Elevating Patient Safety by Implementing a Neonatal Electronic Health Record and Pharmacy Tools at Six Birthing Hospitals

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Background

Nationwide Children's Hospital (NCH)
- Free-standing pediatric hospital
- Largest neonatal network in America

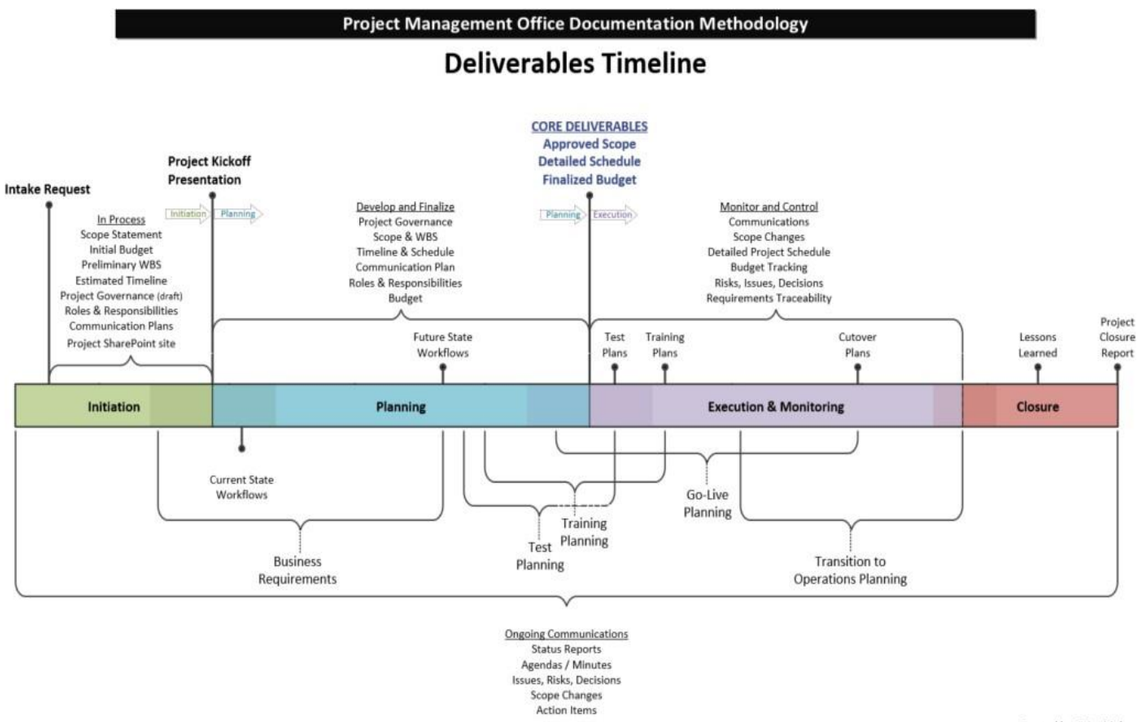
Seven Neonatal Intensive Care Units (NICUs)
- 1 referral center, level IV
- 6 delivery centers, level II-III, located throughout Central Ohio at non-NCH owned "host" hospitals

Prior Operations
- Host pharmacy staff dispense first dose medications for NCH neonatal patients however, did not have access to the patient's electronic health record (EHR).
- Neonatal doses require multiple manipulations to make measurable and administrable doses, creating high risk practices.
- Staff used paper workflows to compound medications.
- Medication errors were reported and there was high suspicion more events were going unrecognized.
- Decision was made to implement an EHR.

Introduction

Interprofessional team was assembled and led by a master's prepared Certified Pediatric Nurse

NCH's Project Management Office methodology was leveraged (4)
- The team visited each site assessing current workflows to optimize the future state.
- Each site required customized planning due to organizational needs and the six sites encompassed three different health systems.



Methods

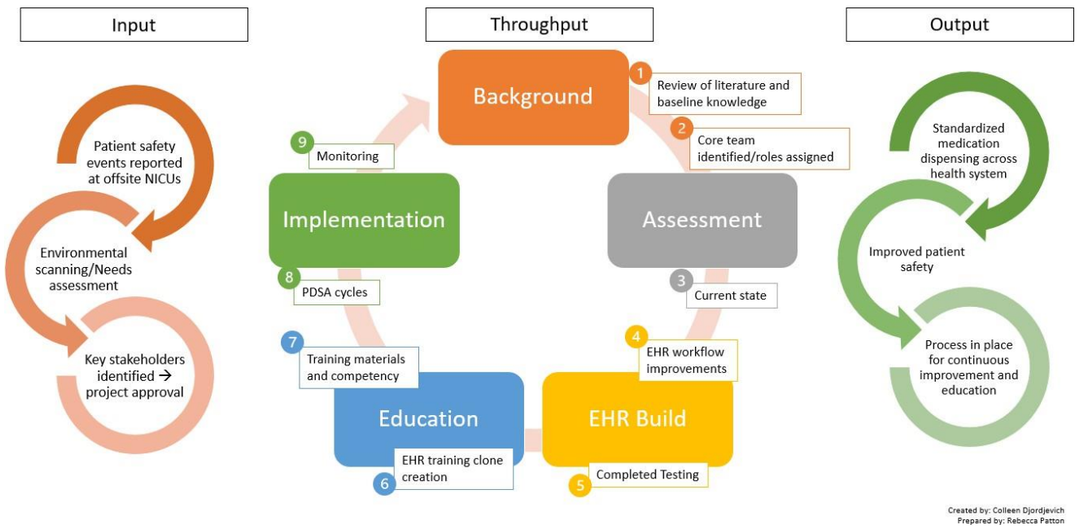
Neonatal EHR
- Pharmacy IS built neonatal EHR for the host pharmacies
- Included dispense prep, dispense check, and compounding and repackaging
- Utilized medication barcode scanning and other EHR safety tools

Training
- Super users were identified for training and support
- Multiple modalities (written materials, auditory presentations, computer-based learning, office hours)
- Users practiced workflows including printing labels and scanning barcodes in the EHR playground

Implementation
- Followed the concepts of plan, do, study, and act (PDSA)
- Lessons learned were implemented after each PDSA cycle
- The six sites went live on a staggered schedule from October 2023 – October 2024 to utilize lessons learned

Results

- Installed 17 mini desktop workstations with barcode scanners across the six sites.
- 567 host pharmacy users were given NCH EHR access.
- "Near miss" data showed miss-scanned medications, compounding errors, and dispensing errors.
- "Near misses" decreased through the implementation across sites.



Discussion

- The neonatal EHR has equipped host clinicians with a standardized, efficient workflow tool providing visibility of near misses and multiple safety stops which have prevented errors from reaching the patient.
- Designation of project coordinator was essential for all aspects of the project (initiation, planning, execution, and closure).
- Lessons Learned activities were integral to the continued success of each implementation.

References

1. Gatiti, P., Ndirangu, E., Mwangi, J., Mwanzu, A., & Ramadhani, T. (2021). Enhancing healthcare quality in hospitals through electronic health records: a systematic review. *Libraries*. http://ecommons.aku.edu/libraries/64
2. Hutton, K., Ding, Q., & Wellman, G. (2021). The effects of bar-coding technology on medication errors: a systematic literature review. *Journal of Patient Safety, 17(3),* 192-206. https://doi.org/10.1097/PTS.0000000000000366
3. Institute for Safe Medication Practices. (2024). Implement strategies to prevent persistent medication errors and hazards. *ISMP Medication Safety Alert! Acute Care, 29*(6), 1-4.
4. Project Management Institute (2021). *A guide to the project management body of knowledge PMBOK guide (seventh edition)*. Project Management Institute.

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