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ADVANCING DIAGNOSTIC SAFETY THROUGH NURSING SURVEILLANCE COMMUNICATION AND CLINICAL REASONING

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ABSTRACT

Misdiagnosis, delayed diagnosis, and incorrect diagnosis are significant patient safety concerns that impact a variety of health care settings. Until now, diagnosis has been considered a task that can only be undertaken by a physician, however, there is emerging evidence of a multi-person team approach where nurses are involved in diagnosis through continuous monitoring, repeated assessment, clinical reasoning, communication, escalation and follow up. This review will explore how nurses can enhance the safety of diagnosis throughout the care journey. Special emphasis is placed on early identification of deterioration, the understanding of fluid shifts in clinical observations, the recognition of differences between anticipated and actual progress and the sharing of unresolved issues. The review also takes into account the impact of diagnostic processes such as communication with patients and families; abnormal investigations; and how patient outcomes following treatment affects the process of recognition. Cognitive vulnerabilities such as anchoring, confirmation bias, premature closure and cognitive overload are mentioned when considering nursing judgement. Organizational influences, including staffing, workload, Professional hierarchy, Psychological safety, Information continuity, and Electronic health systems are also explored as factors that influence nurses' contributions to the effective diagnosis. To enhance diagnostic safety, nurses need to be recognized as active members in the diagnostic team and receive education in clinical reasoning, simulation learning, structured escalation plans, and collaborative work with the other professions, and nurse-sensitive indicators of diagnostic safety needs to be implemented. Increased use of nursing skills in diagnostics may help to minimize preventable harm and enhance continuity, timeliness and accuracy of care.

Keywords – Diagnostic safety; Nursing surveillance; Diagnostic error; Clinical reasoning; Patient safety; Interprofessional communication

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1. Introduction

In modern healthcare, diagnostic safety has emerged as a pivotal issue since diagnostic failures have the potential to cause delays in treatment, unnecessary procedures, complications, and even death. Diagnostic error can take many forms and can happen at a series of steps along the care route: a health problem might not be identified or recognized, or it might be diagnosed incorrectly. A coordinated approach to patient safety in diagnostic processes has become a key element of the global patient-safety agenda, and is being increasingly recognised as a source of preventable harm in healthcare systems (World Health Organization, 2024). Serious adverse events due to diagnostic error in the United States have been estimated to impact large numbers of patients on an annual basis, highlighting the clinical significance of striving to make diagnoses more accurate and timely (Newman-Toker et al., 2024). Emergency care is especially susceptible since practitioners are required to make fast decisions in the absence of full information, under high patient load, and significant diagnostic uncertainty (Newman-Toker et al., 2023).

Errors in diagnosis are not specific to any particular specialty or setting in healthcare. Hospital readmissions have revealed cases in which diagnostic problems during the preceding admission contributed to subsequent care needs, demonstrating how missed opportunities can persist beyond the initial clinical encounter (Raffel et al., 2020). The same problems exist in primary care where longitudinal record reviews have shown missed opportunities for diagnosis in relation to preventable patient harm (Cheraghi-Sohi et al., 2021). Finally, the analysis of patient-safety incidents in A&E departments has shown that patient-safety failure events can occur sequentially, as well as interactively, that is, failures in assessment, investigation, clinical decision-making and communication can be interdependent (Hussain et al., 2019). These results contribute to the general awareness of diagnosis as a multi-personal, multi-informational and multi-temporal phenomenon, and in healthcare contexts.

Accordingly, diagnosis is increasingly understood as a collaborative clinical activity rather than the responsibility of a single professional. Nurses are a position of significant importance, as they often have ongoing contact with patients, undertake repeated assessments, monitor the patients' response to treatment, recognise deterioration in a patient's condition, relay clinical information across professional and organisational boundaries and coordinate information between the various practitioners involved. However, throughout the history of formal education and discussion about diagnostic safety, the focus has been limited on the contribution of nursing practice to the diagnostic process (Gleason, Harkless, et al., 2021). This under-recognition may make it difficult for nurses to recognize discrepancies, raise concerns about unusual clinical courses, escalate concerns, and add information that may make them think again about the diagnosis.

A more precise definition of diagnostic error is also valuable because the definition varies from setting to setting, and this could impact the way events are detected, measured, and prevented in the health care environment (Giardina et al., 2022). In recent years, research priorities in diagnostic safety have shifted to focus on diagnostic processes, understanding of system-level contributors, and interventions to improve measurement of diagnostic safety (Zwaan et al., 2021). Diagnostic failures as reported in malpractice cases also highlight a cluster of interacting cognitive, communication and organizational factors, and call for a view of the broader clinical system in which the diagnostic decisions are made (Watari et al., 2020).

Against this background, nursing contributions to diagnostic safety warrant focused examination. Clinical surveillance, interpretation of changing patient information, communication, escalation of un-resolved concerns and continuity of diagnostic information are key areas in which nurses can contribute to the prevention of diagnostic harm. The comprehension of these contributions is crucial for improving team-based diagnosis and for more explicitly embedding nursing in the process of diagnosis-safety improvement.

Objectives

- To examine how nursing surveillance, assessment, and clinical reasoning contribute to the early recognition of diagnostic problems.
- To evaluate the role of nursing communication, escalation, and information continuity in preventing missed, delayed, or incorrect diagnoses.
- To identify organizational, educational, and system-level strategies that can strengthen nursing contributions to diagnostic safety.

2. Diagnostic Safety as a Shared Clinical Responsibility

Diagnostic safety is the timely and precise identification of a patient's health problem, the efficient communication of the diagnosis and appropriate follow-up. It extends beyond the correctness of a final diagnostic label and includes the processes through which clinical information is collected, interpreted, communicated, and reconsidered as a patient's condition evolves. In this context, diagnostic safety is a system's function and requires collaboration among healthcare professionals, patients, families, technologies and organizational systems. Diagnosis relies heavily on distributed cognition, meaning that knowledge and observations are distributed among members of the care team; in an emergency situation, where information may be incomplete and clinical circumstances can change rapidly, diagnosis is particularly reliant on distributed cognition (Manojlovich et al., 2022).

Diagnostic failures can occur as a missed, delayed or inaccurate diagnosis. Incompleteness in assessment, insufficient follow-up, communication issues, lack of integration in services or a lack of review of a first impression diagnosis in response to new information are all potential causes of these outcomes. There is qualitative evidence in the acute care setting that diagnostic errors often occur as a result of multiple factors at the individual, team, and system level (Barwise et al., 2021). This complexity is especially relevant when dealing with patients that present with atypical symptoms, numerous conditions or symptoms rapidly changing, where diagnostic uncertainty cannot be avoided and re-evaluations become necessary.

Clinical reasoning is flexible, then, when new information arises. While physicians and nurses have different professional responsibilities and areas of concern, they both participate in ways of reasoning that include the taking on of cues, the interpretation of clinical changes, and determination of further actions. In addition to medical diagnostic reasoning in multidisciplinary care, nursing reasoning is often underpinned by ongoing observation, functional assessment and identification of changes from a patient's baseline (Vreugdenhil et al., 2023). Institutional recognition and support of diagnostic safety, however, are very different among healthcare organizations (Campione Russo et al., 2025).

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Important information can also be gained from patients and families that may reveal blind spots in the diagnosis. Patients can help identify missing, incorrect or misunderstood information in clinical notes which can help prevent harm in "good catches" before diagnosis (Bell et al., 2022). Language and access barriers may affect the ability of patients and families to participate, but structured approaches that engage patients and families in a way that invites them to discuss their concerns regarding what is not being resolved can further enhance the quality of the diagnostic conversation (Bourgeois et al., 2023). Recognizing these differences is of critical importance because there is also an equity component to diagnostic safety, with the need to engage meaningfully with diverse patient populations and communities (Giardina et al., 2023).

Within this shared model, nurses should be regarded as active members of the diagnostic team. Through ongoing, active engagement with patients, they also check for the development of new clinical issues, convey concerns and facilitate re-assessment of diagnosis when necessary, placing them in a unique position to detect new diagnostic concerns and guide appropriate diagnostic reassessment.

Nursing activities for diagnostic safety work in three domains: surveillance, communication and escalation, and clinical competence, interprofessional working, supporting systems, and psychological safety all contribute to the effectiveness of nursing activities for diagnostic safety, as shown in Figure 1.

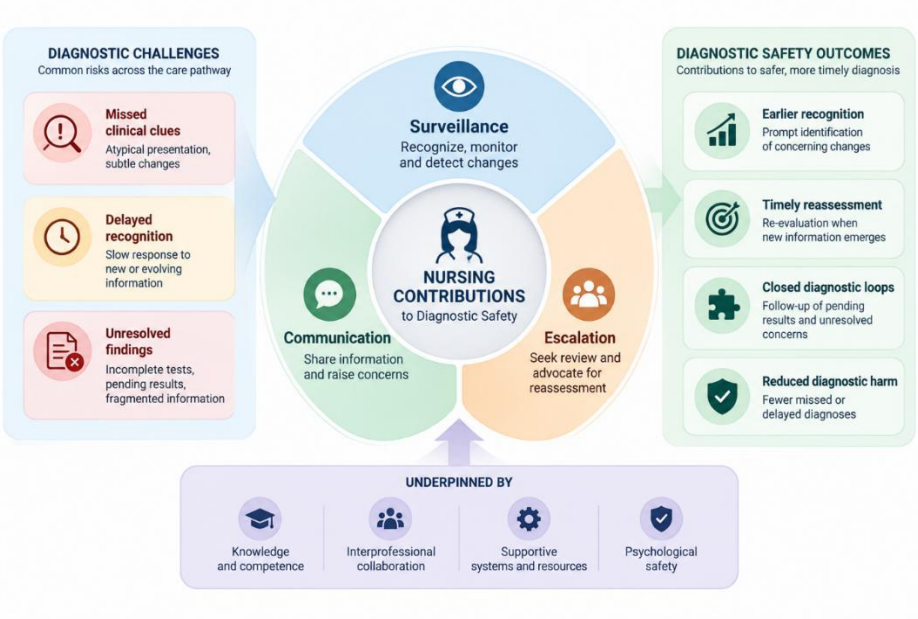


Figure 1. Conceptual framework of nursing mechanisms supporting diagnostic safety

3. Nursing Surveillance and Early Recognition

Nursing surveillance is the constant monitoring, evaluation, analysis and action in response to fluctuations in the patient's status. Nurses are key to recognising subtle shifts in behaviour, cognition, respiratory effort, mobility, pain, responsiveness and physiological measures before patients' condition becomes overtly deteriorating, as they interact with patients on a regular basis.

This recognition is often based on objective findings, not just vital sign abnormalities, and may reflect general clinical impressions as well (Chung & Jung, 2024).

The repetitive assessment at the bedside also enables nurses to compare the change of current assessment and the patients' usual baseline. Early warning systems can help in this process by turning physiological data into risk scores, but their effectiveness relies on accurate measurement, interpretation and clinical response, as well as not taking the place of nursing judgement (McGaughey et al., 2021). Surveillance in an acute and emergency setting should also be linked to clear lines of response with abnormal findings leading to reassessment, escalation or urgent action when necessary (Considine et al., 2021). Rapid response teams may facilitate this process and help minimise failure to rescue when deterioration is detected early (Hall et al., 2020).

Observations must be prioritized and acted upon to be useful in terms of recognition. Structured facilitation interventions can improve nurses' responses to the deterioration of patients, both by improving clinical practice and by addressing contextual barriers (Bucknall et al., 2022). Automated activation systems may also help to further minimise delays in escalation, but this is reliant on nurses' trust and perceived usefulness of the technology (Chua et al., 2023). Effective bedside staff identification of concerning changes and the initiation of escalation also forms part of rapid response systems and therefore requires that changes to be observed, communicated and confidence to be expressed in raising concerns (Julnes et al., 2023). Workload, competing priorities, uncertainty, and organizational norms may still hinder timely response (Smith et al., 2021).

Nursing surveillance is not just about monitoring deterioration in a patient, but also recognising when a clinical pathway is not as expected and requiring a re-thinking of the original diagnosis from a diagnostic-safety point of view.

4. Communication and Continuity of Diagnostic Information

Communication is pivotal to diagnostic safety because information must flow effectively to between individuals, between shifts and between departments, and between healthcare teams, patients and families. Diagnostic information may be lost if abnormal information is not reported in a timely fashion, issues are not referred up or resolved, or pending investigations are not properly transferred. Inadequate communication of test results is especially significant, as incomplete follow-up may lead to delayed diagnosis and treatment, despite the correct investigation performed (Wright et al., 2020).

4.1 Interprofessional Communication

Nurses frequently serve as the link between bedside observations and broader diagnostic decision-making. Effective communication therefore requires more than reporting isolated measurements; nurses must convey the significance, timing, and progression of abnormal findings and explain when a patient’s condition no longer fits the expected clinical course. Structured tools like ISBAR can help you to have a concise, clinically focused approach to communication, breaking information down into a sort of identification, situation, background, assessment and recommendation (Burgess et al., 2020). Likewise, SBAR can enhance the effectiveness of nursing handover and eliminate the ambiguity in transferring significant clinical data (Soed et al., 2025). There is also a need for nurses to be able to escalate concerns if they are not confident with the diagnosis or when their clinical judgement differs from what has already been made.

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4.2 Clinical Handover and Transitions of Care

A ‘handover' is a weak link in the diagnostic chain because it involves transitioning from one professional or team to another when responsibility for the assessment, investigation, or unresolved concerns are transferred. Standardized formats for communication are only part of the equation; so are organizational and cultural aspects of how information is shared, as demonstrated by tailored communication interventions that can make handover safer (Chien et al., 2022). General standards for nursing handover that are evidence based can be used to standardise the transfer of key information between shifts and units (Tacchini-Jacquier et al., 2020). Organized information sharing processes between care settings, known as structured handover protocols, have also been shown to be beneficial for quality of information and the patient experience during transitions of care (Ghosh et al., 2021).

4.3 Patient and Family Communication

Information from patients and families that may not be completely documented during routine clinical assessment. While bedside handover can help patients to clarify their symptoms, identify omissions, and be part of discussions about future care, it needs to be implemented successfully – and this requires the patient and nurse to be comfortable in doing so (Anshasi & Almayasi, 2024). Diagnostic conversations can be even further enhanced by working together to gain a more comprehensive understanding of the clinical problem, which incorporates the patient's experience along with the clinician's interpretation and the family's perspective on the situation (Suarez et al., 2023). Families may be particularly vital when they are aware of changes from the patient's baseline prior to the point where formal measures identify changes. Communication systems that ensure continuity of diagnostic information are therefore needed that allow for the preservation of professional observations as well as the lived experience of patients and families.

Table 1 outlines the main communication pathways through which nurses support continuity and diagnostic safety.

Table 1. Communication Pathways Supporting Diagnostic Safety

Communication pathway	Main risk	Nursing safeguard
Nurse–physician	Clinical concern underestimated	Clear reporting and escalation
Shift handover	Loss of unresolved information	Structured transfer of key concerns
Care transitions	Fragmented diagnostic information	Explicit communication of pending issues
Test results	Abnormal findings not followed	Confirmation of review and follow-up
Patient communication	Symptoms or concerns missed	Active symptom elicitation
Family communication	Changes from baseline overlooked	Incorporation of family observations

5. Nursing Clinical Reasoning and Diagnostic Uncertainty

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The importance of clinical reasoning in nursing practice is that it is needed to interpret the observations made during surveillance. Nurses use a combination of symptoms, physical signs, how the treatment is working, the patient's behaviour, and their knowledge of the patient to decide if the clinical pathway is the expected one or if there is a need to evaluate further. Effective reasoning involves recognizing patterns, identifying inconsistencies, and reconsidering explanations when new information no longer supports the working diagnosis. Diagnostic error may occur when relevant findings are overlooked, misinterpreted, or not reassessed as the clinical picture evolves (Vally et al., 2023).

5.1 Clinical Reasoning in Nursing Practice

Nurses are able to recognise deterioration and ongoing diagnostic issues through pattern recognition and situational awareness. If these symptoms last for a long time, fall is unexpected, or there's no response to treatment, it might be a good idea to review the original diagnosis. It is particularly relevant when there is incomplete evidence or knowledge is quickly developing, such as during the COVID-19 pandemic where atypical presentations and evolving knowledge made diagnostic judgements more complex (Coen et al., 2022).

Acknowledging uncertainty is a way of assisting with rediagnosis, further investigation and collaborative discussion, not diagnostic closure (Simpkin & Armstrong, 2019). Communication of uncertainty is also crucial as it can impact patients' understanding, confidence, and participation in subsequent care (Dahm et al., 2023).

5.2 Cognitive Vulnerabilities in Diagnostic Reasoning

Clinical reasoning can be affected by anchoring, confirmation bias, and premature closure, particularly in high-pressure environments where interruptions, time constraints, and cognitive overload reduce reflective thinking (Hartigan et al., 2020). Abnormal findings that are repeated can also be normalized, and clinical context, experience and organizational pressures can further develop cognitive bias (Hammond et al., 2021). A classic example of how infectious disease diagnosis may overlook other possible causes of similar symptoms is infectious disease outbreaks (Bray et al., 2022). Cognitive forcing is a technique that can be used to challenge these tendencies by encouraging students to think about other explanations before making conclusions (O'Sullivan & Schofield, 2019). Reflective reasoning and repeated reassessment therefore remain important safeguards against fixed diagnostic assumptions.

Common cognitive vulnerabilities that may influence nursing clinical reasoning are summarized in Table 2.

Table 2. Cognitive Risks in Nursing Clinical Reasoning

Cognitive vulnerability	Diagnostic risk	Safeguard
Anchoring	Overreliance on initial diagnosis	Reassess when new evidence emerges
Confirmation bias	Contradictory findings ignored	Actively seek disconfirming evidence
Premature closure	Alternatives not considered	Maintain diagnostic openness

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Normalization of abnormality	Deterioration underestimated	Compare with baseline and trends
Cognitive overload	Important cues missed	Prioritize high-risk information
Automation bias	Excessive reliance on alerts	Combine technology with clinical judgment

6. Nursing Interception of Diagnostic Error Across the Care Pathway

Nurses have a role to play in the safety of diagnosis during assessment, investigation, treatment, discharge and follow-up. There are a number of ways in which problems can be identified in nursing practice, and these opportunities can be seen as opportunities to prevent harm from coming to others; these include: diagnostic errors arising from a lack of information, failure to recognise changes, incomplete follow-up or inadequate re-evaluation of previous thoughts.

6.1 Initial Assessment and Diagnostic Evaluation

The initial assessment is a key stage to note red flag presentations and those that are atypical along with factors that could have an impact on diagnosis. Beyond routine measurements, clinically important information can be gleaned from a symptom history, functional changes, medication usage, comorbidities, and patients' concerns. There can be delays in the diagnostic process if there is a lack of connection between early warning signs and subsequent diagnostic decisions (Shen et al., 2022). Reducing this risk is possible for nurses by documenting and communicating any unusual or unexplained findings.

6.2 Investigation and Treatment

New information will lead to reconsideration of the working diagnosis. Nurses observe symptoms, physiological changes, clinical response to the treatment and adverse reactions and can determine if there is any gap between the anticipated and actual clinical course. If the condition does not improve, worsens, or if new symptoms occur, re-evaluate. The integration of eHR-based safety algorithms with clinical workflow and speedy human response could facilitate their effectiveness in identifying patients at risk for diagnostic delay (Zimolzak, Singh, et al., 2022).

6.3 Follow-Up and Transitions

Follow-up is in jeopardy when the responsibility is not clearly defined or the information is divided. There may still be workflow gaps, undefined ownership, and irregular follow up which lead to losses of test results (Zimolzak, Shahid, et al., 2022), and lost follow-up can be an interaction between technology, communications, task design, and organizational processes (Rogith et al., 2020).

Patients can also identify missing or unresolved results and help to ensure safer follow-up (Thomas et al., 2021). Delayed follow-up of abnormal mammography highlights the impact of communication and coordination issues in the delay of further evaluation (Reece et al., 2021). Patient-reported concerns following emergency discharge can identify diagnostic problems that were not detected during the initial visit (Gleason, Peterson, et al., 2021), and electronic notification systems can identify investigations that remain pending (Weingart et al., 2020). Nursing involvement across these stages helps maintain continuity and close diagnostic loops.

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Table 3 summarizes key points in the diagnostic pathway where nursing actions may help prevent or intercept diagnostic error.

Table 3. Nursing Contributions Across the Diagnostic Pathway

Diagnostic stage	Nursing contribution	Safety value
Initial assessment	Identify red flags, atypical symptoms, and relevant history	Supports early diagnostic accuracy
Investigation	Monitor tests and abnormal findings	Reduces missed or delayed results
Treatment	Assess response and unexpected deterioration	Prompts diagnostic reconsideration
Ongoing care	Reassess trends and communicate changes	Supports early recognition of evolving problems
Transition/discharge	Highlight pending results and unresolved symptoms	Maintains diagnostic continuity
Follow-up	Track persistent symptoms and outstanding findings	Helps close diagnostic loops

7. Prevention of Diagnostic Error Through Nursing Practice

To avoid diagnostic error, nurses must be able to take action promptly when the results of surveillance and clinical reasoning suggest that the diagnosis may be incomplete, incorrect, or not be congruent with the patient's status. Effective prevention therefore involves escalation, verification, reassessment, follow-up, and advocacy rather than reliance on a single safety intervention. Results suggest that interventions that involve multiple phases of the diagnostic process and enable physicians to identify and react to the developing risks are most effective to solve diagnostic errors (Abimanyi-Ochom et al., 2019).

Escalation becomes especially critical when a patient is deteriorating, when the patient is exhibiting symptoms that were not expected, or when the patient is not responding as expected. If the clinical situation is not resolved, nurses need to ensure they clearly articulate their concerns and persist. Communication is thus an important patient safety behaviour; it's a sharing of information, questions or concerns that could prevent harm or lead to reconsidering a clinical pathway (Kane et al., 2023). The willingness of nurses, however, to raise concerns may be impacted by factors such as professional hierarchy, concerns about negative responses, organisational culture and perceived receptivity of senior staff (Lee et al., 2021). Psychological safety is therefore crucial as the provision of care would not be safe if staff were not free to raise concerns and report uncertainty if their decisions were questioned. (O'Donovan & McAuliffe, 2020)

Another barrier to diagnostic failure is verification of critical information. Checklists can be used to remind clinicians of pertinent findings, consider the possibility of alternate diagnoses and confirm that important diagnostic steps were not missed. However, their usefulness can only be assessed when they are integrated into the clinical workflow and are designed to support the human factors that lead to errors, as opposed to the additional documentation burden (Al-Khafaji et al.,

2022). Nurses can also help by verifying that all laboratory and imaging investigations have been performed, that abnormal results are communicated to the appropriate clinician and that there are missing investigations.

Diagnostic prevention also depends on reassessment. If a patient's symptoms continue, intensifies or fail to respond to therapy as expected, a reevaluation of the working diagnosis is necessary. Interruptions and competing demands can disrupt this reasoning process by reducing attention and increasing the likelihood that important clinical information will be missed, making interruption management an important component of diagnostic safety (Sloane et al., 2023).

The lessons learned from past diagnostic successes and failures can help reinforce prevention efforts. Structured feedback can help the clinician to assess how the reasoning has developed and where there may be room for further development in diagnostic processes (Fernandez Branson et al., 2021). In the context of nursing practice, this learning approach underlines the necessity of noticing changes, asking questions about things that aren't resolved, championing patients, and supporting the process of furthering the assessment when uncertainty arises, but not to be blind to it and continue as if nothing has changed.

8. System and Organizational Determinants of Nursing Diagnostic Safety

The systems in which nurses practice influence as well as nurse competence, nursing contributions to diagnostic safety. The number of staff, workload, team working, culture and digital infrastructure all impact nurses' time, information, authority and support to identify and share diagnostic concerns. The quality of the clinical work environment has been found to influence diagnostic processes, affecting communications, attention, coordination, and opportunities for re-evaluating the situation (Khazen et al., 2023).

8.1 Workforce and Work Environment

Sustained clinical surveillance is essential and depends on having adequate staffing and the right skill mix. If the nurse is responsible for too much work, there may be less time for repeated assessment, any meaningful interaction with the patient and timely escalation. Given the association of nurse staffing approaches with nursing and patient outcomes in the context of maintaining safe care, it is clear that a key component of safe care is the design of the nursing workforce (Twigg et al., 2021). High workload can also increase time pressure, fatigue, interruptions, and competing demands, all of which may weaken attention to subtle clinical changes or delay follow-up of unresolved findings.

The continuity of nursing care is also crucial because repeated contact enables nurses to see if something is new to the patient or if it is just within his or her baseline. It can be difficult to improve the understanding of context and make it more dependent on written documentation when it is broken up and responsibilities for its development are constantly shifting. This can be a special challenge when documentation takes up a lot of time. The use of EHRs has been linked to an increased amount of documentation for both nurses and physicians, which can limit the time they have for direct patient care and communication (Moy et al., 2021).

8.2 Team and Organizational Culture

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The safety of diagnosis relies upon the ability of nurses to be able to report concerns without the fear of losing their job or facing repercussions. Professional hierarchy can hinder questioning of an established diagnosis, especially if nurses believe that their observations will not be appreciated. These factors are then psychological safety, interprofessional trust and organisational responsiveness, which impact whether concerns are raised in a timely way. A supportive culture enables nurses to raise uncertainty, seek further re-evaluation, and challenge inconsistencies to the clinical picture as an accepted part of safe practice not interpersonal conflict.

Organizational structures should also clarify responsibility for reviewing abnormal findings, pending investigations, and unresolved symptoms. If accountability is shared, essential information can be taken for granted and a delay in diagnosis can occur.

8.3 Information and Technology Environment

Diagnostic safety can be aided by having clinical information available in digital systems, by the ability of digital systems to identify abnormalities and by the ability of digital systems to communicate between settings. The use of EHRs, however, can also lead to diagnostic error if information is hard to find, presented poorly, duplicated, or distributed throughout various sections of the record (Krevat et al., 2023). Similarly, there have been delays attributed to health information technology that have also been associated with usability issues, workflow issues, communication issues and incomplete follow-up processes (Powell et al., 2020).

While electronic records can facilitate diagnostic communication and data exchange, its impact on diagnostic communication and data sharing will rely on the way information is organised and incorporated into clinical practice (Quinn et al., 2019). Automated nursing DSS tools can help in their recognition and prioritization, but they can also pose new risks if the clinicians rely too heavily on the automated prompts or when too many alerts generate “alert fatigue” (Akbar et al., 2021). Diagnostic safety therefore requires technology that supports, rather than displaces, nursing judgment, communication, and continuous clinical surveillance.

9. Strengthening Nursing Contributions to Diagnostic Safety

Enabling nurses to make a contribution to diagnostic safety, requires that nurses are active not just in observing and communicating, but also in diagnosing. They should be responsible for monitoring, analysing changing clinical data, clarifying uncertainty and the review of unresolved issues, with relevant training, management and inter-agency working.

There is the need for a greater integration of diagnostic-safety competencies in nursing education. Clinical reasoning, recognizing uncertainty, understanding changing patient pathways and communicating concerns about diagnosis are essential patient safety competencies. Nurses' knowledge, attitudes and preparedness for safer practice can be improved through educational interventions while active reasoning, case analysis, reflection and decision-making are essential for the development of clinical reasoning skills (Lee et al., 2022; Pérez-Perdomo & Zabalegui, 2024).

The use of simulation can reinforce these skills, giving nurses the opportunity to practise the identification of deterioration, uncertainty and communicating concerns in a safe setting. Virtual

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simulation has proven to have positive effects on clinical reasoning (Sim et al., 2022), and simulation-based learning in general can enhance competence, confidence, and clinical readiness (Mishra & Trivedi, 2023).

These skills should be further developed in the clinical setting by implementing structured pathways of escalation, interprofessional diagnostic review and learning from diagnostic errors and near misses. Nurses should have clear ways to raise concerns, request a re-evaluation and/or have a voice when findings are not consistent with the working diagnosis.

As shown in Figure 2, strengthening nursing contributions to diagnostic safety requires coordinated action at the individual, team, and system levels, with these factors collectively supporting surveillance, interpretation, communication, escalation, and follow-up in clinical practice.

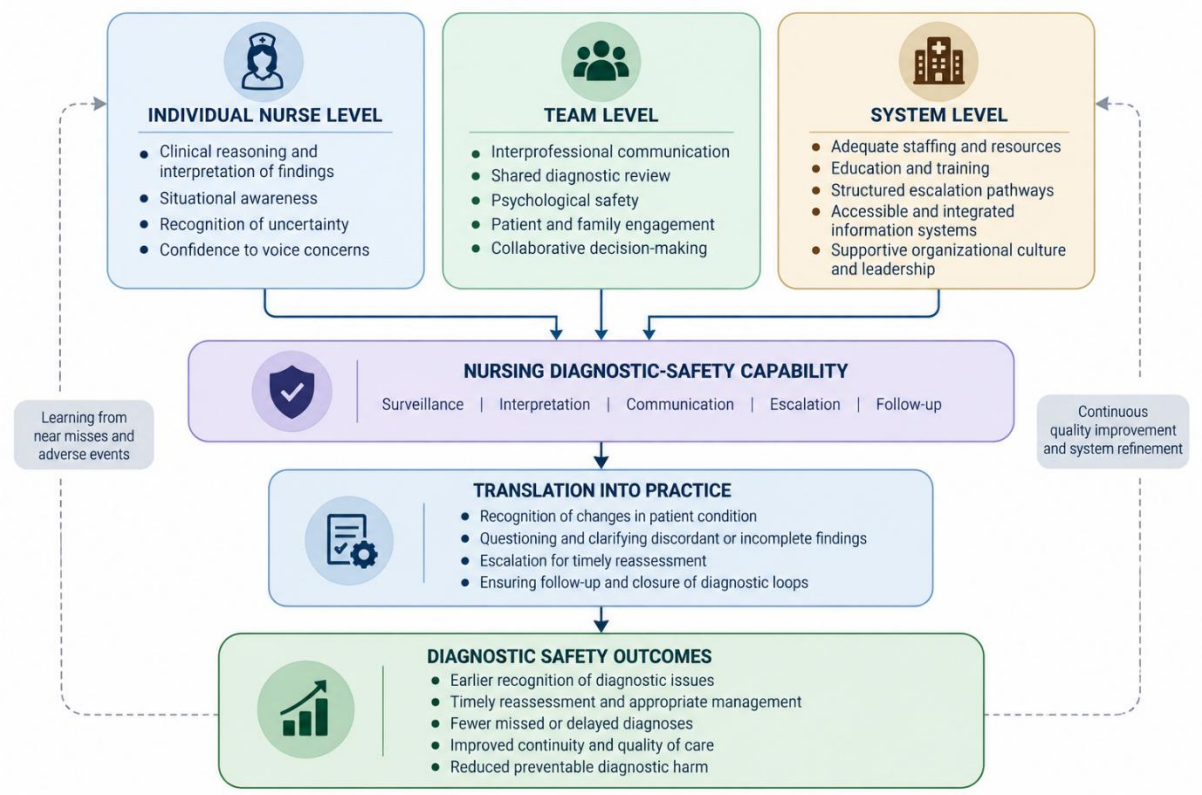


Figure 2. Multilevel framework for strengthening nursing contributions to diagnostic safety

Additionally, the development of critical thinking and clinical decision-making skills should be promoted through CPD as this is influenced by experience, knowledge, context, and workplace conditions (Zainal et al., 2025). Bedside decision-support strategies should be used as an aid to systematic reasoning, rather than a substitute for it (Cunha et al., 2025).

Future research is needed to create nurse-sensitive diagnostic safety indicators such as timely escalation, follow-up of un-resolved findings, diagnostic near misses and nursing-initiated

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reassessment. These could help to better understand the relationship between nursing involvement and diagnostic timeliness, accuracy, continuity and patient outcome.

Table 4 presents priority areas for strengthening nursing contributions to diagnostic safety.

Table 4. Priorities for Strengthening Nursing Diagnostic Safety

Priority area	Recommended action	Expected benefit
Education	Strengthen diagnostic reasoning and uncertainty training	Better clinical judgment
Simulation	Use evolving diagnostic and deterioration scenarios	Improved recognition and escalation
Communication	Standardize escalation pathways	Faster response to concerns
Teamwork	Include nurses in diagnostic review	Better information integration
Safety culture	Support speaking up and psychological safety	Earlier identification of risk
Measurement	Develop nurse-sensitive diagnostic indicators	Improved evaluation and quality improvement
Research	Expand evidence across care settings	Stronger basis for future interventions

10. Conclusion

Diagnostic safety relies on the timely detection, explanation, discussion and resolution of clinical issues throughout the patient's care. Nurses play a crucial role in this process, by constantly monitoring, repeatedly reviewing patient data, noticing subtle shifts, understanding developing clinical data, and identifying discrepancies between expected and actual patient progress. They are close to patients and as a result have a unique opportunity to pick up early warning signs, identify problems that have not been resolved and start further investigation when the clinical picture is inconsistent with a current diagnosis.

Effective nursing contributions to diagnostic safety also depend on communication. Abnormal findings are reported clearly, concerns escalated in a required structure, information is accurate from handover and the patient/family's observations are taken into account, therefore minimising information loss and enabling diagnostic reassessment. The importance of clinical reasoning is also not to be overlooked as the value of surveillance is limited if the observations are not interpreted in the context of the broader clinical situation. Nurses should then be able to identify uncertainty, challenge inconsistent findings, and re-evaluate assumptions when treatment response and/or patient trajectory is not as anticipated.

These responsibilities cannot be sustained through individual vigilance alone. Diagnostic practice should be safe, which depends on having sufficient staff, workload, information, leadership, psychological safety and interprofessional trust. Healthcare systems should provide nurses with the opportunity to speak up and speak out without fear and contribute to the process of a diagnosis and review.

In order to enhance the roles of nurses in diagnostic safety, a greater focus on clinical reasoning, uncertainty management, simulation-based education, structured pathway of escalation and learning from diagnostic near misses is needed. Future work also needs to create nurse-sensitive indicators that are able to quantify these contributions. Incorporating nurses into the diagnostic team can further enhance team decision-making, ensure continuity of diagnostic information and minimise avoidable harm due to missed, delayed or incorrect diagnoses.

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