


Missing Nursing Care Data that Represents Disruption to the Neutral Thermal Environment of Premature Neonates

A cluster of six yellow starburst or asterisk-like shapes arranged in a small group to the right of the word "Premature".

Clinical Intelligence

- **Clinical Intelligence (CI) is:**
 - An emerging field in healthcare,
 - Changing nursing practice,
 - Drives clinical outcomes,
 - Essential in realizing the value of data generated through clinical information systems such as the electronic health record (EHR).
- Harrington, L. (2011). Clinical intelligence. *Journal of Nursing Administration*, 41(12): 507-509.

Fundamental Theorem of Informatics



Friedman, C.P. (2009). A “fundamental Theorem” of biomedical informatics. *Journal of the American Medical Informatics Association*, 16(2): 169–170. doi: 10.1197/jamia.M3092

The EHR: Friend or Foe?

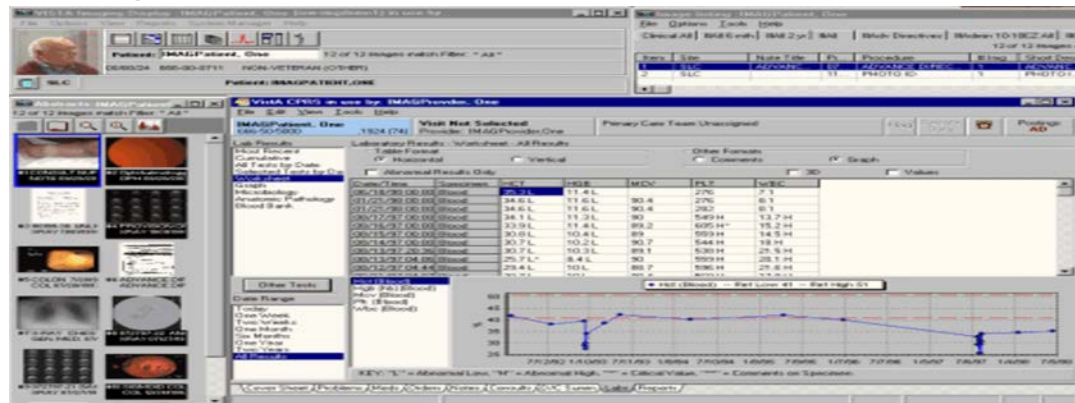
- **American Recovery and Reinvestment Act of 2009**
- **Meaningful users of the EHR's by 2014**
 - Impacts multiple disciplines.
 - However, nurses are the largest group of patient care providers,
 - Nurses collect the majority of patient information,
 - Nurses bear the greatest impact of this practice change.

S. Bakken, J. Cimiotti, L. Flynn, R. Gershon, A. Hessels. (2015). Impact of health information technology on the quality of patient care. *Online Journal of Nursing Informatics*, 19.



EHR: Friend or Foe?

- **The EHR contains flow sheets to gather information about real time patient care:**
 - Vital sign data (electronically transferred & hand entered),
 - Standardized language drop-down menus with predetermined choices.
- **Functionality and usability**
 - Data management,
 - Data entry, and
 - Data analytics.



Neonatal Nursing



- **No common definition of what constitutes a neonatal nurse exists.**
- **The EHR may provide data that will assist to define neonatal nursing.**
 - Standardized documentation of nursing care provided in the neonatal intensive care unit (NICU) may describe key components of the nursing care process.

Kenner, C. (2015). Neonatal nursing workforce: A global challenge and opportunity. *Newborn & Infant Nursing Reviews*, 15(4), 156-166.



Nursing Care, Thermal Regulation and Growth in an Incubator

- For more than a century, the hallmark of nursing care has been to promote health through regulation of the environment.
- Premature neonates are at risk of poor adaptation to the environment due to the immaturity of their thermoregulatory process and multiple body systems challenging energy expenditure and growth.
- Many nursing care procedures require disruption of the neutral thermal environment (NTE) provided by the incubator.

(Knobel, 2005a; Knobel, 2005b; Levine, 1967; Nightingale, 1859b/1982; Verklan & Walden, 2015).



Does Frequency of Nursing Care Affect Growth of Moderately Premature Neonates While in an Incubator

- **This study exemplifies the need to maximize the value of the EHR:**
 - Identified 6 categories and 51 nursing care procedures that disrupt the NTE of premature infants in a NICU from a review of published and grey literature,
 - Content validity was supported using five clinical experts in neonatal nursing,
 - The panel unanimously agreed with the categories and nursing care procedures.



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- Findings from this study were constrained by the number of procedures documented in the study site's EHR:
 - The panel unanimously determined that 25 of the 51 procedures were represented as data elements in the Patient Doc File of the Epic™ EHR.



Missing Nursing Care Data that Represents Disruption to the Neutral Thermal Environment of Premature Neonate

- Neonatal nurses are the key providers of patient care, including assessment, diagnosis, and intervention,
- Clinical documentation in the EHR needs to reflect the real-time of care services to support better patient care planning and clinical or administrative decision making related to patient care,
- Thus, it is imperative that EHRs are designed to meet nursing care requirements to optimally coordinate patient care activities,
- Care that mirrors workflow and captures real time care patterns.



Why???

- Since there is no regulatory framework to monitor EHR system safety, these systems may:
 - Have been developed from erroneous or incomplete design specifications,
 - Be dependent on unreliable hardware or software platforms,
 - Have programming errors or bugs,
 - Work well in one context or organization, but be unsafe or fail in another, and
 - Change how clinicians do their daily work, thus introducing new potential failure modes.

Bowman, S. (2013). Impact of electronic health record systems on information integrity: Quality and safety implications. *Perspectives in Health Information Management*, 10(Fall), 1c

Conclusions

- **Building an infrastructure for the collection and analysis of data for clinical intelligence is a crucial need if the overarching goal of a health care system is to improve patient outcomes.**
- **Research is needed that shows the benefits and pitfalls of clinical information systems, such as the EHR, to develop data that improves patient outcomes, assists to evaluate new models of care delivery and education of the healthcare workforce.**

Questions?

