MASSACHUSETTS
HEALTH POLICY COMMISSION

Lawrence General Hospital

Floating Hospital for Children at Tufts Medical Center

HPC Neonatal Abstinence Syndrome Investment Program at Lawrence General Hospital

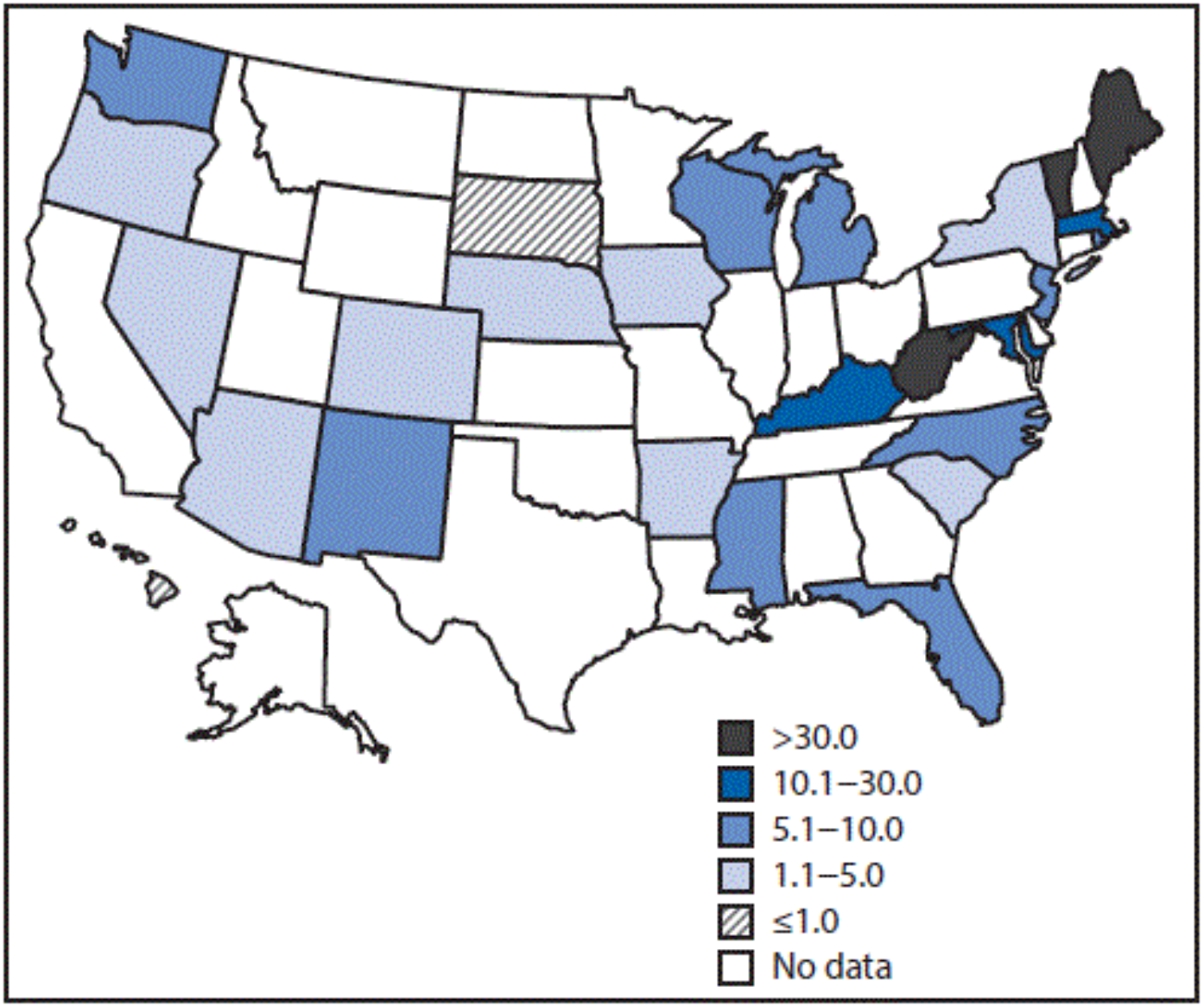
So good. So caring. So close.

Health Policy Commission Investment Grant

MA Birthing hospitals were issued a challenge to demonstrate that **cost-savings and quality improvement** are achievable together through implementing **evidence-based models for treating NAS** and **supporting women with opioid use disorder during pregnancy**

Project Team

- Heather Topp – SW
- Nicole Garabedian – Care Management
- Lorna Rajkowski – Pediatrics and SCN RN manager
- Jenny Tardie – Maternity and L&D RN manager
- Pracha Eamranond – Chief Transformation Officer
- Brian Collins and Derek Bourgoine – Data analysts
- Steve Golner - IT
- Bill Ewing - Marketing
- Brenda Leblanc and Carol Laverdure – Volunteer cuddlers
- Anne Marie Aquino - Education
- Greg Parsons - Finance
- Raja Senguttuvan – Neonatology
- Dan Hale – Pediatrics, Investment Director
- Nursing and physician staff!



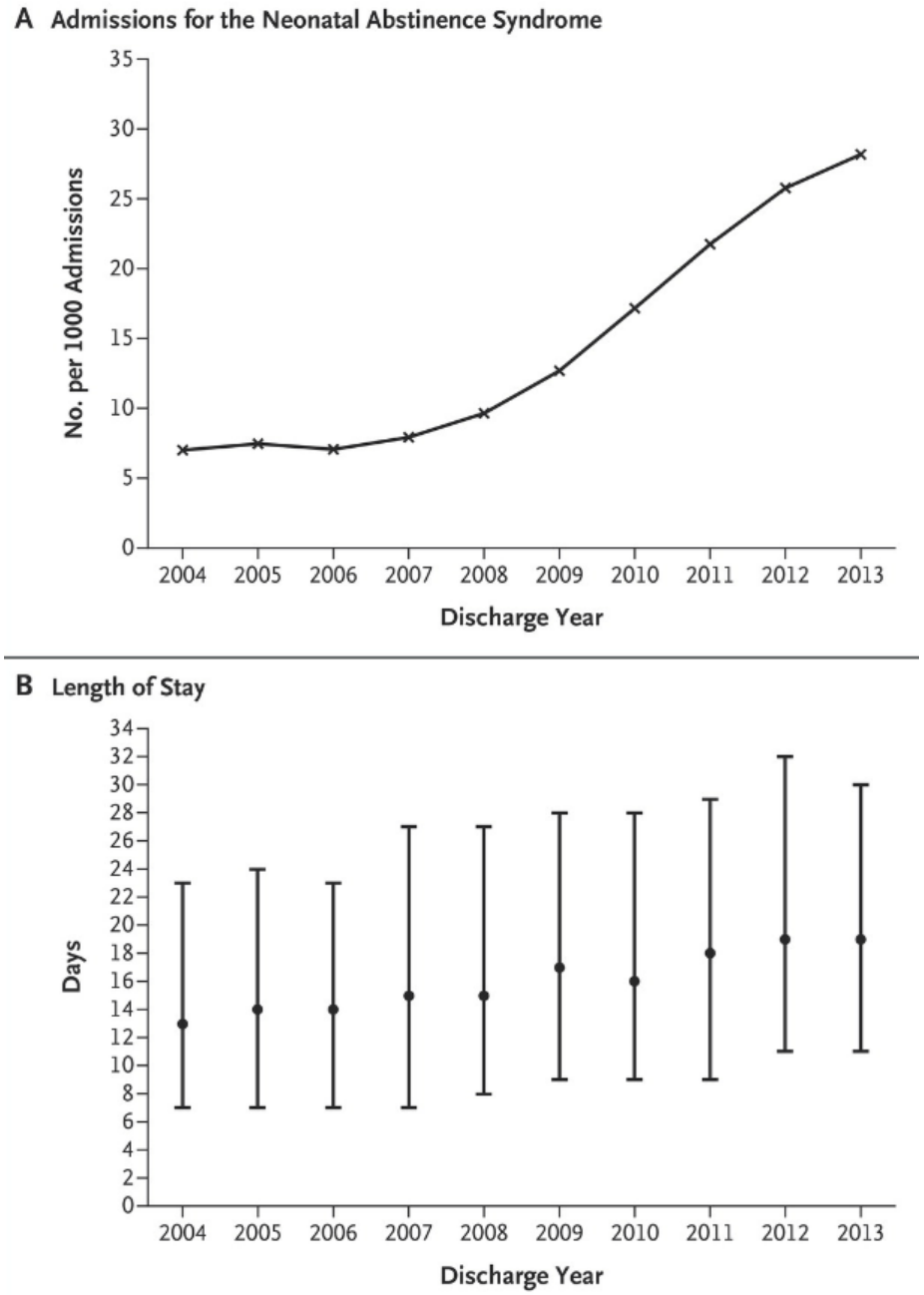
CDC data

U.S.

How a 'Perfect Storm' in New Hampshire Has Fueled an Opioid Crisis

By KATHARINE Q. SEELYE JAN. 21, 2018

Lawrence, Mass., near the New Hampshire border, is a major drug trafficking hub for New England and a central location for dealers and users. Todd Heisler/The New York Times


A Admissions for the Neonatal Abstinence Syndrome
No. per 1000 Admissions
0
5
10
15
20
25
30
35
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Discharge Year
B Length of Stay
Days
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Discharge Year

NEJM 2015


Moving
Beyond
Stigma


ANYONE CAN BECOME ADDICTED
TO DRUGS.

What is Neonatal Abstinence Syndrome (NAS)?

What is Neonatal Abstinence Syndrome (NAS)?

Withdrawal in a newborn is characterized by:

- **central nervous system** hyperirritability (seizure, tremor)
- **autonomic nervous system** dysfunction (fever, respiratory rate changes)
- **gastrointestinal tract** dysfunction (feeding issues, vomiting, loose stools, weight loss)

Grant Performance Measures

Element	Measure	Value of Measure
Primary Aim	Reduce the cost per episode by 10%	To determine if the program reduces costs over the length of the episode
Secondary Aim #1	Reduce the inpatient length of stay by 20%	To determine if the program reduces inpatient LOS at LGH
Secondary Aim #2	Increase the breast-feeding rate by 20%	To determine if infants with NAS are being breastfed

Summary of key LGH changes and goals

- Dedicated SW (NAS Care Manager and Program Navigator)
- Dashboard and real time guideline and protocol management
- In-hospital counseling and resources 5 days a week
- Prenatal tour, previewing, and setting expectations
- OB and community outreach and marketing
- Increase non-pharmacologic management
- Increase number of cuddlers
- Training of every SW, nurse and physician:
  - Best practice and care guidelines
  - Updated policies
  - Sensitivity and trauma informed care training

LGH Cuddlers!

- Over 180 cuddler volunteers!
- Over 60 trained!
- 1-2 hour shifts
- 7a-10p

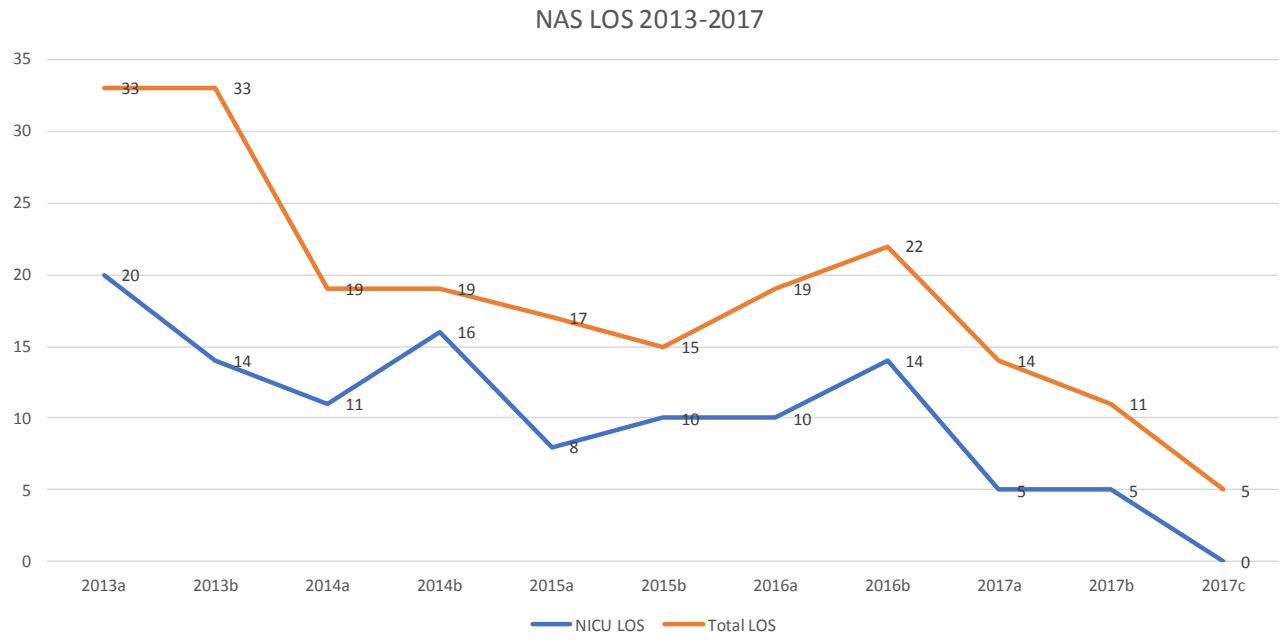
2013: joined VON
2013: started rooming in on pediatrics
3/2013: started NAS Task Force

5/2015: leadership change

2/2016: suspend NAS Task Force
2016: discontinue VON

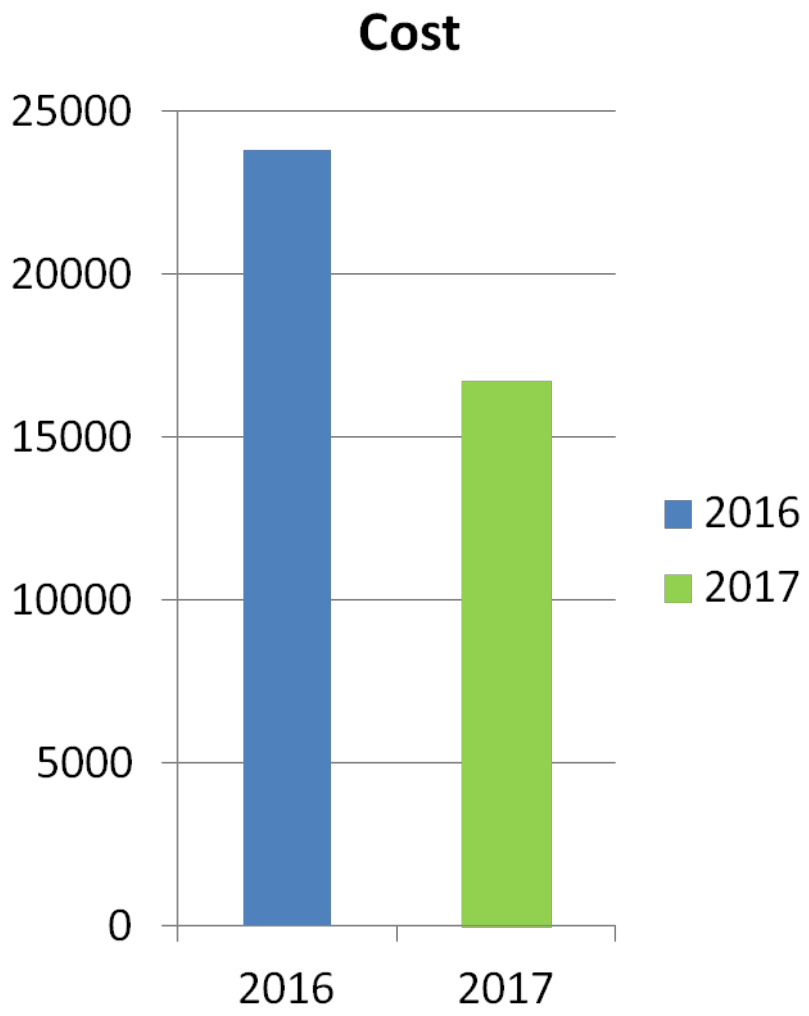
1/2017: start of HPC NAS prep period, join neoQIC

9/2017: RN sensitivity training



Cost of care

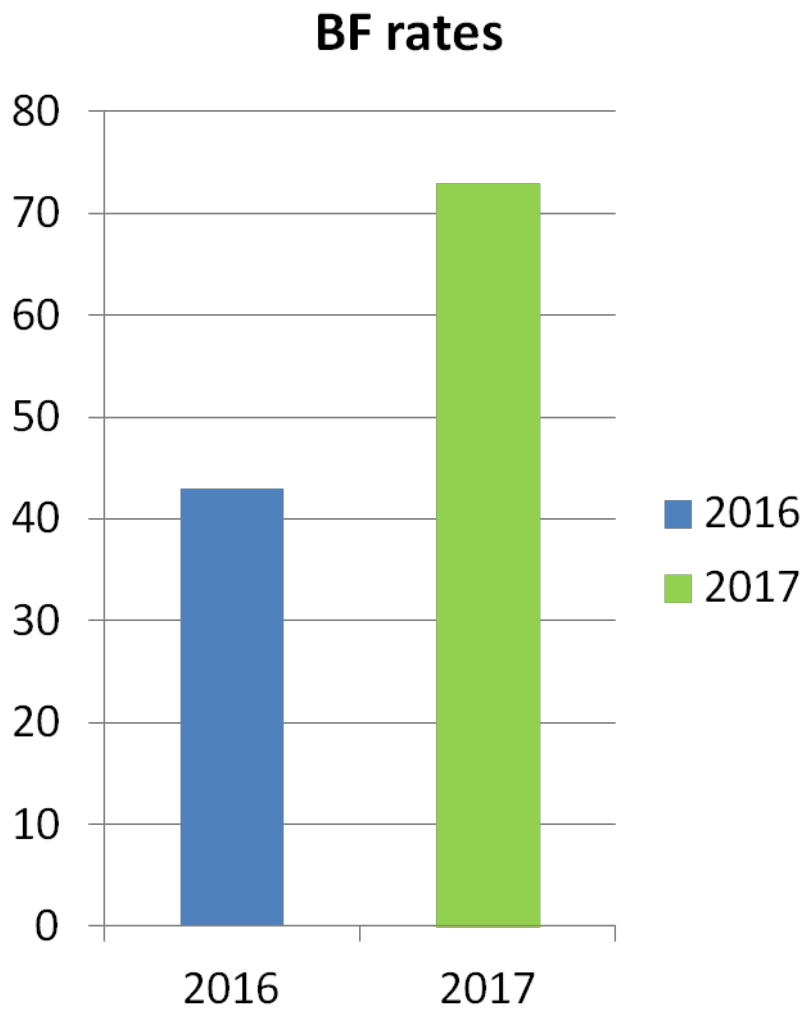
- CY 2016:
  - **$23,809** average per admission
  - *20 patients*
- CY 2017:
  - **$16,722** average per admission
  - $7,000 savings each newborn
  - **30% decrease**
  - **$156,000 in savings in 2017**
  - *22 patients*



neoQIC
Neonatal Quality Improvement Collaborative of Massachusetts

Breastfeeding rates

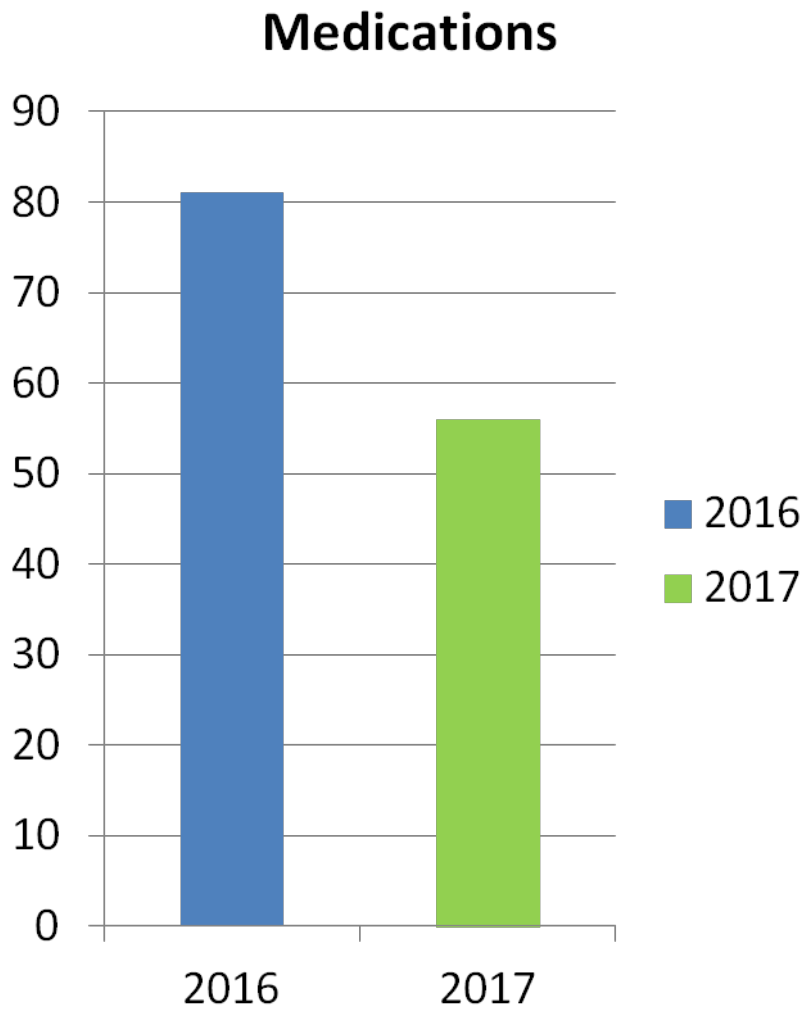
- CY 2016:
  - 43% exclusive breastfeeding or combination feeds
  - *14 eligible patients*
- CY 2017 YTD
  - 73% exclusive breastfeeding or combination feeds
  - **70% increase!**
  - *15 eligible patients*



neoQIC
Neonatal Quality Improvement Collaborative of Massachusetts

Medication usage

- CY 2016 (prelim data):
  - **84%** required medication for treatment
  - *19 total study patients (23 annual)*
- CY 2017 YTD
  - **36%** required medication for treatment
  - NO babies required second line agent
  - **57% decrease!**
  - *22 total study patients (25 annual)*



Nursing Assessment of the Opioid-Exposed Infant: Utilizing The Finnegan Abstinence Scoring Tool

Dan Hale, M.D., FAAP, SFHM; Patricia Ottani PhD, RN; AnneMarie Aquino, BSN, RN; Heather Topp MSW, LCSW

BACKGROUND

Lawrence General Hospital (LGH) is a 189-bed, 41-bassinet, independent not-for-profit hospital, located in the city of Lawrence, a low-income, densely populated urban community of 76,000. The broader catchment area of the hospital includes the communities of Methuen, Haverhill, Andover, and North Andover totaling over 200,000 individuals. Approximately three-quarters of the hospital's gross patient service revenue comes from public payers (Medicare and Medicaid).

Nurses in the special care nursery, mother/baby unit and pediatric unit provide care and nursing interventions to infants who have been exposed to opioids in utero. It is essential that a consistent method is utilized to accurately assess the presence of signs and symptoms of opioid withdrawal in this population so that the appropriate interventions can occur immediately, ensuring the health and safety of the newborn.

The LGH Neonatal Abstinence Training Program utilizes the Finnegan Abstinence Scoring Tool which has an established inter-rater reliability of 0.75 to 0.96. The project goal is for nurses to demonstrate ongoing competency in the use of this tool in order to provide consistent, timely and appropriate interventions to all opioid-exposed infants. Not all current LGH nurses have received standardized training in the past so the aim was to train all nurses in the use of this tool.

This work is supported by a Massachusetts Health Policy Commission grant (2017-2019).

PROJECT TEAM

Dan Hale, M.D., FAAP, SFHM (Grant investment director)
Patricia Ottani PhD, RN (Nursing education)
AnneMarie Aquino, BSN, RN (Nursing education)
Heather Topp MSW, LCSW (Grant program coordinator)
Jenny Tardie, RN (Labor and delivery, maternity, and newborn nurse manager)
Lorna Rajkowski, RN (Special care nursery and pediatrics nurse manager)
Raja Senguttuvan, , M.D., FAAP (Special care nursery medical director)
Transformation Team
Maternal Child Health and Pediatrics nursing staff

AIMS

1. All nurses who care for newborns with NAS will receive Finnegan Abstinence Scoring Tool training between January and March 2017.
2. All participants will achieve inter-reliability scores of greater than 90%.

MEASURE

Nurses will complete an assessment immediately after completing the training video.

INTERVENTIONS

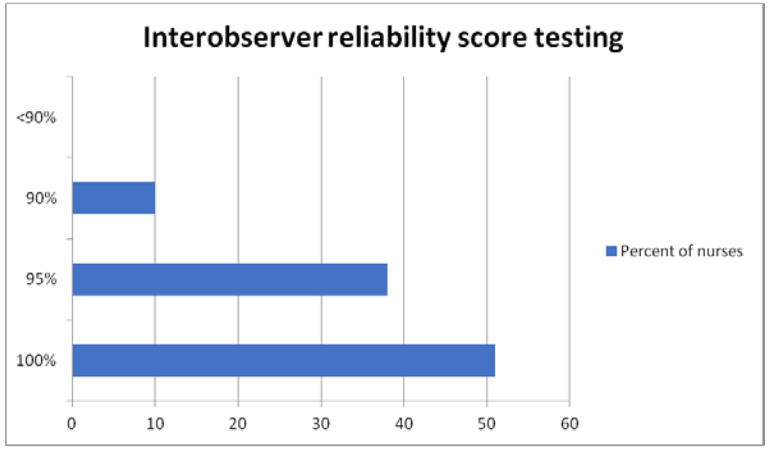
The program utilized the instructional manual authored by Loretta Finnegan, MD and Karen D'Apolito PhD APRN NNP-BC. The manual included a DVD containing a demonstration of a neonatal assessment for signs and symptoms of withdrawal using the Finnegan Abstinence Scoring Tool. While viewing a newborn exam, the nurses had to check off those signs and symptoms of withdrawal that they believed the infant was experiencing; they then watched the exam review to see if they correctly assessed all of the withdrawal signs and symptoms. They must have achieved a score of greater than or equal to 90% to ensure competency with this skill. They could retake the exam to achieve this score.

The planning of this educational intervention involved many stakeholders over a 2 month preparation period.

Reference: D'Apolito, K., Finnegan, L. (2010). Assessing signs & symptoms of neonatal abstinence syndrome: Using the Finnegan scoring tool. (2nd ed.) NeoAdvances, LLC.

RESULTS

1. 100% of all currently working nurses who care for newborns with NAS completed the Finnegan Abstinence Scoring Tool training between January and March 2017.
2. 100% of nurses had the goal inter-reliability scores of greater than 90%.



CONCLUSIONS & LESSONS

1. This training module was very successful in completing the project goals of training all nurses with acceptable inter-reliability scores.
2. Using inter-disciplinary support all targeted staff were trained within a narrow window of time (3 months.)
3. Stakeholder meetings, effective marketing and communication of goals, specific aim statements, and project planning contributed to meeting all goals.
4. Implementation of this training module was proven to be realistic and effective at a community hospital

NEXT STEPS

1. All new nurses will receive Finnegan Abstinence Scoring Tool training during orientation.
2. All staff will receive Finnegan Abstinence Scoring Tool refresher training every two years.
3. Literature will be monitored for alternative scoring tools for future use.

DISCUSSION QUESTIONS

How often should nurses receive refresher NAS scoring training?

Are hospitals in MA using other types of scoring such as eat-sleep-console (ESC) type scoring?

Neonatal abstinence syndrome LOS reduction in a community hospital

Lorna Rajkowski, RN; Heather Topp, MSW, LCSW;
Raja Senguttuvan, M.D., FAAP, Dan Hale M.D., FAAP, SFHM

Purpose/Objective

Intervention 1: To study the effect of allowing rooming in of the newborn with neonatal abstinence syndrome (NAS) with his or her parent(s) or guardians in a community hospital setting. **Intervention 2:** To study the effect of a comprehensive program and group of interventions on length of stay (LOS), cost of care,

Background

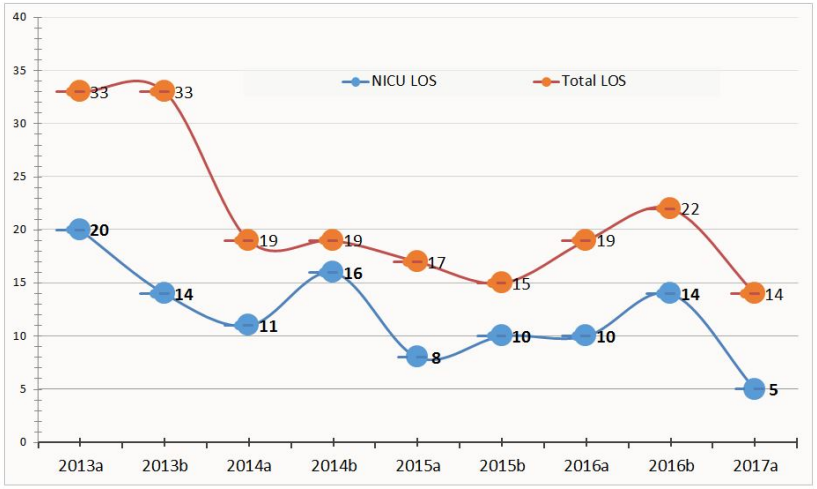
In utero opioid exposure can result in NAS. NAS incidence has increased five-fold in the last decade. NAS is a serious condition characterized by central nervous system hyperirritability and autonomic nervous system and gastrointestinal tract dysfunction. Newborns with NAS may have several potential complications, may require pharmacological management, have increased hospital costs, and have a prolonged LOS. Opioid use disorder in pregnant women and NAS are now considered a public health crisis.

Intervention 1 (Rooming In)

Several non-pharmacologic interventions may assist in the care of NAS. One of these interventions include a parent or guardian rooming in with the newborn. Rooming in is when the patient has a private room and the parent(s) or guardian provide care and holding in addition to the nursing staff. The parent or guardian may also sleep in the same room. In tertiary care settings, rooming in has been demonstrated to decrease LOS, cost of care, and medication required to treat NAS.

At the community site, initially standard of care for a newborn with NAS was to admit to a Neonatal Intensive Care Unit (NICU) for management and discharge to home from the NICU when stable and no longer requiring medications. The level 2 NICU at the community study hospital did not have rooming in capability for the parents. With the intervention, newborns were transferred from the NICU to the inpatient pediatric ward when stable and weaning from medications. The pediatric ward has the capability for a parent or guardian to stay in a single room with the newborn for up to 24 hours a day.

Length of stay data



Ongoing interventions (Comprehensive Care Management and Education)

Based on the success of rooming in at this hospital, the inclusion of families in care was incorporated into the comprehensive NAS program. The program has goals and implementation strategies that include:

- Standardizing policies
- Standardizing pharmacologic and non-pharmacologic practice guidelines
- Staff and referring partner education
- Family education
- Staff and family engagement
- Expanding cuddler availability
- Lactation support and breastfeeding education
- Real time program review of individual patients
- Creating a care coordinator position to follow patients through the hospital stay
- Creating a developmentally appropriate environment for newborns with NAS

Novel strategies to coordinate this program and offer direct patient interventions include having a social worker care coordinator and pediatrician review all inpatient cases frequently during the admission to assess care barriers and to offer guidance for optimal care management. In addition, the NAS program now is included in the population health transformation team as an approach to offer population health comprehensive care practices to a neonatal condition.

This work is supported by a Massachusetts Health Policy Commission grant (2017-2019).

Results and Conclusion

During the **Intervention 1 study period** of transitioning to rooming in, LOS in the NICU decreased from 20 days on average to 10 days (50% reduction) over the first two years. Total hospital LOS decreased from 33 days to 15 days (55% reduction). (See also graph.)

During the current **Comprehensive Intervention period**, the total hospital LOS decreased to 14 days and the NICU LOS decreased to 5 days during the first study period (January to May 2017).

The increase in LOS in 2016 is likely multi-factorial and includes several outlier newborns with limited court-ordered parental contact with prolonged LOS as long as 44 days and a one year suspension of the inter-disciplinary task force due to staffing issues.

Since the implementation of new care models, there were no transfers of newborns back to the NICU or readmissions to the hospital after discharge.

This implementation of rooming in demonstrates that rooming in can be done safely and effectively at community hospitals. Rooming in may become standard of care for NAS if the capability exists at a facility. A comprehensive care model and use of population health strategies can be applied to neonatal medical conditions with success.

References

1. Impact of Parental Presence at Infants' Bedside on Neonatal abstinence syndrome. Hospital Pediatrics. Howard et al. Feb 2017.
2. Neonatal abstinence syndrome: Pharmacologic strategies for the mother and infant. Seminars in Perinatology. Kraft et al. Volume 40, Issue 3, Pages 203–212.
3. Rooming-In to Treat Neonatal Abstinence Syndrome: Improved Family-Centered Care at Lower Cost. AV Holmes et al. Pediatrics. April 2016.
4. A Qualitative Study of Family Experience With Hospitalization for Neonatal Abstinence Syndrome. E Atwood et al. Hospital Pediatrics. Oct 2016.

Lawrence General Hospital

Neonatal Abstinence Syndrome

Opioid Use In Pregnancy

Information for Patients

So good. So caring. So close.

Opioid Use During Pregnancy

Information for Patients

Neonatal Abstinence Syndrome (NAS) is a group of problems that occur in a newborn who was exposed to addictive or prescription drugs while in the mother's womb.

Lawrence General Hospital is offering an opportunity for pregnant women who are either addicted or in recovery to visit the hospital and become familiar with the level of care that will be provided for their family.

Get Your Questions Answered

- *What happens if my child is born addicted?*
- *Will my child have withdrawal symptoms?*
- *What is Finnegan Scoring?*
- *How long will my baby be at the hospital?*
- *Who will be involved in my child's care?*
- *What is the Special Care Nursery?*
- *Am I able to breastfeed?*
- *Where will I be staying?*

For more information or to schedule an appointment, call a Lawrence General Hospital social worker at 978.946.8085 or email nas.program@lawrencegeneral.org.

Lawrence General Hospital

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Lawrence General Hospital

Neonatal Abstinence Syndrome

Opioid Use In Pregnancy

Information for Health Care Providers

So good. So caring. So close.

Opioid Use During Pregnancy

Information for Health Care Providers

Are you working with a patient who is...

- *Pregnant*
- *Struggling with addiction*
- *Receiving medication assisted treatment*
- *Receiving long-term opioid prescriptions*

The sooner we are able to meet with these families and connect with them prior to their inpatient stay, the sooner we will be able to help them access the resources they need in the community. We accept referrals from both patients and providers.

For more information call a Lawrence General Hospital social worker at 978.946.8085 or email nas.program@lawrencegeneral.org.

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References

- J Addict Med. 2008 Sep 1; 2(3): 113–120.
- Rooming-In to Treat Neonatal Abstinence Syndrome: Improved Family-Centered Care at Lower Cost. Holmes, et al. *Pediatrics*, May 2016
- Neonatal abstinence syndrome: Pharmacologic strategies for the mother and infant. Kraft, Stover, Davis. *Seminars in Perinatology.* 40 (2016) 203-212.
- Yale-New Haven Children's Hospital Honored with Top Pediatric Quality Award for Improving Care Delivery to Neonatal Abstinence Syndrome Patients. Children's Hospital Association press release. March 8, 2016.
- Call in the cuddlers: Volunteers step up to soothe babies born dependent on opioids. StatNews Jan 6 2017.
- Maternal and neonatal factors impacting response to methadone therapy in infants treated for neonatal abstinence syndrome. *Journal of Perinatology* (2011) 31.
- Neonatal abstinence syndrome—postnatal ward versus neonatal unit management. Saiki, T., Lee, S., Hannam, S. et al. Eur J Pediatr (2010) 169: 95. doi:10.1007/s00431-009-0994-0
- A Novel Approach to Assessing Infants With Neonatal Abstinence Syndrome. Matthew R. Grossman, et al. *Hospital Pediatrics* Dec 2017.