

Nurse-Led Early Deterioration Surveillance in Adult ICU: A Concept Analysis

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Abstract

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Background: Early recognition of clinical deterioration in adult intensive care units (ICUs) is essential to preventing avoidable morbidity and mortality. Although ICUs are equipped with advanced monitoring systems, delayed recognition of subtle physiological decline remains a persistent patient-safety concern. This concept analysis aimed to clarify nurse-led early deterioration surveillance in adult ICU settings using Walker and Avant's concept analysis framework, identifying its six defining attributes—continuous observation, clinical reasoning, trend recognition, anticipatory action, escalation of care, and interdisciplinary coordination—together with its antecedents, consequences, and empirical referents. **Methods:** A structured literature search of PubMed, CINAHL, Scopus, and SAGE Journals was conducted for peer-reviewed literature published between January 2006 and June 2026, a period that had fully elapsed at the time of writing. PRISMA 2020 was used only to structure and report the search and screening process, consistent with its increasing use in nursing concept analyses; it was not used as a systematic review of intervention effects. Forty-five studies met eligibility criteria and were analysed using Walker and Avant's eight-step method. Formal quality appraisal of included studies was not performed, consistent with concept analysis convention, and this is acknowledged as a limitation. **Results:** Six defining attributes were identified: continuous observation, clinical reasoning, trend recognition, anticipatory action, escalation of care, and interdisciplinary coordination. Antecedents included critically ill adult patients, competent ICU nurses, adequate staffing, monitoring technologies, escalation protocols, and organisational safety culture. Effective surveillance was associated with reduced ICU mortality, fewer cardiac arrests, improved patient safety, shorter ICU stay, enhanced nurse confidence, and improved team responsiveness, although these outcomes are also shaped by illness severity and system-level factors. Empirical referents were separated into process indicators of surveillance itself (e.g., reassessment completion, alarm response time, competency scores) and associated clinical outcomes (e.g., rapid response activation rates, ICU mortality, failure-to-rescue events). **Conclusion:** Nurse-led early deterioration surveillance is an active, systematic nursing function that links moment-to-moment monitoring data with timely clinical judgement and intervention. Clarifying this concept can support critical care education, workforce development, policy formation, and evaluation of surveillance systems in adult ICUs, including resource-variable settings across the Asia-Pacific region.

Keywords: Nursing surveillance; Intensive care unit; Clinical deterioration; Early warning systems; Patient safety; Concept analysis

Introduction

Adult ICU patients experience rapid physiological fluctuations that may progress to respiratory failure, shock, sepsis, cardiac arrest, or multiorgan dysfunction if not recognised promptly. Despite continuous electronic monitoring, preventable deterioration still occurs because raw physiological data alone do not guarantee meaningful interpretation. Adverse events are frequently preceded by abnormal trends in respiratory rate, heart rate, blood pressure, urine output, consciousness, skin perfusion, or behaviour that may emerge hours before collapse, yet recognition can be delayed by alarm fatigue, workload burden, fragmented communication, and inconsistent escalation criteria (Stevenson et al., 2016; Scott and Kaur, 2020). Nurses remain the clinicians

with the greatest continuous bedside presence and are therefore uniquely positioned to detect subtle deterioration earlier than other members of the care team (Gazarian et al., 2010).

Despite its clinical importance, the term nurse-led early deterioration surveillance is applied inconsistently across at least three overlapping bodies of literature. Nursing science frames it primarily as a cognitive, interpretive process; health-informatics and rapid-response literature frames it largely as compliance with structured early warning score (EWS) protocols (Guan et al., 2024; Gonem et al., 2022); and patient-safety literature frames it mainly as a mechanism for preventing failure-to-rescue events (Williams et al., 2019). Because these framings emphasise different components of practice, the concept lacks an agreed set of defining attributes, which weakens curriculum design, competency measurement, and policy development (Kim et al., 2026).

This inconsistency is compounded by conflation of nurse-led surveillance with passive, technology-driven monitoring. In this analysis, monitoring refers to the automated acquisition and display of physiological data by bedside devices and alarms, which does not by itself require cognitive interpretation or action. Surveillance, in contrast, denotes the nurse's active acquisition, interpretation, and synthesis of that data—together with behavioural and contextual cues—into a clinical judgement that may prompt anticipatory action (Rossetti et al., 2025). Establishing this boundary is a central aim of the present analysis and is developed further in the Results.

Concept clarification is necessary because poorly defined concepts weaken education, implementation fidelity, measurement, and policy development. Walker and Avant's (2019) method is widely used in nursing scholarship to refine concepts and identify operational indicators. This paper therefore analyses nurse-led early deterioration surveillance in adult ICU settings to provide a theoretically grounded and practically applicable definition for advanced nursing practice.

Methods

This study employed Walker and Avant's (2019) eight-step concept analysis methodology to clarify and refine the concept of nurse-led early deterioration surveillance in adult ICU settings. The analytic process involved selecting the concept of interest, determining the purpose of the analysis, identifying relevant uses of the concept in the literature, determining its defining attributes, constructing model and additional cases, identifying antecedents and consequences, and specifying empirical referents. Because Walker and Avant's method does not itself prescribe a literature-search reporting standard, the PRISMA 2020 statement was used only to structure and report the identification, screening, eligibility, and inclusion of source literature (Figure 1); it was not used to conduct a systematic review of intervention effectiveness, and no meta-analytic synthesis was undertaken. This adapted reporting approach is increasingly adopted in nursing concept analyses to improve search transparency without altering the underlying Walker and Avant methodology.

Figure 1. PRISMA 2020 Flow Diagram of Study Identification, Screening, and Inclusion

Identification	Records identified through database searching (n = 1,842) PubMed (n = 612), CINAHL (n = 398), Scopus (n = 540), SAGE Journals (n = 292)	
Screening	Records after duplicates removed (n = 1,510) Records screened by title/abstract (n = 1,510)	Duplicate records removed (n = 332) Records excluded as not relevant to nurse-led surveillance or ICU deterioration constructs (n = 1,373)
Eligibility	Full-text articles assessed for eligibility (n = 137)	Full-text articles excluded (n = 92): Pediatric/neonatal population (n = 31) No empirical or theoretical data (n = 23) Duplicate publication (n = 18) No clear nursing relevance (n = 20)
Included	Studies included in concept analysis (n = 45)	

Literature Search Strategy

Four major electronic databases were searched: PubMed, CINAHL, Scopus, and SAGE Journals. The search covered studies published between January 2006 and June 2026, a range that intentionally extends earlier than the concept's contemporary usage to capture foundational early-warning-score validation and instrument-development literature alongside current evidence, and that had fully elapsed at the time of manuscript

preparation. Full Boolean search strings for each database are provided in Appendix A to support replicability. Reference lists of eligible studies were also reviewed manually to identify additional relevant sources.

Eligibility Criteria

Studies were included if they were peer-reviewed articles published in English and focused on adult acute care or ICU populations. Eligible papers examined nursing surveillance, recognition of deterioration, early warning systems, escalation of care, patient monitoring outcomes, or related nurse-led safety interventions. Quantitative, qualitative, and mixed-methods studies, systematic reviews, integrative reviews, and concept development papers were considered appropriate for inclusion to capture the multidimensional nature of the concept.

Studies were excluded if they focused exclusively on paediatric or neonatal populations, consisted solely of editorials or opinion pieces without empirical or theoretical data, were duplicate publications, or involved purely technical or engineering evaluations without clear nursing relevance.

Quality Appraisal

Consistent with Walker and Avant's concept analysis methodology, formal critical appraisal of individual study quality (e.g., using GRADE or JBI checklists) was not performed, because the purpose of the search was conceptual and definitional rather than an evaluation of intervention effectiveness. This is acknowledged as a limitation, and the empirical referents identified below should be read as candidate indicators rather than validated measurement instruments.

Attribute Synthesis Process

Defining attributes were derived through a structured, iterative process. Both authors independently read and open-coded the 45 included studies for recurring descriptions of nurse behaviour, cognition, and action associated with detecting and responding to deterioration. Codes were compared in a shared matrix, collapsed into candidate attributes through constant comparison, and refined through discussion until consensus was reached on six mutually exclusive, literature-supported attributes.

Results

General and disciplinary usage of the term surveillance denotes close, continuous observation for the purpose of direction or oversight, a meaning rooted in public-health and epidemiological practice, where it refers to ongoing, systematic data collection for population-level decision-making. Nursing scholarship adapts this general meaning to the individual patient level, while human-factors and aviation literature contribute the related but distinct construct of situation awareness—the perception, comprehension, and projection of environmental elements over time (Endsley, 1995)—which underpins much of the cognitive framing used in nursing surveillance literature. Within adult critical care literature specifically, nurse-led early deterioration surveillance is used in several interrelated ways. Most commonly, it describes continuous bedside monitoring in which nurses maintain ongoing awareness of physiological, behavioral, and clinical change and identify early instability preceding respiratory failure, hemodynamic compromise, sepsis progression, or neurological decline (Kim et al., 2026; Poncette et al., 2020).

It is also framed as a cognitive process grounded in clinical judgement, in which nurses integrate multiple cues, interpret evolving trends, and differentiate clinically meaningful change from expected variability (Rossetti et al., 2025; Gazarian et al., 2010). In parallel, other authors operationalize surveillance through structured track-and-trigger tools and early warning scores such as NEWS2, a lineage that extends from early instrument-development work through to contemporary validation studies (Lam et al., 2006; Kirkland et al., 2013; Smith et al., 2013; Pieringer and Hellmich, 2013; Paternina-Caicedo et al., 2017; Guan et al., 2024; Gonem et al., 2022; Mohan et al., 2023; Pirret and Kazula, 2022; Ağırbaş et al., 2026; Bailey et al., 2026; Siber and Tasdemir, 2025).

Nurse-led surveillance is further used to describe timely escalation of care through structured communication with physicians or rapid response systems, intended to prevent failure-to-rescue events and avoidable cardiac arrest (Goh et al., 2021; Solomon et al., 2016; Maharaj et al., 2015; Danesh et al., 2019). Recent literature increasingly incorporates digital surveillance platforms, wearable sensors, and predictive analytics alongside bedside nursing judgement, positioning surveillance as a hybrid socio-technical practice rather than a purely

technology-driven one (Van Der Vegt et al., 2024; Li et al., 2024; Bi et al., 2025; Ahmed et al., 2025; Andrews et al., 2025; Bai et al., 2025). Taken together, these uses—spanning general and dictionary meanings, human-factors theory, and discipline-specific clinical literature—indicate that nurse-led early deterioration surveillance extends beyond passive observation to encompass continuous assessment, interpretive reasoning, prioritization, structured communication, and coordinated action, as summarized in Table 1.

Table 1. Defining Attributes of Nurse-Led Surveillance

Attribute	Operational Meaning
Continuous observation	Repeated, purposeful bedside review of physiological, behavioral, and psychological status, rather than isolated task-based measurement
Clinical reasoning	Integration of objective and subjective cues, patient history, and treatment trajectory into a risk judgement
Trend recognition	Detection of progressive deviation from an individual patient's baseline over time, even when single values remain within normal limits
Anticipatory action	Proactive, time-critical measures initiated before overt decompensation occurs
Escalation of care	Timely activation of medical, senior clinician, or rapid-response review when risk exceeds nursing scope
Interdisciplinary coordination	Structured communication and shared situational awareness across nursing, medical, and allied-health team members

Defining Attributes

Before describing the six defining attributes, it is necessary to state the operational boundary between nurse-led surveillance and passive, technology-driven monitoring adopted in this analysis. Passive monitoring refers to the continuous automated acquisition and display of physiological data—for example, telemetry, pulse oximetry, or automated EWS calculation—without requiring nurse interpretation or action. Nurse-led surveillance begins where passive monitoring ends: it requires the nurse to notice, interpret, and act on data. An EWS trigger that a nurse acknowledges but does not act on is monitoring without surveillance; conversely, a nurse who detects a concerning trend before any alarm threshold is reached, and initiates review, is exercising surveillance without technological prompting. The six attributes below, summarized in Table 1, describe the components of this active process.

The first attribute, continuous observation, refers to sustained and purposeful bedside review of the patient's physiological, psychological, and behavioral status rather than isolated, task-based measurements (Kim et al., 2026; Poncette et al., 2020). It involves ongoing reassessment of vital signs, perfusion, mental status, respiratory effort, and response to treatment to maintain situational awareness in a dynamic ICU environment (Stevenson et al., 2016). The second attribute, clinical reasoning, involves interpreting multiple cues within the patient's clinical context to form a risk judgement and decide whether action is required. Nurses synthesize objective findings, patient history, treatment trajectory, and experiential knowledge to distinguish insignificant fluctuation from meaningful decline (Gazarian et al., 2010; Rossetti et al., 2025). The third attribute, trend recognition, is the ability to detect progressive deviation from an individual patient's baseline, even when single values remain within conventionally acceptable limits. This includes recognising patterns such as gradually rising respiratory rate, increasing oxygen requirement, worsening confusion, or declining urine output that may signal impending deterioration hours before collapse (Guan et al., 2024; Smith et al., 2013; Gonem et al., 2022).

Furthermore, the fourth attribute, anticipatory action, reflects proactive nursing responses aimed at preventing progression to overt instability. Actions may include repeating assessments, initiating time-critical pathways such as sepsis bundles, optimizing oxygen delivery, preparing emergency equipment, and seeking urgent clinical review before further decompensation occurs (Evans et al., 2021; Singer et al., 2016). The fifth attribute, escalation of care, is timely activation of additional expertise when risk exceeds nursing scope or when deterioration requires multidisciplinary management. Escalation may occur via structured calls to physicians, senior ICU clinicians, or rapid response systems, and is strengthened by clear escalation frameworks and organizational support for speaking up (Goh et al., 2021; Weigand et al., 2025; Fitzgerald et al., 2026). The sixth attribute, interdisciplinary coordination, involves collaboration among nursing staff, medical teams, and other clinicians to ensure a coherent and timely response to emerging deterioration. Effective coordination depends on clear role expectations, shared situational awareness, and reliable communication processes, including structured tools such as SBAR (De Meester et al., 2013; Müller et al., 2018).

Case Construction

Consistent with Walker and Avant's (2019) framework, model, borderline, related, and contrary cases were constructed to test the boundaries of the concept; Table 2 maps each case type against the defining attributes. Invented and illegitimate cases were not constructed. Because the constituent attributes of nurse-led surveillance—observation, reasoning, escalation—are all clinically routine actions rather than hypothetical or category-violating constructs, these two case types were judged to add limited discriminant value for this particular concept, a common and defensible practice in applied nursing concept analyses (Walker and Avant, 2019).

Table 2. Illustration of Cases Against Defining Attributes

Case type	Observation & trend recognition	Cue integration (objective + subjective)	Clinical reasoning	Anticipatory action / escalation	Interdisciplinary communication
Model	Present	Present	Present	Present	Present
Borderline	Present (partial trend recognition)	Partial	Limited	Delayed	Limited
Related	Present (threshold-based only)	Minimal	Not primary	Triggered by alarm, not reasoning	Variable
Contrary	Absent	Absent	Absent	Absent	Absent

Model Case

A model case illustrating all defining attributes involves a 67-year-old man recovering from septic shock in the ICU. During routine surveillance, the bedside nurse notices that the patient's respiratory rate has increased progressively from 20 to 28 breaths per minute over two hours. Additional findings include rising lactate levels, cool extremities, and new-onset confusion. Although blood pressure remains within an acceptable range, the nurse recognises the concerning trend rather than relying on isolated values. She immediately reassesses the patient, activates the sepsis escalation protocol, informs the intensivist, obtains blood cultures, increases oxygen support, and prepares vasopressor therapy. Through early recognition and coordinated intervention, further deterioration is prevented. In this scenario, sustained bedside review provides the continuous observation on which trend recognition of the rising respiratory rate depends; synthesis of the lactate, perfusion, and mentation findings constitutes clinical reasoning; activation of the sepsis pathway and preparation of vasopressor therapy represent anticipatory action; the call to the intensivist constitutes escalation of care; and the coordinated response with medical and laboratory staff reflects interdisciplinary coordination.

Borderline Case

A borderline case shares some, but not all, defining attributes. A nurse observes a patient's oxygen requirement rising gradually across a shift and documents the trend, demonstrating continuous observation and partial trend recognition, but attributes the change to the patient's known chronic lung disease without further cue integration. No repeat focused assessment or escalation occurs until the next scheduled round, at which point the attending physician is informed. Because interpretation and escalation are delayed rather than entirely absent, this case retains some, but not all, features of the concept.

Related Case

A related case involves an automated bedside monitor that triggers an alarm when a preset heart-rate threshold is crossed, prompting a nurse to attend and silence the alarm. If the nurse's response is confined to threshold-based reaction without independent trend interpretation or anticipatory reasoning, the scenario reflects alarm response rather than nurse-led surveillance. It is conceptually related because it shares the surface behavior of nurse attendance at the bedside but lacks the interpretive and anticipatory core of the concept.

Contrary Case

A contrary case can be seen in a 58-year-old patient recovering from abdominal surgery whose respiratory rate rises from 18 to 26 breaths per minute and whose urine output falls below 20 mL/hour across a busy evening shift. These changes are documented in the electronic record at each round but are not compared against earlier values, so the progressive trend is not recognized. A pulse-oximetry alarm sounds twice during the shift and is silenced without further assessment. The nurse, managing four other acutely unwell patients, does not re-

examine the patient, does not integrate the respiratory and renal findings, and does not contact the medical team. No anticipatory action is taken, no escalation occurs, and no interdisciplinary communication is initiated. Several hours later, the patient is found unresponsive and pulseless, and resuscitation is commenced. This scenario is contrary to the concept because none of the six defining attributes—continuous observation, clinical reasoning, trend recognition, anticipatory action, escalation of care, or interdisciplinary coordination—is present at any point in the patient's care.

Antecedents

Several antecedents must be present before nurse-led early deterioration surveillance can occur effectively. These include the presence of critically ill adult patients requiring intensive monitoring, as well as competent ICU nurses possessing advanced assessment skills and critical care knowledge, supported by adequate nurse-to-patient staffing ratios (Law et al., 2018; Shin et al., 2018). Access to monitoring devices, electronic records, and real-time clinical data is also necessary, alongside clear escalation pathways and organizational protocols that support rapid intervention, such as validated nurse-worry indicators (Douw et al., 2016; Douw et al., 2017).

Education in deterioration recognition and response is essential, as is psychological safety that enables nurses to voice concern without fear of dismissal. Interdisciplinary responsiveness and a broader patient safety culture create an environment in which surveillance findings lead to meaningful action.

Associated Outcomes

When nurse-led early deterioration surveillance is present, several favorable outcomes have been associated with it in the literature, including lower ICU mortality, fewer cardiac arrests, fewer unplanned intubations, shorter ICU and hospital length of stay, and earlier initiation of definitive treatment (Weigand et al., 2025; Solomon et al., 2016; Law et al., 2018). Because these outcomes are also shaped by illness severity, staffing, and other system-level factors, they should be interpreted as outcomes associated with, rather than directly caused by, effective surveillance. Improved interprofessional communication and greater nurse confidence in clinical decision-making are also reported (Müller et al., 2018). Conversely, absent or ineffective surveillance is associated with delayed rescue, preventable complications, prolonged hospitalization, increased healthcare costs, moral distress among staff, and avoidable death (Sarmadi et al., 2026).

Empirical Referents

Empirical referents are measurable indicators that demonstrate the presence of the concept itself, as distinct from its downstream clinical outcomes. Process indicators—direct referents of surveillance activity—include completion rates of scheduled reassessments, time from abnormal trend onset to escalation, alarm response times, quality and completeness of nursing documentation of trends, and scores on validated nurse surveillance or situation-awareness competency tools (Stevenson et al., 2016; Poncette et al., 2020). Associated clinical outcomes, which reflect the downstream effect of surveillance but are also shaped by other system factors, include EWS, NEWS2, MEWS, or qSOFA trigger and response rates, frequency of rapid response team activation, rates of unplanned ICU transfer, cardiac arrest, ICU mortality, and failure-to-rescue events (Guan et al., 2024; Goh et al., 2021; Solomon et al., 2016). Researchers operationalizing this concept should prioritize process indicators when the aim is to measure surveillance itself, reserving clinical outcome indicators for evaluating its downstream impact.

Discussion

This analysis indicates that nurse-led early deterioration surveillance is a complex professional capability rather than a routine monitoring task. Technology generates data, but nurses transform data into action through contextual reasoning; healthcare systems that overemphasize devices while underinvesting in clinical judgement development may not realize the full safety benefit of monitoring technology.

The six defining attributes identified here align closely with established models of nursing cognition. Continuous observation and trend recognition correspond to the noticing phase of Tanner's (2006) Clinical Judgment Model, in which nurses perceive a patient situation against an expected trajectory, while clinical reasoning parallels Tanner's interpreting and responding phases, in which cues are synthesized into a judgement that guides action. The progression from continuous observation through anticipatory action also mirrors Benner's (1984) novice-to-expert continuum, in which expert nurses recognize patterns and act on subtle cues that novice nurses may not yet perceive. Endsley's (1995) situation awareness theory, comprising perception,

comprehension, and projection of elements over time—offers a similar structure: continuous observation corresponds to perception, clinical reasoning and trend recognition to comprehension, and anticipatory action to projection-driven response. Positioning nurse-led surveillance within these established frameworks strengthens its theoretical grounding and distinguishes it from a purely procedural or task-based understanding of monitoring.

Findings also indicate that surveillance effectiveness is highly dependent on context. Excessive workload, interruptions, understaffing, and hierarchical communication patterns appear to reduce surveillance effectiveness (Law et al., 2018; Shin et al., 2018). Failure to rescue should therefore not be framed solely as individual error but also as a potential systems failure.

Early warning systems remain useful empirical supports, but the literature reviewed here suggests they function best as an augmentation of, rather than a replacement for, nursing judgement. Overreliance on numeric scores may miss atypical presentations, whereas structured tools paired with expert assessment appear to improve standardization and communication (Guan et al., 2024; Gonem et al., 2022; Scott et al., 2026).

Nurse-led surveillance in the adult ICU differs from general ward-based surveillance in intensity, technological density, and patient acuity. ICU nurse-to-patient ratios typically allow closer continuous observation, and the concentration of monitoring technology increases the volume of cues requiring interpretation; ward nurses, by contrast, typically surveil larger patient groups with fewer continuous data streams and rely more heavily on intermittent vital-sign rounds and EWS triggers. Because the cognitive and staffing demands differ, findings from this ICU-focused analysis should not be assumed to transfer directly to general ward contexts without further concept work.

This concept also carries specific implications for low-resource Asian ICU settings, including many in the Philippines and neighboring countries, where nurse-to-patient ratios may exceed recommended standards, digital EWS platforms may be unavailable, and rapid response systems may be less formalized (Zhao et al., 2026; Nam et al., 2024). In these contexts, surveillance may depend more heavily on unaided clinical reasoning and interdisciplinary communication than on technological support, underscoring the value of investing in critical care education and structured escalation protocols even where digital infrastructure is limited.

This concept is especially relevant amid aging ICU populations, multimorbidity, rising global sepsis burden (Rudd et al., 2020), and increasing technological complexity. Future ICUs will likely require hybrid surveillance models in which nurses integrate bedside assessment with predictive analytics and AI-generated alerts (Van Der Vegt et al., 2024; Li et al., 2024).

Clinical Implications

The findings of this concept analysis carry several practical implications for clinical practice, education, leadership, and digital health system design. In practice, hospitals should implement nurse-led surveillance bundles including trend review, escalation criteria, bedside huddles, and structured handovers. In education, critical care curricula should prioritize cue recognition, simulation of deterioration scenarios, and escalation communication training. From a leadership perspective, managers should optimize staffing ratios, reduce alarm burden, and support a speaking-up culture (Williams et al., 2019). In the digital health domain, electronic records should display trend dashboards and actionable alerts designed with nursing workflow input.

Future Research

This concept analysis also identifies several directions for future research. First, development and psychometric validation of nurse surveillance competency scales are needed. Second, prospective trials linking surveillance interventions to mortality and other patient outcomes should be conducted. Third, AI-assisted surveillance integrated with bedside nursing judgement warrants investigation. Fourth, the impact of staffing ratios on rescue failure requires further study. Fifth, cross-cultural ICU surveillance models in Asia-Pacific and other resource-variable settings should be explored.

Limitations

This concept analysis has several limitations. First, because Walker and Avant's method does not require systematic quality appraisal, the methodological rigor of individual included studies was not formally assessed; the empirical referents identified should therefore be treated as candidate indicators rather than validated measures. Second, the search was restricted to English-language publications, which may have excluded

relevant evidence published in other languages, particularly from non-English-speaking Asian health systems. Third, publication bias cannot be excluded, as studies reporting successful surveillance interventions may be more likely to be published than null or negative findings. Fourth, several included studies involved general ward rather than ICU-exclusive populations, which may have introduced some conceptual variability despite eligibility screening. Fifth, grey literature, conference abstracts, and unpublished reports were not searched, which may have omitted emerging practice not yet reflected in peer-reviewed literature. Finally, terminology overlap between surveillance, monitoring, and situational awareness may have limited retrieval sensitivity despite the structured search strategy described in Appendix A.

Conclusion

Nurse-led early deterioration surveillance in adult ICU is the systematic nursing process of continuously observing, interpreting, anticipating, and escalating signs of patient decline to prevent adverse outcomes. It is a high-value advanced nursing function associated with patient safety. Clarifying this concept strengthens theory development, clinical protocols, education, and future research. Healthcare systems should explicitly recognize and resource nurse-led surveillance as a determinant of critical care quality.

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Appendix A. Database Search Strings

The following Boolean search strings were used, adapted to each database's syntax, and limited to records published January 2006–June 2026:

PubMed: ("nursing surveillance" OR "nurse surveillance" OR "clinical deterioration" OR "patient deterioration") AND ("intensive care unit" OR ICU OR "critical care") AND ("early warning score" OR "early warning system" OR "rapid response team" OR "rapid response system") AND ("2006/01/01"[dp] : "2026/06/30"[dp])

CINAHL: (MH "Nursing Surveillance" OR MH "Early Diagnosis") AND (MH "Intensive Care Units") AND (MH "Early Warning Score" OR "rapid response team" OR "track and trigger") — limited to peer-reviewed, English language, 2006–2026

Scopus: TITLE-ABS-KEY(("nursing surveillance" OR "nurse-led surveillance") AND ("clinical deterioration" OR "early warning") AND ("intensive care" OR ICU)) AND PUBYEAR > 2005 AND PUBYEAR < 2027 AND LANGUAGE (english)

SAGE Journals: [Abstract/Title/Keywords: ("nurse surveillance" OR "nursing surveillance") AND ("deterioration" OR "early warning" OR "rapid response") AND ("intensive care" OR ICU)] filtered to research articles and reviews, 2006–2026

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