

# Addressing the Unique Needs of an Electronic Health Record in a Neonatal Intensive Care Unit

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## ABSTRACT

Documentation in an electronic health record (EHR) should match the nurse workflow for unique patient populations and their correlated units, but pros and cons exist with such EHR customization. Integration of our NICU EHR with other units was a complex process that required nurses to customize each patient record because neonates have specific care needs. We present concepts related to EHR customization that are applicable to any unit with a unique patient population.

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Hospitals across the country are progressing into the world of electronic health records (EHRs), and vendors often supply a core system that can be customized to meet a hospital's needs. The level of customization can affect successful implementation, quality of documentation, and staff acceptance of the system. Our experience in customizing an EHR to match the nurse workflow was the result of an organizational decision to transition from paper to EHR documentation. The purpose of this article is to describe the experience of one NICU within an organization regarding the adaptation of electronic documentation to meet the unit's specific needs.

## Background of Nursing Informatics

Computer literacy, information management, and use of technology in health care were first noted in the 1970s (Abdrobo, 2008), and the field of health information technology has continued to expand at a tremendously rapid pace during the past several decades. In 1992, the American Nurses Association recognized nursing informatics as a unique and invaluable area of nursing expertise (1992) and specifically defined it as "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" (American Nurses Association, 2015, p. 1). One significant aim of nursing informaticists is to develop electronic systems that support best documentation and data collection practices that in turn lead to improved patient outcomes (Keenan, 2014).

As health care evolves in this technology-driven climate, there is risk that the uniqueness that has been associated with the field of nursing will be lost. Therefore, when we designed our system, nurses were important stakeholders who defined essential nursing care components. The inclusion of these components allowed us to provide safe, high-quality care and gave us the ability to analyze nursing quality benchmark data. Technology solutions that involve nurses are often designed to enhance safer and more efficient patient care. For nurses within the hospital or ambulatory setting, these solutions often include the use of an EHR; point-of-care barcode scanning; telemedicine; and medical devices such as cardiac monitors, ventilators, and infusion pumps. The design of such solutions must take into consideration the nursing process and the

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## Direct patient care staff members provide invaluable contributions that are essential for the successful design and implementation of an electronic health record.

ways that nurses provide care to patients. Nurses are uniquely situated to define exactly how nursing care is provided and what the related documentation needs are.

### Literature Review

When designing an EHR, many decisions are made about what charting elements are included and how to ensure that nurse workflow and evidence of clinical decision making are documented. Determining workflow involves an in-depth analysis of the steps and processes in patient care (Elias, Barginere, Berry, & Selleck, 2015). Nurses can be assisted with clinical decision making by rules or tasks within the computer system that remind or help them complete specific assessments or interventions for the patient. Tasks in an EHR serve as reminders and often include direct links from which to complete documentation. Tasks are presented in sequential order and at logical times based on preprogrammed rules that represent workflow. Use of an EHR can enhance positive results, such as improved job satisfaction and better patient outcomes (Agency for Healthcare Research and Quality, 2013).

In a recent study to evaluate the clinical data needs of a NICU EHR, Ellsworth et al. (2014) conducted a Web-based survey of NICU providers to evaluate 98 data terms. The researchers found that a large amount of data was presented to these providers, which resulted in a strong need to present data in such a way as to guide clinical decision making. The researchers found that for areas such as a NICU, a need may be present to synthesize data on the basis of clinical role to avoid information overload (Ellsworth, Lang, Pickering, & Herasevich, 2014). If an EHR is not designed to capture nurse workflow, gaps in documentation may occur, such as those for newborn assessments, plans of care, and key elements that affect the transition of the neonate from the hospital to the home setting.

As identified by the American Academy of Pediatrics, specific pediatric functions are needed in the EHRs of pediatric units (Spooner, Council on Clinical Information Technology, & American Academy of Pediatrics, 2007). These functions

include tools related to immunization management, growth tracking, medication dosing, data norms, and privacy in special pediatric populations (Spooner et al., 2007). Like pediatric units, NICUs also need specific, neonatal functions within EHRs, and these include Apgar score, gestational age, postmenstrual age, birth weight, maternal and birth history, neonatal pain and opioid withdrawal scales, pre- and post-ductal saturations, umbilical lines, breast milk additives, fontanel description, apnea and bradycardia events, head circumference, parent visitation, and congenital anomalies.

Ramirez, Carlson, and Estes (2010) described the implementation of computerized physician order entry in a 50-bed NICU. The investigators found that the creation of specific order sets followed by step-by-step testing that incorporated NICU nursing-specific scenarios were needed. They concluded that the nursing team at the unit level was essential to the successful adoption of a new electronic system. These nurses provided key insight to understand the differences between needs in the NICU and the rest of the hospital, and they communicated essential information to leadership and information technology specialists (Ramirez et al., 2010).

### General Advantages and Disadvantages of a NICU EHR

General advantages of customizing an EHR to accommodate nurse workflow include remote access to the patient record, guided documentation, and the ability to retrieve data with which to assess quality of care. One significant advantage of a customized system is clinical decision support, which provides a visual indicator, often referred to as an alert (i.e., a pop-up message) that notifies the nurse when an action is needed. For example, clinical decision support in a NICU can be alerts to the nurse when an infant's blood protocol expires, when an infant's measurements are outside the growth chart parameters, and when a medication dosage is outside of parameters set for the infant's weight. These programmable safety alerts are not possible with paper documentation.

Electronic health records can also be programmed with task reminders for many nursing interventions and care. Task reminders may include pain reassessment after a pain intervention, indwelling urinary catheter care if the patient has a catheter, Braden Q skin assessment, daily parent education, twice-daily assessment for

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