Review of Contemporary Philosophy
ISSN: 1841-5261, e-ISSN: 2471-089X
Vol 22(1), 2023
pp. 129 - 142

From Data to Practice: The Impact of Nursing Informatics on Clinical Decision-Making

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Abstract

Nursing informatics is a rapidly evolving field that bridges clinical care, technology, and information science, significantly influencing clinical decision-making processes in healthcare. This review explores the integration of nursing informatics tools, such as Electronic Health Records (EHRs) and Clinical Decision Support Systems (CDSS), and their impact on improving patient outcomes and enhancing nursing efficiency. Through a comprehensive literature review, this paper examines the role of informatics in data-driven decision-making, evidence-based practices, and the reduction of medical errors.

The findings reveal that nursing informatics facilitates real-time access to patient information, streamlining workflows and improving communication among healthcare teams. EHRs and CDSS provide critical support in complex decision-making scenarios, enabling nurses to make informed choices based on patient-specific data and evidence-based guidelines. Informatics tools also enhance patient safety by minimizing documentation errors, ensuring compliance with clinical protocols, and supporting preventive care measures.

However, challenges such as usability issues, alert fatigue, and the need for continuous training in informatics competencies persist. The review emphasizes the importance of user-centered design, interdisciplinary collaboration, and ongoing education to address these barriers. By leveraging nursing informatics, healthcare organizations can promote a culture of safety, efficiency, and innovation in clinical decision-making.

This paper underscores the transformative potential of nursing informatics in modern healthcare, advocating for its strategic implementation to empower nurses and improve patient care outcomes globally.

Keywords:
Nursing informatics, clinical decision-making, electronic health records (EHRs), clinical decision support systems (CDSS), patient safety, evidence-based practice, healthcare technology, nursing efficiency.

Received: 5 March 2024 **Revised:** 22 May 2024 **Accepted:** 17 June 2024

Chapter 1: Nursing Informatics

Today's healthcare environment relies on nurses to deliver and manage care while keeping patients safe (Yoder-Wise & Sportsman, 2022). Nurses need timely, accurate, and accessible data and information to make the right decisions to improve patient outcomes (Sensmeier & Anderson, 2021). Communication is an essential tool and nurses need appropriate access to patient information, including medical histories, medication lists, lab and imaging results, and clinician notes, to understand a patient's clinical status. Much of current communication is in an electronic format, which requires new skills to ensure that health information is accurate, easy to use and understand, and accessible whenever and wherever it's needed (Alzhrani et al., 2022).

Over time, several attempts made to describe the different subdomains within the interdisciplinary field of health informatics (Davies et al., 2020). Health informatics is an umbrella term for a field of study that combines domain knowledge from the health sciences, e.g., medicine, nursing, and pharmacy, with insights from information and computer sciences. Those pursuing a health informatics career are typically cross-trained to skillfully combine domain expertise and insights from information and computer sciences (Bichel-Findlay et al., 2023).

Technology is essential in the modern dynamic healthcare systems as it plays a crucial role in nursing and education work (Krishnamoorthy et al., 2023). Nursing informatics is the application of information technology in the nursing responsibilities encompassing management, practice, and education (Kleib et al., 2021). Additionally, nursing informatics includes integrating computer science, nursing science, and information science to reinforce the nursing practice. Currently, clinical nursing information systems, medical diagnostic systems, and decision support systems are linked to patient information collection (McGonigle & Mastrian,).

According to the American Nurses Association, nursing informatics is the specialty that integrates nursing science with multiple information and analytical sciences to identify, define, manage, and communicate data, information, knowledge, and wisdom in nursing practice (Hübner et al., 2022). The contribution of nurse informaticists in developing and improving technology, such as electronic medical records (EMRs) and clinical decision support (CDS), is essential for reducing medical errors, patient care delays, and healthcare costs (Van Dort et al., 2021).

Nursing informatics is the practice of using data and technology to improve patient experiences and outcomes, among other goals. Nursing informatics specialists (sometimes called nurse informaticists or informatics nurses) work with EHR and EMR systems in a variety of ways: maintaining, optimizing, collecting, and analyzing (Booth et al., 2021). Nursing informatics is a fast-growing field that plays a vital role in leveraging technology and data to transform health care delivery, enhance patient outcomes, and advance the nursing profession. This nursing role bridges a health care organization's systems, nursing staff, and providers, including nurse practitioners and certified nurse midwives (Damar et al.,).

Incorporating informatics in nursing offers valuable input into how technological systems should be designed and implemented from a nursing perspective. Patient care can be subjective in many ways, but nursing informatics aims to use data-driven approaches to nursing that will improve patient care in a meaningful way and enhance the clinical experience for both providers and patients (Haupeltshofer et al., 2020). Healthcare environments characterized by increased technology integration in routine operations have improved patient care quality and enhanced management efficiency, implementing information systems provides better access to evidence, positively affects patient care quality, andaugments evidence-based nursing (Gaughan et al., 2022).

Nurse informaticists play an essential role in the design and use of health information technology (IT), including devices that enable clinicians to track data and deliver safe and efficient care. Nursing informatics bridges the gap between health care's clinical and technological perspectives (Asif & Khan,). Nurses should advocate for the innovative use of nursing informatics while always keeping sight of their focus on patient safety and privacy. The goal of nursing informatics is to facilitate progression of patient data to information and wisdom to improve the patient condition (Ovwasa,).

The Healthcare Information and Management Systems Society (HIMSS) is a nonprofit professional society whose mission is to reform the global health ecosystem through the power of information and technology (Gibson et al., 2023). HIMSS sponsors a vibrant nursing informatics community, which has grown to represent over 8,000 nurse informaticists, working in a wide variety of roles and settings. These roles build on functional areas that require informatics skills, including education, leadership and administration, consultation, systems analysis and design, policy development, quality and performance improvement, research, and evaluation (Sensmeier & Anderson, 2020).

Since 2004, HIMSS has tracked nursing informatics workforce data to assess the evolving status of the specialty (Sensmeier & Anderson, 2021). The HIMSS 2020 Nursing Informatics Workforce Survey continues to show that nurse informaticists play a crucial role in healthcare. Just as the continuum of care has expanded beyond the walls of the hospital, nursing informatics has expanded its scope to welcome innovation into its practice. Virtual care, mobile devices, and point-of-care CDS are among the many new tools and technologies in use today. The specialty of nursing informatics has followed this high-tech trajectory by managing increasingly sophisticated applications, performing expanded job roles, experiencing increased salaries, and achieving advanced educational preparation (Tiase & Carroll, 2022).

Nursing informatics currently includes many tools aimed at facilitation of these efforts. The purpose of this paper is to discuss the utilization of Electronic Health Record (EHR), Clinical Data, and Clinical Decision Support Systems (CDSS) tools to support decision-making in critical care nursing practice (Anderson et al., 2020). The purposeful use of digital tools is one of the key strategies to meet foreseen health care challenges locally and globally. Health informatics includes contributions from several areas, e.g., nursing informatics, medical informatics, clinical informatics, dental informatics, etc. These terms are used interchangeably with or are gradually being substituted by the term eHealth (Cummings et al., 2020).

Achievements in biomedical and health informatics are significant contributors to increasingly advanced diagnostic processes, personalized treatment, and advanced health management regimes to control chronic conditions. They also contribute to efforts at prevention, early intervention, or task shifting to meet requirements for independence and aging in place (Hassan et al., 2022). Nursing informatics is vital for several reasons: *Improving patient care and outcomes*: By leveraging data and technology, nursing informatics enhances the quality and safety of patient care. Optimized EHRs can allow nurses and other health care providers to quickly glean patient information if data is collected, analyzed, and shared effectively (Atique et al., 2020).

Electronic health records (EHRs) provide real-time patient information, reducing errors and enabling more accurate diagnoses and treatments (Avula& Tummala, 2021). *Streamlining workflows:* Informatics helps streamline nursing workflows by automating routine tasks, allowing nurses to focus more on patient care rather than administrative duties. This efficiency can lead to better patient outcomes and increased job satisfaction among nurses. Improved efficiency and simpler workloads reduce the time and frustration

that nurses may have with administrative burdens, allowing more time for patient care (Saxena et al., 2023).

Data-driven decision making: With access to comprehensive patient data, nurses and healthcare providers can make more informed decisions. This data-driven approach supports evidence-based practice, improving patient outcomes and optimizing resource utilization (Avula, 2022). *Enhancing communication:* Effective communication is critical in healthcare. Nursing informatics facilitates seamless communication among healthcare team members, ensuring that everyone has access to up-to-date patient information, which is essential for coordinated care (David-Olawade et al.,).

Supporting education and research: Nursing informatics contributes to nursing education and research by providing tools and data necessary for training and studies. It helps in developing educational programs that integrate the latest technology (Forman et al., 2020). Nursing time is expensive. When nursing informatics can improve data handling, it makes it easier for nurses to provide quality patient care more efficiently and effectively. Access to timely, correct data and the ability to analyze it can support research, quality improvement initiatives, and innovation. These efforts may assist in implementing evidence-based practice (Deckro et al., 2021).

Other benefits of nursing informatics include: *Enhanced patient safety*. More accurate documentation and better access to patient information may minimize medical errors and improve communication between health care providers and patients (Zareshahi et al., 2022). *Virtual care.* During the COVID-19 pandemic, nursing informatics stepped up to implement and support more telehealth and virtual health care platforms. Data-driven decision making. Access to real-time data and analytics can allow for better-informed decisions and proactive care interventions (Ognjanović et al.,).

The impact of nursing informatics on a patient's quality in different clinical environments, and the outcomes conflict with improved patient care quality. Primarily, nursing informatics reduces medical errors, increases efficiency, improves communication loops, enhances service delivery, and promotes medical professionals' performance in all fields of medicine (Al Najjar & Shafie, 2022). *Impact of nursing informatics on patient outcomes,* the presence of health information on the internet equalized knowledge opportunities among the healthcare providers and the patients creating an e-patient phenomenon (Yusof et al.,).

Nursing informatics can enhance the information sharing between the nurses and the patients building unique relationships that lead to positive patient outcomes. Electronic health records can change the quality of care and patient outcome. Integrating the electronic health records system would provide more value to specific patients and populations for chronic diseases (Teixeira et al., Nursing informatics promoted time management, time spent on patient care, documentation time, information access and quality, knowledge updating and utilization, nurse-patient relationship, the teaching of families and patients, communication, and care coordination, among others. Such positive benefits of nursing informatics imply an improved patient outcome (Jayousi et al.,).

Nursing informatics and patient satisfaction, for decades issues in nursing efficiency and patient safety have a pressing concern. However, promoting the role of nursing informatics is proved to be the best mechanism for addressing the mentioned issues. Nursing informatics reduced time for completing electronic records while diminishing medical errors, increased satisfaction with electronic shifts and reduced nurse turnover (Idoko et al.,). Significantly, nursing informatics increased patients' satisfaction implying an increase in nursing efficiency. Therefore, there is a pressing need for healthcare organizations to continually enhance nursing information systems to provide high-quality services to patients in the modern competitive environment (Popescu et al., 2022).

Similarly, the approach reduces medication costs while ensuring that patients access their health reports and records within a precise diagnosis time (Alolayyan et al., 2022). However, the issue of implementing nursing informatics remains a complicated subject encompassing dynamics at various levels, including patients, healthcare providers, and healthcare organizations. Such challenges may result in reduced

performance, and patients' needs may not be addressed to the recommended standards, hindering the patient-centered healthcare framework (Okolo et al.,

Chapter 2: Clinical Decision-Making

Nurses must be competent decision-makers to satisfy consumer needs. This is expected by the uncertain and dynamic nature of the healthcare setting, in order to solve their customers' needs, nurses should be able to select, tuning information, create those decisions and implementing those decisions accordingly (Viale,). Nurses must integrate a huge variety of clinical data while facing conflicting pressures to decrease diagnostic uncertainty, risks to patients, and costs. Deciding what information to gather, which tests to order, how to interpret and integrate this information to draw diagnostic conclusions, and which treatments to suggest is known as clinical decision making (Chan et al., 2020).

Clinical decision making refers to the process of constructing clinical options based on objective clinical data and evidence-based standards, with consideration of multiple factors such as patient preferences and technological advancements in healthcare (Musen et al., 2021). Clinical decision-making can be considered a cognitive process related to identifying a problem by identifying relevant clinical signs or features, data collection, assimilation, analysis, evaluation, and selection, to make a practical decision (Davoodi et al., 2022).

Clinical decision making is a cognitive process in which nurses identify problems that directly or indirectly affect patients, find, and select appropriate alternatives. This is a core competency that allows judgments to be made using various forms of patient information and is the basis for clinical practice (Oh et al., 2022). Clinical decision making requires the intuition necessary to prevent disease and promote the patient's health under certain principles. It is the ability to cope with and resolve the patient's behavior, which means the power to handle the nursing task (Kvist & Hofmann, 2023).

Clinical decision-making is one of the most important skills that nurses bring to the profession. When nurses have the authority to make evidence-based care decisions that follow best practices, a host of benefits accrue. Patients have better outcomes, nurses have higher job satisfaction, and hospitals benefit by improving their patient care metrics and reducing their risk profile (Park et al., 2023). For nurses, clinical decision-making entails increasing their cognitive abilities and intuition, which will allow them to directly and indirectly identify the problems affecting their patients and select appropriate nursing alternatives for them (Collen,).

Thus, clinical decision making is a key competency required in the field of clinical practice. In addition, it allows the provision of high-quality nursing by consolidating the nursing practices and enabling important judgments to be made in the uncertain disease situation of a patient, thereby contributing to the patient's comfort (Abdelhamed et al., 2023). Clinical decision-making in nursing is an active approach to assessing a patient's condition and basing care decisions on the evidence. It's a collaborative approach, with a team of health care providers weighing in and determining the best course of action (Jones & Morgan, m).

Clinical decision-making also includes patients and families in the process, which recognizes patients as their own best advocates and experts on their physical and mental health needs. Decision- making is defined as "the choice between multiple alternatives" (Huang et al., 2020). In nursing, clinical decision-making embraces making decisions on hospital care and how to introduce care to patient. With evidence-based knowledge, practice, and clinical help this method becomes more efficient. It embodies the nurse's willingness to make proper decisions constructed on the interaction of knowledge and expertise while applying decision-making to nursing, while the nurse transitions from the beginner to the expert (Jonas et al., 2022).

Major component of providing safe patient care is the use of appropriate knowledge and communicating of accurate information. Without clear data, one cannot guarantee that the patient concerned will be given the best or best actions (Kwame & Petrucka, 2021). Several tools developed in the healthcare sector to ensure better accuracy of information. By properly developing and using these

instruments, healthcare team can make judgments further relevant to patient care, and assist in the process of clinical decision making (Joseph-Williams et al., 2021).

Critical thinking skills, teamwork, communication, collaboration, and knowledge of best practices are all essential parts of the clinical decision-making process. Nurses, colleagues, and patients keep the lines of communication open, make sure that everyone is on the same page with regard to decisions, and follow the evidence when caring for patients (Liu et al., 2022). Clinical decision-making has a number of advantages for hospitals, patients, and nurses. At its core, the process is rooted in science and the scientific method (hypothesis, test, repeat). It allows nurses to use all of their clinical experience, education, and professional knowledge of patient care, rather than following a set workflow or checklist (İlaslan et al., 2023).

Nurses are clinicians; therefore, they should make clinical decisions. Health care organizations that support nursing judgment and critical thinking benefit in the following ways: *Patient Outcomes*, Nurses assess their patients, work with their colleagues, communicate with patients and their families, and identify patient health requirements. They can base their decisions on research and data. They can use critical thinking skills to identify when a patient's treatment needs to be adjusted. The research increasingly shows that clinical decision-making by nurses can improve quality of care and patient satisfaction (Thirsk et al., 2022).

Also, *Hospital Advantages,* as health care payment models move from fee-for-service reimbursement models to value-based care, patient outcome metrics have become more important. That's because hospitals and doctors will soon largely be reimbursed based on the quality of the care they provide rather than by procedure (McKenna & Jeske, 2021). Medicare is using data such as hospital-acquired infections, falls, and readmissions to penalize hospitals. As a result, allowing nurses to use their clinical judgment can help boost hospital revenues (Aloisio et al., 2021).

Inaddition, *Job Satisfaction,* The nursing shortage worsened under pressure. Nurses report that when their employers give them authority to make clinical decisions, they are more likely to be satisfied in their jobs. They may be less susceptible to burnout and more likely to stay in the profession (Ulrich et al., 2022). When employers treat nurses as clinicians, they are more likely to retain staff, which can help stem the nationwide nursing shortage that the health care system faces (Pursio et al., 2021).

Attribute of nurses' clinical decision making are, Clinical reasoning, the first attribute of nurses' clinical decision making, means holistic and comprehensive thinking that can solve the diverse and complex health problems of patients. It refers to the problem-solving ability needed to recognize the patient's health problems and predict the risks or benefits of the patient based on clinical intuition and an analytical approach (Molina-Mula & Gallo-Estrada, 2020). This is a holistic thinking ability essential for nurses that leads to the result of professional assessment and resetting, thereby having a positive effect on the patient's recovery and being exerted as a form of being connected with each other (Farčić et al., 2020)..

Choosing and applying challenging alternatives, the second attribute of nurses' clinical decision making, can be said to be a nurse's resource that enables him or her to have confidence in the patient's health problem despite the changes it is undergoing, and to seek an alternative to achieve desirable results (Oh et al., 2022). In most studies, the nurses' selection and application of challenging alternatives based on their clinical experience corrected the patients' health problems, and the nurses themselves induced favorable adaptations to clinical practice with open and positive values (Abdelhamed et al., 2023).

Professional assessment and resetting, the third attribute of nurses' clinical decision making, are powerful activities that can allow nurses to actively and independently identify when a patient's complex health situation needs to be corrected or when a difficult problem or emergency situation is encountered (AL Btoush et al.,). It refers to the redistribution of resources by collecting data on the priority health needs of the patient and his or her family and on the patient's disease, and revising the results. This is an important factor that enables nurses to flexibly cope with nursing in the clinical practice field, and to eventually share their opinions with their fellow medical staff to form a social network. Above all, it is an essential element for improving nurses' nursing capacity (Shin et al.,).

The antecedents of nurses' clinical decision making, clinical judgment experience regarding the patient's health status, which is constantly changing and has high uncertainty and complexity, is important (Perrotta et al., 2020). Priority is given to the patient's health problem, and the problem is predicted and treated through the nurse's interaction with his or her fellow medical staff. At the same time, improperly recognizing the situation and misidentifying the priorities can have a very negative impact on the patient's health problem (Sendak et al., 2020).

Nurse decision-making variables are divided into four categories: nurse characteristics, patient characteristics, environmental factors, and organizational determinants (Abu Arra et al., A2023). Nursing experience, clinical expertise, nurses' demographic parameters, autonomy, and individual attitudes toward patient care identified as nurse characteristics. The interaction of the multidisciplinary team, the hospital's goal and vision, decision-making tools (protocols and guidelines), and institutional resources were all organizational determinants (Galletta et al., 2022).

For successful day-to-day patient care, nurses must be able to analyze a wide range of information, utilizing Clinical Decision-Making expertise, to solve complicated problems that arise in clinical practice. This will guarantee patient safety and encourage good results. The job of nurses is more critical than ever in this era of health care development (Jawabreh,). Nurses must be able to make sound decisions in the face of constantly changing and increasingly complex situations in health care services. Decisions must be made when a patient's condition changes, necessitating the nurse to recognize, analyze, and integrate it (Zhu et al.,).

As a result, achieving the patient's goals necessitates a multi-step decision-making process that is accompanied by critical thinking. In the meanwhile, numerous errors have made as a result of thinking mistakes that influence decision-making processes (Zh et al., 2019). As a result, high expectations of nurses to overcome and minimize events involving registered nurses are reliant on the CDM skills of the nurses. There is additional support for this notion in a publication called Enhancing Patient Safety that says the nurse's capacity to recognize, interrupt, and rectify medical mistakes would help protect patients by using their entire talents and responsibilities (Abate et al., 2022).

Clinical decision making has three integrated phases: diagnosis, assessment of severity, and management (Jussupow et al., 2021). Appropriate clinical decision making considers the need to make a precise diagnosis as well as the costs associated with inappropriate or indiscriminate use of diagnostic tests. It also assesses the risk for an adverse outcome because of inappropriate management, and the costs and possible harmful effects of therapeutic interventions (Hager et al.,).

The consequences of nurses' clinical decision making, the patien psychological well-being and comfort improves when provided with nursing (Giordano et al., 2021). Thus, nurses' clinical decision-making ability acts as a positive predictor and makes patients think that they are receiving high-quality nursing services. As a result, nurses develop a sense of accomplishment and gain high satisfaction with their clinical decision making (Ronan et al., 2022).

Chapter 3: The Impact of Nursing Informatics on Clinical Decision-Making

In modern society, due to the development of medical technology and the rapid aging of the population, the complexity of nursing tasks in relation to patients with chronic diseases is increasing. This requires clinical decision making by skilled and professional nurses (El-Rashidy et al., 2021). Clinical decision-making nurtures professional nursing knowledge for maintaining the life and promoting the health of a patient. Above all, it is essential to solve the priority nursing problem of the patient based on clinical experience. The nurse can recognize the patient's priority health problem based on the patient's information and can predict the uncertain disease situation of the patient through clinical decision making (Ndawo, 2021).

Therefore, in the clinical practice field, it is necessary for nurses to collect various information needed for the nursing of patients, and to make clinical decisions with rational and critical reasoning. Poor decision-making linked with up to 98,000 deaths in hospitals each year. Research indicates that critical care nurses

make 238 decisions per hour (Wilson & Sinha,). Nursing informatics solutions represent one important effort to improve patient outcomes and support nursing practice. Nursing informatics is a field of science that combines the sciences of nursing, information, computers, and cognition to provide better access to patient information and support nursing practice (Mebrahtu et al., C. 2021).

The goal of nursing informatics is to facilitate progression of patient data to information and wisdom to improve the patient condition. Nursing informatics currently includes many tools aimed at facilitation of these efforts (Lu et al., 2021). Critical care nurses coordinate care for patients with highly complex and potentially unstable illnesses. This requires critical care nurses to work within health care teams to maintain awareness of a patient's current status in order to limit and respond to complications with an end goal of improved patient outcomes (Silvestri et al., 2022).

Moreover, this high level of nursing care requires specialized education, knowledge and skills for effective response to changes in patient status. Despite experience and training of nurses caring for complex patients, memory and rapid data processing can interfere with timely and correct decision-making (Ackermann et al., 2022). The electronic health record (EHR) can assist in decision-making. CDSS is required to facilitate effective use of EHR in healthcare to improve patient outcomes. Clinical Decision Support Systems CDSS are computer software tools designed to facilitate decision-making through connecting evidence with patient status (Holmström et al., 2020).

Also, Use of CDSS can improve guideline compliance through warnings, alerts, and advice. CDSS is an increasingly important tool in nursing practice. Research identifies CDSS as supporting decision-making in time limited circumstances leading to improved patient outcomes (Abdellatif et al., 2021). Nursing research is inconclusive in demonstrating effectiveness of CDSS in nursing practice. However, Meaningful Use requirements and the demanding nature of decision-making in nursing practice, require that CDSS will continue to be developed as an important part of nursing practice (Pereira et al., 2021).

Improvement of CDSS, Several suggestions for CDSS improvement are described in nursing literature. To begin with, the design of CDSS must be user focused for enhanced usability for the nurse end user. User focus would include CDSS design and identification of the end users' physical, perceptual, and cognitive needs (Lu et al., 2022). Timing of CDSS information is essential. Research identifies that nurse use of CDSS increased when the CDSS information fit with nursing workflow. CDSS must fit the nurse user role (Kaltenhauser et al., 2020).

CDSS tools that do not meet end user needs lead to reduced access to evidence for decision-making. To better support acute care nurse decision-making, the end user should participate in design. One study designed nurse role specific CDSS with characteristics identified by the participating acute care nurses as important for CDSS (Jones et al., 2022). Nurses described the predominant needs of CDSS for acute care nursing practice: provide a picture of the patient's status over the course of time, support nurse autonomy, and align with the individual needs of the patient. Through inclusion of the end user in the development of CDSS, specific decision support needs can be addressed potentially resulting in a more effectively implemented CDSS in acute care (Zhai et al., 2022).

Use of CDSS in acute care nursing practice, Effective CDSS could support decision-making with many patient populations. A logic model exists in the background of the EHR system, connecting evidence-based practice to the CDSS alert and recommendations (Sutton et al., 2020). The highly complex nature of ICU nursing care requires excellent decision-making skills in conjunction with the data that exists in the EHR and experience of the clinician. The CDSS with evidence-based logic guide nurses towards effective decision making in anticipation of medication side effects (Hak et al., 2022).

Also, it is important to point out that at this time point, CDSSs are patient specific, such as with recommendations to check vital signs when administering a particular medication, and are not designed for a specific diagnosis (Ostropolets et al., 2020). there is still a constant interest in the skills of nursing informatics (NI) that can be justified by the transformation and the interest that nurses should be ready for effective performance in patient care, integrated, patient-centered environments where they are needed

not only to record data and research quality information, but mostly as an important resource for planning and decision-making, and transforming nursing practice (Chen et al., 2023).

The EHR includes many levels of clinical data and includes CDSS. The EHR, Clinical Records, and CDSS are informatics tools that can offer valuable support to nurses in decision making. The dynamic decision-making for critical care necessitates informatics instruments that provision practice of nursing by combining existing evidence with clinical data (Laing, & Mercer, 2021). the Impact of Nursing Informatics Competencies (NICs) on Decision Making Satisfaction". NIC can help the holistic healthcare sector in industry that thrives by learning to improve knowledge and sustain progress (Shahmoradi et al., 2021).

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