

HRET HIIN CASE STUDY

QUEST FOR EXCELLENCE

OPTIMIZING MANAGEMENT OF NEONATAL ABSTINENCE SYNDROME (NAS)

Christus St. Vincent
Regional Medical Center
Santa Fe, NM



SETTING THE STAGE

Describe how this project is consistent with your strategic plan and how leadership guided and sustained performance expectations.

>The Christus St. Vincent (CSV) Hospital Board and Senior Executive Team has established a Clinician-Directed Performance Improvement (CDPI) program to help attain quality of care. CDPI gives practicing clinicians the protected time, support, and training to conduct performance improvement projects based on their insight, expertise, and frontline understanding. The CDPI Pediatrics Clinician Dyad (physician and nurse) pursued this project to improve our management of Neonatal Abstinence Syndrome (NAS).

Why did you select this project and what methods were used to identify the need?

>Our exploratory data revealed that 4% of our newborns were exposed to opiates in utero, and that 28% of these received opiate treatment for NAS. The average LOS for these babies was 18 days, at a cost of \$16,000. The Clinician Dyad prioritized this project based on recent work at Yale New Haven Children's Hospital to shift management of newborns with NAS towards non-pharmacologic treatment, with shorter LOS.

PROJECT DESIGN

AIM statement: "For newborns with NAS, we will decrease the amount of opiates (number of doses

and cumulative dose) administered in the hospital by 25%, when comparing 12 months after intervention in October 2016 with the previous two years."

What methodology was used?

>This product was conducted through CDPI and its performance improvement course called the Advanced Training Program, which takes place over the course of one year and is designed to walk participants through a performance improvement project. The course teaches the IHI Model for Improvement, which links to rapid cycles of Plan-Do-Study-Act (PDSA). It borrows the principles of reducing variation and statistical process control from Six Sigma. In addition, the course promotes the use of many Lean tools, such as value-stream mapping, Ishikawa/fishbone diagrams, and the 8 major types of waste.

"How was the data collected and used to guide your process improvement efforts?"

>Data collection involved all newborns with in-utero exposure to opiates documented on screening, with pre-intervention period of January 2015-September 2016, and post-intervention period of October 2016-March 2018. The primary process metrics were average number of doses of opiates received during admission, and cumulative dose of opiates (in methadone equivalents). Outcome metrics were hospital LOS and total direct costs. The balance metric was 30-day readmission rate, in case the new process inadvertently led to newborns being discharged still at risk for severe withdrawal. Data was obtained by EMR chart review.

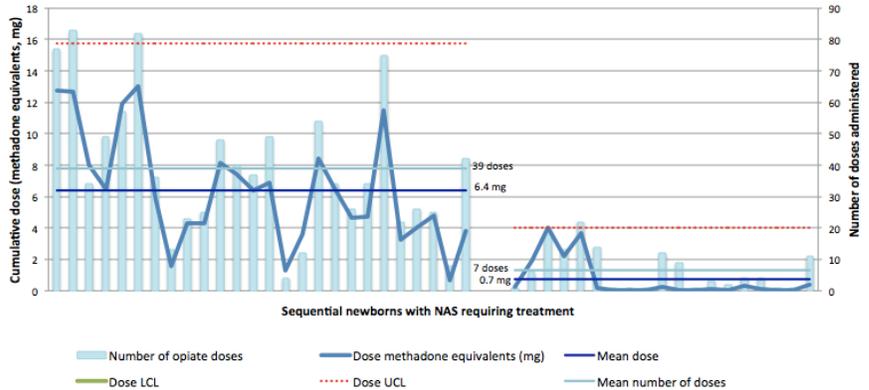
RESULTS

Describe the results including patient outcomes, process changes and service delivery results.

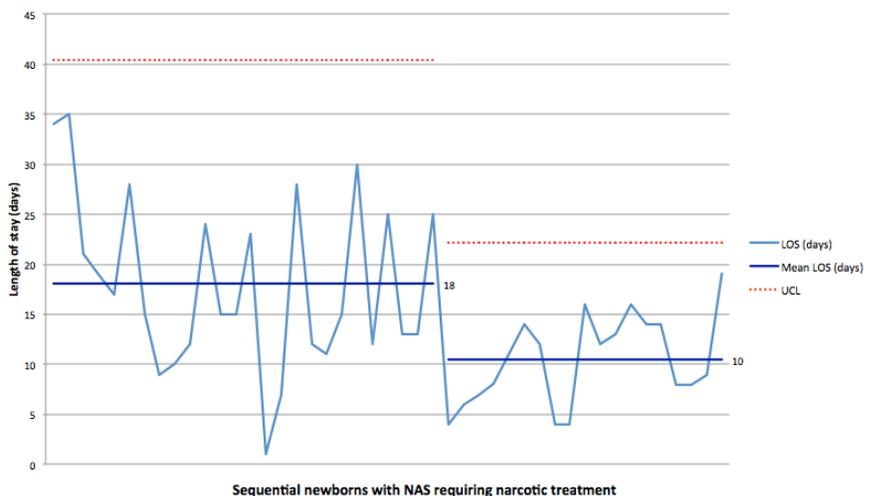
>Approximately 1/3 fewer opiate-exposed infants received any opiate treatment in the hospital. Among those who required treatment, the average number of doses of opiates administered decreased from 39 to 7 and the average cumulative dose decreased from 6.4 to 0.7 mg.

>Average LOS for these infants decreased from 18 days to 10 days ($p < 0.0001$, see graph below), associated with a decrease in total direct costs from \$16,018 to \$7,253 ($p < 0.0001$).

Opiate Doses for Newborns with NAS Requiring Opiate Treatment Pre-intervention (Jan 2015 – Sept 2016) and Post-intervention (Oct 2016 – Mar 2018)



Hospital Length of Stay for Newborns with NAS Requiring Narcotic Treatment Pre-intervention (Jan 2015 – Sept 2016) and Post-intervention (Oct 2016 – Mar 2018)



$p < 0.001$ for difference in means

LESSONS LEARNED

- > Trusting clinician insight is an important strategy in quality improvement. There are no externally reported metrics with any bearing on the management of NAS and little other attention to this issue as a focus for quality efforts, so this would not otherwise be a project prioritized by CSV. However, through its CDPI program, CSV leadership has made a strategic decision to empower clinicians to direct the institution's focus.
- > The CDPI pediatrician and pediatric nurse allowed for a true shift in culture among pediatrics staff embracing performance improvement more generally as "the way we do things."

Key Interventions:

- > 1. Use of non-pharmacologic means of supporting newborns through withdrawal, including cuddling, low-stimulation environment, and baby-centered feeding schedules
- > 2. Use of opioid treatment only when withdrawal interferes with biological functions or when the baby is inconsolable (Eat-Sleep-Console score)
- > 3. When opioids are required, use of short-acting, as-needed morphine rather than long-acting, scheduled tapers of methadone
- > 4. Active enlistment of families as partners with staff in supporting newborns through withdrawal
- > 5. Staff and family education

SPREAD AND SUSTAINABILITY

- > In our opinion, the most important predictor of success would be identifying and empowering a clinician dyad (pediatrician and nurse) to lead the change.
- > Sustaining this project is facilitated by having replaced order sets corresponding to our previous process (e.g. scheduled slow tapers of long-acting opiate treatment) with new order sets, and creating EMR documentation of Eat Sleep Console (ESC), our new scoring criterion for treating NAS with opiates.
- > The level of enthusiasm among frontline staff for this project is encouraging in terms of sustaining. At this point the results have been sustained for over a year and a half and this continues to be an ongoing project.
- > In our institution, CDPI Clinician Dyads are paid for quality improvement activities part time, and given centralized supports including statistical consultation, manual and electronic data collection, graphics development, and training in performance improvement methods. This allows us to take advantage of clinicians' insight, expertise, and influence in designing our systems of care, and has proved to be highly cost-effective.