient deterioration

require a multidisciplinary approach. Nurses play a crucial role in assessing, collecting data, and activating the escalation pathway. However, it is the responsibility of the responding clinicians to act upon this escalation. The literature supports this perspective, emphasising that the effectiveness of the tool depends on a collaborative, multidisciplinary response. Jensen et al. (2018) found that nurses felt their ability to use the PEWS effectively improved with interdisciplinary understanding and engagement.

These findings suggest that the effective implementation of the PEWS is significantly influenced by the quality of communication concerning escalation in the context of patient deterioration. Participants in this study identified various communication-related factors that affected their decision to escalate according to the PEWS pathway. Among these factors were the perceived workload of the medical team, nurses' sense of psychological safety, and the level of collaboration within the multidisciplinary team. This aligns with recent literature on the utilisation of the PEWS (Pedersen et al., 2025; Graetz et al., 2020). A more supportive environment for escalating concerns and voicing apprehensions ultimately results in safer patient outcomes in healthcare settings.

5.2.4 Unique Factors Presented by Children

One of the key findings from this research was the challenges participants identified regarding child specific factors in obtaining the PEWS. This issue was frequently discussed in the qualitative findings. While the PEWS are designed as a standardised tool for identifying and escalating clinical deterioration, this standardisation does not account for the unique physiological, developmental, and behavioural factors that can impact the administration and outcomes of the PEWS. The findings of this research underscore the complex nature of assessment tools and their application within the paediatric population in response to clinical deterioration.

The distress experienced by paediatric patients can significantly impact the physiological parameters that contribute to the PEWS. Participants noted that factors such as crying, fear, anxiety, and pain could lead to abnormal observations that inflate a PEWS score. They indicated that these elevated observations often did not reflect any actual clinical deterioration but were instead temporary responses to the child's

distress. In such cases, participants preferred to reassess the patient once they appeared to be more settled. This finding aligns with existing literature (Jensen et al., 2018), which emphasises that PEWS should be utilised in conjunction with clinical judgment. Jensen et al. (2018) found that nurses believed that the PEWS should be interpreted within the broader clinical context.

Findings from this research suggest that participants rely on their clinical knowledge of paediatric behaviour and development when making decisions regarding the escalation of the PEWS. Additionally, the participants demonstrated an understanding of the physiological responses to distress that relate to the PEWS score. A significant tension arises when participants decide to delay escalation based on these clinical judgments, rather than adhering to the mandatory escalation pathway associated with the PEWS. While the participants indicated that they would reassess the patient if there were signs of distress, this approach could lead to delays in escalation during periods of clinical deterioration. However, they expressed concern about the potential for unnecessary escalation if the reassessment phase did not take place. This tension is further emphasised in the literature, which highlights the dangers of overreliance on clinical judgment in practice, as it can diminish adherence to the mandatory escalation pathway and potentially delay the recognition of patient deterioration. Pedersen et al. (2025) described the challenge of balancing the use of the PEWS and the utilisation of the nurses' clinical judgement in the unique setting of paediatrics.

Research participants identified distinct factors associated with family involvement in the PEWS and its subsequent escalation. Family centred care is a fundamental to paediatric nursing. The participants highlighted how caregivers influence both the timing and frequency of PEWS observations. This involvement is largely absent in adult care settings. Specific situations described by participants included cases where caregivers requested that no observations be conducted overnight to avoid disturbing their child. In other instances, parents requested delays in observations to alleviate or prevent distress. Nurses often find themselves facing the dilemma of adhering to the required observation schedule for PEWS while also considering caregivers' preferences in upholding the principle of family centred care. The literature further supports the need for balance within the paediatric population when utilising a

standardised tool, underscoring the complex factors that are inherent in paediatric care (Reuland et al., 2023). It highlights the importance of including caregivers in recognising deterioration, which adds to the nursing challenge of balancing their involvement in the application of the PEWS (Gillipelli et al., 2022).

Participants in this research expressed concerns that the PEWS lacked the flexibility to recognise that distress can lead to physiological responses in children. They highlighted their frustration that the scoring system did not consider factors commonly associated with the paediatric population. The literature on this topic also indicates that early warning systems tend to be inflexible and struggle to capture some of the complexities inherent in paediatric health. Jensen et al. (2018) found that while nurses find the tool helpful in supporting escalation, it fails to provide context for PEWS and the complexities of working with children.

The study findings indicate that participants believe paediatric specific factors significantly influence their ability to complete the PEWS and adhere to the mandatory pathway. Important considerations such as developmental implications, distress, physiological responses, and caregiver influence are often overlooked in the application of the PEWS. Participants noted that when a patient's responses are linked to these unique factors in paediatric care, they rely on clinical judgment to assess the situation. This sometimes leads to nurses deviating from the mandated pathway, opting instead to reassess before escalating care. This aligns with existing literature, which highlights the challenges nurses face with the standardisation of the PEWS, as it does not account for the various responses that are distinctive to children. Therefore, the PEWS should integrate a scoring system that reflects nurses' understanding of the complexities children present in healthcare settings.

A notable finding of this study was that there were no spontaneous links between the PEWS and the concept of cultural safety. When asked about cultural implications in the structured interviews, the nurses largely framed the PEWS as a physiological assessment. There were links to the complexity of working with children and the impact of family-centred care, but cultural considerations were not identified. This suggests that participants viewed the tool predominantly as a physiological assessment.

Given how significant culturally safe practice is in the New Zealand nursing context, the findings give rise to questioning if cultural safety is addressed in the context of the PEWS. Further consideration should be given to how cultural safety principles can be integrated into education regarding the recognition and escalation of deterioration.

5.2.5 Adherence to PEWS and Education

One of the key findings from this research is that participants perceived no barriers to nurses' utilisation of the PEWS tool and the associated mandatory escalation pathway. All participants reported having received education specifically related to PEWS, and there was a clear understanding of how to obtain a score and the necessary steps for escalation. This resulted in a consistent grasp of the purpose and rationale behind the PEWS. However, despite this understanding and education, inconsistencies in the application of the PEWS remain. The discrepancy between knowledge and application suggests that the issue lies not in knowledge acquisition, but in the nurses' comprehension of how to effectively apply the PEWS in the complex clinical environment of paediatrics.

The findings indicate that adherence to the PEWS is influenced more by the realities of working in a clinical environment than by knowledge deficits. Participants demonstrated an understanding of the PEWS requirements, but identified the associated documentation as a significant challenge; specifically, they struggled to complete this documentation in a timely manner due to competing priorities. These findings underscore that adherence to the PEWS is more likely affected by organisational barriers and pressures rather than a lack of education. These findings are reflected in other literature which identifies that organisational pressures have a greater influence on the PEWS, despite staff education regarding its use (Pedersen et al., 2025; Reuland et al., 2023).

The findings of this research challenge the notion of increasing education as a standalone measure to improve the use of the PEWS. It is important to educate nurses about the importance of the PEWS and the rationale for its use, but knowledge alone does not translate into the consistent use. Pedersen et al. (2025) found that the use of the PEWS was influenced by clinical knowledge and skills, along with factors such as

the workplace culture, interprofessional relationships, and how the tool is perceived. Further to this Reuland et al. (2023) identified organisational barriers, including high patient to staff ratios, patient overflow, delays in referral processes, and limited monitoring resources, despite the presence of educational support for the PEWS. These factors are similar to those identified in the current study, where staffing levels, skill mix, workload, and broader clinical environment were perceived to influence the ability of nurses to complete and respond to the PEWS effectively. Combining the findings of this research and the wider literature suggests that education should be viewed as the foundation of the use of the PEWS rather than the only measure to support the use of, and adherence to, the PEWS.

This research highlights the distinction between compliance and confidence. The participants expressed confidence in their ability to accurately complete the PEWS score. However, it became evident that this confidence did not extend to adherence to the escalation and documentation requirements. This observation aligns with existing literature, which notes that when nurses employ a standardised tool, factors such as clinical judgment, workload pressures, and the clinical context significantly influence their adherence to the PEWS (Jensen et al., 2018; Reuland et al., 2023). From this research, it is indicated that adherence is less related to a lack of confidence, knowledge, or education; rather, it is influenced by the nurses' ability to adhere to the PEWS expectations in clinical practice and avoid afferent limb failure.

Participants in this research indicated that completing the required documentation in a timely manner was a significant challenge. The accurate and prompt completion of documentation is crucial for the effective use of the PEWS. Accurate recording of observations is essential for assessing and evaluating trends that may indicate patient deterioration. Inaccurate documentation can compromise patient safety and delay necessary interventions to prevent further decline. While participants recognised the importance of thorough documentation, they also cited workload and competing priorities as barriers. Indeed, the literature emphasises the need for effective documentation processes and organisational support to ensure accuracy in clinical documentation (Reuland et al., 2023).

Overall, the findings of this research indicate that the participants have the skills and knowledge required to complete the PEWS to its entirety. Rather than an education in understanding the tool, the challenge is the translation of knowledge into clinical practice. This is particularly evident in relation to documentation and the realities of working in a clinical space with challenging workloads. This suggests that overall education is required as a foundation for the use of the PEWS in practice but the support that is required is the translation of this knowledge into clinical practice. To address this issue, consideration of other influences that impact this translation, such as organisational pressures, workload, workplace culture, and documentation systems, is required. This suggestion is consistent with the literature surrounding the topic (Pedersen et al., 2025; Reuland et al., 2023).

5.3 What Education is Required to Support Effective Use of the PEWS?

Throughout the research findings, participants expressed confidence in their ability to use the PEWS tool. However, they believed that the education needed to extend beyond merely calculating a score, completing a chart, and following an escalation algorithm. Instead, participants emphasised that the educational approach should encompass how nurses integrate the PEWS into clinical assessment, clinical judgment, communication, and decision-making. These findings align with existing literature on the PEWS, which suggests that when PEWS education is integrated into a broader system for recognising and escalating deterioration, rather than being treated as a standalone tool, it is more effective (Allen et al., 2022; Bonafide et al., 2013; Roland et al., 2023)

5.3.1 Education and Simulation Training

A common recommendation from participants was to incorporate the PEWS into simulation training. There is a prevailing belief that simulation training effectively bridges the gap between theoretical knowledge and clinical practice. Initially, education surrounding the PEWS focused on understanding how the tool functions. However, simulation training enhances the application of the PEWS in realistic patient scenarios, where participants are tasked with assessing patients, interpreting findings, and communicating concerns for escalation. This approach is supported by literature

indicating that recognising a deteriorating patient is complex and requires more than simply adhering to a tool. (Bonafide et al., 2013; Roland et al., 2023). Using simulation as a method to educate nurses provides experiential learning that strengthens clinical reasoning and judgment, both of which are essential for recognising subtle signs of deterioration in paediatric patients (Endsley, 1995; Tanner, 2006).

Participants argued that education should prioritise the application of the PEWS rather than merely explaining its components. They expressed confidence in their ability to calculate the score, noting that this process was straightforward. However, they found understanding the score's significance within the broader clinical context to be more challenging. This aligns with existing literature, which suggests that while nurses view the tool as a useful prompt, they do not consider it a replacement for thorough patient assessment and clinical decision making (Foley & Dowling, 2018; Jensen et al., 2018). Roland et al. (2023) argued that numerous clinical and contextual factors contributing to patient deterioration are not adequately represented by a numerical score. Therefore, education should prioritise the interpretation and application of the PEWS within the clinical context, rather than focusing solely on the score and adherence to protocols.

5.3.2 Education of Paediatric Assessment and Clinical Judgement

Participants expressed a strong desire for ongoing development of paediatric-specific assessment skills. They noted that the effective application of the PEWS relies heavily on the ability to conduct a comprehensive clinical assessment, which is essential for identifying abnormal findings in children. The importance participants placed on paediatric assessment skills reflects the unique physiological differences that paediatric patients have in comparison to adults. Additionally, the variations in development across different age groups within the paediatric population introduce further complexities in assessing and recognising deterioration (Berdambetova, 2025; Hockenberry, 2023). Systematic reviews have identified inaccuracies in PEWS documentation and interpretation when the assessing nurse has limited skills in evaluating a paediatric patient (Chapman et al., 2019; Kowalski et al., 2021). Participants suggested that the PEWS should include fundamental paediatric assessment skills, encompassing respiratory, cardiac, and neurological assessments, as well as the interpretation of physiological differences across age ranges.

5.3.3 Education to Support Communication and Escalation

Another theme identified in the research was the necessity for communication training, especially regarding the importance of voicing concerns to medical staff. Participants noted that while calculating the score and recognising deterioration are valuable skills, they are effective only if the concerns raised are acknowledged and addressed. The PEWS serves as a standardised language to facilitate escalation during instances of patient deterioration and enhances communication among healthcare professionals (Bonafide et al., 2013; Graetz et al., 2020). However, the literature suggests that communication barriers are often cited as contributing to the ineffective use of the PEWS (O'Neill et al., 2021). Participants in this research acknowledged that it is not always easy to communicate effectively when there are concerns about a patient. They emphasised that developing strong communication skills requires education and support. Training programmes that incorporate a structured approach to communication, escalation of care, and enhance nurses' ability to advocate for their patients are essential.

5.3.4 Interprofessional Education

The participants noted that an understanding of the escalation criteria did not necessarily instil the confidence needed to raise concerns regarding the PEWS in actual clinical settings. Additionally, literature has shown that healthcare professionals may hesitate to escalate concerns due to barriers such as hierarchical dynamics, fear of criticism, and differing interpretations of the issues at hand (Dwyer et al., 2024; O'Neill et al., 2021). Training that enables nurses to practice escalation scenarios through role-playing can significantly boost their confidence, clarify their roles, and enhance psychological safety which is crucial, especially when nurses might hesitate to challenge decisions or voice concerns about deteriorating situations (O'Donovan & McAuliffe, 2020).

Participants suggested implementing interprofessional education that includes both nurses and doctors in the training process. They highlighted instances where there were varying interpretations of the PEWS, citing differing understandings of the score's implications, escalation pathway requirements, and indicators of deterioration

in paediatric patients. Such discrepancies led to frustrations among participants. Evidence indicates that for PEWS to be effective, it is essential to foster a shared understanding and encourage multidisciplinary collaboration (Graetz et al., 2020; Pedersen et al., 2025). The PEWS has been shown to enhance communication and teamwork when the healthcare team has trained together and received consistent messaging regarding what the PEWS are and their purpose (Allen et al., 2022; Bonafide et al., 2013). Therefore, the use of interprofessional education may contribute to a more consistent application of the PEWS, improving responses and communication between doctors and nurses during instances of PEWS deterioration.

5.3.5 Ongoing Education

Participants indicated that ongoing education is essential, rather than a one-time training session. They suggested that training should be delivered repeatedly through methods such as simulation training, bedside teaching, and refresher courses. The literature supports the notion that for the PEWS to be sustainable, there must be continuous reinforcement of its application, especially in environments with high staff turnover and varying levels of experience in working with paediatric populations (Allen et al., 2022; Al Zaher et al., 2025). In New Zealand context, training is relevant when there is workforce movement, as well as for internationally trained nurses, where variations in paediatric knowledge or understanding of local systems and context exist (Buchan, 2025).

The current research highlighted the importance of balancing clinical judgment with adherence to the PEWS. Education should focus on this relationship. While participants generally demonstrated an understanding of the PEWS, particularly how to utilise it and what is required when following the escalation pathway, concerns were raised about an overreliance on the scores, which may undermine professional judgment. This perspective aligns with existing literature regarding the standardisation of the PEWS and its impact on nurses' clinical judgment. Flenady et al. (2024) and Le Lagadec et al. (2025) acknowledged that strict adherence to the tool may limit nurses' ability to apply critical thinking, particularly when clinical judgment is not integrated into the tool. Nursing theory suggests that clinical judgment is developed and refined as new nurses gain the opportunity to recognise patterns, understand context, and

respond to subtle changes, elements that a PEWS pathway might not fully accommodate (Benner et al., 2009; Tanner, 2006).

5.3.6 Summary

Overall, the findings suggest that education alone will not resolve the challenges associated with the PEWS. Participants generally felt that they had enough knowledge about the tool; yet barriers remained. The approach should encompass the development of skills in paediatric assessment, communication, confidence in escalating concerns regarding deterioration, interprofessional collaboration, and clinical judgment. Rather than merely instructing nurses on how to use the chart in isolation, emphasis should be placed on understanding how the PEWS functions within the broader context of paediatric care. It is crucial for nurses to learn how to identify, escalate, and respond to signs of deterioration. Such strategies will enhance nurses' ability to utilise the PEWS effectively while fostering ongoing development of their assessment skills.

Part 2: Interpretation using iPARIHS

5.4.1 Innovation: PEWS

The findings of this research indicate that the PEWS is generally perceived as a valuable resource that assists nurses in recognising and escalating the deterioration of paediatric patients. Participants reported that the PEWS enhances communication and supports paediatric assessment. This suggests that the innovation represented by the PEWS tool has been embraced by nurses as beneficial, particularly in its absence.

The value of the PEWS has been recognised by both participants and literature, highlighting its importance in establishing a common language and enabling early identification of deterioration (Bonafide et al., 2013; Graetz et al., 2020). This research and previous literature have shown that nurses value the PEWS as it enhances their confidence in communicating and escalating concerns. (Jensen et al., 2018), suggesting that the participants recognise the value of the PEWS as a patient safety tool and understand why it has been implemented in the paediatric setting.

While participants acknowledged the advantages of the PEWS, they also highlighted a persistent tension between the tool's standardisation and the flexibility needed in clinical practice. The implementation of a standardised chart, both locally and nationally, has been recognised for its benefits in ensuring consistency when addressing deterioration in the paediatric population (Roland et al., 2021). Despite the tension, the standardisation of the tool at a national level, through the iPARIHS framework and surrounding literature, would be considered a strength of the innovation.

Despite the generally positive perception of the PEWS reflected in this research, the evidence supporting this innovation is somewhat more complex. Although there have been notable improvements in recognising deterioration, communication, situational awareness, and escalation, systematic reviews indicate considerable variation in the validity and effectiveness of the PEWS, especially in its application to the paediatric population (Chapman et al., 2016; Lambert et al., 2017; Trubey et al., 2019). This has led to the argument in the literature that the PEWS should not be regarded as a standalone solution for the complexities of deterioration among children (Roland et al., 2023). Participants in this study echoed this sentiment, indicating their support for the PEWS, but emphasising that it should be used as part of a comprehensive assessment process rather than the sole tool in evaluating paediatric patients.

From an iPARIHS perspective, the findings indicate that the participants did not reject the innovation. Instead, they suggested that achieving successful implementation requires a balance between strict adherence to the PEWS and the utilisation of clinical judgment. Participants reported that the PEWS was most valuable when it served as a guide for escalation, rather than a rigid protocol to be followed strictly. Overall, the PEWS exhibits the characteristics of an innovation that can be effectively implemented within the iPARIHS framework. The tool was seen as valuable and beneficial for patient safety. However, tensions were evident regarding the standardisation of the tool in the paediatric setting. This suggests that implementing the innovation will require support to promote both adherence to the PEWS and the development of clinical judgment skills necessary for recognising and escalating situations of paediatric patient deterioration.

5.4.2 Recipients: Nurses

In the iPARIHS framework, the recipients are individuals or groups affected by the innovation. Successful implementation depends on their knowledge, skills, beliefs, motivations, and behaviours (Harvey & Kitson, 2015). In this study, nurses were identified as the primary users of the PEWS implementation, as they are responsible for obtaining observations, calculating scores, recognising deterioration, and escalating care when needed. The findings suggested that while the nurse participants valued the tool, there was considerable variation in their experiences with it. Additionally, their reliance on clinical judgment and differing perceptions of the PEWS in practice were notable.

Overall, participants expressed positive attitudes towards the PEWS, viewing it as a valuable addition to the clinical environment. The PEWS offers a structured assessment that aids in recognising the deterioration of paediatric patients. These findings are in line with existing literature (Bonafide et al., 2013; Jensen et al., 2018). Positive perceptions of innovation are crucial within the iPARIHS framework, as they significantly increase the likelihood of engagement in adopting the PEWS into practice. In the current research, participants demonstrated a clear understanding of the role the PEWS plays in practice and largely expressed their support for its implementation.

One of the findings revealed a variation in experience levels among nurses, with participants noting differences in confidence between those with less experience and their more experienced counterparts when working with paediatric patients. More experienced participants had greater comfort interpreting the PEWS within a broader clinical context and exercising their clinical judgment. In contrast, more inexperienced nurses were less confident in applying clinical context and judgment in practice, often relying heavily on the PEWS for clinical support. This is a consistent finding with the literature. Benner et al.'s (2009) work on the development of nursing expertise indicates that seasoned nurses are more adept at recognising clinical patterns and identifying subtle deteriorations that may not be evident through objective tools like the PEWS. Within the iPARIHS framework, it is crucial to consider levels of clinical practice when understanding the characteristics of recipients, as this can influence implementation outcomes.

In this study, participants expressed varying viewpoints on the process of escalation. Some participants emphasised that the PEWS escalation pathway is crucial for ensuring patient safety, while others indicated that they rely more on clinical judgment when determining the need for escalation. This variation aligns with other literature on early warning scores, where inconsistencies in escalation are evident despite the existence of protocols and standardisation of the tool (O'Neill et al., 2021). Some of the factors that impact the escalation of the PEWS include a nurse's paediatric clinical experience, confidence in communication, perceptions of hierarchy, and individual beliefs about the patient's risk (Dwyer et al., 2024). Research indicates that participants do not respond to the PEWS uniformly. Their responses are often influenced by clinical experience and judgment.

In the context of the iPARIHS framework, these findings indicate that recipients play a significant role in how the PEWS are utilised in practice. While participants generally expressed a positive attitude toward the innovation of the PEWS and felt confident using them, individual application was influenced by individual participant's experience and clinical judgment. This highlights the importance of recognising the variability among recipients across the spectrum of experience for successful PEWS implementation. Effective strategies must support clinical reasoning, facilitate escalation when necessary, and promote a consistent understanding of the expectations surrounding the PEWS. Participants were not resistant to the PEWS; rather, they engaged with them critically, applying their interpretations and clinical judgment to navigate complex clinical situations.

5.4.3 Local Context: Paediatric Ward, Staffing, and Workload

In the iPARIHS framework, the local context refers to the immediate clinical environment where the innovation is being implemented. In this research, participants highlighted the workload, staffing, and the specific environment of the paediatric ward as local contextual factors influencing the implementation of the PEWS. They noted that challenges in fully utilising the PEWS often arise due to clinical demands, particularly during periods of high patient acuity and increased workload. This finding aligns with existing literature on the PEWS, which indicates that nursing workload can lead to delays, omissions of information, or diminished accuracy (Alghamdi, 2016; Ball

et al., 2013; Swiger et al., 2016). The PEWS relies on timely observations, accurate documentation, and appropriate escalation according to the escalation pathway, all of which can be affected by workload pressures.

The staffing levels in a clinical environment can significantly impact the utilisation of the PEWS. Study participants noted that perceived inadequate staffing or an unfavourable skill mix diminished their ability to complete the PEWS in a timely and accurate manner. This finding aligns with existing literature indicating that staffing shortages, which affect workload, can negatively influence patient outcomes and hinder timely responses to the PEWS and any deterioration in patient condition (Reuland et al., 2023; Pedersen et al., 2025). Additionally, variations in paediatric experience can enhance confidence in applying the PEWS in practice (Buchan, 2025).

In the paediatric wards, where this research was conducted, there are unique contextual implications for the implementation of the PEWS. Nurses are caring for children who span a wide range of ages, developmental stages, and clinical situations. As a result, nurses in this specific environment must use the PEWS in conjunction with complex paediatric clinical assessments. Deterioration in these young patients can be subtle, and they may compensate physiologically for an extended period before becoming critically unwell (Hockenberry, 2023). Therefore, for nurses to effectively complete the PEWS pathway, they need adequate time, experience, and support to conduct thorough assessments. These findings indicate that factors such as workload, staffing levels, and the characteristics of the ward environment are crucial in influencing the successful implementation of PEWS within the clinical setting.

5.4.4 Organisational Context: Documentation, Auditing, and Medical Engagement

In the iPARIHS framework, the organisational context encompasses the structures, processes, leadership influences, and cultural factors that impact the implementation of innovations in healthcare (Harvey & Kitson, 2015). Findings from this research indicate that medical engagement, documentation expectations, and the auditing process are significant factors influencing the organisational aspects of the PEWS.

In this research, participants noted that the engagement of the medical team significantly influenced the successful implementation of the PEWS. While nurses are the primary users of the PEWS, its effectiveness hinges on the medical team's recognition, understanding, and response to the PEWS pathway during escalation events. Participants indicated that when the medical team is actively engaged, adherence to the system improves. Similarly, in the literature highlights that the PEWS plays a crucial role in facilitating communication within the interdisciplinary team (Bonafide et al., 2013; Graetz et al., 2020; Pedersen et al., 2025). A shared understanding of paediatric patient deterioration fosters better collaboration. Conversely, a lack of engagement from the medical team can undermine nurses' confidence in following the pathway, ultimately limiting the system's effectiveness.

Documentation emerged as a crucial organisational factor in the implementation of the PEWS. The introduction of the PEWS established clear expectations for completing assessments and documentation. Participants recognised the significance of documentation in enhancing the accuracy, monitoring, and clinical decision-making associated with the PEWS. However, maintaining these expectations proved challenging due to workload and staff pressures. The literature reflects this perspective, noting that inaccuracies and incomplete documentation hinder the consistent application of the PEWS (Bjerkan et al., 2021; Chapman et al., 2019). As the effectiveness of the PEWS relies on the collection and interpretation of objective clinical observations, organisational expectations regarding the quality of documentation are vital for the tool's reliability and effectiveness.

Auditing serves as an essential organisational tool for supporting the implementation of various initiatives. Following the introduction of the PEWS, regular audits were conducted, offering valuable insights into PEWS completion and compliance with escalation protocols through documentation. Feedback and performance monitoring were identified as crucial for reinforcing changes in practice and pinpointing areas requiring additional support (Allen et al., 2022). Participants acknowledged the audit process for identifying variability in PEWS utilisation across different areas where the system was employed. The findings suggest that audits should be integrated into a broader strategy aimed at facilitating implementation and ongoing improvement.

These findings indicate that organisational factors significantly influence PEWS implementation. Effective medical engagement regarding the escalation of deterioration, adherence to documentation expectations, and established auditing processes create mechanisms for reinforcing best practices and ensuring continuous monitoring. Within the iPARIHS framework, these factors contribute to the environment in which PEWS is utilised and will ultimately impact the successful rollout of this innovation.

5.4.5 Outer Context: National Expectations

In the context of the iPARIHS framework, the outer context encompasses the broader health system dynamics, including national policies, regulatory requirements, strategic priorities, and external influences that significantly shape local implementation practices (Harvey & Kitson, 2015). The findings from this research indicate that the national implementation of the PEWS exerts substantial influence on local clinical practices.

The PEWS was introduced as a nationally mandated initiative and participants acknowledged that it was not merely a local innovation, but an integral component of a national programme orchestrated by the Health Quality and Safety Commission (HQSCNZ, 2022a, 2025). As a national initiative, PEWS imbued local healthcare settings and nursing professionals with a degree of legitimacy and provided a directive aligned with best practice standards. Within the iPARIHS framework, this national implementation fosters a shared vision and rationale for the necessary changes.

Participants recognised the national expectations surrounding compliance with the PEWS and its associated pathways, which highlighted an anticipatory obligation for healthcare professionals to employ the system consistently. The primary objective of this standardisation was to mitigate the risks associated with variations in clinical practice, especially those that could impede the timely identification of patient deterioration and responses to risk. Nevertheless, findings from this study suggest that the expectation of compliance can engender tension, as participants perceived that rigid adherence to the protocol did not always accommodate the complexities inherent in individual paediatric cases.

Moreover, the national auditing process constituted another critical factor influencing the outer context. As part of the nationwide rollout of PEWS, an auditing mechanism was established to evaluate implementation fidelity. This process enabled healthcare systems to measure consistency, identify practice gaps, and promote accountability within local contexts (Allen et al., 2022; Roland et al., 2021). External monitoring and performance feedback emerged as pivotal drivers of sustainability for the practice, supporting the data essential for ongoing innovation of the PEWS (Allen et al., 2022; Al Zaher et al., 2025). Participants acknowledged the national scope of the auditing process, which underscored a commitment to enhancing the application of PEWS in managing patient deterioration.

The findings within the iPARIHS framework illustrate that the outer context significantly impacts the implementation of PEWS. National leadership, the mandate for adoption, compliance expectations, and auditing collectively create an environment conducive to the effective implementation of PEWS. These drivers enhance accountability for patient safety and signify that the PEWS initiative extends beyond local applications to encompass a broader national framework within New Zealand's healthcare landscape.

5.4.6 Facilitation: Supporting the Implementation of PEWS

The iPARIHS framework posits that facilitation is a critical element in the successful implementation of innovations (Harvey & Kitson, 2015). This study's findings indicate that facilitation has significantly influenced the implementation process of the PEWS. Participants identified several enabling factors, including education, leadership, interprofessional learning, and senior support, which contribute to their understanding of how to effectively utilise the PEWS in clinical practice.

A noteworthy finding is that participants regarded the educational initiatives provided during the implementation of the PEWS as fundamentally positive. The education offered was perceived to enhance their understanding of the rationale behind the PEWS within the clinical context. This observation aligns with existing literature on implementation science, which emphasises the importance of ongoing education for

maintaining sustainability, compliance, and effective utilisation of the PEWS (Al Zaher et al., 2025; Pedersen et al., 2025). Participants reported that educational sessions incorporating complex clinical scenarios facilitated a deeper understanding of the PEWS' practical applications. These findings imply that a facilitation strategy emphasising practical knowledge is essential for successful implementation.

Leadership emerged as another crucial component of facilitation. Participants highlighted the visibility of leadership in promoting the PEWS, which reinforces expectations regarding its usage. Within the realm of implementation science, leadership is recognised as a key determinant of success, as it influences organisational priorities, resource allocation, and engagement opportunities (Harvey & Kitson, 2015). The findings of this research suggest that effective leadership contributed to the successful implementation of the PEWS and helped frame its introduction as integral to patient safety, rather than merely an addition to documentation practices.

Furthermore, participants emphasised the importance of senior nurse support in the facilitation of the PEWS within clinical practice. Access to the guidance and reassurance of senior nurses—such as charge nurses, nurse educators, and members of senior medical teams—proved essential when the PEWS identified patients at risk of deterioration. This senior support enhances decision-making for escalation, boosts confidence among less experienced paediatric nurses, and fosters learning opportunities. Previous research corroborates the notion that a supportive clinical environment, coupled with access to experienced healthcare professionals, is vital for cultivating confidence in managing patient deterioration (Jensen et al., 2018; O'Neill et al., 2021). This suggests that facilitation extends beyond education on the PEWS to encompass daily support within the clinical environment.

In summary, the findings illustrate that facilitation serves as a significant enabler in the effective utilisation of the PEWS. Education, leadership, and senior support collectively contribute to an enhanced understanding of the PEWS. The iPARIHS framework advocates that these facilitation strategies are instrumental in facilitating the integration of the PEWS into clinical practice and advancing successful implementation outcomes.

5.4.7 Summary

The iPARIHS framework has been utilised to analyse the findings of this research, highlighting the implementation of the PEWS and the perceptions surrounding its practical use. Overall, participants viewed the PEWS as a beneficial tool for recognising and escalating the deterioration of paediatric patients, as it enhances communication and provides a structured approach. However, participants emphasised the importance of balancing adherence to the mandatory pathway with clinical judgment in the complex paediatric environment. These findings indicate that the successful implementation of the PEWS requires more than just introducing the tool; it also necessitates ongoing facilitation, strong leadership, and consideration of the clinical context in its application.

Part 3: Recommendations

5.5.1 Implications for Clinical Practice

The findings from this research indicate that effective use of the PEWS requires a balance between clinical judgment and standardisation expectations. While participants acknowledged the value of PEWS as a structured tool for recognising deterioration and escalating concerns, there was a consistent emphasis on the idea that PEWS should support, rather than replace, clinical judgment. This perspective is supported by literature, which highlights that deterioration in the paediatric population is complex and relying solely on objective data from PEWS for clinical decisions is inadequate. Thus, it is important to reinforce that escalation can occur regardless of whether a PEWS pathway has been activated, and that clinical judgment, concerns from healthcare providers, and parental input can all contribute to a comprehensive assessment that supports patient safety.

Furthermore, the findings revealed that participants valued the engagement of the medical team in the use of PEWS. Although nurses are the primary users of the chart, the effectiveness of the escalation process depends on the response from the medical team. In clinical practice, there needs to be shared ownership regarding the implementation of PEWS. Improved communication and understanding of escalation

expectations are necessary. Therefore, the organisation should adopt an interdisciplinary approach to PEWS education that is ongoing and sustainable, extending beyond health professionals who specialise in paediatric care.

Documentation was identified as a barrier to effective PEWS usage. Participants recognised the importance of accurate documentation but noted that workload pressures in the clinical environment could hinder this. To address these challenges, it is recommended to streamline the documentation process and provide ongoing feedback. Regular audits should be conducted to identify gaps in documentation to support continuous quality improvement in practice.

Lastly, the research highlights the need to foster psychological safety when escalating concerns using PEWS. Nursing staff must feel secure and supported in their efforts to escalate concerns and advocate for a deteriorating patient, regardless of their experience level or hierarchical influences. Leadership and senior paediatric staff play a crucial role in creating a supportive culture within the clinical environment. Strengthening psychological safety may reduce barriers to the effective use of PEWS in clinical practice.

5.5.2 Implication for Education

This research identifies that educational strategies should extend beyond merely teaching the technical use of the PEWS. There should be a focus on developing nurses' abilities to apply this tool in complex clinical situations. Participants emphasised the need to bridge the gap between the theoretical understanding and practical application of the PEWS. Incorporating simulation-based education is recommended to enhance training related to the PEWS, particularly in addressing the deterioration of paediatric patients and the processes of detection, escalation, and ongoing decision-making, which should include multidisciplinary responses to deterioration.

Additionally, the findings highlight the necessity of supporting interprofessional communication among nurses, medical teams, and other healthcare professionals involved in managing deteriorating paediatric patients. Shared educational experiences can foster a common understanding of the PEWS and the expectations surrounding

its use. This collaborative approach enhances teamwork, communication, and consistency in responses to patient deterioration.

The research also reveals a need for additional support for nurses who have limited experience with the paediatric population. There was variability in participants' confidence with the PEWS, which correlated with their clinical experience. This need for support extends beyond to nurses to all healthcare professionals who may encounter a deteriorating paediatric patient in clinical settings. Establishing education pathways, providing access to senior clinician support, and creating mentorship opportunities can help bolster the confidence of less experienced staff. Given the diversity within the nursing workforce, ongoing education and refresher courses should be integrated into professional development rather than being confined to initial implementation events.

5.5.3 Policy Implications

Through this research, there are indications of potential for refinement of the policy related to PEWS. Participants frequently described tension between strict adherence to PEWS and its associated pathways and the complexities of working with the paediatric population. It is essential to consider reviewing these pathways to ensure that nurses can exercise clinical judgment when caring for complex paediatric patients. Allowing for flexibility should not undermine standardisation; instead, it should acknowledge the unique aspects of working with paediatric patients and the impact these factors have on the validity of PEWS in practice.

Regarding documentation, the policy should support nurses in clearly documenting their decision-making when they choose to deviate from the mandatory escalation pathway. Rather than viewing deviations as non-compliance with the policy, the process should encourage nurses to record their rationale and thought processes. This approach would maintain accountability in clinical practice while recognising and supporting the importance of clinical judgment.

Auditing can also benefit the implementation of PEWS in practice. The national approach to auditing has primarily focused on compliance measures, such as chart

completion and documented pathway adherence. However, findings suggest that the audit framework should also consider contextual factors such as workload pressures, staffing levels, experience, patient complexity, and the reasons for clinical judgment in escalation decisions. A broader auditing framework may provide deeper insights into the utilisation and implementation success of PEWS.

Finally, participants emphasised the need for PEWS policies to incorporate paediatric specific clinical factors. Children exhibit physiological changes due to distress, anxiety, pain, or fever that can influence the PEWS score without reflecting actual clinical deterioration. Future reviews of PEWS and its associated guidance and education should consider how these paediatric specific factors can be incorporated into the escalation process. Such refinements will enhance the application of PEWS in clinical settings while preserving its standardisation and role in promoting patient safety.

5.5.4 Summary

These recommendations identify key areas for enhancing the practical implementation of the PEWS. Emphasising the importance of clinical judgment, interdisciplinary collaboration, simulation-based education, a culture of supportive escalation, and paediatric context-specific policy frameworks, these strategies aim to improve the effectiveness, sustainability, and overall impact of PEWS in recognising and addressing deterioration in the paediatric population.

Part 4: Strengths, Limitations, Conclusions and Implications

5.6.1 Study Strengths

The research exhibits several notable strengths. Firstly, it employs a mixed methods design, which allows for a comprehensive exploration of nurses' experiences with the PEWS. Initially insights were achieved through focus groups and later expanded to a broader cohort via survey, enhancing the study's credibility through methodological triangulation. Further, the participants' diverse backgrounds in paediatric nursing and their experiences with the PEWS contribute to a rich variation in perspectives regarding its utilisation, clinical judgment, and adherence to the established pathway.

The research addresses a gap in the literature concerning the application of the PEWS in the New Zealand context. It includes specific recommendations focused on cultural safety within this local framework, which is particularly relevant given that most existing literature stems from international contexts. Additionally, this research explores the implications of working with the paediatric population, highlighting the unique factors that children present in the use of PEWS, which are not found in the adult population. Currently, the literature does not comprehensively address paediatric care as a specialty.

5.6.2 Study Limitations

With all research, there are limitations that need to be considered when interpreting findings. These can be related to the study design and how it was conducted or the extent in which the findings can be transferred to other settings. Below the internal and external limitations are discussed.

5.6.2.1 Internal Limitations

The study was conducted by a Nurse Educator who was directly involved in the educational rollout of the PEWS tool. This dual role of educator and researcher may introduce potential bias related to the researcher. The participants' familiarity with the researcher might have influenced their responses due to the existing professional relationship. Although efforts were made to maintain objectivity during data collection, there remains a possibility that participants' responses and engagement were affected by their familiarity with the educator/researcher. Given this familiarity, there is a risk of response bias among participants. They may have provided more favourable responses in light of perceived expectations, aiming to produce positive outcomes. Because I played a role in delivering the education, participants might have found it challenging to express negative views, identify barriers to tool utilisation, or report real situations in practice, even with assurances of confidentiality and voluntary participation.

Another limitation is the reliance on self-reported data. Use of focus groups and surveys meant participants' responses were based on their own perceptions. This can introduce recall bias as well as social desirability bias. As a result, knowledge,

confidence, and the use of the PEWS may not fully reflect the practice in the clinical setting.

5.6.2.2 External Limitations

The limitations of this research are primarily related to the sample size and context. The qualitative data were derived from focus groups consisting of 13 participants, while the quantitative data included responses from only 31 individuals out of a possible 94. This reduced sample size may limit the representation of results and restrict the diversity of perspectives and experiences within the target audience. Although the sample yielded valuable insights, a larger study would enhance confidence in the findings. Upon closer examination, the low response rate for the survey raises concerns about potential non-response bias, suggesting that the opinions of those who did not participate may differ from those who did. It is possible that individuals who were more engaged with the PEWS or possessed greater confidence in its application were more inclined to respond.

Additionally, this research was conducted in only two clinical settings within Te Whatu Ora, Waikato. The PEWS is utilised in various other settings within the organisation, including rural hospitals and the emergency department. Focusing solely on these two clinical areas may have overlooked important contextual factors such as the culture, leadership, and existing practices in other environments. Consequently, the results may not accurately reflect the experiences of others within the organisation. Furthermore, as the research was conducted in a single healthcare setting, the generalisability of the findings may be limited. Variations in organisational structure, culture, staff levels, leadership support, and resources are likely across different settings. Future research that includes multiple organisations and clinical contexts would enhance the validity of these findings.

5.6.3 Conclusions

This exploratory mixed-method study aimed to examine the factors that influence the use of the PEWS tool, along with the associated mandatory escalation pathway, and to identify the education required to support its application in practice. The findings revealed that nurses acknowledged the value of PEWS for recognising and escalating care, as well as providing a common language for communication.

The research indicated that the application of the PEWS is influenced by various factors that extend beyond the tool itself. Many of these factors contribute to afferent limb failure by influencing the recognition, escalation, communication, and response to paediatric deterioration. Clinical judgment, professional experience, workload pressures, communication processes, psychological safety, and the unique complexities of working with the paediatric population all impact how nurses utilise the PEWS. Participants expressed confidence in obtaining observations, calculating a PEWS score, understanding the escalation pathway, and knowing the required documentation. However, the study found that organisational and contextual factors had a greater impact than any deficits in knowledge or education. This suggests that use of the PEWS must balance standardisation with nurses' clinical judgment within the complex paediatric environment.

Although the findings indicated that understanding of the PEWS was not lacking, the research highlighted that education remains a crucial component of its implementation. It is suggested that education about the tool should not be approached in isolation. Instead, it should have a practical focus, integrating the application of the PEWS through methods such as simulation training, paediatric assessment skills, communication and escalation training, and interprofessional education. Such education should empower nurses to incorporate the PEWS into broader clinical reasoning and decision-making processes, rather than viewing it as an isolated assessment tool.

Utilising the iPARIHS framework, the findings emphasised that the successful implementation of PEWS is influenced both by the tool itself and by the interactions among nurses' usage, the clinical and organisational context, and the facilitation strategies that support its implementation. While the PEWS was viewed positively by participants, its effectiveness depended on organisational support, medical engagement, leadership, staffing, and ongoing facilitation. This reinforces the understanding that the PEWS is part of a broader system for recognising and escalating clinical concerns rather than just a standalone tool.

This research contributes to the growing body of knowledge regarding PEWS implementation within the New Zealand context. It examines the realities of a nationally mandated pathway in the paediatric setting. The findings suggest that future support for the PEWS should enhance interdisciplinary collaboration, bolster clinical judgment, address organisational barriers, and provide education that bridges the gap between knowledge and clinical application. By considering the contextual factors influencing PEWS, nurses can be better supported in recognising and responding to paediatric deterioration, ultimately improving patient safety and quality of care.

5.6.4 Future Research

This research has uncovered several opportunities for future studies regarding the implementation of the PEWS, particularly within the New Zealand healthcare context. A key finding was the tension between adherence to the mandatory escalation pathway associated with PEWS and the use of clinical judgment. Future research should explore this relationship, examining how nurses balance standardised assessment tools, their professional experience, and decision-making when escalating care. Understanding this dynamic can help develop specific strategies that support the use of PEWS while allowing nurses to exercise their clinical judgment effectively.

The findings also revealed limited discussion about cultural safety in relation to PEWS. Although participants did not explicitly connect cultural safety with the use of the PEWS, this omission highlights an important area for further investigation. Future research could explore how cultural safety influences assessment, communication, and the escalation of deterioration. This should include an evaluation of whether current PEWS education, policies, and practices support culturally safe care for children and their families in New Zealand's healthcare context.

It is important to note that use of the PEWS is not the sole responsibility of nursing staff. While this research focused on the nursing perspective, it is a multidisciplinary tool. The responses and understanding of the medical team, in particular, impacted nurses' experiences. Gaining insights into the perceptions of the medical team and other healthcare professionals responding to the PEWS will strengthen interprofessional collaboration and communication.

Further research into the application of the PEWS in rural settings is necessary. This study identified that PEWS is also utilised in New Zealand's rural healthcare settings, which often have different staffing models, levels of paediatric experience, resource availability, and access to paediatric specialist services. Understanding how these contextual factors influence the use of PEWS will assist in developing tailored educational approaches for rural settings.

Participants in this research expressed that they saw value in simulation-based PEWS training. Future research should evaluate the impact of simulation-based education on nurses' confidence, clinical judgment, communication skills, and adherence to the escalation pathway. Investigating whether simulation is an effective strategy for managing paediatric deterioration will provide valuable insights.

As noted in the study limitations, the current research was conducted in a single organisation and in two clinical spaces. A national, multisite study involving healthcare organisations and diverse clinical settings across New Zealand would offer broader understandings of the PEWS implementation, enhance transferability of findings, and identify differences in factors that influence PEWS use.

Overall, future research should move beyond examining the PEWS as a standalone assessment tool and focus on the broader clinical, educational, organisational, and cultural factors that influence its use. Such work would contribute to understanding how the PEWS can be implemented effectively and sustainably, improving the recognition and escalation of deteriorating paediatric patients to enhance overall care.

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Appendices

Appendix A: Paediatric vital sign chart audit form

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Appendix A: Paediatric Vital Sign Chart Audit Form

Instructions														Case selection																								
1. Circle 'Yes' or 'No' for each question. Only question 1.2 has a 'N/A' option. 2. Use abbreviations for vital signs that are absent for question 2.1a-g. 3. See the operational definitions for details on what is required for each question. 4. The paediatric early warning score is abbreviated to PEW score. 5. Use the prioritised ethnicity identified in the patient clinical record. Use these abbreviations: Māori (M), Pacific peoples (P), Asian (A), Other (O), European (E) and Residual Categories (R).														1. Audit 10 patient's vital signs charts per week. 2. Select the charts for audit of patients who have been in the ward or unit for a minimum of four hours. 3. Review the charting and associated documentation in the clinical record over a 72-hour audit period.																								
If you identify adverse events or near misses that have not been previously reported, follow your organisation's reporting guidelines																																						
Hospital :														Case number →												1	2	3	4	5	6	7	8	9	10			
Ward:														NHI number (optional) →																								
Date:														Ethnicity →																								
Auditor:														Age →																								
														Indude month (m) or year (y), eg, 4m = 4 month																								
Questions														Type of chart →																								
														Use: 1 = 0–11m, 2 = 1–4y, 3 = 5–11y, 4 = 12+y																								
#	Observation frequency	Operational definitions																																				
1.1	Was the frequency of vital sign monitoring appropriate for the patient?	This is determined by the organisational minimum standard, local policy/guidelines, the escalation												Ye s No	Ye s No	Ye s No	Ye s No	Ye s No	Ye s No	Ye s No	Ye s No	Ye s No	Ye s No	Ye s No	Ye s No	Ye s No	Ye s No											

		pathway, procedural requirements or documented in the plan of care.										
1.2	Was the use of partial and incomplete sets of vital signs appropriate for the patient?	Review the number of incomplete and partial sets on the chart. Only circle 'Yes' if use is in line with local guidelines/policy, escalation pathway or plan of care.	Yes s No N/ a	Yes s No N/ a	Yes s No N/ a	Yes s No N/ a	Yes s No N/ a	Yes s No N/ a	Yes s No N/ a	Yes s No N/ a	Yes s No N/a	
Recognition												
2.1	For the most recent set of vital signs, was the core vital sign set completed? <i>(If yes, go to question 2.3; if no, complete question 2.1a-g)</i>	Use the most recent set of vital signs except if this is the set done at the time of patient discharge. Use the prior set in this situation The core vital sign set is complete when all the vital signs required to calculate the PEW score are recorded: respiratory rate, respiratory distress, oxygen, oxygen saturation, heart rate, central capillary refill, systolic blood pressure.	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	
2.1 a-g	Note which vital sign(s) were absent	Write abbreviations of the vital sign(s) that were absent, eg, RR, RD, O ₂ , SpO ₂ , HR, CR, BP										
Case number →			1	2	3	4	5	6	7	8	9	10

2.2	For this most recent set of vital signs, was the PEW score total marked with a plus (+) symbol?	A plus symbol (+) is used to mark that the vital signs set is a partial PEW score. Only circle 'Yes' if the total PEW score has a '+' next to it, eg, 6+.	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No
2.2a	Was the reason for a partial recording documented in the patient's clinical record?	Circle 'Yes' if a reason has been documented in the clinical record that corresponds to the date and time of this set of vital signs.	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No
2.3	Was whānau concern recorded for this patient?	Circle 'Yes' when the whānau concern box is marked with a 'Y', 'N' or 'A'. Circle 'No' when the whānau concern box is blank.	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No
3	Was the PEW score total calculated correctly for the most recent set of vital signs?	Only circle 'Yes' when all of the following apply: - question 2.1 or question 2.2 is a 'yes' and any valid modification is correctly applied to the calculation, and - the PEW score total is calculated correctly.	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No
4	Were any modifications made to the PEW score triggers? <i>(if yes, complete questions 4a and 4b; if no, go to question 5)</i>	Circle 'Yes' when modifications are documented in the modifications box on the vital signs chart.	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No

4a	Was a rationale and duration for the modification documented? <i>(clinical requirements)</i>	Circle 'Yes' when both the rationale and duration for the modification are documented on the vital signs chart.	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No
4b	Did the person making the modification legibly date and sign it and record their contact details? <i>(documentation requirements)</i>	Circle 'Yes' when all the documentation requirements are completed (legible date, signature and contact details).	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No
Escalation and response													
5	Did the patient reach any of the defined triggers for escalation in the 72-hour audit period? <i>(If yes, complete questions 5a–d; if no, audit is complete)</i>	Circle 'Yes' if the patient had a PEW score 4–5, PEW score 6–7, PEW score 8+ or a single vital sign in the blue zone in the 72-hour audit period.	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No
Case number →			1	2	3	4	5	6	7	8	9	10	
5a	Did escalation occur according to the pathway?	If more than one escalation was triggered in the 72-hour audit period, select the most recent for inclusion in the audit. Circle 'Yes' if an escalation occurred according to the pathway. Circle 'No' for any deviation from the agreed escalation pathway or inadequate documentation.	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No

5b	Did the response occur according to the pathway?	Circle 'Yes' if the responder attended in the time frame specified on the escalation pathway. Circle 'No' for any deviation from the agreed response pathway.	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No
5c	Did the responder complete documentation requirements (according to local policy)?	Circle 'Yes' only if all documentation requirements are completed according to local policy	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No
5d	Did the recogniser complete documentation requirements (according to local policy)?	Circle 'Yes' only if all documentation requirements are completed according to local policy	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No
5e	For this escalation, was the PEW score marked with a plus symbol?	Circle 'Yes' only if a partial PEW score was the last set of vital signs documented prior to the set requiring escalation, or a clinical deterioration resulted in escalation after a partial set of vital signs	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No	Yes s No

Appendix B: PEWS Quarterly Data 2024

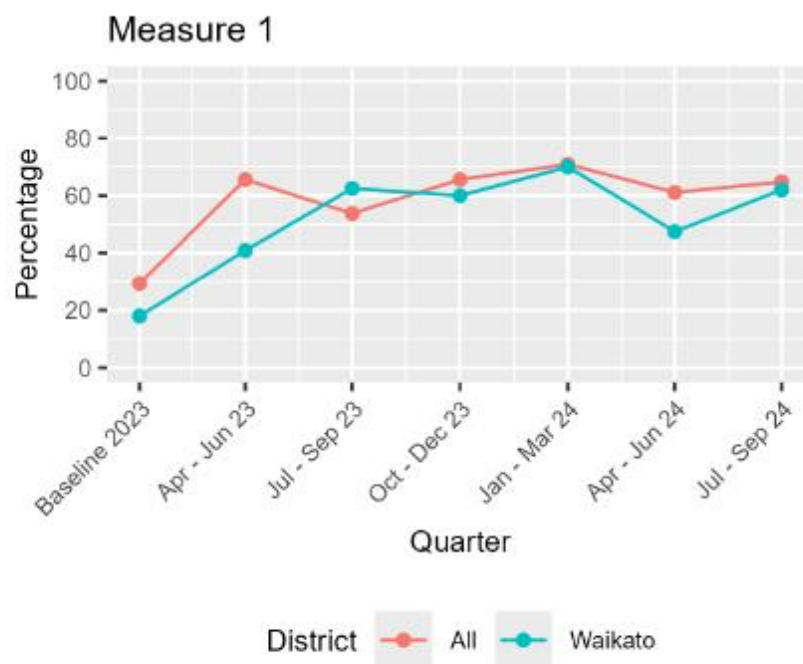


Te Tāhū Hauora
Health Quality & Safety
Commission

Paediatric early warning systems quarterly data

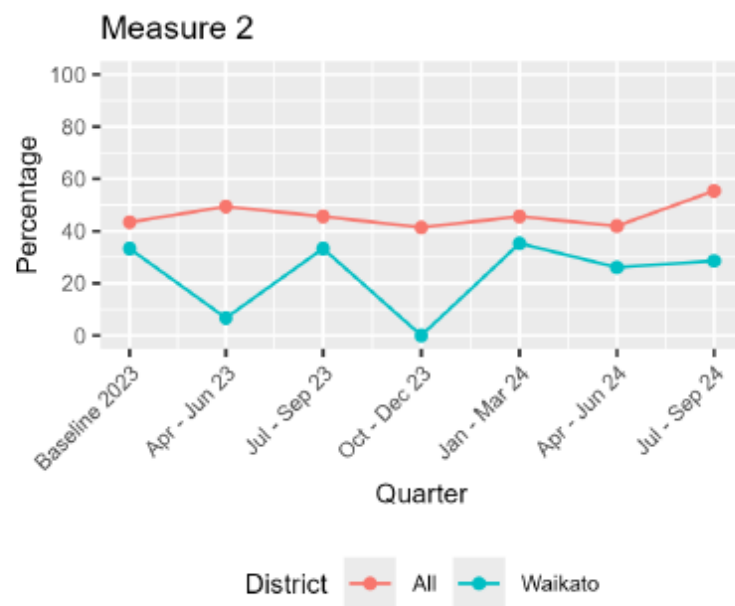
Waikato, July to September 2024

Measure 1: Percentage of patients with a complete core vital signs set for the most recent set of vital signs.

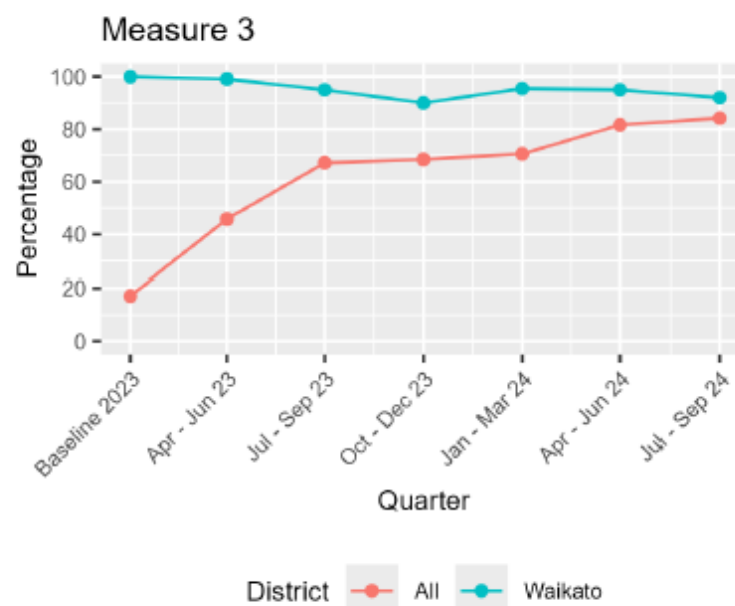


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New Zealand Government

Measure 2: Percentage of patients who triggered an escalation for whom the response occurred as per the mandatory escalation pathway.



Measure 3: Percentage of patients with whānau concern recorded.



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New Zealand Government

Appendix C: Permission for Image Use: Tanner Model



July 24, 2026

Tarryn Clayton
Waikato University
3/186 Young Street
Te Awamutu, Waikato 3800
New Zealand

Reference #: 2620-6037

Material Requested: Figure on page 208

Usage Requested: Master's thesis, Waikato University

Citation: Tanner C. A. (2006). Thinking like a nurse: A research-based model of clinical judgment in nursing. *The Journal of Nursing Education*, 45(6), 204–211. <https://doi.org/10.3928/01484834-20060601-04>

Dear Tarryn Clayton:

Permission is granted for the requested materials and usage listed above, subject to the following conditions:

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- Permission is granted for non-exclusive, worldwide use, in the English language, in electronic form. Requests for additional formats, languages, or future editions must be submitted separately.
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Please sign and date below, keep a copy for your records, and email to publishingpermissions@wyanokegroup.com. Please include your reference number on all correspondence information.

Requestor accepts conditions above:

Signature:  **Date:** 27th July 2026

Sincerely,
SLACK Incorporated
Permissions Department

Appendix D: Participant Information Form

What is this project about?

This research is being conducted as part of a University of Waikato Masters degree. The project is about understanding how nurses use the mandatory escalation pathway associated with the Paediatric Early Warning Charts. For consistency of care and to ensure optimal outcomes of the patients it is important to determine how the chart is being used. If there are cases where it is not being used, what are the reasons and barriers for it not being used. This will enable the researcher to explore this so quality improvement can be implemented to improve the safety of the Tamariki we care for.

Who is leading this research?

The lead researcher is Tarryn Clayton. Her current position is the Nurse Educator for paediatrics at Te Whatu Ora Waikato. She is one of the two nursing leads that facilitated the roll out of the current national PEWS charts that are in use at Te Whatu Ora Waikato. Thus, she has a unique interest in this area and a passion to improve health outcomes for the Tamariki in our region. This work is supported by the research supervisor Dr Samantha Heath.

What is being asked for from the participants?

The research occurs in two phases.

In phase 1, there will be 3-4 focus groups with up to 5 Registered Nurses in group, so the researcher will be asking if you would like to participate in a semi structured focus group that will be recorded. Semi structured means the person leading the focus groups will come with some questions surrounding the topic, but discussion will also be led by the participants. The purpose of the focus groups is to understand themes rather than focusing on the individuals practice. You will be asked to sign a consent form before the focus group begins. Once the interview has been completed, it will be transcribed, and you will receive a copy to review. You need to know that the interview may be transcribed by a third party who has signed a confidentiality agreement. You also need to know that the focus group interview will be completed by an impartial person who has signed a confidentiality agreement.

The focus groups will be carried out at a time and place which is convenient for you. You have the right to not answer any of the questions, and to remain silent if you do not wish to participate in the discussion.

In phase 2, everyone will receive an email inviting them to complete a quick and anonymous online survey about PEWS. To participate, you simply click the link to the survey.

How much time is involved?

The focus group time will vary depending on the discussion, but will be a maximum of 60 minutes

The online survey will take approximately 10-15 minutes.

What are the participants right for consent and withdrawal?

For the interviews there will be a consent form given to all participants which will be completed prior to the commencement of the interview. Withdrawal from the research is possible until 2 weeks after receiving the transcript from the interview. If there are questions that you do not feel comfortable asking you can decline to answer. Your individual feedback will remain confidential and will not be shared with anyone. The information collected from your responses will be used exclusively for research purposes and will not influence your employment or professional practice in any way.

With the online survey the consent statement will be provided before you start. Because the survey is anonymous withdrawal will not be possible after submission. Your consent will be implied when you click the submit button.

You are under no obligation to participate, but if you would like to ask any questions or book in for an interview, please contact:

Tarryn Clayton: Lead Researcher
0272561156 (During working hours)
Tarryn.clayton@waikatodhb.health.nz

Who to contact if there are issues?
Samantha Heath: Research Supervisor
Samantha.heath@waikato.ac.nz

This research project has been approved by the Human Research Ethics Committee (Health) at the University of Waikato as HREC(Health)2024#72. Any questions or concerns about the ethical conduct of this research may be sent to the Secretary of the Committee, email humanethics@waikato.ac.nz, postal address: Human Research Ethics Committee (Health), University of Waikato, Te Whare Wananga o Waikato, Private Bag 3105, Hamilton 3240).



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WAIKATO
Tē Whare Wānanga o Waikato

Appendix E: Participant Consent Form

UNIVERSITY OF WAIKATO
DIVISION of HEALTH

PARTICIPANT CONSENT FORM

Name of person
interviewed: _____

I have received a copy of the Information Sheet describing the research project. Any questions that I have, relating to the research, have been answered to my satisfaction. I understand that I can ask further questions about the research at any time during my participation, and that I can withdraw my participation at any time up until 2 weeks after receiving the transcript from the interview.

During the interview, I understand that I do not have to answer questions posed unless I am happy to talk about the topic.

When I receive the transcript of the interview, I understand that I have up to 2 weeks to review it and ask for any changes to be made. After this period, I understand that I will not be able to withdraw my transcript. Upon receiving the transcript I will not share the transcript with any other party. I will be reviewing only the information that I provided during the interview.

When I sign this consent form, I will retain ownership of my interview, but I give consent for the researcher to use the interview for the purposes of the research outlined in the Information Sheet. I understand that my identity will remain confidential in the presentation/dissemination of the research findings.

I understand that the people who may see the information I provide will be the researcher and her supervisor and if necessary, a transcriber who has signed a confidentiality agreement. I understand that the interviewer has also signed a confidentiality agreement.

Information shared during the focus group is to remain confidential and will not be disclosed to any other staff members. This includes not sharing the transcriptions that include the responses of other focus group participants.

Please complete the following checklist. Tick [P] the appropriate box for each point.	YES	NO
I wish to receive a copy of the findings.		

Participant :	_____	Researcher :	_____
Signature :	_____	Signature :	_____
Date :	_____	Date :	_____
Contact Details :	_____	Contact Details :	_____



Appendix F: Interviewer Consent Form

University of Waikato
Division of Health

Project Title: Exploring factors that influence the use of the Paediatric Early Warning Scoring system (PEWS) at Te Whatu Ora Waikato: A mixed methods study.

I, ...(Full-name printed)

I agree to keep confidential all of the information provided to me, including any field notes taken during the conduct of the focus group.

I have no connection to this project other than as interviewer for the focus groups.

Signature

Date



Appendix G: Interview Questions

1. In your area can you explain what PEWS are and how you use them?
2. How confident do you think nurses are to use the PEWS and follow the escalation pathway?
3. What challenges do you think you or other nurses are faced with when using the PEWS?
4. When making decisions in a critical situation, does the PEWS score impact any of these decisions?
5. As some of you are aware, there has been ongoing auditing of the PEWS charts since the national charts were rolled out. The data from these audits have identified that around 60% of the time when a patient triggers a PEWS, it has not been escalated according to the pathway. From your experience using the PEWS, why do you think this would be the case?
6. Do you think there is any variation in the use of the PEWS according to experience of the nurse? Ethnicity? Gender?
7. What do you think the barriers are for nurses using the PEWS?
8. Do you feel you have enough education and understanding to support you and your use of the PEWS charts?
9. Can you describe a situation where you or someone else followed the PEWS correctly? What were the outcomes and what contributed to accurately escalating according to the pathway?
10. Can you describe a situation where you or someone else did not follow the PEWS correctly? What were the outcomes? And what contributed to no accurately escalating according to the PEWS pathway?

Appendix H: Recruitment Poster

Calling All Registered Nurses Working On E4 and E5 to Participate in Nursing Research!

Exploring factors that influence the use of the Paediatric Early Warning Scoring system (PEWS) at Te Whatu Ora Waikato: A mixed methods study.

This research is looking at the use of the Paediatric Early Warning Charts (PEWS) with a particular focus on the adherence to the mandatory pathway of escalation. The research is exploring whether there are any factors that influence the use of PEWS and the escalation pathway. The goal of this research is to apply a consistent framework around the future use of the PEWS chart.

Phase One

Focus Groups:

- The purpose of the focus groups is to find themes to inform the questions that will be included in the online survey.
- They are not focused on any individual practices.
- The focus groups have up to 5 nurses in each one and will be carried out at a time that suits you.
- You will be interviewed by a third party for up to an hour with questions that ask about your experience with PEWS and the associated pathways.
- The focus group will be recorded and transcribed.

If you are interested in participating in this part of the research, please contact Tarryn Clayton at tarryn.clayton@waikatodhb.health.nz

Phase Two

Online Survey:

- This is an anonymous online survey.
- Every Registered Nurse on E4 and E5 will receive an email that invites them to participate.
- The online survey will take 10-15 minutes.
- Once it is available there will be a QR code to use to complete the survey.

The Researcher:

- Masters Research by Tarryn Clayton, tarryn.clayton@waikatodhb.health.nz
- Waikato University Supervisor: Dr Samantha Heath, samantha.heath@waikato.ac.nz

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NEW ZEALAND

Appendix I: Survey Consent



Exploring factors that influence the use of the Paediatric Early Warning Scoring system

This research is being conducted by Tarryn Clayton as part of a University of Waikato Masters degree. The project is about understanding how nurses use the mandatory escalation pathway associated with the Paediatric Early Warning Charts. For consistency of care and to ensure optimal outcomes of the patients it is important to determine how the chart is being used. If there are cases where it is not being used, what are the reasons and barriers for it not being used. This will enable the researcher to explore this so quality improvement can be implemented to improve the safety of the Tamariki we care for.

Note: Completion and submission of this online survey will be taken as an indication of your informed consent to participate in this research study. All responses are anonymous and cannot be linked to individual participants by the researcher.

Tarryn Clayton: Lead Researcher 0272561156 (During working hours) Tarryn.clayton@waikatodhb.health.nz
Who to contact if there are issues? Samantha Heath: Research Supervisor Samantha.heath@waikato.ac.nz
This research project has been approved by the Human Research Ethics Committee (Health) at the University of Waikato as HREC(Health)2024#72. Any questions or concerns about the ethical conduct of this research may be sent to the Secretary of the Committee, email humanethics@waikato.ac.nz, postal address: Human Research Ethics Committee (Health), University of Waikato, Te Whare Wananga o Waikato, Private Bag 3105, Hamilton 3240).

Appendix J: Poster for Quick Link to Survey



Appendix K: Survey Questions

How long have you been a paediatric nurse?

Less than 5 years 5 to 10 years 10 + years

Questions in the table will be asked using this Likert scale

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

Theme	Questions	Rationale of inclusion	Relevant Research Question and Objectives
Clinical Judgement vs Pathway Adherence	I base my decision to escalate my patients care solely on the PEWS.	There were varied responses to this. The newer nurses were more inclined to say the followed completely.	What factors influence nurses use of the PEWS assessment scoring and its associated mandatory pathways?
	The PEWS leaves no room for clinical judgement	This was a common comment in the interviews. It also is something that features in the literature. This also fits well with my research objective of how nurses rationalise escalation (or non escalation) of the PEWS.	What factors influence nurses use of the PEWS assessment scoring and its associated mandatory pathways?
	I feel that my experience in paediatric nursing qualifies me to make escalation decisions based primarily on clinical judgement	This is similar to the previous question but includes a nurses experience into the decision making. Again, this features in both the literature and in the interviews. And again, fits with my objectives. And should identify a factor that affects nurses decisions to escalate a PEWS out of range.	What factors influence nurses use of the PEWS assessment scoring and its associated mandatory pathways?

Time Pressures	Competing workload makes it difficult to complete escalation documentation in real time	There were a few comments about the inaccurate completion of PEWS. And these were based on time constraints. Time constraints is in the literature but not a lot focus on the subsequent documentation.	What education is required to support the effective use of PEWS to promote patient safety?
	I struggle to capture all required documentation and timing regarding the PEWS	This is very similar to the previous question. But takes out the workload factor. And more on if they just forgetting to document.	What education is required to support the effective use of PEWS to promote patient safety?
	I struggle to contact all the required people according to PEWS due to time constraints	This focus is on the process of escalation and the time constraints of doing this with a busy workload.	What education is required to support the effective use of PEWS to promote patient safety?
Interprofessional Responses and Communication	Delays in medical review are a barrier for nurses to following PEWS timelines	From the interviews it was perceived that the doctors were too busy to respond to PEWS so they didn't escalate accordingly. This is something that featured in the literature as well. Nurses don't want to bother the doctors.	What factors influence nurses use of the PEWS assessment scoring and its associated mandatory pathways?
	When other nurse colleagues advise against escalating according to the PEWS, I still follow the documented pathway	This came up frequently. I have used the term colleagues, but from the interviews it was mentioned that it was senior nurses that were encouraging junior	What factors influence nurses use of the PEWS assessment scoring and its associated mandatory pathways?

		nurses to not follow the pathway.	
	Specialty teams accustomed to adult care sometimes underestimate paediatric PEWS triggers	This is slightly unique to the surgical ward. And was mentioned in the interviews as well. And there is some literature about non-paediatric specialised teams and their unfamiliarity of paediatrics and indications of deterioration.	What factors influence nurses use of the PEWS assessment scoring and its associated mandatory pathways?
Factors Presented by Children	Nurse-phobic or distressed children make taking vital signs (and hence PEWS) difficult	This one is a broad question. There isn't a lot in the literature about this. And from the interviews was seen as a significant barrier to following the PEWS	What education is required to support the effective use of PEWS to promote patient safety?
	I will choose not to escalate a PEWS score when I believe the child's elevated observations are due to factors such as distress or fever.	And this follows on from the last question. I feel like there is more that I can ask in this section. But I haven't quite figured out what else I want to know.	What education is required to support the effective use of PEWS to promote patient safety?
Education	Local education (e.g., Ko Awatea modules/in-service) prepared me to use PEWS effectively.	This is one of the research questions about education.	What education is required to support the effective use of PEWS to promote patient safety?

Free Text Question:

What education would you like to recommend in relation to escalating PEWS scores?

Appendix L: Ethics Application

Research Ethics Application – Cover Sheet

Principal Investigator:	Tarryn Clayton
Division / School / Faculty / Institute:	Division of Health/ School of Nursing/ Waikato University
Email address:	Tarryn.clayton@waikatodhb.health.nz
Preferred phone number: Office phone number (if applicable):	0272561156 Work
Student ID (if applicable):	1661547
Proposed start date of data collection/field research: Proposed project end date:	Expected start date: Feb 2025 Expected end date: June 2026
This is an application for approval of: (indicate all that apply)	Staff research project: Yes ☐ No ☐ PhD research: Yes ☐ No ☐ Masters research: Yes ☒ No ☐ Other: Yes ☐ No ☐
Name of degree/paper (if applicable):	Masters of Health Science
Supervisor name:	Dr Samantha Heath
Supervisor's approval signature:	
Funding sources (if applicable):	Health Workforce Directorate Fund, Te Whatu Ora Waikato
Project sponsors (if applicable - eg equipment):	
Research locations (if outside UOW facilities):	Te Whatu Ora Waikato
Associated/linked Applications (provide other applications' approval code and	1. 2.

title):	3.
Has the application received approval from other institutions? If so, please talk to the HREC Chair before proceeding as this Committee may only need to ratify the already approved application.	No

I request approval for this research or related activity and attach all relevant documentation necessary for evaluation under the Ethical Conduct in Human Research and Related Activities Regulations.

<https://calendar.waikato.ac.nz/research-assessment-graduation/ethical-conduct>

I have read and complied with the University's Ethical Conduct in Human Research and Related Activities Regulations.

Principal Investigator's signature:  Date: 27/11/2024

Project Overview

Please provide the following information about your project

- Project Title: Exploring factors that influence the use of the Paediatric Early Warning Scoring system (PEWS) at Te Whatu Ora Waikato: A mixed methods study.**
- Briefly outline the **research topic, research questions** and/or **research objectives** (boxes will expand as you write)

Research topic (20-50 words)	The purpose of the national Paediatric Early Warning Score (PEWS) is to identify when sick children's vital signs are outside normal parameters. PEWS assessment assists nurses to determine whether mandatory escalation is required. Understanding why nurses do not always complete mandatory escalation when indicated by the PEWS score will be explored.
Research questions (bullet point)	What factors influence nurses use of the PEWS assessment scoring and its associated mandatory pathways? What education is required to support the effective use of PEWS to promote patient safety?
Research objectives	To: Explore how nurses rationalise escalation and non-escalation of

(bullet point)	PEWS Identify factors that affect nurses' decisions to escalate an out-of-range PEWS score. Inform and target any in-service education which may be required in the use of PEWS assessment, scoring and/or escalation. Determine whether a review of the current local escalation pathway is required and then provide the local PEWS development team with supporting information from the results of the study. To improve patient safety by supporting nurses to use the mandatory pathway to effectively escalate the PEWS.
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3. What specific research activities are you planning to undertake? *Briefly* respond to this question by LISTING research activities. Please note this application focuses on Human research. You will be asked to provide further details under Q.18. NB: delete examples

Research activity	Brief comment (10-30 words per item)
Introduction to the research study	Socialisation of the upcoming research and the opportunities to participate, and circulation of participant information.
Focus Groups	With 12-15 Registered Nurses split into 2-3 focus groups. These nurses will work on the 2 paediatric wards at Te Whatu Ora Waikato.
Transcription	Of interviews once completed
Return transcripts	To participants for review and comment within a 2-week timeframe
Analysis	Of narrative data using NVIVO software to determine themes and to inform the questions to be asked in the survey that follows
Online survey	Sent to all Registered Nurses working on the 2 paediatric wards at Te Whatu Ora Waikato.
Analysis	Of surveys using descriptive statistics and narrative analysis of open-ended questions.
Dissemination	Of findings to the participants and key stakeholders such as the PEWS development team for further action.

4. Justify your project. Provide a summary of the research, its methods, anticipated academic benefits, value and/or contribution to the field.

(a) Research summary (under 300 words)	Paediatric Early Warning Score (PEWS) is a tool used to record sick children's vital signs. It includes the assessment of respiratory rate, oxygen use, breathing effort, oxygen levels, heart rate, blood pressure and capillary refill. Each set of vital signs recorded, is scored. This score enables nurses to determine whether the assessed vital signs are within normal physiological parameters for the child's age. The score is used to identify whether mandatory escalation is required for a medical review and the time frame in which that review should take place. PEWS assessments are routinely carried out by Registered Nurses on the paediatric inpatient wards at Te Whatu Ora Waikato. The national PEWS chart was rolled out in 2023 to unify documentation and to improve the escalation of care and outcomes for all paediatric patients. Extensive auditing has taken place since the roll out of the national version of the form. However, recent audit results supplied to the Health Quality and Safety Commission suggest that at Te Whatu Ora Waikato, the PEWS mandatory escalation process is not being correctly followed on every occasion. Te Whatu Ora Waikato referral rates are currently below the national average (Health Quality and Safety Commission, 2024) and audit data demonstrates that there have been occasions where a score has not triggered the mandatory escalation process. It is important therefore, that this situation is addressed for patient safety reasons. Review of the current literature indicates multiple factors affect nurses' decision-making in this situation and these range from lack of individual understanding to organisational culture. Asking nurses about their experiences of using PEWS will determine whether these reflect the current literature and the extent of any remedial actions that might be required for example, education or by the local PEWS development team.
(b) Methods summary (under 300 words)	This research will be conducted using mixed methods (MM) and following an exploratory-sequential design. In such a design, relevant issues are explored initially with a focus group. Analysis of narratives is then used to generate a survey for a wider group of participants. This design supports the in-depth exploration of complex issues as well the opportunity to identify any subthemes that might become apparent. Initially, semi structured focus groups will be conducted with 12-15 Registered Nurses who have volunteered to participate. These participants will be divided into 2-3 smaller groups. These nurses will all be working in the children's wards in which PEWS assessment is undertaken. In these focus groups, the researcher will

	explore how nurses rationalise escalation or non-escalation of a PEWS score as well as any factors that influence their decision making. Deductive and inductive thematic analysis of the interview narratives using NVIVO software will provide data from which follow-up survey questions will be developed. This survey will be distributed to all Registered Nurses in the children's wards and used to verify the themes that emerged from the earlier interviews. The survey questions may include Likert -type responses and open-ended questions for example. Analysis will make use of descriptive statistics and inductive thematic analysis of the open-ended questions. It is anticipated that analysis will assist in setting the direction for any further clinical education, or other remedial action needed by the PEWS development team and required to maintain patient safety. The outcomes of the work will be disseminated to participants and to the PEWS development team for action and implementation, to improve patient safety.
(c) Anticipated academic benefits/value/ contribution to the field summary (max 200 words)	Understanding the factors that influence decision making in response to the PEWS assessment score is essential to inform education practice and patient safety. This will be done by drawing on findings from this research to develop and implement targeted education to address factors that affect the utilisation of the mandatory escalation pathway for the PEWS. Improving the accurate use of the PEWS charts will also support early escalation of care for paediatric patients and will contribute to decreasing unintended long-term effects of illness and the improvement in health outcomes. The research will add to the body of work which has already been completed on the use of PEWS. Additionally, the researcher will achieve her Masters of Health Science degree and add to the skilled capacity of the nursing workforce.

The Researcher(s)

Please tell us about you and/or your research team

5. LIST all members of the research team and briefly describe their roles within your research project.

Name	Role
<i>Dr Samantha Heath</i>	<i>Research Supervisor</i>

Chris Baker	Cultural Advisor
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6. OUTLINE (250 words max) relevant qualifications to undertake this research.

Qualifications and Prior experience	Bachelor of Nursing with Post Graduate Diploma in Health Science. No previous research experience
Training/expertise in relevant research methods	No previous research experience
Personal knowledge of topic/area of interest	The PEWS chart became a national chart in June 2023. I have been project co-lead for children's nursing in the roll out of the project. This included the chart design, escalation pathway development and the ongoing auditing.
Other...	

7. What, if any, discipline-specific codes of ethics or professional standards will guide your research? Outline here:

This research will be conducted within the professional standards required by Nursing Council of New Zealand for Registered Nurses.

Your intended participants

Please provide the following information about your intended participants:

8. Broadly, who will your participants be? (Indicate the broad target population: e.g. approx. 30 young adults (20-25 years old) men and women from Waikato rural communities). *Offer estimates if exact numbers are uncertain. Do not include individuals' names.*

- Semi Structured Focus Groups: 12-15 Participants that work as Registered Nurses on the two paediatric inpatient wards at Te Whatu Ora Waikato. The 12-15 participants will be divided into 2-3 smaller groups.
- Online Survey: All Registered Nurses employed on the paediatric inpatient wards at Te Whatu Ora Waikato will be invited to participate via email. This will be approximately 95 participants.

9(a) How will you recruit participants? Summarise your process as a list of actions, in chronological order (no more than 200 words)

Phase One: Focus Groups

The study will be explained to all registered nurses on wards E4 and E5 at the nursing

huddle times.

A Participation Information Sheet (Appendix A) will be shared with nurses about registering interest in participating in the focus groups.

Self-selection to undertake a focus group interview will be completed by the participants by email. With Registered Nurses that express interest, the researcher will follow-up using the contact details provided until a maximum of 15 participants have been recruited for the interview phase.

Phase Two: Survey

In the week prior to the email delivery of an online survey link there will be a reminder about the research at the nursing huddle times.

An online survey link will be emailed to all Registered Nurses on wards E4 and E5 at Te Whatu Ora Waikato.

Participation of in the survey will be voluntary.

The survey will be open for 3 weeks.

A reminder about completing the survey will be emailed the week prior to the closing date.

9(b) Do you need permission from any person or organisation to recruit participants prior to recruiting participants? If so, please describe this process.

- The nursing directorate for Child and Women's health. There are monthly meetings which are used to present quality initiatives and research occurring in the area. The group is already aware of this research and have approved this project (Appendix D).
- Research will be lodged and reviewed by the Research Office at Te Whatu Ora Waikato once ethics approval has been granted.

10. How will you inform them about the project and their involvement in it?

Summarise your process. Link to relevant attached appendices (e.g. *recruitment emails, posts, posters, information sheets...*)

Information about the research will be available via:

- Nurses huddle at handover time where the researcher will be available to provide information sheets and answer any questions arising.
- The Participant Information Sheet will be prepared and will be handed out at the nurse's huddle and will be attached to survey emails. (Appendix A)
- Posters will be placed in the area of recruitment with QR code and link for both the interview and for the survey (Appendix C)
- The research will be discussed at shift handovers and nursing huddles.

11. Are the participants vulnerable? Yes ☒ No ☐ B If yes, then:

(a) in what ways are they vulnerable? Outline

Participants are vulnerable because the lead researcher is the Nurse Educator in paediatrics, and this is a senior nursing role. It could be viewed that there is an imbalance in the power relationship regarding performance issues and job security.

(b) Why do you need to involve them in your research? Outline

The Registered Nurses are the users of the PEWS tool and are perfect informants about how it is to use it in the real world in clinically deteriorating situations. Their views are essential to the research and will assist in determining any remedial actions that might need to be taken.

(c) How will you protect them from harm? Outline

I have put in place recruitment procedures that use an 'arm's length' approach thereby reducing any perceived coercion to join the study. Participants can self-select in both phases of the work. There will be no individual recruitment or follow-up. The questions also address clinical practice in the third person phrasing questions as for example, 'nurses don't' rather than 'you don't.' The interviews will be undertaken by an independent interviewer who is not associated with this project or Te Whatu Ora Waikato rather than being completed by the researcher. The focus groups will be used to inform the survey questions and the surveys will be anonymous.

12. Will you select participants on the basis of:

Ethnicity: Yes ☐ No ☒	Iwi: Yes ☐ No ☒
Culture: Yes ☐ No ☒	Disability: Yes ☐ No ☒
Gender: Yes ☐ No ☒	Ethical belief: Yes ☐ No ☒
Religion: Yes ☐ No ☒	Sexuality: Yes ☐ No ☒

If yes to any of the above:

- (a) State how you will inform participants about the selection criteria.
- (b) Are your participants likely to come from a particular ethnic group or other distinct population even if you are not selecting them on that basis? If so, please discuss the implication of this for your research.
- (c) What cultural and other competencies do you have to work with your selected participant group (e.g. language, membership, professional training)?

13. Do you have any type of relationship with your participants already (e.g. employer/employee, supervisor/worker, personal relationship)? Yes ☒ No ☐

Currently work as a Nurse Educator in this area so I have a professional relationship with all the potential participants for both the survey and the interview.

14. Will participants receive any form of compensation or incentive for

participation? (See guidelines on compensation and note that reimbursement for travel expenses can be stated, but does not need justification) Yes ☐ No ☒

If yes, what will they receive? (e.g. vouchers, prizes, shared refreshments, course credits etc.) Outline.

Consent

Please provide the following information about consent processes:

15. How will you gain informed consent from your participants? Outline methods for this consent process

(a) Who will gain consent from participants?

Phase 1: Focus Groups:

At the start of the semi structured focus groups interview the interviewer will address the consent form with the participant, ensure that the participant information sheet has been read and understood, answer any questions that arise, and if they are willing to continue, the participant will sign the consent form. (Appendix C)

Phase 2: Survey:

The online survey will be completed digitally and will be anonymous. At the start of the survey, information from the participant information sheet will reiterate that submission of the survey implies their consent to participate in the study.

(b) At what point do participants give their consent?

Semi Structured Focus Group: For this process there will be a consent form for all the participants to sign prior to the interviews being conducted.

Online survey: The submission of the survey is anonymous. Submission will imply consent is given.

(c) If vulnerable, are your participants able to give informed consent? Yes ☒ No ☐

☐ If no, then, how will you obtain consent from their proxy?

Not applicable

16. With the exception of participants who are anonymous to the researcher, participants have the right to withdraw entirely or in part from the research. Please explain how and by when participants are able to withdraw: (e.g. three weeks after data collection, or receipt of a transcript) and ensure this is consistent with what is included in the Participant Information Sheet and Participant Consent Form.

Phase 1: Focus Groups:

The participants will have the opportunity to withdraw at any time up to 2 weeks after their transcript is returned for review.

Phase 2: Survey:

The information provided with the online survey will indicate that when the participant submits their responses there will no longer be an opportunity for withdraw from participation.

17. Data collection activities may be planned for off-campus locations. Please list all non UOW locations where you will engage in data collection.

- (a) If you need consent or permission from any organisation, community representative, and/or anyone other than the individual participants Please list the required permissions, consents, and/or approvals in chronological/process order.
- Waikato Hospital: Child Health Directorate
 - The Locality Authorisation Research team at Te Whatu Ora Waikato
- (b) How and when will you gain these permissions, consents and/or approvals?
Ensure you attach any statements, letters, or emails of permission or approval that have been secured in advance of your application to the Human Research Ethics Committee.
- Child Health permission has already been gained from the Nurse Director (See Appendix D)
 - An application to the Locality Authorisation Research team at Te Whatu Ora Waikato alongside this application.

Research design

18(a) Please outline what you intend your participants to do

Phase One Focus: Groups:

Initially, there will be 2-3 semi-structured focus groups with 4-5 Registered Nurses in each one. Nurses will be asked about nursing practice when using the PEWS assessment and the mandatory guideline that is associated with its use. The Registered Nurses will be asked about factors that affect nursing practice and any reasons why nurses might deviate from the associated guidelines. Their responses will be used to formulate survey questions. (Appendix E)

Phase Two: Surveys

Online surveys will be emailed out to all Registered Nurses working on Ward E4 and E5 at Te Whatu Ora Waikato. It will be an anonymous survey that will use the information from the

semi structured interviews to verify the issues that arose from the interviews in phase one and will likely include questions about using charts and the perceived barriers of using the charts. Directions for education activities may also be included (Appendix F).

(b) How will participants benefit from their involvement in the research?

The benefit of involvement is improving patient outcomes. The information will be used to target education and improve the escalation pathway. The intention is to be able to develop nurses' confidence and decision- making when using PEWS and its associated documentation.

19(a) Could participants be harmed in your research? Yes v No If yes, please outline all potential harms to your participants with brief commentary. Use the table to help you be succinct:

FORESEEN HARMS	LIKELIHOOD OF HARM OCCURRING	HOW YOU INTEND TO MINIMISE THE RISKS	DESCRIBE IN SOME DETAIL WHAT YOU WILL DO IF A PARTICIPANT IS HARMED
1. The potential for discovering areas of sub-optimal practice	Low	Participants will not be asked directly if the participant has ever failed to use the mandatory escalation process. Instead, the questions will be put in the third person. For example, 'other nurses have decided not to use the escalation system'. This will reduce any personalisation within the question.	The researcher will investigate whether external services need to be offered such as Employee Assistance Programme (EAP) through Te Whatu Ora. This service provides wellbeing support to create a happier, healthier workplaces. The researcher will also assist in making the appropriate referrals by providing web addresses and phone numbers. A call to the participant a week after the interview will be carried out to check on their wellbeing. The information sheet will also explicitly state that the interviews are not focused on the individuals but rather finding the themes for the surveys

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(b) Could concerns arise regarding the health and wellbeing of anyone participating in your project?

Yes ☒ No ☐ If yes, briefly explain how this will be managed:

Invoking feelings of not performing to nursing standards. I will investigate whether external services need to be offered such as EAP through Te Whatu Ora. I will assist in making appropriate referrals by providing web addresses and phone numbers. I will call the participant a week after the interview to check on their wellbeing. To ensure that there are no concerns that performance may be questioned by other participants when working in the focus groups, the confidentiality of others' responses will be added to the consent form.

20. How will you analyse participant data?

Phase One: Focus Groups:

The focus group data will be analysed using NVIVO. This will support thematic analysis of the narratives provided by the Registered Nurses. I intend to use a deductive approach using themes from the literature on PEWS and adding to this as necessary using an inductive approach to reflect practices in the area.

Phase Two: Survey:

I will use excel to analyse the data from the surveys because there are insufficient numbers of Registered Nurses for meaningful statistical analysis and therefore descriptive statistics alone will be used.

Will your research involve comparing one group to another? Yes ☐ No ☒

(a) If yes, then explain the process for this comparison, addressing:

- (i) How the participants are categorized into specific groups
- (ii) Why is it important to do this?

21. Does your research involve any deception of participants? Yes ☐ No ☒

(a) If yes, then describe the deception.

(b) Why is it necessary to deceive participants?

(c) How and when will participants be told of the deception?

22. Will the true identity of the researcher(s) be concealed from participants at

any time during the research? (Such research is called 'covert research'.) Yes ☐ No ☒

- (a) If **yes**, then describe the concealment **and** explain why it is necessary
- (b) How and when will participants be told of the concealment? If never, then, explain why the concealment will not be disclosed to participants.

Cultural safety

Te Whare Wānanga o Waikato, the University of Waikato, through its official *Charter*, has an explicit commitment to partnership with Māori, to kaupapa and tikanga Māori, and to the interests of New Zealand- born and Island-born Pacific people.

The *Ethical Conduct and Human Research and Related Activities Regulations* stipulates that researchers are required to respect the **cultural, social and language preferences** and **sensitivities** of participants. Therefore, you apply for ethical approval, you should demonstrate an awareness of social and cultural difference, consult advisors regarding the appropriate conduct of your research, and present the outcome of any consultation in your ethics application.

Two resources important to refer to when undertaking research at the University of Waikato are:

- [Te Ara Tika – Guidelines for Māori Research Ethics](#)
- [Pacific Health Research Guidelines](#)

23. Does the research project have particular relevance or potential implications for Māori, and/or other social and/or cultural groups? Yes ☒ No ☐

If yes, then please provide the following information about your consultation processes, Use the table to outline relevant information:

ITEMS TO ADDRESS	DETAILS
1. List the relevant stakeholders (<i>i.e. groups to consult</i>):	Cultural advisor for an opinion on the research and review of newly published Te Whatu Ora Waikato guidelines
2. Identify outcomes of your consultation <i>to date (e.g. describe advice taken on appropriate procedures and approaches to research, decisions made about appropriate ways to return research findings)</i> :	Advice from the Cultural advisor to use the guidelines to inform how the study is conducted especially in relation to staff participants and dissemination.

3. Do you have at least one cultural advisor for this project?	Yes ☒ No ☐ Chris Baker Nurse Consultant Cultural Workforce Development
4. Provide their name(s) and specific role(s):	

24. Outline how you will show respect and sensitivity towards participants

Greet the participants with appropriate language. Establishing if there are any cultural considerations for the participant and whether Karakia to open and close the interview for example is appropriate. Providing the opportunity for a support person to come with the participant.

Being sensitive to cues of distress, and asking if the participant wants to stop the interview.

25. How will participants' identities (and their communities and/or organisations where relevant) be represented in the research?

Is it important to maintain the confidentiality of participants (and their communities/organisations where relevant) in the research reporting?	Yes ☒ No ☐
If yes, outline how you intend preserving confidentiality:	I will not use names or other any identifying factors in the reporting of the research. This includes names, areas of work and length of experience or other indices where it is possible identify 'who'. Interview participants will be referred to by number e.g. P1 throughout the write-up.

26. In addition to the researcher(s) listed on this application, who else will see information that participants provide?

Will anyone else see participants' data?	Yes ☒ No ☐ If yes, add names here: Transcriber Independent interviewer
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Outline why they need to see it:	To transcribe the focus group interviews In the conducting of the focus group interviews
Will any shared information be linked to participants' names?	Yes ☐ No ☒ If yes, outline reason here: The interviewer will be listening to the conversation as the primary source. The transcriber will be identifying the 'voice' to allocate a participant number.

Will data/names be anonymised before sharing? <i>It may be appropriate to ask additional parties (e.g. student researchers, transcribers) to sign a confidentiality agreement. Attach the confidentiality agreement that you intend to use.</i>	Explain here: Yes The interviewer will be an objective interviewer and before they carry out the interviews they will sign a confidentiality agreement. This will be the same for the transcriber (Appendices G,H)
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27. Transcription of interviews

(a) If the interviews are being transcribed, who will be undertaking this work and are there implications for confidentiality?

Focus group interviews will be conducted in person in a private room and recorded via a voice recording device with an objective interviewer. The researcher intends to complete the transcription of the interviews herself. A transcriber confidentiality agreement has been included in Appendix G, in case of unforeseen circumstances and a third-party transcription service is required.

(b) Will participants have the opportunity to view their transcripts and if so, describe this process.

Once the interview is completed, transcription will take place. The transcription will be sent to the participant who will have up to 2 weeks from receiving it to withdraw from the study.

How and where will the data be stored and protected during the research project?

How:	Data will be stored digitally.
Where :	Transcription will be stored as a password protected document on the researcher's computer and backed up on one drive.

Research Reporting

28. Identify all the anticipated research outputs for the project

Thesis	Yes ☒ No ☐
Conference papers	Yes ☒ No ☐
Journal articles	Yes ☒ No ☐
Book chapters	Yes ☒ No ☐
Media releases	Yes ☒ No ☐
Teaching and learning materials	Yes ☒ No ☐
Other	Yes ☐ No ☐ List:
Sharing outcomes with participants	
Outline how you provide participants with this information:	The participants will be sent a follow-up email with major findings, and there will be a presentation at nursing round table to which the participants are automatically invited. I will provide a brief synopsis at nursing huddles and handovers.

29. Research data must be stored for a minimum of 5 years after the completion of a research project. Where and how will you store your data after the project has been completed? NB: Supervisors are responsible for storing research data on behalf of their students.

Where you will store it	Digitally on the supervisor's laptop. The associated confidential documents will be further password protected.
How you will store it	On password protected personal laptop, in password protected files and backed up.
Archiving after 5 years: Where? Under what conditions?	N/A
Choosing to destroy data after 5 years. Outline how this will be done safely	Deleting the all the digital files from the computer and recycle bin. Shredding consent forms completed by hand for the interviews.

Legal Issues

30. Ownership of Human Research Data

It is usual to state that participants own the data that they provide, and that the researcher will use the data for the specified purposes, with the consent of participants. Please explain any variation from this arrangement.

No variation.

31. Copyright

The researcher's ownership of scholarly publications and other forms of research outputs is governed by the University of Waikato's Intellectual Property Rights Policy. Crucially the policy states in Clause 8 that, *"the University recognises and endorses the traditional academic freedom of staff to publish research and scholarly documents and to produce creative and artistic works without restriction; the University does not assert ownership of copyright of such works (e.g. books, journal articles, conference papers, art works and musical recordings) unless specified in clauses 12- 18 of [the] policy."* Please explain any variation from this policy.

No variation

Clause 9 states: *"When dealing with intellectual property that includes Mātauranga Māori, and in the context of the WAI262 claim report, the principles of Te Tiriti o Waitangi will be applied by the University"*.

- (a) Is any intellectual property related to this project subject to the principles of Te Tiriti o Waitangi?

Yes ☐ No ☒

32. Other legal or ethical issues. Describe any other legal or ethical issues related to this project. Consider particularly relationships between members of the research team, and project funders, sponsors, or other stakeholders.

The use of the organisations name "Te Whatu Ora, Waikato." This anonymising of the organisation maybe required for publication.

There is an established relationship between the researcher and potential participants.

List any references here (there should be no more than 5)

Creswell, J. W. (2022). *A concise introduction to mixed methods research* (2nd ed.). SAGE.

Health Quality and Safety Commission. (2024). *Paediatric early warning systems quarterly data. Waikato, April - June 2024.*

Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher*, 33(7), 14-26.
<https://doi.org/10.3102/0013189x033007014>

Appendices

APPENDIX A: Participant Information Sheet
APPENDIX B: Information Poster
APPENDIX C: Consent Form
APPENDIX D: Nursing Directorate Letter
APPENDIX E: Proposed Focus Group Questions
APPENDIX F: Proposed Survey Questions
APPENDIX G: Transcriber Confidentiality Agreement
APPENDIX H: Interviewer confidentiality agreement

APPENDIX A: Participant Information Sheet



What is this project about?

This research is being conducted as part of a University of Waikato Masters degree. The project is about understanding how nurses use the mandatory escalation pathway associated with the Paediatric Early Warning Charts. For consistency of care and to ensure optimal outcomes of the patients it is important to determine how the chart is being used. If there are cases where it is not being used, what are the reasons and barriers for it not being used. This will enable the researcher to explore this so quality improvement can be implemented to improve the safety of the Tamariki we care for.

Who is leading this research?

The lead researcher is Tarryn Clayton. Her current position is the Nurse Educator for paediatrics at Te Whatu Ora Waikato. She is one of the two nursing leads that facilitated the roll out of the current national PEWS charts that are in use at Te Whatu Ora Waikato. Thus, she has a unique interest in this area and a passion to improve health outcomes for the Tamariki in our region. This work is supported by the research supervisor Dr Samantha Heath.

What is being asked for from the participants?

The research occurs in two phases.

In phase 1, there will be 3-4 focus groups with up to 5 Registered Nurses in group, so the researcher will be asking if you would like to participate in a semi structured focus group that will be recorded. Semi structured means the person leading the focus groups will come with some questions surrounding the topic, but discussion will also be led by the participants. The purpose of the focus groups is to understand themes rather than focusing on the individuals practice. You will be asked to sign a consent form before the focus group begins. Once the interview has been completed, it will be transcribed, and you will receive a copy to review. You need to know that the interview may be transcribed by a third party who has signed a confidentiality agreement. You also need to know that the focus group interview will be completed by an impartial person who has signed a confidentiality agreement.

The focus groups will be carried out at a time and place which is convenient for you. You have the right to not answer any of the questions, and to remain silent if you do not wish to participate in the discussion.

In phase 2, everyone will receive an email inviting them to complete a quick and anonymous online survey about PEWS. To participate, you simply click the link to the survey.

How much time is involved?

The focus group time will vary depending on the discussion, but will be a maximum of 60 minutes

The online survey will take approximately 10-15 minutes.

What are the participants right for consent and withdrawal?

For the interviews there will be a consent form given to all participants which will be completed prior to the commencement of the interview. Withdrawal from the research is possible until 2 weeks after receiving the transcript from the interview. If there are questions that you do not feel comfortable asking you can decline to answer. Your individual feedback will remain confidential and will not be shared with anyone. The information collected from your responses will be used exclusively for research purposes and will not influence your employment or professional practice in any way.

With the online survey the consent statement will be provided before you start. Because the survey is anonymous withdrawal will not be possible after submission. Your consent will be implied when you click the submit button.

You are under no obligation to participate, but if you would like to ask any questions or book in for an interview, please contact:

Tarryn Clayton: Lead Researcher
0272561156 (During working hours)
Tarryn.clayton@waikatodhb.health.nz

Who to contact if there are issues?

Samantha Heath: Research Supervisor
Samantha.heath@waikato.ac.nz

This research project has been approved by the Human Research Ethics Committee (Health) at the University of Waikato as HREC(Health)2024#72. Any questions or concerns about the ethical conduct of this research may be sent to the Secretary of the Committee, email humanethics@waikato.ac.nz, postal address: Human Research Ethics Committee (Health), University of Waikato, Te Whare Wananga o Waikato, Private Bag 3105, Hamilton 3240).

APPENDIX B: Information Poster



Calling All Registered Nurses Working on E4 and E5 to Participate in Nursing Research!

Exploring factors that influence the use of the Paediatric Early Warning Scoring system (PEWS) at Te Whatu Ora Waikato: A mixed methods study.

Masters Research by Tarryn Clayton, tarryn.clayton@waikatodhb.health.nz,
Waikato University Supervisor: Dr Samantha Heath, Waikato University

This research is looking at the use of the Paediatric Early Warning Charts (PEWS) with a particular focus on the adherence to the mandatory pathway of escalation. The research is exploring whether there are any factors that influence the use of PEWS and the escalation pathway. The goal of this research is to apply a consistent framework around the future use of the PEWS chart.

There are two parts to the research:

Phase One: Focus Groups. The purpose of the focus groups is to find themes to inform the questions that will be included in the online survey. They are not focused on any individual practices. The focus groups have up to 5 nurses in each one and will be carried out at a time that suits you. You will be interviewed for up to an hour with questions that ask about your experience with PEWS and the associated pathways. The focus group will be recorded and transcribed. If you are interested in participating in this part of the research, please contact Tarryn Clayton at tarryn.clayton@waikatodhb.health.nz

Phase Two: This is an anonymous online survey. Every Registered Nurse on E4 and E5 will receive an email that invites them to participate. The online survey will take 10-15 minutes. Once it is available there will be a QR code to use to complete the survey.

APPENDIX C: Consent Form
UNIVERSITY OF WAIKATO
DIVISION of HEALTH
PARTICIPANT CONSENT FORM

Name of person interviewed:

I have received a copy of the Information Sheet describing the research project. Any questions that I have, relating to the research, have been answered to my satisfaction. I understand that I can ask further questions about the research at any time during my participation, and that I can withdraw my participation at any time up until 2 weeks after receiving the transcript from the interview.

During the interview, I understand that I do not have to answer questions posed unless I am happy to talk about the topic.

When I receive the transcript of the interview, I understand that I have up to 2 weeks to review it and ask for any changes to be made. After this period, I understand that I will not be able to withdraw my transcript. Upon receiving the transcript I will not share the transcript with any other party. I will be reviewing only the information that I provided during the interview.

When I sign this consent form, I will retain ownership of my interview, but I give consent for the researcher to use the interview for the purposes of the research outlined in the Information Sheet. I understand that my identity will remain confidential in the presentation/dissemination of the research findings.

I understand that the people who may see the information I provide will be the researcher and her supervisor and if necessary, a transcriber who has signed a confidentiality agreement. I understand that the interviewer has also signed a confidentiality agreement.

Information shared during the focus group is to remain confidential and will not be disclosed to any other staff members. This includes not sharing the transcripts that include the responses of other focus group participants

Please complete the following checklist. Tick [P] the appropriate box for each point.	YES	NO
I wish to receive a copy of the findings.		

Participant :		Researcher :	
Signature :		Signature :	
Date :		Date :	
Contact Details :		Contact	
		Details :	

APPENDIX D: Nursing Directorate Letter

27/11/2024

Health New Zealand
Te Whatu Ora

Waikato University Human Research Ethics Committee
 The University of Waikato Te Whare Wananga o Waikato
 Gate 1, Knighton Road
 Hamilton 3240

Dear Waikato University Human Research Ethics Committee

Tarryn Clayton has presented her proposed masters' research to the Child Health Nursing Directorate. The research discussed was titled 'exploring factors that influence the use of the Paediatric Early Warning Scoring system (PEWS) at Te Whatu Ora Waikato: A mixed methods study.' The Child Health Nursing Directorate feels that this proposed research is relevant to the clinical area and will benefit patient outcomes in the service. We support Tarryn in completing this research within the department and involving staff from the clinical area.

Ngā mihi


Wendy Diamond-Hill
 **Nurse Manager- Child Health | Kaiwhakahaere Tapuhi- Hauora Tamariki**
Waikato+64 21 836 712 | wendy.diamond-hill@waikatoorb.health.nz

C7 ER3 | Waikato Hospital | Hamilton 3202

**Health New Zealand**
Te Whatu Ora

Health New Zealand | Te Whatu Ora

TeWhatuOra.govt.nz
 PO Box 793, Wellington 6140
 Waea pūkoro: +64 21 123 4567

Te Kāwanatanga o Aotearoa
New Zealand Government

APPENDIX E: Proposed Focus Group Questions

Focus group facilitator will remind the group that all information is confidential and must not be discussed outside of the room. Facilitator will reinforce that any information shared will be anonymised and will not affect employment.

1. Can you give me a brief explanation about what PEWs are and how they are used in the area that you work in?
2. How confident do you think most nurses are when using the PEWS?
3. Does the PEWS influence nurses decision-making in critical situations? If so how?
4. What challenges do you think are faced when using PEWS in your clinical area?
5. Can you describe a scenario where you observed accurate escalation of a child's PEWS? What were the contributing factors that made it an accurate escalation?
6. Can you describe a scenario where you observed poor escalation of a child's PEWS? What were the contributing factors to the poor escalation?
7. From the audit data it has identified that there is a lack of mandatory escalation of PEWS within the ward. From your experience can you explain why this has been identified in the data?
8. In your opinion, are there any barriers encountered by nurses in raising concerns when using the PEWS scores?
9. Is there any education support that could be provided to support the use of the mandatory pathway when using the PEWS?
10. What advice would you give to new nurses regarding the use of PEWS?

APPENDIX F: Proposed Survey Questions

The following are examples of the style of questions that could be asked in phase 2 (survey) once analysis of the narrative data has been completed for Phase 1.

How confident are you in using PEWS?

Not confident at all	Not confident	Not sure	Confident	Very confident
-----------------------------	----------------------	-----------------	------------------	-----------------------

XXXX (factor) is a challenge for me when using PEWS

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
--------------------------	-----------------	----------------	--------------	-----------------------

Contributing factors that are involved in an accurate PEWS escalation are:
(tick as many as apply)

Selection of contributing factors applied in the table for participants to identify
Contributing factor 1
Contributing factor 2
Contributing factor 3
Contributing factor 4 etc.

What education would you like to recommend in relation to escalating PEWS scores?

.....Space for free text answer.....

Appendix G: Transcriber confidentiality agreement



NEW ZEALAND
University of Waikato
Division of Health

Project Title: Exploring factors that influence the use of the Paediatric Early Warning Scoring system (PEWS) at Te Whatu Ora Waikato: A mixed methods study.

I, ...(Full-name printed)
Agree to transcribe the recordings provided to me

I agree to keep confidential all of the information provided to me.

I will not make any copies of the transcription or keep any record of them.

Signature

Date

Appendix H: Interviewer confidentiality agreement



**University of Waikato
Division of Health**

Project Title: Exploring factors that influence the use of the Paediatric Early Warning Scoring system (PEWS) at Te Whatu Ora Waikato: A mixed methods study.

I, ...(Full-name printed)

I agree to keep confidential all of the information provided to me, including any field notes taken during the conduct of the focus group.

I have no connection to this project other than as interviewer for the focus groups.

Signature

Date

Appendix M: Human Ethics Approval Letter

The University of Waikato
Private Bag 3105
Gate 1, Knighton Road
Hamilton, New Zealand

Human Research Ethics Committee
Roger Moltzen
Telephone: +64021658119
Email: humanethics@waikato.ac.nz



THE UNIVERSITY OF
WAIKATO
Te Whare Wānanga o Waikato

12 February 2025

Tarryn Clayton
School of Nursing
Division of Health
By email: tarryn.clayton@waikatodhb.health.nz

Dear Tarryn,

HREC(Health)2024#72 : Exploring factors that influence the use of the Paediatric Early Warning Scoring System (PEWS) at Te Whatu Ora Waikato: A mixed methods study

Thank you for your responses to the Committee feedback.

We are now pleased to provide formal approval for your project.

Please contact the Committee by email (humanethics@waikato.ac.nz) if you wish to make changes to your project as it unfolds, quoting your application number with your future correspondence. Any minor changes or additions to the approved research activities can be handled outside the monthly application cycle.

We wish you all the best with your research.

Regards,

Emeritus Professor Roger Moltzen MNZM
Chairperson
University of Waikato Human Research Ethics Committee

Appendix N: Waikato Research Approval

Te Whatu Ora
Health New Zealand
Waikato

Research Registration

It is a requirement that all research and audit conducted within Te Whatu Ora Health New Zealand (Waikato) be registered with the Research Office. By registering your project early on, even when it is still at the concept stage, we can assist you with advice and guidance relating to design, contracts, funding, ethics approval and much more. Once you have completed and submitted the registration form (below) you will receive copies of the relevant Waikato Approval of Research Forms. These need to be circulated for the appropriate signatures and returned to us. You will receive a fully signed copy for your project file.

Complete this form and email it to WKresearch@tewhatuora.govt.nz to commence your registration with us. We endeavour to respond within 2-3 working days. If you have not had a response and you have time constraints on your project please contact us by phone on **(07) 8398899 ext 23589**.

RD025020	Exploring factors that influence the use of the Paediatric Early Warning Scoring system (PEWS) at Te Whatu Ora Waikato: A mixed methods study.
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Project Personnel

(PI) External PI name:	Ms Tarryn Clayton
External PI organisation:	Waikato University
Mobile phone number:	0273876296
Email address:	Tarryn.clayton@waikato.ac.nz

Waikato PI name:	Ms Tarryn Clayton
Mobile phone number:	0272561156
Email address:	Tarryn.clayton@waikatodhb.health.nz

All Waikato Co-Investigators:	Dr Samantha Heath (Waikato University Supervisor)
Research Nurse/Co-ordinator:	0272692869
Other Waikato contacts:	Samantha.heath@waikato.ac.nz

Nominate the primary contact person for this research:	Ms Tarryn Clayton
Mobile phone number:	0272561156
Email address:	Tarryn.clayton@waikatodhb.health.nz

Host Waikato department	Paediatrics
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Project Details

Type of Project	☐ Observational: qualitative/epidemiological ☐ Clinical/Interventional (drug/device/other intervention) ☐ Data Registry ☐ Audit or evaluation ☒ Other (Case study, cohort study, case-control study, cross-sectional study, descriptive study, anonymous survey)
Is your Project	☐ Pharmaceutical sponsored ☐ Investigator Led ☒ For Qualification (see next question) ☐ Other
Is this project related to Professional Development or Academic Study	☐ Allied Health / CASP / Nursing Portfolio ☐ Medical Council registration or College requirement ☒ Tertiary Study, eg PG Cert/Dip/Masters/Doctorate ☐ None of the above.
Is this a multi-centre project?	☒ Not a multi-centre project ☐ Multi-centre, Waikato -led ☐ Multi-centre, Waikato sub-site ☐ Waikato as a referral or resource site only
Data/Information Source	☒ Prospective (recruiting patients, presumably consenting) ☐ Retrospective (existing data, potentially not consenting)
Will non-Waikato employees access patients, identifiable patient information, staff or premises for this study?	☐ Yes – confidentiality agreements may be required ☒ No
Will you expect to publish your results	☒ Yes ☐ No
Financial/resource Considerations:	None projected.
Project start date:	01/03/2025
Project end date:	01/07/2026
Proposed sample size at Waikato:	Up to 120 staff members

Te Whatu Ora

Health New Zealand

Waikato

Research Registration

Provide a brief plain-English summary of your study including aim and method	The purpose of the national Paediatric Early Warning Score (PEWS) is to identify when sick children's vital signs are outside normal parameters. PEWS assessment assists nurses to determine whether mandatory escalation is required. Understanding why nurses do not always complete mandatory escalation when indicated by the PEWS score will be explored. • Focus groups with 12-15 Registered Nurses split into 2-3 focus groups. These nurses will work on the 2 paediatric wards at Te Whatu Ora Waikato. • Online Surveys Sent to all Registered Nurses working on the 2 paediatric wards at Te Whatu Ora Waikato.	
Might this study contribute to reducing inequities in health outcomes between Māori and other New Zealanders?	☐ Yes ☒ No Please explain why or why not: This research explores the nurses use of a nationally recognised tool based on physiology not inequities.	
Co-design: Have stakeholders been engaged in the design or development of this project?	Stakeholders can be institutions, communities or individuals. Conversations with Māori stakeholders are appropriate for researchers working alongside Māori participants ☒ Yes <i>as per attached email</i> ☐ No ☐ Not applicable	
Will your study require input from Clinical Support Services? (above normal standard of care) (select all applicable)	☐ Laboratory ☐ Radiology ☐ Clinical Coding / Business Analyst ☐ Pharmacy ☐ Medical Records ☒ None	
Will your study involve the use of equipment, device or product that is not currently approved for purchase/use at Waikato?	☐ Yes ☒ No	
Enter a list of keywords:	Paediatrics, Paediatric Nursing, Child Health, Early Warning Scores, Paediatric Early Warning Scores, Escalation, Mandatory Pathway	

Cultural Considerations

% of Māori with condition of interest	Not applicable
What are your plans for recruiting Māori?	Not applicable

Is ethnicity a variable in your study? (Māori c.f. non-Māori)	Researchers are asked to use the NZ Census question to collect ethnicity and to include ethnicity statistics in their research report to Waikato on completion. ☐ Yes ☒ No
Will your study involve collecting tissue samples?	Includes blood, urine and tissue samples ☐ Yes ☒ No

Ethical Considerations / Privacy / Data Management

What benefits do you expect the study to provide?	Understanding the factors that influence decision making in response to the PEWS assessment score is essential to inform education practice and patient safety.
What risks do you expect the study to pose and how will you minimise expected risk?	The risk expected is minimal. The only risk that has been identified is the potential for nurses to feel that their practice is sub-optimal. Ongoing support and resources for psychological support will be offered.
Briefly explain how your study will contribute to new knowledge and improve health outcomes?	This will be done by drawing on findings from this research to develop and implement targeted education to address factors that affect the utilisation of the mandatory escalation pathway for the PEWS. Improving the accurate use of the PEWS charts will also support early escalation of care for paediatric patients and will contribute to decreasing unintended long-term effects of illness and the improvement in health outcomes.
How will Waikato patients' clinical information be accessed?	☐ Paper records already on the ward/unit (current patients) ☐ Paper records requested via Medical Records department ☐ Electronic data extract already within the department ☐ Electronic data extract requested via Business Information (list of NHIs or full data set) ☐ Other ☒ No patient clinical information will be accessed.
Is the information identifiable to you, the researcher?	☒ Yes ☐ No
If identifiable, will consent be sought?	☒ Yes ☐ No
Will identifiable information be shared with an outside organisation?	☐ Yes – who? ☒ No
Where will information generated by this research project be stored?	☒ Te Whatu Ora / Health NZ servers/computers in NZ ☒ University servers/computers in NZ

Te Whatu Ora

Health New Zealand

Waikato

Research Registration

	☐ Overseas University services/computers ☐ Other organisations / the cloud / overseas
What will happen to the data after the study?	Digitally on the supervisors' laptop. The associated confidential documents will be further password protected.
Data Security : Explain all measures taken to preserve the confidentiality of the patient information.	Deleting the all the digital files from the computer and recycle bin by the researcher. Shredding consent forms completed by hand for the interviews.

Ethics, Regulatory Approval & Funding Details

What type of ethics approval will/has been sought? (delete those not applicable)	☐ Health & Disability Ethics Committee (HDEC) review ☒ Non-HDEC review (e.g. university ethics committee) #2024 #72 ☐ No ethics review is required ☐ Not sure
Is SCOTT/Other approval being sought?	☒ No ☐ Yes, please list:
Is this study funded? (select those applicable)	☐ Commercial Contract ☐ Research Grant (HRC, WMRF etc) ☐ Collaborative ☐ Funded from Waikato Health Trust Funds ☒ Non Funded
If the project involves fund sources external to Waikato	Please enter name of organisation(s) providing funding
Will Waikato be a signatory for any funding contract(s)	☐ Yes, there will be Waikato contracts for this project ☒ No, contracts will not be signed by Waikato
Current status of this project and any other information:	Post ethics approval. Awaiting registration to begin research

Management and Resource Sign-offs

This study does not require HDEC review.

Locality Review – the undersigned agree to the following statements:

- The study protocol and methodology are ethical and scientifically sound.
- This researcher has identified that this study does not require Health & Disability Ethics Committee (HDEC) review.
- The local lead investigator is suitably qualified, experienced, registered and indemnified.
- Resources, facilities and staff are available to conduct this study, including access to interpreters if requested.
- Cultural consultations have occurred or will be undertaken as appropriate
- Appropriate confidentiality provisions have been planned for.
- Appropriate arrangements are in place to notify other relevant local health or social care staff about the study, and for making available any extra support that might be required by participants, where relevant.
- Conducting this research will have no adverse effect on the provision of publicly funded healthcare.
- There is a stated intent that the results of the study will be disseminated and where practical and appropriate the findings of the study will be translated into evidence based care.

Clinical Support Services Sign-offs

CROSS OUT/ADD SIGN-OFFS APPLICABLE TO THIS PROJECT

SIGNATORIES DECLARATION: We agree that appropriate resources are available in our service to support this project

Clinical Support Service	Name	Signature	Date signed
Pharmacy	Rajan Ragupathy		
Pharmacy	Julie Vickers ~~OR Jan Goddard~~		
Laboratory	Kay Stockman		
Radiology	Michael Swarbrick		
Medical Records	Ethan Rogers		

Department/Service Sign-off

Dept/Service /Org	Role	Name	Signature	Date signed
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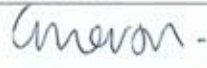
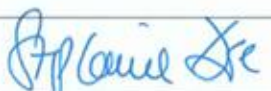
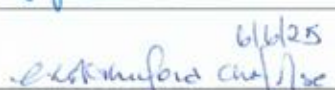
As Clinical Director/Clinical Unit Leader, by signing this I confirm

- I have discussed the research project and resource implication for this department with the principal investigator and that the Principal Investigator has discussed these resource implications with any affected services / staff members.
- All researchers/students from the department involved in the research project have the skills, training and experience necessary to undertake their role.
- I support the research project being conducted; and confirm there are suitable and adequate facilities and resources for the research project to be conducted at this site.

Paediatrics	Head of Department	Stephen Adams		7/5/25
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As Director / Executive Director, by signing this I confirm:

- All costs incurred by Waikato Unit/Service in regard to the research project are included in an approved research budget (including those costs which will be incurred by contributing units, eg laboratory). For studies involving researcher time only, the researcher has the time to undertake the study.
- Research is not commenced until all required approvals have been obtained.

Child Health	Director	Cath Anderson		30/5/25
Hospital & Specialty	Group Director Operations	Stephanie Doe		03/06/25
Nursing	Chief Nurse	Cheryl Atherfold		6/6/25
Te Puna Oranga	Māori Research Review Ctte	Hina Pokaia	NOT REQUIRED	

Please return to the Research Office (via Sarah Brodnax, Level 2 Hockin) along with required documents as identified in the checklist for final approval.

Appendix O: Integration Working

Code	Category	Themes	Quotes	Quantitative Findings
- Using Clinical Judgement - Theory of the PEW - Our Nursing Experience - Mandatory Pathway Adherence - Rationalise Decisions - Use your brain - I can look - I can tell - Junior nurse - Nursing Intuition - Senior Nurse	- Clinical experience of nurses - The PEWS theory - Decision making	Clinical Judgement <i>And Experience</i>	- So especially for juniors it's useful - In all honesty, I think that the theory of the pews and the mandatory pathway mandatory is difficult to actually do perfectly in real life - Yes, that's a sick child, but in paed's we have certain things that already scored on higher anyway. But they're stable. They're fine. Nothing's going to change. And they stay like that for most of the shift. - We understand that they're PEWSing high and that there's a chance they can deteriorate. Escalation is important, but in our setting it doesn't always work. - Because like our clinical judgement is not just a box and a counting up of numbers. You know our clinical judgement, our experience, our assessment skills, our observations and all of that. We're nurses that are doing this every day. - You don't get to use your brain. You don't get to figure it out yourself. Or actually think about it, or	2. Clinical Judgement vs Pathway Adherence ● Strongly agree ● Agree ● Neutral ● Disagree ● Strongly disagree I base my decision to escalate my patients care solely on the PEWS. The PEWS leaves no room for clinical judgement I feel that my experience in paediatric nursing qualifies me to make escalation decisions based primarily on clinical judgement

Code	Category	Themes	Quotes	Quantitative Findings
			rationalise what's happening. It's a no, this is what's happening. You've got to do this now. • I mean, yeah, it tells us that there's something wrong. But at the same time, I can look at a child and see that they're working really, really hard and without doing obs. I can tell that there's something wrong with the child. • Because they've used their clinical judgement on telling kids sickness for so long. And now a nurse can jump in if the kids really sick and be like this child actually like really sick. But then, as a junior nurse, this all started coming out as I was starting in practise. And so it's this is what you do. This is what you do. You get taught from day one. Like first day on the job • They're just so good using clinical judgement to be like, actually this child will be fine. • And they probably feel they're pretty much being told that your clinical judgement doesn't matter and you have to follow this now. • I will say that it's very evident when you have junior nurses starting, like when	

Code	Category	Themes	Quotes	Quantitative Findings
			they are NETPs or RN2s since the PEWS has come out. Which has been a while. It's very evident that that their communication, their escalation is very good because they have had it from the start. From the getting go in their training, so they're very good. • I feel Like the higher the PEWS, the more you are like, there is something going on. But in a critical situation and there's something going on the PEWS isn't really the first thing in your mind. Depending obviously on the situation, but your first thing you're thinking about is stabilising the patient rather than what that number are showing • And also it's showing like really high PEWS because they don't usually modify the PEWS score. For example, they have oxygen, that's already ready to, but, but they look OK. • Because if you just look at the numbers actually you know it's high. But clinically the child is so well. • I think it's also good starting point. It's also good for newer people. New to the area because they go	

Code	Category	Themes	Quotes	Quantitative Findings
			actually the chart has told me to ring these people. So I can ring you and you can just tell them this chart has told me to ring you this. This is what needs to happen. Rather than trying to have that conversation without anything to back it up. Because it can be hard. • I think pews is really helpful. It is a useful tool to start with. It's a starting point about how to push for escalation. As long as judgement wise it's the same. You look at the child clinically and the numbers like together. • I think a big one is getting doctors to respond. Especially at night or on PM shifts when they are on call covering everything or just nighttime and they don't want to come. • Sometimes I feel like the PEWS is a little bit nursing by numbers and you can't use your nursing intuition. • There's parts of it that you thought sort of hum and ha about but that's more because you've been nursing for so many years it could change this sort of thing. • I mean we will still often ring the PARS and we would let them know that from my point of view that I'm not	

Code	Category	Themes	Quotes	Quantitative Findings
			too concerned at this present time. But I will repeat the obs and let you know if it changes. But again it's a documentation and half the time we don't get back to do the obs. • I think like as from a newer perspective its a good guideline. But also lets you use some of those learnings that you learned in school and judgements while still having the support of knowing how to let the PARS nurses know. • And sometimes physically, you do your own assessment. You see how the child is and go from there. • And I know that senior nurses are the worst. And that sometimes I get that's about change. It's because you actually haven't in the past, and sometimes you actually forget. So it's having to get that reminder, actually I need to follow the pathway. So it's not always the fact what you actually haven't done it. It's because you're actually not overly concerned with the child, but you're actually supposed to do it.	

Code	Category	Themes	Quotes	Quantitative Findings
			- I had a patient that took on highflow yesterday that had a PEWS were like 8 or something, but because their saturations dropped. But then I just restarted them on oxygen and so it was like it was a blip. I guess it was fixed within the half hour sort of thing. So I didn't see the need to follow it because the result wasn't triggering - Although some nurses, more senior nurses that probably use their clinical judgement. Whereas there are some nurses from other cultures and such that might be a bit like this is the pathway and this is what we need to do. - Even coming in as a new grad. Because that is pretty much telling you exactly what you need to do when you first off don't have that clinical judgement.	

Code	Category	Themes	Quotes	Quantitative Findings
• Timely Manner • Delegation • More Staff • Heavy Workloads • Time to Document • In Depth • Too Busy	• Heavy Patient Workloads • Timely Documentation • Staffing Levels • Detailed charts and processes	Time Pressures	• When you look at, how many patients or how many nurses on shift or how many doctors on duty, they can't always make the reviews in the stated timely manner. • But everyone could say, oh, you should delegate that a task with your other patient that needs something to a colleague. But that's that colleague. Is that dealing with their patients. • Like sometimes I think, OK, the whole country has this pews system, right. It's the same across all hospitals. Which I think is really good, that it's streamlined, but if they actually wanted this perfectly followed in every case for every patient help, you'd need double the staff. • So we're doing our very best in the situation we're in with the you know the challenges of reality of working as a nurse in a public hospital in this country. • So in winter we obviously get higher PEWS. We also get heavier workloads. Our staffing is OK, probably could be greater considering our workloads and our high PEWS. So I think it's hard to follow it perfectly and to a T. What we talked about earlier, 15	Competing workload makes it difficult to complete escalation documentation in real time I struggle to capture all required documentation and timing regarding the PEWS I struggle to contact all the required people according to PEWS due to time constraints

Code	Category	Themes	Quotes	Quantitative Findings
			minute obs and when you have lots of patients. When you have a full workload. • Then if they start deteriorating you've got lines to do, cap gases to do. Frequent obs to do sometimes fluids, venting their stomach. Yes, you can ask for help, but when they also have heavy workloads it makes it a little bit difficult to follow the pathway to a tee. • If I could just stand with the obs chart and just do it while someone else does all the things. It's almost like you need it. That's the realities of it. • It's also like the pathway say this and they are like that's OK, I'm not going to come. • Time. Time to document. Especially if you're juggling other loads and priorities. And time to fill it out properly and add the score properly. And then the documentation involved with that. • If you're coordinating someone has a high PEWs and you need to come and see them. But I haven't got time to actually go back to mine.	

Code	Category	Themes	Quotes	Quantitative Findings
			• And in my world, paediatric surgical, when we have post OP kids, we have to do obs every half an hour and hourly then 2 hourly. Sometimes we just can't get to it if we have to be somewhere. • That can be a challenge sometimes as a coordinator when you've got a workload and also managing the PEWS and supporting the staff. Because when you're following that pathway, there's quite a bit to do. And then that's on top of once the doctors have seen them and then you've got a plan to do. • But then actually other patients missing out because you're focusing on pathway which is quite sometimes quite in depth. • And sometimes it's not escalated because you're too busy doing other things, you just don't have the time to actually get there and make that call.	

• Pathway for doctors • Timely Manner • Further Escalation • Doctor Workload • Verbal communication • Hesitant to interrupt • Doctors Not Following Pathway • Senior Nurse contradiction • Adult Surgical Sub Specialties • Build Relationships	• Consideration of doctors workloads • Verbal communication with no documentation • Doctors from primarily adult specialties • Senior nurses contradicting pathway •	Interprofessional Responses and Communication	• That's not a pathway just for nurses. It's also a pathway for the doctors to you follow as well. • When you look at, how many patients or how many nurses on shift or how many doctors on duty, they can't always make the reviews in the stated timely manner. • I think one of the things that nurse 1 is saying is if a doctor is busy somewhere else, and they say that they're going to be there that time and then it kind of gets to that time. And then you have to further escalate it and you have to keep going and keep going. • I don't know how better we are at escalating it to higher up consultants, but we definitely have not been in the past. • Most of the time, it's more "Hey, doctor, they are this. Do you want me to change anything?" No. They're all right. Verbally. But it's, it's not as official. It's not as following the system. • But it's the pathway. That's also a challenge because the doctors are like they're fine • So we are aware of our medical colleagues. You know if they're seeing kids down in ED. Of course our kids in the ward are a	Delays in medical review are a barrier for nurses to following PEWS timelines When other nurse colleagues advise against escalating according to the PEWS, I still follow the documented pathway Specialty teams accustomed to adult care sometimes underestimate paediatric PEWS triggers
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Code	Category	Themes	Quotes	Quantitative Findings
			priority too. But if I've got a high PEWS, but if I'm thinking they're upset or they've got a temperature or whatever. I'm honestly a little bit hesitant to interrupt them. And what they're doing down there • Because it's just interrupting what they're very busy with down in ED. And sometimes I think that I don't need to do that. And I don't want to interrupt them because they're busy when I'm going to assess this child again. • I think a lot of the time, I think they don't look to unwell or we'll start escalating and the doctors won't follow the chart. And so they just keep PEWSing. And you have to keep calling every time they PEWS and be like, hey, this is according to the child. Then they just get annoyed at you. • I think one thing for me as well, being, more being a new grad is that bringing it up to senior nurses, and sometimes they'll be like nah that's fine. And in my head, I'm like that is what I'm supposed to do. But then someone who's higher up than me is telling me I don't need to do that.	

Code	Category	Themes	Quotes	Quantitative Findings
			And it's that contradiction of what do I listen to? Do I listen to the senior nurse that's telling me one thing? Or do I listen to the paperwork that's telling me another thing • I think sometimes as well with the specialities like ortho and plastics that are usually with adults. You call them and they are like that's fine. You're like, yeah, but this is a 3-year-old kid. This isn't an 80-year-old man. • For the paediatric like medical, it's easier for them because they see it quite often. There's a pattern especially for respiratory distress. For the paediatric surgical, downstairs it's quite hard. Component of pain can cause strider, grunting. Which is respiratory but not really based on breathing. It's more from the pain. We have different sub specialties in surgical ward. • But don't feel bad ringing the consultants especially at night time. They get paid to be called. Don't worry if they are going to scream at you, I don't care, I am covering myself. I have rung you and will document it. It is the response of the doctors. Because the PAR nurses will come anytime. But	

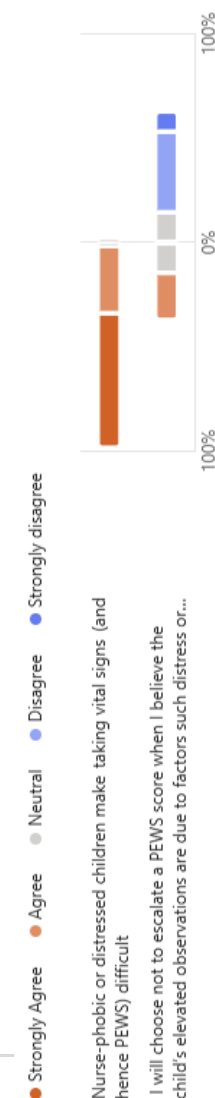
Code	Category	Themes	Quotes	Quantitative Findings
			the doctors, it's quite annoying on their part. It's not just our ward, that needs them yeah, we understand that. But they also need to prioritise the escalation. • Escalating to other senior nurses they've had a lot of experience. And they say don't call. And then you're like I'm not sure. So I think that's another barrier. • I don't want this person I'm going to have to work with for however long to hate me for not listening to them, but then I know what the paper says. • I think it helps you build those relationships with those teams as well. So you do get to know and then when you need that support that's there as well as you build that rapport.	

- PEWS High
- Screaming Child
- No Escalation
- Reassessing
- Disturbing the child
- Parental/Caregiver Refusal
- Nurse Phobic
- Inaccuracy of Vital Signs
- Febrile Child

- Frequent high PEWS from distress
- Challenges with accuracy of vital signs
- Parental/Caregiver Refusal due to not wanting to be disturbed
- The role fever plays in PEWS

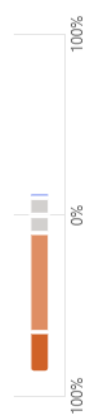
Factors
presented by
Children

- They're PEWSing high right now because they're grumpy and they're crying
- I know they've got a high blood pressure right now because they're kicking and screaming because they don't like it. Yeah, I'm not going to escalate that because they're angry at you. It's not accurate.
- But typically I have to wait 5-10 minutes to do it again to try and hopefully get great numbers, but they've just had a high PEWS and I technically haven't escalated that. That's what I find really difficult.
- But then I think also some of our escalation would be the just the temperature and screaming children. I think sometimes we're like, actually this child give them 30 minutes and they'll be fine.
- Also no kid likes to have observing done every 30 minutes. That aspect too. You're waking them up or you're annoying every 30 minutes.
- It's so hard to get accurate blood pressure on a kid unless they're really unwell. And then you've like probably



Code	Category	Themes	Quotes	Quantitative Findings
			missed the signs of seeing their blood pressure deteriorate. • It's hard with kids, especially kids with sensory things. • That's the difference between paed's nursing to adult nursing. This is a real challenge. Then of course, the families and the parents and the caregivers, they sometimes are just like don't let them sleep. And they're just terrified we're going to disturb the baby. • If the child is moving quite a lot, especially younger kids that when you check the blood pressure and it's showing high. But it's actually because the child's moving a lot or crying. Also the heart rate changes. • Sometimes they are nurse phobic. And as soon as you walk in the door they are elevated and don't want you there. • But if you have a patient and you do obs and they're crying or they're febrile, the numbers are expected to be elevated. So then your PEWS is going to be elevated. So sometimes it's waiting and maybe reassessing • And I've found the blood pressure. Like I understand why we do them is another	

Code	Category	Themes	Quotes	Quantitative Findings
			challenge in paediatrics. And sometimes that can lead to inaccurate PEWS scores or distress. • Or it's because they're crying or just angry. Or you do obs on a bronch patient after they've just had a good bottle. And then everything's up. And then you wait a bit. • And sometimes getting a good trace. I had trouble with a baby the other day because their sats were low but their trace was rubbish. So it's not accurate and it's by the time you fluff around doing that, you're like, oh, no, are they actually? • And sometimes it's actually the families as well. They don't want you in there. They are like you're not coming in. You are not doing it this time. These are barriers that you find. I need to do a blood pressure.	

• Forgotten Documentation • Verbal • Education to caregivers. • Adult nursing and Subspecialties • Doctors understanding • Combining theory and practical •	• Poor and forgotten documentation • Non paediatric experience and knowledge • Doctors understanding	Education	• They tell the escalation by the thing on the back of the PEWS that we have. Which I forget a lot of the time. • I think along with it is we do a lot of verbal stuff and its poorly documented. • I don't actually know. That's a good question. Yeah. I'm pretty sure there is. (re Ko Awatea) • It can be a lot harder than it should be. It's a lot harder than they make it sound. • But we've also received education recently that we do need to educate and explain to our caregivers and parents why we need to do this. The importance of it and find ways that we can keep them on board and then still monitor the child. Because we need to monitor the child. But we also we don't want to get off site with the caregiver. • For the paediatric like medical, it's easier for them because they see it quite often. There's a pattern especially for respiratory distress. For the paediatric surgical, downstairs it's quite hard. Component of pain can cause strider, grunting. Which is respiratory but not really based on breathing. It's more from the pain. We	 Local education (e.g., Ko Awatea modules/in-service) prepared me to use PEWS effectively.
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Code	Category	Themes	Quotes	Quantitative Findings
			have different sub specialties in surgical ward. • It is follow what is written. But its just to inform them. It is important to cover ourselves as well. And with our documentation. • I think that most nurses will need the online learning and the practical. And combine them because that is what we do a lot. • The biggest thing that happens I think is people don't look and necessarily put the right figure in the right box. And so then your scores aren't true. Or they use the wrong age bracket and then your scores don't align with the expected normal for that age range. • We're not always good at doing it and documenting as frequently as required. And recently I've gotten the habit of like documenting and the notes that they've been on a continuous monitor. Because you'll visualise them. But I don't always document and sometimes I think that's it • And I guess for some of our newer nurses, too, or some people that work in ED and children are not their bread	

Code	Category	Themes	Quotes	Quantitative Findings
		Other Quotes	and butter it gives them what you sort of expect for that age range. • Because sometimes we do actually do it because a lot of our registrars are often on the floor and in the office. We let them know, but then our documentation doesn't always reflect it. • And I'm pretty sure all the doctors just get it drilled into them by the nurses as well. • It really does make a difference to escalation, appropriate escalation and keeping our patients safe. Doing what's right for them, at the right time. The biggest challenge I think is just bring that into the real life, real time, situation in the ward.	