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The art of effective handoffs: What is the evidence?

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Handoff Communication and Preventable Errors

In 1999, the landmark report *To Err is Human* was released by the Institute of Medicine, reporting that nearly 100,000 lives a year are lost in the US due to preventable medical errors.¹ Errors in the Neonatal Intensive Care Unit (NICU) are often serious yet many are preventable. Vulnerable infants are at a particularly high risk for preventable error because of their size and immaturity. If they experience adverse drug events (ADEs) or nosocomial infections, their risk for negative long-term complications increases dramatically.^{2–4} In the NICU, more than half of ADEs occur in infants born at 24–27 weeks gestation, in contrast to a mere 3% in term infants.⁵ Further, the lowest gestation infants remain at high risk simply because they stay longer in the hospital and the opportunity for error related to communication breakdowns is greater with increasing length of stay.⁶

If the quality of healthcare is to improve, communication between providers must improve whether they are nurses, physicians, respiratory therapists or professionals interacting across disciplines.⁷ When care is “handed-off” at shift change, when patients are transferred, or when those responsible for caring for a patient change due to a change in acuity or scheduling, opportunities for communication breakdowns occur. Several researchers have found that when information degrades because of ineffective handoffs, it strongly increases the opportunity for medical errors and up to 2/3 of sentinel events are related to communication breakdowns.^{7–10} The Agency for Healthcare Research and Quality (AHRQ) reports that nearly half of hospital staff (N=176, 811) indicate that patient information is lost during shift handoffs.¹¹ They recommend handoffs be structured, include an opportunity for questions and answers, and be supplemented by readily available medical records preferably in electronic form.¹¹

Handoffs are standard procedure in the Neonatal Intensive Care Unit (NICU) and impact patient care more than we realize. Upon admission to the NICU, prenatal and labor information is “handed-off” from labor and delivery and the team taking care of the mother to the NICU staff. Along with verbal reports, which may be less than optimal, records are transferred with the infant. If the infant is transferred from one facility to another because of their size or gestation, the handoff becomes even more complex. Gray and colleagues estimate that an infant who stays in the NICU for six months experiences more than 300 nursing shift handoffs across their stay and the longer they stay, the larger the team of nurses caring for them becomes.⁶

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Many stakeholders identify the desperate need to improve handoff communication to prevent medical errors including the Institute of Medicine,¹² AHRQ,¹¹ American Academy of Obstetrics and Gynecology (ACOG),¹³ and the Joint Commission.¹⁴ To identify best practices to improve shift handoffs in the NICU, a search of Medline, CINAHL, Cochrane and the AHRQ website was completed in October 2011. The search was restricted to English language articles published in the last five years using the keywords handoffs and nursing, then narrowing the search to the NICU.

Summary of Evidence

Little evidence was found to support any specific protocol for handoffs and the quality of the research on handoffs is lacking.¹⁵⁻¹⁶ Perhaps this is because improving handoff communication is largely local and limited to quality improvement projects that are not published. Literature on NICU-specific handoffs includes few published research articles. Gray and colleagues evaluated the handoff network (defined in their study as nurses communicating at change of shift), the characteristics of the team caring for high risk neonates, and the impact of the size of the handoff network on parent satisfaction.⁶ Palma, Sharek and Longhurst found that by using a handoff tool (defined as a sign-out tool used when neonatal providers signed out to another physician, resident or neonatal nurse practitioner) generated by the Electronic Medical Record (EMR) in the NICU, providers were more satisfied, spent less time preparing for the sign-out and felt that the accuracy of information shared improved.¹⁷ Clearly, more work is needed to determine the best approach to handoffs in the NICU. However, broad strategies to improve handoffs may be adapted from the larger body of healthcare literature that critiques handoffs across many different patient care settings.

Barriers to effective nursing handoffs were identified in a systematic review of 20 years of handoff literature including: un-standardized approach to handoff communication, problems with equipment, environmental hindrances, complex patients, and high caseloads.¹⁶ Nursing barriers included: high turnover of nurses, high patient to nurse ratios, too little time, splintered team dynamics and a lack of team cohesiveness.¹⁶ Effective handoffs minimize loss of information, especially when supported by structured checklists,¹⁸ focus on pertinent information alone, use a standard structure so that information is related in a consistent way, allows time for questions, and integrates face-to-face interaction.¹⁹ Another systematic review identified the need to integrate verbal, written and technology-supported components for hospitalist handoffs to be most effective.²⁰ Many mnemonics have been developed to structure handoff communication and the SBAR (short for Situation, Background, Assessment, and Recommendation for action) method is cited most often in the literature.¹⁵ Tools to support handoff communication primarily include mnemonics and structured checklists but none were found that specifically addressed the NICU population. Although it is clear from the literature that handoffs are important to ensure continuity of patient care, how handoffs affect outcomes is unclear. In the NICU, ineffective handoffs ultimately impact the infant and their family if a preventable error occurs but also negatively impact staff morale, a unit's reputation and team cohesiveness.

Recommendations to improve handoffs

Actions that limit the negative impact of human factors are most likely to improve handoff communication²¹ including limiting reliance on memory, avoiding interruptions, limiting excess noise, standardizing the process, involving families by using bedside report,²² and providing an opportunity for information to be verified through a repeat-back process.^{15,16, 19, 21} Personnel briefings or "huddles" can be beneficial when handoffs occur mid-shift (e.g. when a patient is transferred in from another hospital, admitted directly after

birth or has a change in personnel due to increased acuity).²¹ Health care personnel can reduce variation during handoff by adopting a standard process (mnemonic or structured checklist),¹⁵ keeping report patient-centered vs. task-centered, mapping out the process, using information technology if available,^{17,20} considering an audio-taped report, and allowing a time for questions and verification face-to-face.²¹

When handoffs occur because of discharge, transfer to another unit or transfer to another facility, be sure to provide clear medication instructions and reconcile medications across the continuum of care. In general, it is a best practice to supplement verbal communication with standardized forms and checklists and to update policies and procedures to reflect the new process. When an infant is transferred within a hospital or from facility to facility, the sending personnel should provide a verbal report to the receiving unit but consider following it up with a faxed report using a structured format. At discharge, be sure to ask for the parent to repeat back key points to assure they are understood.²¹ Finally, to determine the impact of the process change, measure the impact of the change on adverse events, staff satisfaction and time-management.²¹

Improving handoff communication has the potential to improve outcomes by reducing preventable errors across the continuum of care for vulnerable infants. By taking action and changing handoff processes, nurses can be empowered to provide the best care and avoid time-wasting errors that ineffective handoffs incur in the NICU. More high-quality research is needed to test handoff mnemonics in the NICU, identify best practices for the NICU and to publish successful implementation of standardized handoff processes so that others can test them in their units.

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Table 1Strategies to improve handoffs^{16, 19, 21}

Strengthen communication skills	<ul style="list-style-type: none"> • Involve parents • Be thorough and concise • Keep report patient-centered • Delay transfer of responsibility if there are concerns about patient stability • Keep comments objective • Use interactive questioning during face-to-face communication • Limit interruptions
Standardize the process	<ul style="list-style-type: none"> • Report information in the same order every time • Develop guidelines, tools, and visual reminders (posters, pocket cards, structured forms, etc.) • Use a read-back process to verify information shared • Audit the process to recognize and fix system problems
Use technology	<ul style="list-style-type: none"> • Integrate information from Electronic Medical Record (EMR) or Kardex • Give report with patient records accessible to enable quick access to patient information
Train for success	<ul style="list-style-type: none"> • Practice handoffs, perhaps using simulation and include time for debriefing • Address issues of hierarchy, ensuring questions are always encouraged (experienced nurse vs. the novice)
Involve staff in the process	<ul style="list-style-type: none"> • Choose a mnemonic that works for your setting (e.g. SBAR) • Develop a training program with staff
Lead the process well	<ul style="list-style-type: none"> • Adhere to expectations for structured handoffs • Allow time to implement and evaluate the process • Use early adopters as champions to show that the process works