Improving Outcomes for Substance-Exposed Infants and Families

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1065 Newborn Units Worldwide
32 Countries
Mission
To improve the quality and safety of care for newborn infants and their families through a coordinated program

Vision
To build a worldwide community of practice dedicated to providing every newborn infant and family with the best possible and ever improving medical care.
Three Things

Thing 1. The Challenge of the Opioid Epidemic

Thing 2. What Can We Do to Improve?

Thing 3. Is There Evidence of Measurable Improvement?
Thing 1.
The Challenge of the Opioid Epidemic & NAS
In Some States . . . Overdoses Outnumber Motor Vehicle Deaths

Majority of overdoses deaths are linked to overdose of prescription opioid painkillers
Some states have more painkiller prescriptions per person than others.

Why the Surge in NAS?

• 3-fold US growth in NAS From 2000 to 2009
• Opioid pain reliever (OPR) use escalating

• 2012, 259 million OPR prescriptions in the US
• Enough for every US adult to have one bottle of pills.

• OPR use and misuse rates vary by geographic region.
Conclusions

• Nationally NAS has grown nearly 6-fold since 2000

• Total US hospital bill grew from $200M to $1.5B
  – Equivalent of 22% of the CDC’s budget

• NAS highest in states with highest rates of prescription opioid use
Thing 2.

What Can We Do to Improve?
Breaking Down Silos
From AAP Guidelines to Action

CLINICAL REPORT

Neonatal Drug Withdrawal
The 15 / 50% Dissemination Rule

Even when we have good quality evidence and consensus about best practices exists . . .

It takes ~15 years for the evidence to reach 50% of the patients who would benefit!
# iNICQ Participants

## 42 States + Ireland, UK, Canada

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VON Partnerships With Statewide Collaboratives on NAS

Munish Gupta  Alan Picarillo

Lily Lou

Padu Karna

Bill Edwards  Victoria Flanagan  Bonny Whalen

Sue Kannenberg  Jeff Garland
The Intervention
VON Internet-Based Collaborative Aims

AIM 1.
Engage centers in a multi-center QI collaborative focused on improving the quality, safety and value of care for substance exposed infants and families.

AIM 2.
Promote the rapid cycle adoption of the AAP NAS guidelines into clinical practice by standardizing policies and practices.
Join Other Engaged Teams
Learning Network
Nurses, Physicians (OB, Neo, Addiction Specialists), Social Workers,
Department of Child Health Services,
Addiction Specialists, Public Health, Visiting Nurses
Peer-to-Peer Learning
Teams “Gather” in A Virtual On-Line Classroom or Homeroom
Breaking Down Silos
Model for Improvement

1. What are we trying to accomplish?
2. How do we know that a change is an improvement?
3. What changes can we make that will result in the improvements we seek?

PDSA 1

PDSA 2

PDSA 3
The Intervention
Critical Components

• Intra-disciplinary team-based learning model
• Universal Training / Silo-Breakers!
• VON NAS Toolkit
• Potentially Better Practices (8)
• Structured educational curriculum
  – Expert-Led Webinar Series (11)
  – List-Serve Coaching
• Case studies / data-driven improvement stories
• Virtual Video Visit to Center of Excellence
  – Trauma-informed care family-centered care
• Audit and feedback of data
The “ACE” Study

Adverse Childhood Event study with 17,000 HMO participants, San Diego

- 1 in 4 exposed to 2 categories of ACE;
- 1 in 16 to 4 ACE’s
- 66% of the women experienced abuse, violence or family strife in childhood

- Childhood experiences are powerful determinants of who we become as adults
- Unaddressed traumatic experiences effect future physical, mental and social well being

Virtual Video Visit Sheway Vancouver, BC

- Highlight an integrated model of care, that addresses the social determinants of health
  - Fir Square inpatient unit
  - Vancouver’s Sheway community care center

- Put a human face on addiction
  . . . Empowering women to teach us how to best partner with them.
Tools to Impact Attitudes

Video Companion

A trauma-informed, family-centered approach to supporting women with substance use issues who are pregnant and newly parenting.”
Potentially Better Practices

**PBP 1.** Develop and implement a **standardized process** for the
- Identification;
- Evaluation,
- Treatment;
- Discharge management infants with NAS.

**PBP 2.** Develop and implement a **standardized process** for measuring and reporting rates of NAS and drug exposure.

**PBP 3.** Create a culture of compassion, understanding and healing for the **mother-infant dyad**.
PBP 4.

Provide care for infants and families in sites that promote parental engagement in care and avoid separation of mothers and infants.
PBP 5.

Engage mothers / family members in providing non-pharmacologic interventions as “first-line” therapy for all substance-exposed infants.
What is Dyadic Management?

Supporting withdrawal symptoms in the Infant while also engaging the Mother as primary caregiver with Family

“Co-regulatory Caregiving”
Life Course Approach

INFANT’S STRENGTHS & NEEDS

• ID infant’s unique qualities
• Sensitivity to different sensory stimuli
• What supports a soothing response?

MOTHER’S STRENGTHS & NEEDS

• ID strengths of the mother
• ID Needs of the mother
• Coordination with her treatment plan

GOAL: Develop an individual plan of care in partnership with the family that is used in concert with family guiding team interventions.
Family as a Primary Therapeutic Intervention

Family-centered developmentally supportive strategies not just “nice to do” critical intervention

- Family is supported to be the primary caregiver
- Positive interactions with their baby are supported . . focus on bonding and attachment
- Keeping mother and infant together is essential – single room couplet care is ideal.
- Potential to prevent or de-escalate NAS symptoms
Emphasis on Soothing vs. Sedating or Medicating

- No good studies of non-pharmacologic treatment for NAS; however, it is **low-risk, low-cost and potentially highly effective**
- 44% of VON participating center had no policy on non-pharmacologic options
What About Nicotine Withdrawal Sequence?
Develop clear eligibility criteria for breastfeeding and actively promote and support breastfeeding by eligible mothers.
PBP 7.

Develop a standardized process to ensure safe discharge into the community.
Thing 3.

Is there Evidence of Measurable Improvement?
The VON iNICQ Study

- Prospective cohort study

- Serial cross-sectional preplanned audits of enrolled centers

- Inclusion criteria – diagnosed with NAS (ICD-9-CM 779.5) and required pharmacologic RX
iNICQ 2013 NAS Launch

Prior to iNICQ

Policy Audit

Patient Audit

Ongoing Audit and Feedback


Lessons Learned Audit 1.
VON Days Quality Audit: NAS

PURPOSE: To understand the evaluation and management of infants who received pharmacologic treatment for NAS and identify local opportunities for improvement.

N=2041 newborns from 42 states and 3 countries

- 25% no policy on screening
- 51% had no policy on human milk
- 1:5 infants is out-born and transported to another center for care
- 80% of infants did not receive ANY mother’s milk at DC
- 82% RX with morphine and 16% RX with methadone
  - 24% RX Phenobarbital
  - 10% RX with Clonididine
  - 35% DC home on medications
# NAS – Presence of Hospital Policies

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<td>Pharmacologic treatment</td>
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<td>Breastfeeding</td>
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### NAS Presence of Hospital Policies

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<tr>
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## Infant Outcomes N=3458

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<td>15 (10, 23)</td>
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<td>Length of hospital stay</td>
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Patrick SW, Schumacher RE, Horbar JD, Buus-Frank M, et. al., Improving Care for Infants with Neonatal Abstinence Syndrome: A Multicenter Prospective Collaborative.
Where Were These Infants Discharged To?

- Home with parent: 71%
- Home with guardian / foster: 25%
- Transferred to another facility: 2.8%
- Other: 2%
## Infant Outcomes N=3458

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<td>19 (15, 28)</td>
<td>&lt;0.001</td>
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Patrick SW, Schumacher RE, Horbar JD, Buus-Frank M, et. al., Improving Care for Infants with Neonatal Abstinence Syndrome: A Multicenter Prospective Collaborative.
Reducing LOS by 2 days nationwide would result in an estimated savings of $170 million dollars in hospital charges.
New Hanover Regional Medical Center
NAS Patient LOS c Chart
February - September 2014

Created NAS Admit Orderset Physician Re-Education on NAS Medical Protocol

Inter-Rater Reliability: Initiated 2 RN-verification of any NAS score of 8 or greater

LOS in Days

33.11
19.77
19.98
10.33
0.69

VON Vermont Oxford NETWORK
Dartmouth Hitchcock Medical Center
Hospital Costs per Treated Newborn

11 PDSA Cycles / 18 Months

1. RN scoring training/ reliability
2. Family interviews
3. Baby-centered scoring
4. Prenatal education
5. Parent symptom diary
6. Standardize score interpretation
7. Rooming-in pilot
8. “Cuddlers”
9. Full rooming-in
10. Addiction training
11. Transfers

Jan 2013: Formed Multi-D VON NAS QI team
April 2013 - Oct 2014: 11 PDSA cycles
Collaborative Summary

Engagement in a multi-center, multi-state QI collaborative is a novel model to promote rapid-cycle adoption of practice guidelines. This was associated with:

- Improved standardization of hospital policies
- Decreased in healthcare utilization
  - Decreased LOT, LOS
  - Proportion of infants discharged home on pharmacotherapy decreased

In Summary
Three Things

Thing 1.
The Challenge of the Opioid Epidemic

Thing 2.
What Can We Do to Improve?

Thing 3.
Is There Evidence of Measurable Improvement?
VON Universal Training Program & Statewide Implementation Package

- NAS QI Toolkit
- 8 Potentially Better Practices
- Structured educational curriculum
  - Expert-led Webinar Series
  - List-Serve coaching
- Case studies / data-driven improvement stories
- Virtual Video Visit to Center of Excellence
  - Trauma-informed, family-centered care
- Audit and feedback of data
NAS Universal Curriculum and Statewide Implementation Package
Now Endorsed by NANN

https://public.vtoxford.org/quality-education/nas-universal-training-program/
We Honor the VON NAS Centers of Excellence in NAS Education and Training!

- Affinity NICU at St. Elizabeth Hospital, Appleton, WI
- Akron Children’s Hospital, Akron, OH
- Alaska Native Medical Center, Anchorage, AK
- Allegiance Health, Jackson, MI
- Aurora Baycare Medical Center, Green Bay, WI
- Aurora Women’s Pavilion, West Allis, WI
- Baptist Medical Center, San Antonio, TX
- Baystate Medical Center, Springfield, MA
- Beaumont Health System Troy, Troy, MI
- Berkshire Medical Center, Pittsfield, MA
- Cape Code Healthcare, Hyannis, MA
- Cardinal Glennon Children’s Hospital, Saint Louis, MO
- Children’s Hospital at Providence Alaska, Anchorage, AK
- **Children’s Mercy, Kansas City, MO**
- CJW Medical Center, Chippenham Campus, Richmond, VA
- Concord Hospital – The Family Place, Concord, NH
- Fairbanks Memorial Hospital, Fairbanks, AK
- Gundersen Lutheran Medical Center, La Crosse, WI
- Helen DeVos Children’s Hospital, Grand Rapids, MI
- Lowell General Hospital, Lowell, MA
- LRG Healthcare, Laconia, NH
- Massachusetts General Hospital for Children, Boston, MA
- McLaren Port Huron, Port Huron, MI
- Melrose-Wakefield Hospital, Melrose, MA
- Mercy Medical Center, Springfield, MA
- MetroWest Medical Center, Framingham, MA
- Milford Regional Medical Center, Milford, MA
- NHRM- Betty H. Cameron Women’s and Children’s Hospital, Wilmington, NC
- Northeast Georgia Medical Center, Gainesville, GA
- **Overland Park Regional Medical Center, Overland Park, KS**
- Pinnacle Health Hospitals, Harrisburg, PA
- Rutland Regional Medical Center, Rutland, VT
- **Shawnee Mission Medical Center, Shawnee Mission, KS**
- Southern New Hampshire Medical Center, Nashua, NH
- Springfield Hospital, Springfield, VT
- St. John Hospital and Medical Center, Detroit, MI
- St. Joseph Mercy Oakland, Detroit, MI
- St. Mary’s Medical Center, Duluth, MN
- St. Vincent Hospital and Health Center, Billings, MT
- Swedish Medical Center, Seattle, WA
- Washington Regional Medical Center, Fayetteville, AR
- Winchester Hospital, Winchester, MA