Improving Outcomes for Substance-Exposed Infants And Families

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VON Vermont Oxford NETWORK

1065 Newborn Units Worldwide

32 Countries

Vermont Oxford Network

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.

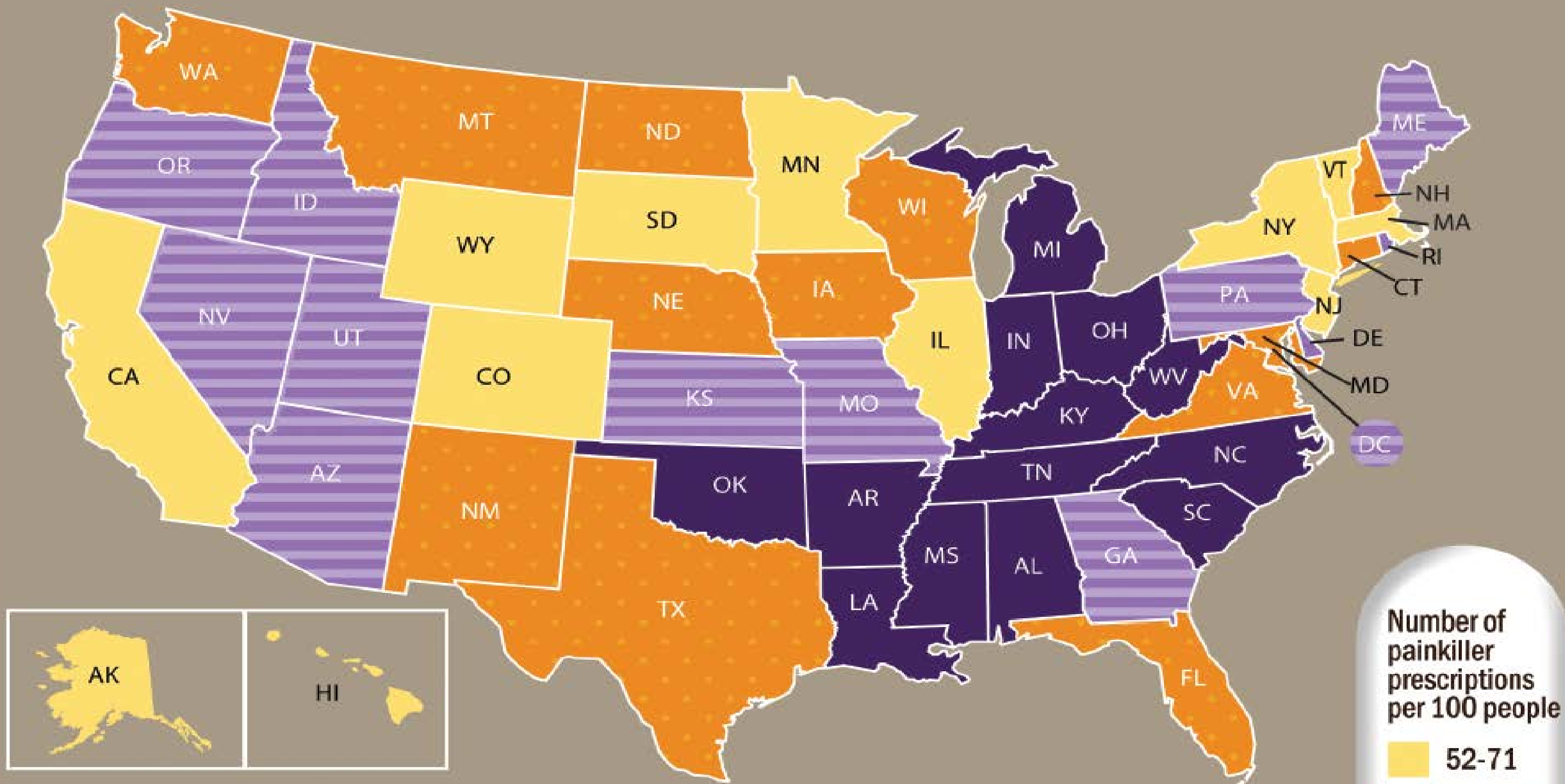
The Challenge of the Opioid Epidemic & NAS

In Some States . . . Overdoses Outnumber Motor Vehicle Deaths

CDC

At least
HALF
of all opioid overdose deaths involve a **prescription opioid**.

Majority of overdoes deaths are linked to overdose of prescription opioid painkillers



Some states have more painkiller prescriptions per person than others.

SOURCE: CDC Vital Signs, July 2014. cdc.gov/vitalsigns.

Slide Courtesy of Stephen Patrick. With Permission.

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

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™

CLINICAL REPORT

Neonatal Drug Withdrawal

The 15 / 50% Dissemination Rule

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

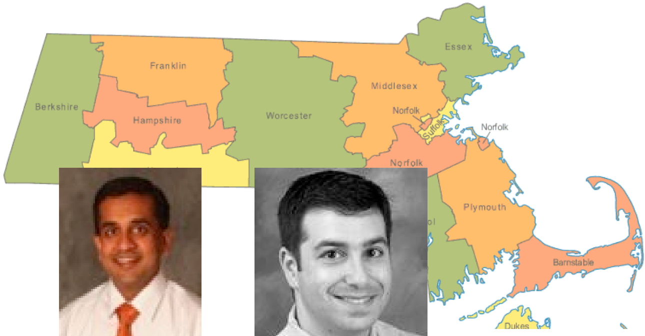
It takes ~15 years for the evidence to reach 50% of the patients who would benefit!

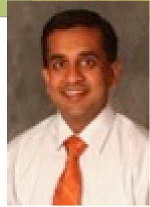
iNICQ Participants

42 States + Ireland, UK, Canada

- Alabama
- Arizona
- California
- Colorado
- Connecticut
- Delaware
- District of Columbia
- Georgia
- Hawaii
- Idaho
- Illinois
- Indiana
- Iowa
- Kentucky
- Louisiana
- Maine
- Maryland
- Massachusetts
- Montana
- Michigan
- Minnesota
- Missouri
- Nebraska
- New Hampshire
- New Jersey
- New York
- North Carolina
- North Dakota
- Ohio
- Oklahoma
- Oregon
- Pennsylvania
- Puerto Rico
- Tennessee
- Texas
- Utah
- Vermont
- Virginia
- Washington
- West Virginia
- Wisconsin

VON Partnerships With Statewide Collaboratives on NAS





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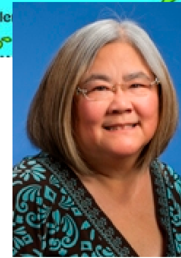


Lily Lou

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.

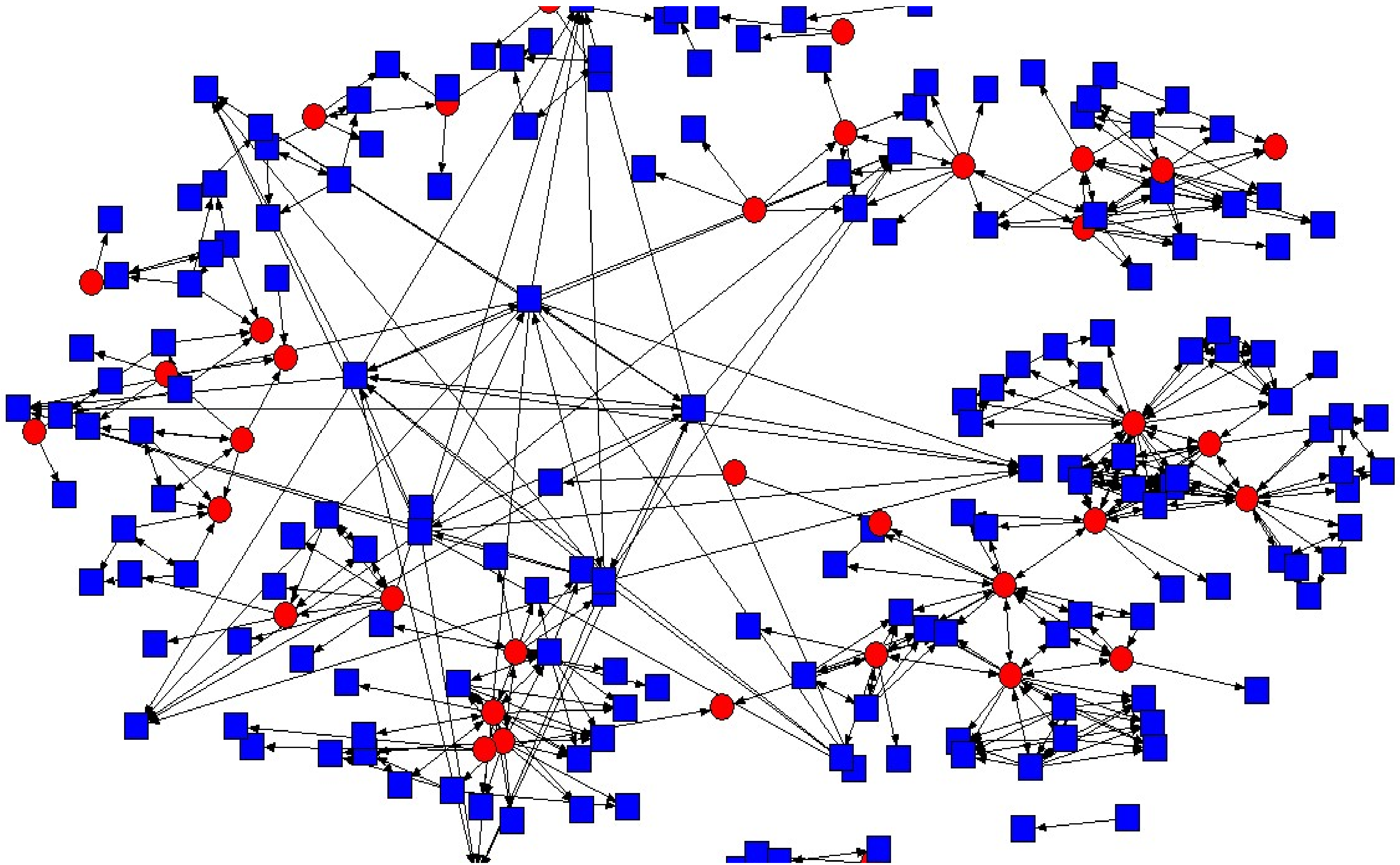
AIM 2.

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

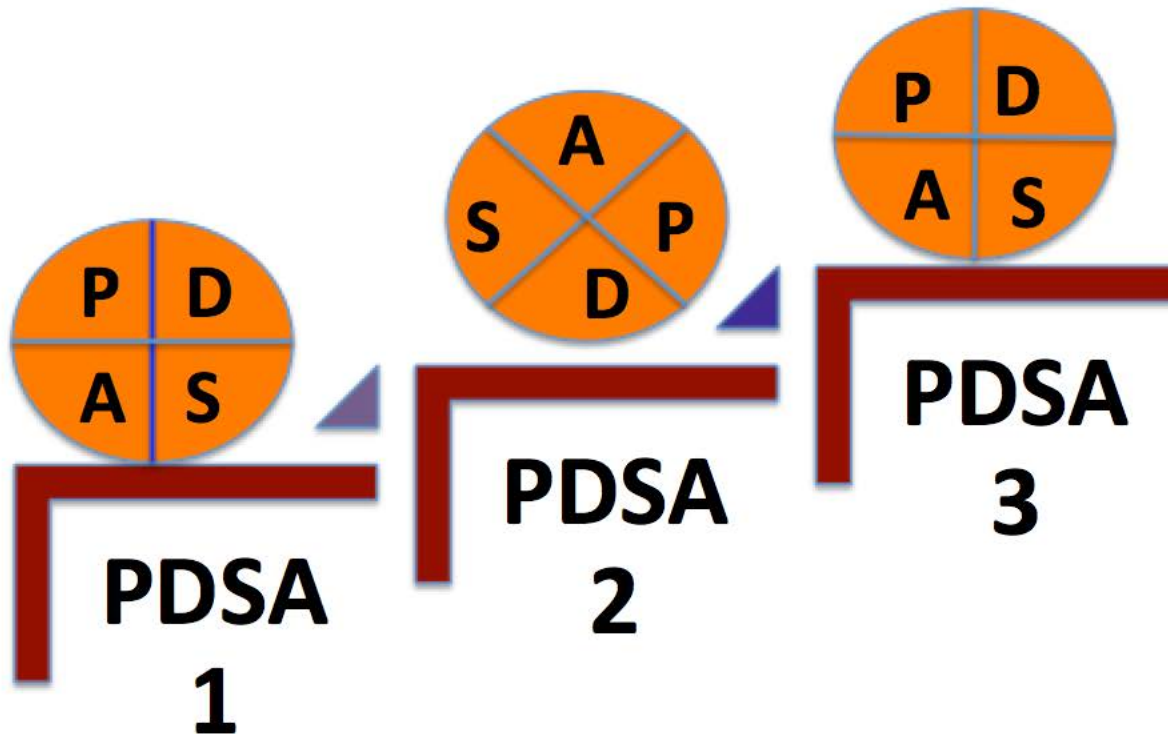
Breaking Down Silos

Model for Improvement

What are we trying to accomplish?

How do we know that a change is an improvement?

What changes can we make that will result in the improvements we seek?



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

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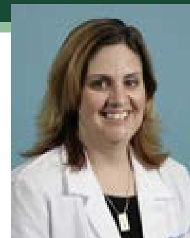
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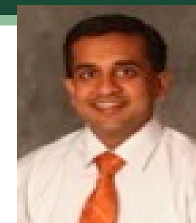
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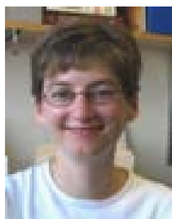
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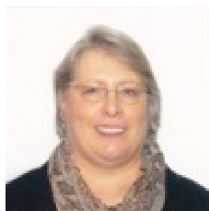
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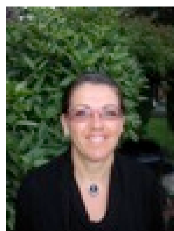
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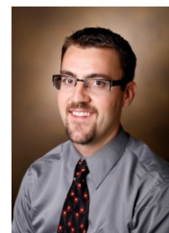
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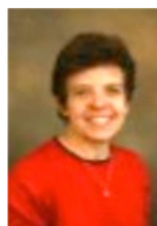
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Denise Zayack

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The "ACE" Study

Anda, R. et al. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. American Journal of Preventive Medicine, 14, 245-258.

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

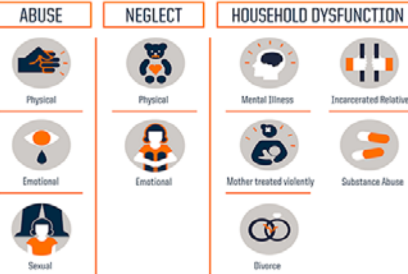
THE TRUTH ABOUT ACEs

WHAT ARE THEY?

ACEs are ADVERSE CHILDHOOD EXPERIENCES

The three types of ACEs include

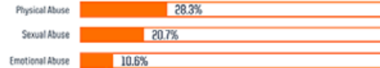
ABUSE NEGLECT HOUSEHOLD DYSFUNCTION



HOW PREVALENT ARE ACEs?

The ACE study* revealed the following estimates:

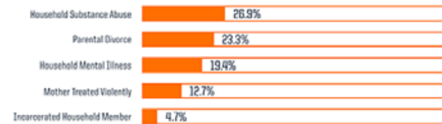
ABUSE



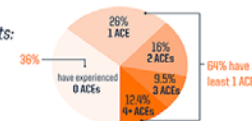
percentage of study participants that experienced a specific ACE

NEGLECT

HOUSEHOLD DYSFUNCTION



Of 17,000 ACE study participants:



64% have at least 1 ACE

WHAT IMPACT DO ACEs HAVE?

As the number of ACEs increases, so does the risk for negative health outcomes

Possible Risk Outcomes:

rwjf.org/vulnerablepopulations

VON Vermont Oxford NETWORK

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 addict . . . **Empowering women to teach us how to best partner with them.**

Tools to Impact Attitudes

iNICQ

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 **<u>standardized process</u>** 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**.

iNICQ

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.

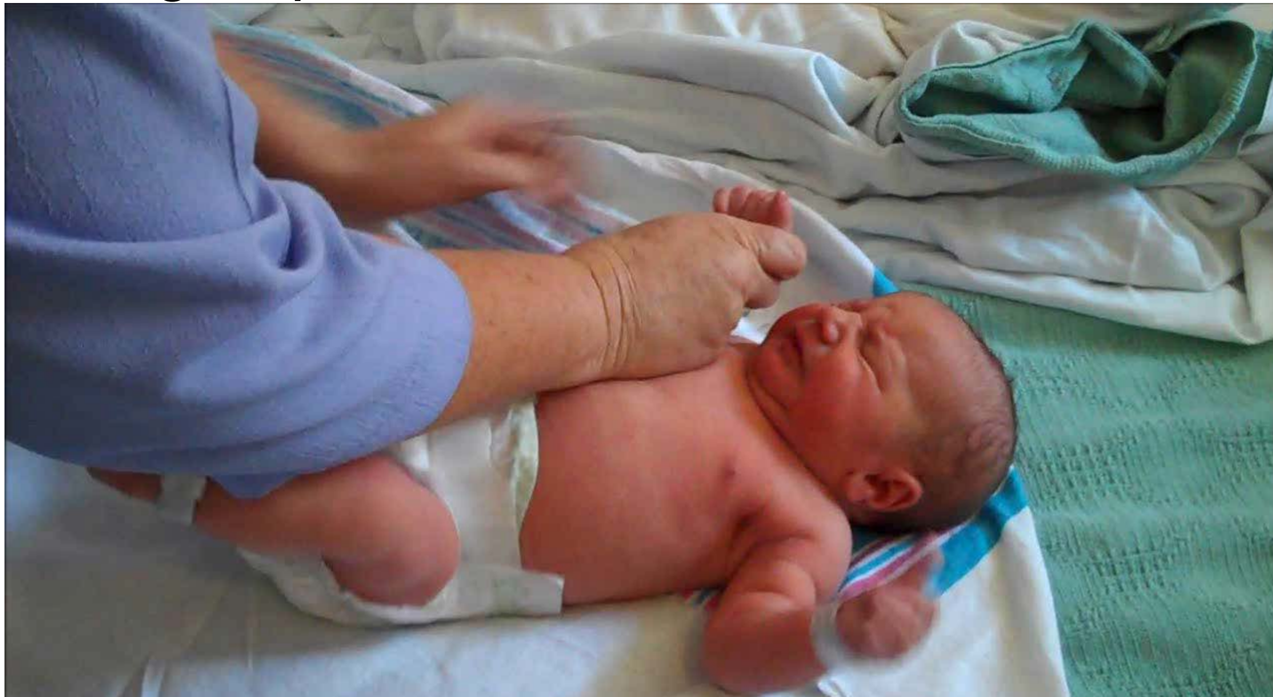
Family as a Primary Therapeutic Intervention

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?

iNICQ

PBP 6.

Develop clear eligibility criteria for breastfeeding and actively promote and support breastfeeding by eligible mothers.

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PBP 7.

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

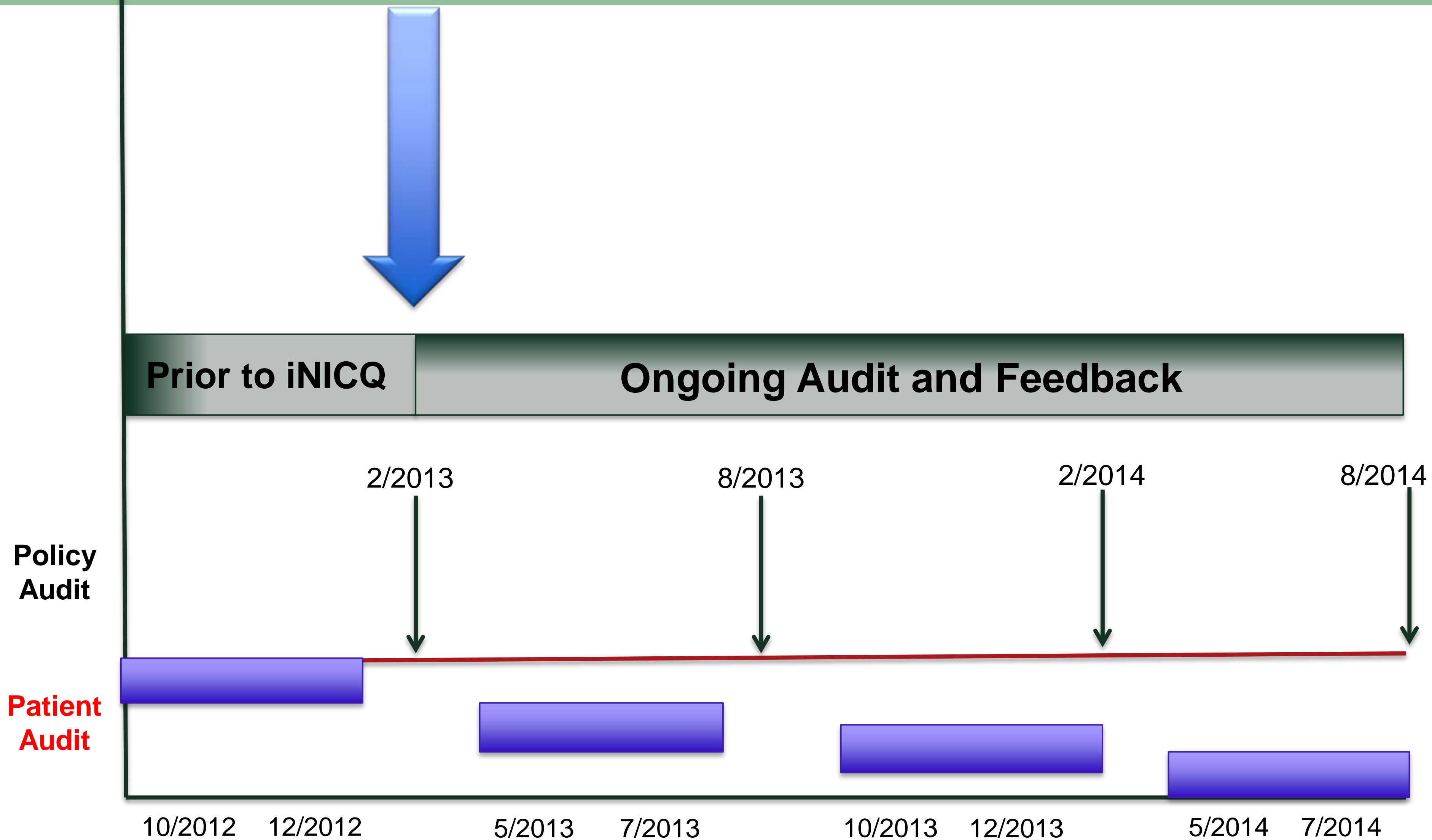
Thing 3.

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



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 received **ANY mother's milk** at DC
- 82% RX with morphine and 16% RX with methadone
  - 24% RX Phenobarbital
  - 10% RX with Clonidine
  - **35% DC home on medications**

NAS – Presence of Hospital Policies

	February 2013	August 2013	February 2014	August 2014	
	%	%	%	%	p-value
Maternal substance use screen	75				
Evaluation and treatment	76				
Standardization scoring	45				
Non-pharmacologic treatment	59				
Pharmacologic treatment	68				
Breastfeeding	49				

Patrick SW, Schumacher RE, Horbar JD, Buus-Frank M, et. al., Improving Care for Infants with Neonatal Abstinence Syndrome: A Multicenter Prospective Collaborative. *Pediatrics, 2016.*

NAS Presence of Hospital Policies

	February 2013	August 2013	February 2014	August 2014	
	%	%	%	%	p-value
Maternal substance use screen	75	78	81	90	0.002
Evaluation and treatment	76	83	88	95	<0.001
Standardization scoring	45	59	67	77	<0.001
Non-pharmacologic treatment	59	66	69	84	<0.001
Pharmacologic treatment	68	81	84	92	<0.001
Breastfeeding	49	55	57	72	<0.001

Patrick SW, Schumacher RE, Horbar JD, Buus-Frank M, et. al., Improving Care for Infants with Neonatal Abstinence Syndrome: A Multicenter Prospective Collaborative. Pediatrics; 2016.

Infant Outcomes N=3458

	February 2013	August 2013	February 2014	August 2014	
	Median (IQR)	Median (IQR)	Median (IQR)	Median (IQR)	p-value
Length of treatment (days)	16 (10, 27)	15 (10, 23)	15 (10, 24)	15 (10, 24)	0.008
Length of hospital stay (days)					

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

	February 2013	August 2013	February 2014	August 2014	
	Median (IQR)	Median (IQR)	Median (IQR)	Median (IQR)	p-value
Length of treatment (days)	16 (10, 27)	15 (10, 23)	15 (10, 24)	15 (10, 24)	0.008
Length of hospital stay (days)	21 (14, 33)	20 (14, 28)	20 (14, 29)	19 (15, 28)	<0.001

Patrick SW, Schumacher RE, Horbar JD, Buus-Frank M, et. al., Improving Care for Infants with Neonatal Abstinence Syndrome: A Multicenter Prospective Collaborative.

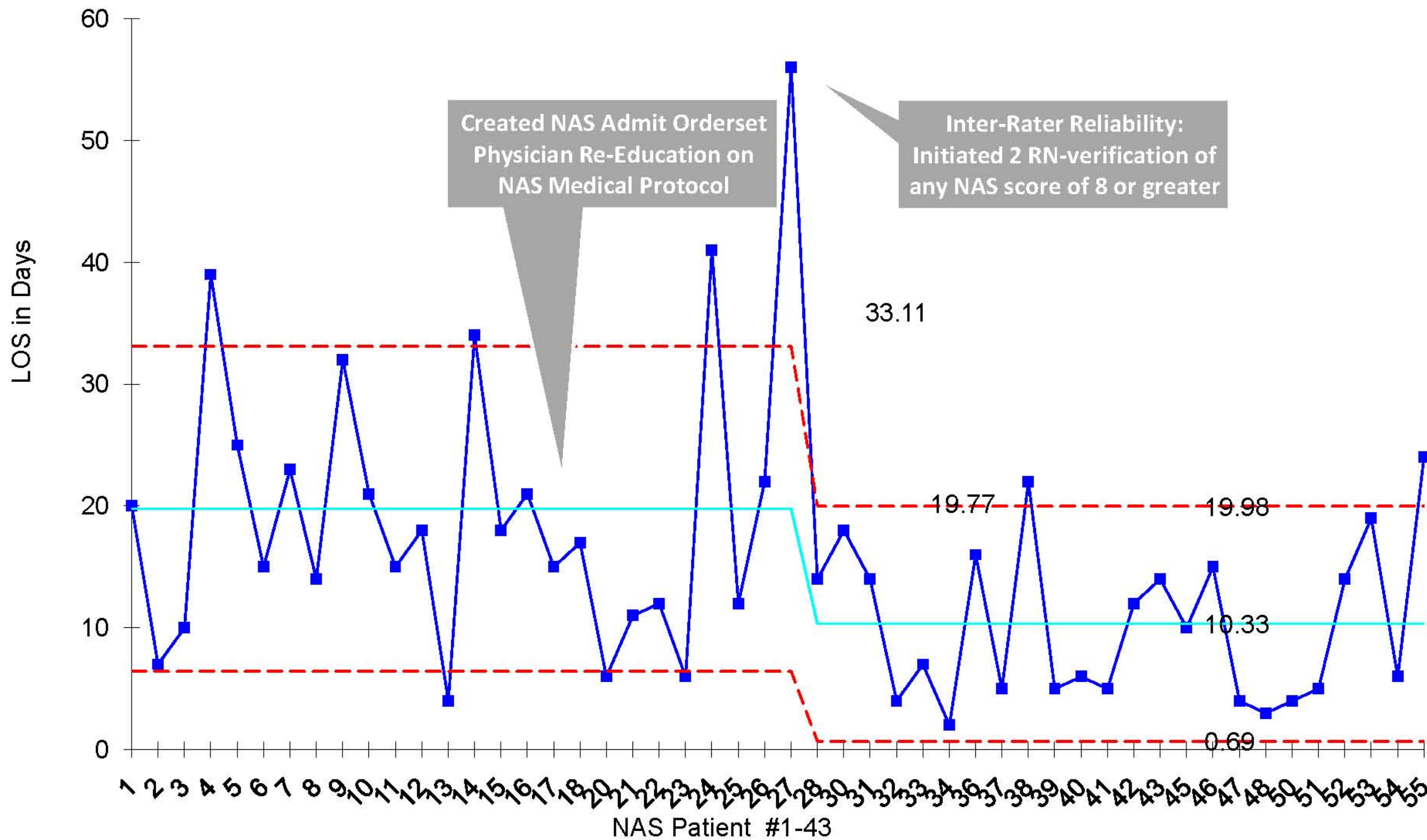
Potential to Scale-Up?

Patrick SW, Schumacher RE, Horbar JD, Buus-Frank M, et. al., Improving Care for Infants with Neonatal Abstinence Syndrome: A Multicenter Prospective Collaborative. Pediatrics; 2016.

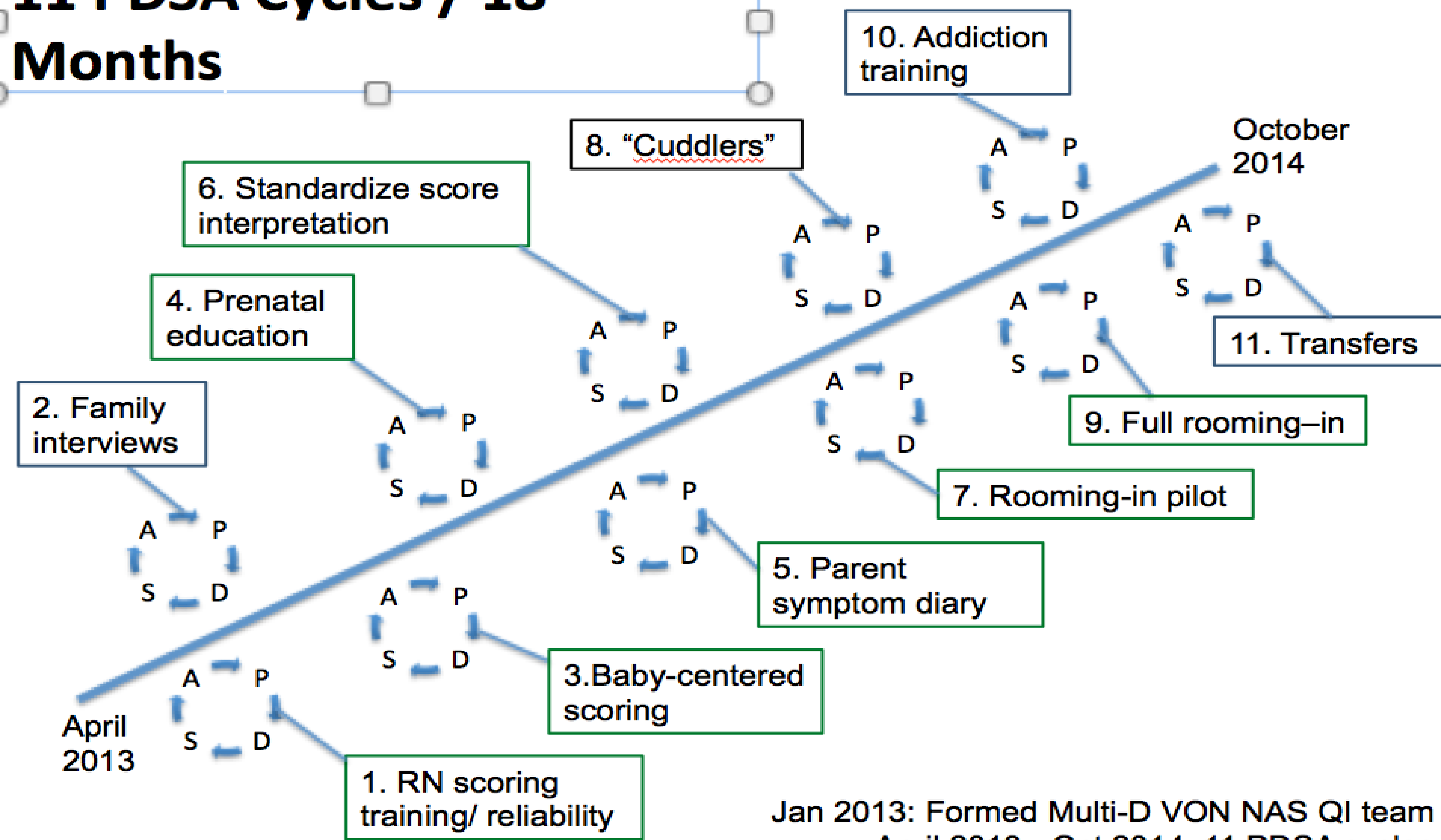
Reducing LOS by 2 days nationwide would result in an estimated savings of $170 million dollars in hospital charges.

New Hanover Regional Medical Center

NAS Patient LOS c Chart February - September 2014



Dartmouth Hitchcock Medical Center Hospital Costs per Treated Newborn



In 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

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
Improving Outcomes for Infants and Families Impacted By Neonatal Abstinence Syndrome

NAS Universal Curriculum and Statewide Implementation Package Now Endorsed by NANN

https://public.vtoxford.org/quality-education/nas-universal-training-program/

National Association of Neonatal Nurses

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

Breaking Down Silos . . .
Building on Fertile Ground!