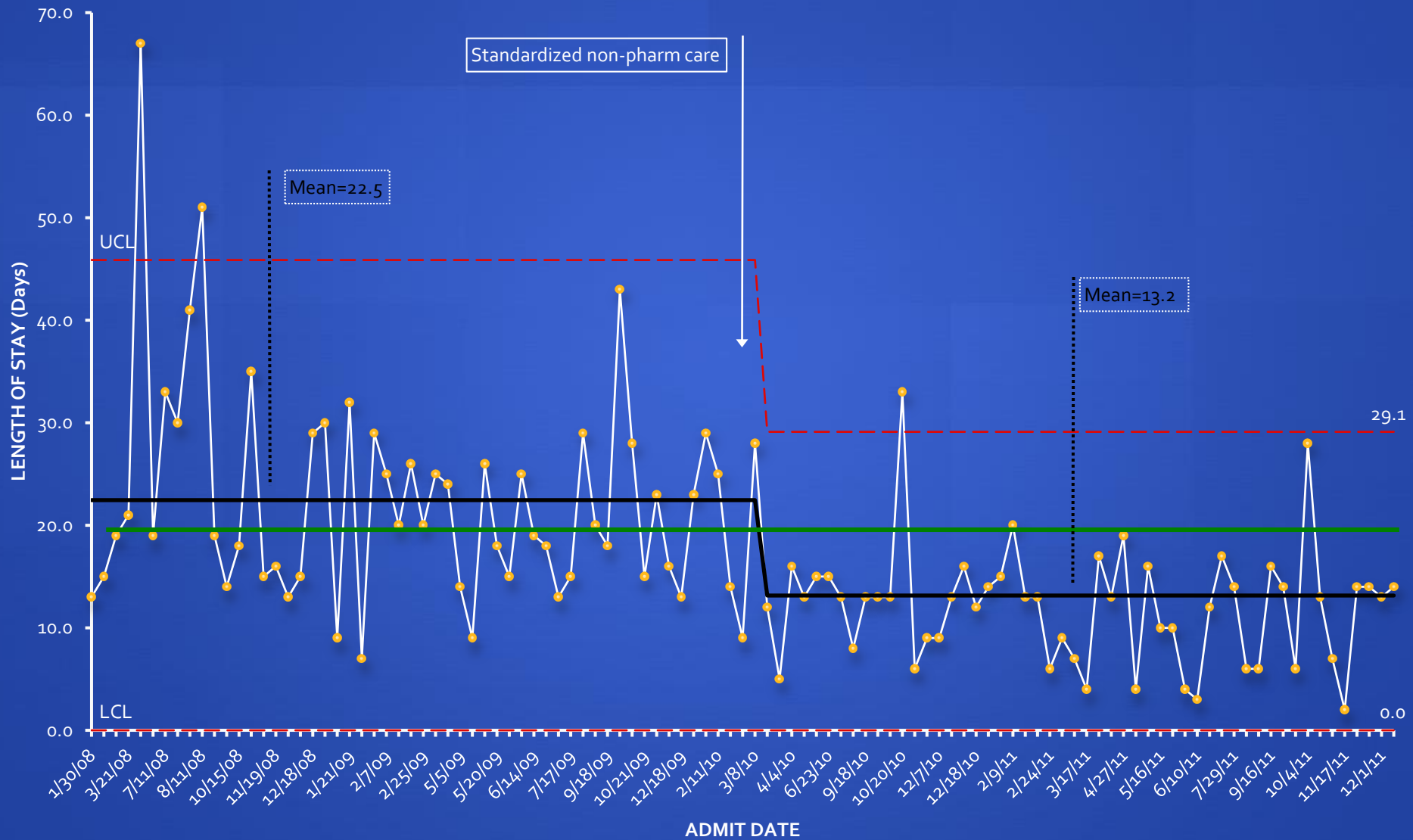




Intervention 1

Focus on non-pharmacologic care

Length of Stay: Methadone exposed infants



The standard approach: why?

- Medications
- NICU





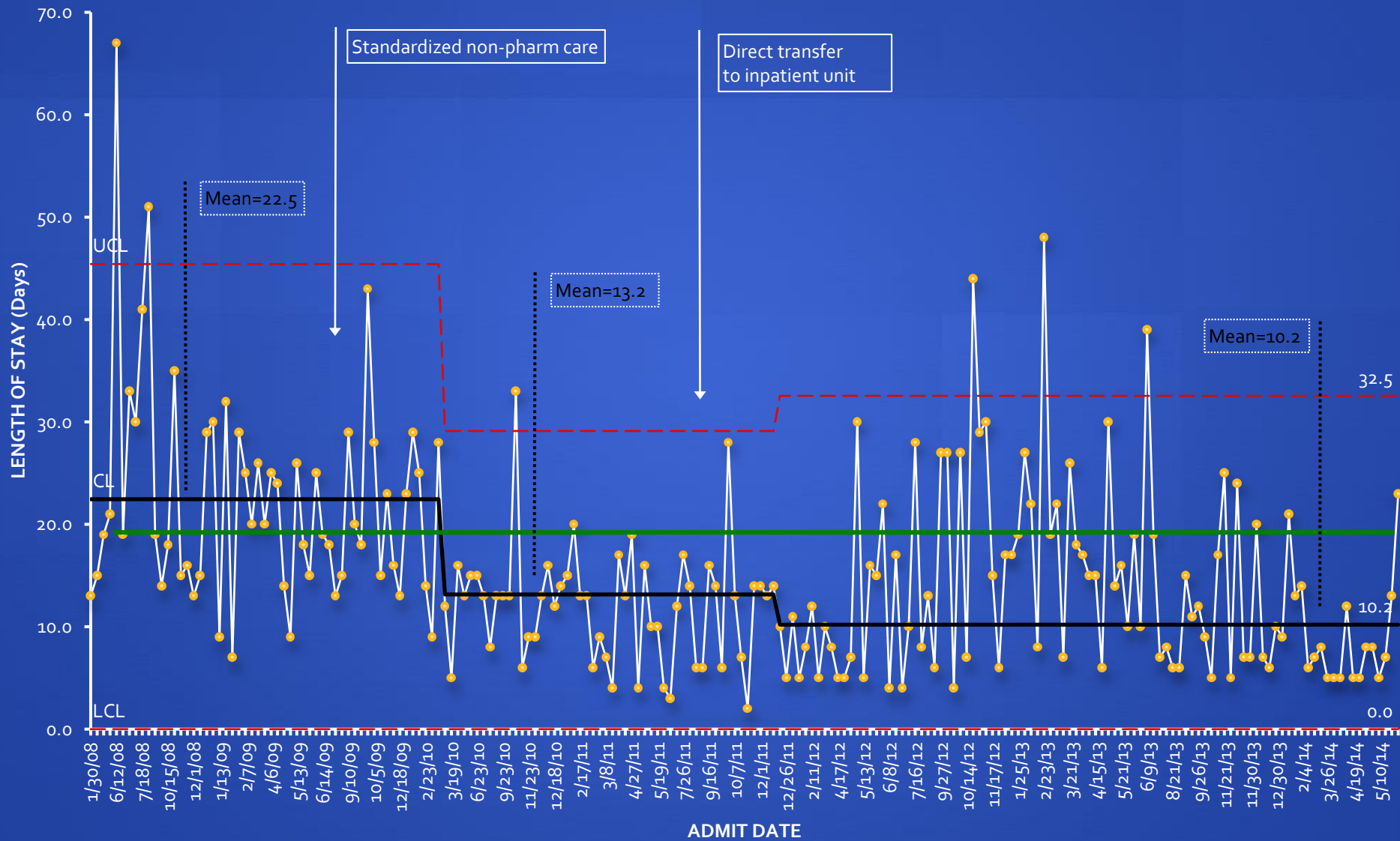


Source: <http://adamandsarahcoats.blogspot.com>

Intervention 2

Direct transfer to the general inpatient unit

Length of Stay: Methadone exposed infants



The standard approach: why?

- Medications
- NICU
- Finnegan Scores

SYSTEMS	SIGNS AND SYMPTOMS	SCORE	AM 2	4	6	8	10	12	PM 2	4	6	8	10	12	DAILY WT.
CENTRAL NERVOUS SYSTEM DISTURBANCES	High Pitched Cry	2													
	Continuous High Pitched Cry	3													
	Sleeps < 1 Hour After Feeding	3													
	Sleeps < 2 Hours After Feeding	2													
	Hyperactive Moro Reflex	2													
	Markedly Hyperactive Moro Reflex	3													
	Mild Tremors Disturbed	2													
	Moderate Severe Tremors Disturbed	3													
	Mild Tremors Undisturbed	1													
	Moderate Severe Tremors Undisturbed	2													
	Increased Muscle Tone	2													
	Excoriation (specify area): _____	1													
	Myoclonic Jerks	3													
	Generalized Convulsions	3													
METABOLIC VASOMOTOR/ RESPIRATORY DISTURBANCES	Sweating	1													
	Fever < 101°F (39.3°C)	1													
	Fever > 101°F (39.3°C)	2													
	Frequent Yawning (> 3-4 times/interval)	1													
	Mottling	1													
	Nasal Stuffiness	1													
	Sneezing (> 3-4 times/Interval)	1													
	Nasal Flaring	2													
	Respiratory Rate > 60/min	1													
	Respiration Rate > 60/min with Retractions	2													
GASTROINTESTINAL DISTURBANCES	Excessive Sucking	1													
	Poor Feeding	2													
	Regurgitation	2													
	Projectile Vomiting	3													
	Loose Stools	2													
	Watery Stools	3													
SUMMARY	TOTAL SCORE														
	SCORER'S INITIALS														
	STATUS OF THERAPY														

Adapted from Finnegan L. Neonatal abstinence syndrome: assessment and pharmacotherapy. Neonatal Therapy: An update, F. F. Rubaltelli and B. Granti, editors. Elsevier Science Publishers B.V. (Biomedical Division). 1986: 122-146

“The infant with a score of “7” or less was not treated with drugs for the abstinence syndrome because, in our experience, he would recover rapidly with swaddling and demand feedings. Infants whose score was “8” or above were treated pharmacologically”

Finnegan LP, et al. Assessment and treatment of abstinence in the infant of the drug- dependent mother.
Int Clin Pharmacol Biopharm. 1975;12(1-2):19-32

Problems with the Finnegan

- Long lengths of stay and lots of meds
- Purpose of treatment is to get the scores below threshold
- Must disturb the infant and exacerbate signs of withdrawal
- Can be slow to respond
- Powerful and potentially harmful meds to give to treat a sneeze or a yawn

Intervention 3

**Discontinuation of the Finnegan
Scoring tool and adoption of a
functional scoring approach**

1) Can the baby eat?

2) Can the baby sleep?

3) Can the baby be consoled?

ESC Study

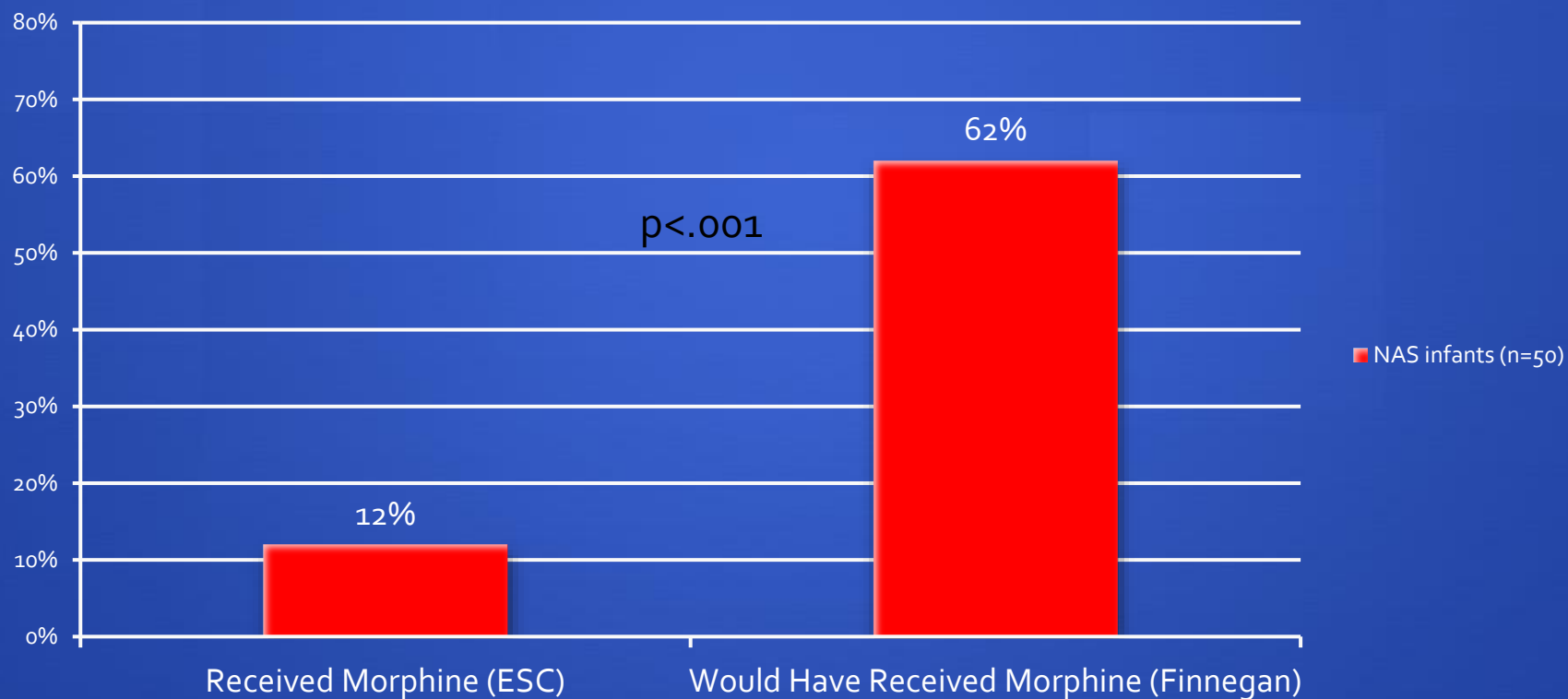
- Analyzed 50 consecutive NAS babies admitted to our general inpatient unit from March 2014 to August 2015
- Assessed every 2-6 hours using the FNASS, but did not guide management
- Management decisions based on ESC

Outcomes

1. Proportion of infants treated with morphine vs. proportion predicted to be treated with morphine using the FNASS approach
2. Days the two approaches disagreed
3. FNASS scores the day after the two approaches disagreed

Results

Proportion of Infants that Received Morphine



Results

- On 78 days (26.4%) the ESC Led to LESS Morphine than Predicted by The Finnegan
 - The following day, the average Finnegan score decreased by 0.9 points, and decreased in 69% of cases.
- On 2 days (0.7%) the ESC Led to MORE Morphine than Predicted by The Finnegan
 - In both cases the average Finnegan score increased by 1.7 Points the next day

Results

- No readmissions
- No seizures
- No ICU transfers



Source: <http://www.mdnews.com>

The standard approach: why?

- Medications
- NICU
- Finnegan Scores
- Medication Dosing



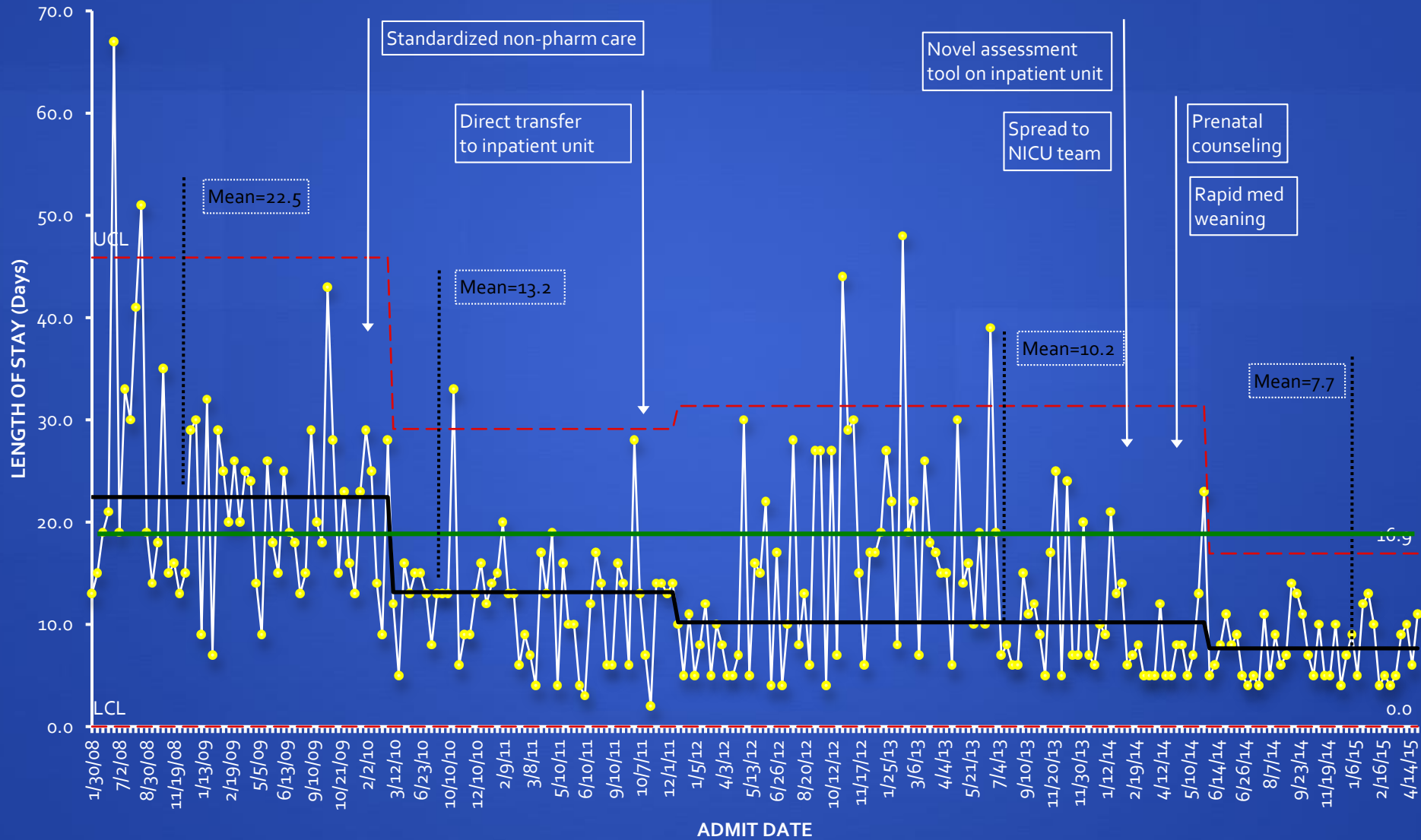
Intervention 4

**Decrease in morphine up to 3 times per
day**

Intervention 5

PRN Dosing

Length of Stay: Methadone exposed infants



The standard approach: why?

- Medications
- NICU
- Finnegan Scores
- Medication Dosing
- Staff cares for the baby



Cleveland, et al., JOGNN;43(3): 318-329

How do moms feel?

- Addiction is misunderstood
- Guilty
- Judged
- Mistrusting of nurses

“His nurse was like ‘his muscles are locking up because of his junkie mom’. I didn’t want to visit, I would call before and if that nurse was there, I wouldn’t even go.

“...because we’re gonna leave and he’s gonna cry and they’re gonna leave him crying because they’re gonna be like, ‘you know what? His parents are jerks!’”

if you're using while you're pregnant, you have a problem; a big problem . . . and you need help. You obviously don't care about your- self, about anything, except the drug. Make it a little bit easier on that mother if she's showing initiative . . . if she's taking the time to be there. If she loves her child, you can see it and you can feel it. If it's obvious that she's there for the baby then embrace it; make it easier. You don't know what her circumstances are. You don't know what she's been through or how hard her life has been. You don't know what she was feeling when she was pregnant . . . if she was being abused, if she was poor. Whatever the reason she was using while she was pregnant . . . you just don't know. So, try to make it easier for her.

Intervention 6

Empowering messaging





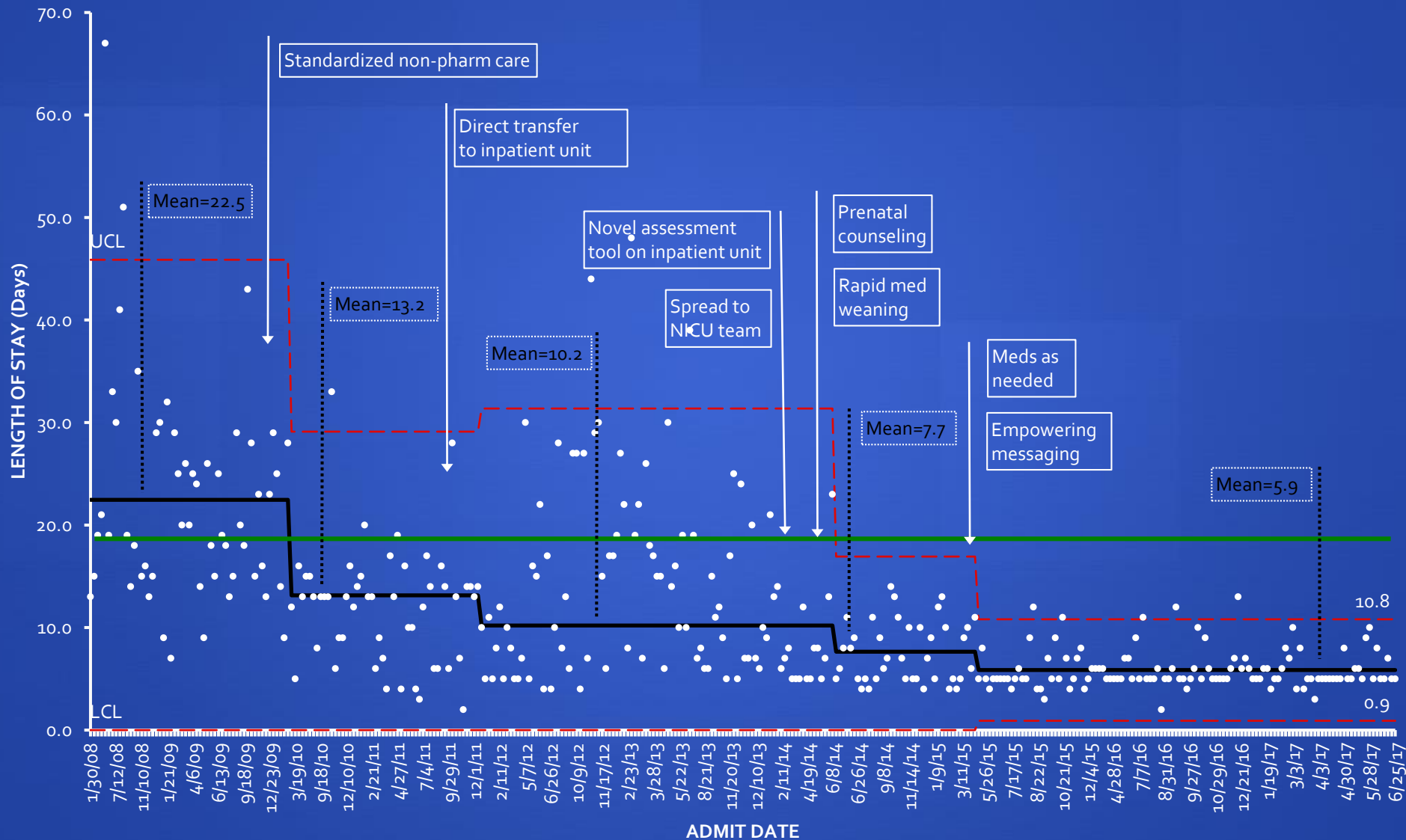
Old Protocol

- Goal: suppress withdrawal signs
- NICU: Mom visits
- Finnegan Scores: treat the number
- “supportive care”
- “feed on demand”
- Morphine
- Surprise!
- Staff takes care of infant

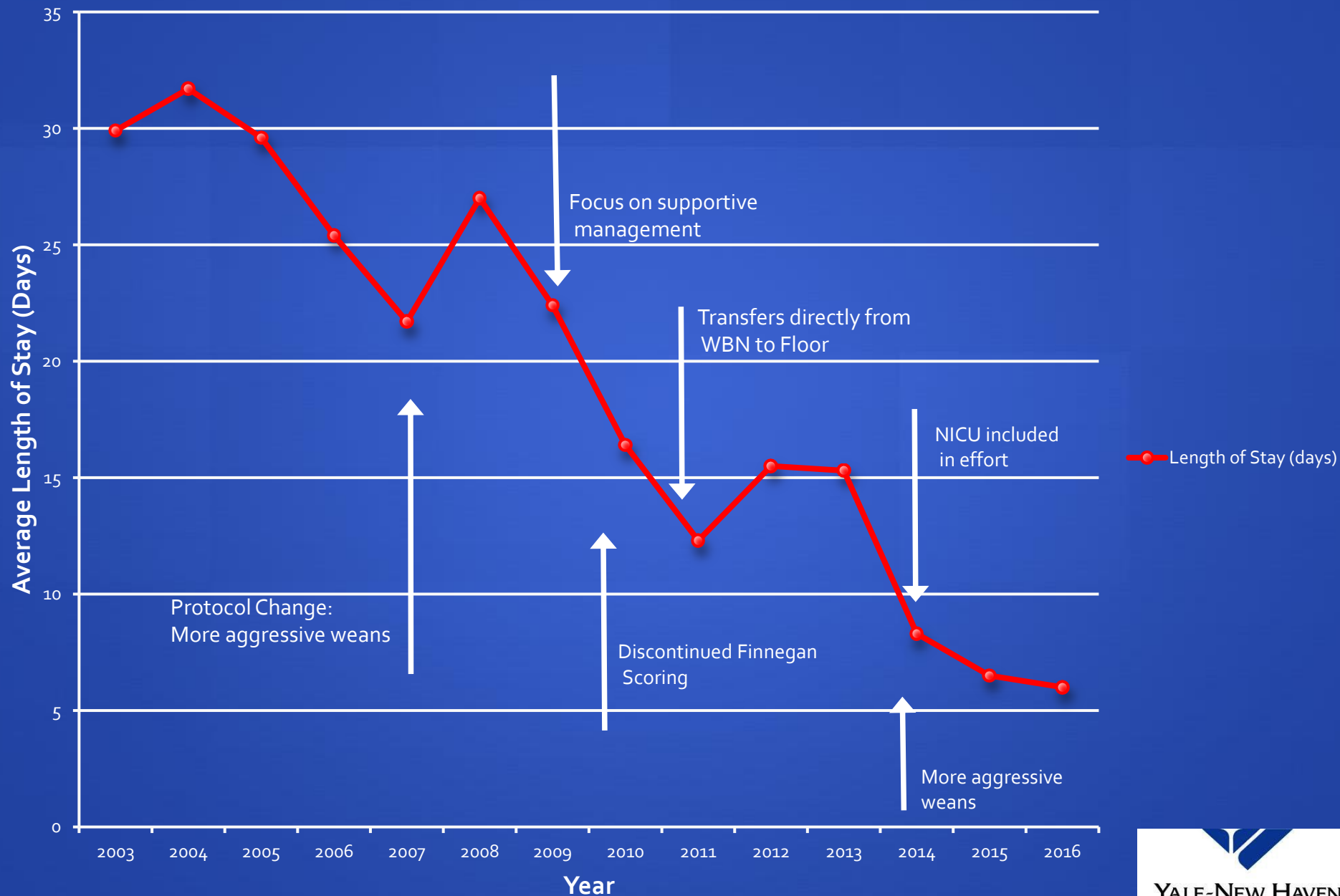
New Protocol

- Goal: have infant function as a normal neonate
- Mother and child together
- Eat/Sleep/Console: treat the infant
- SUPPORTIVE CARE
- No feeding schedule
- Meds on page 3
- Prenatal preparation
- Staff coaches parents

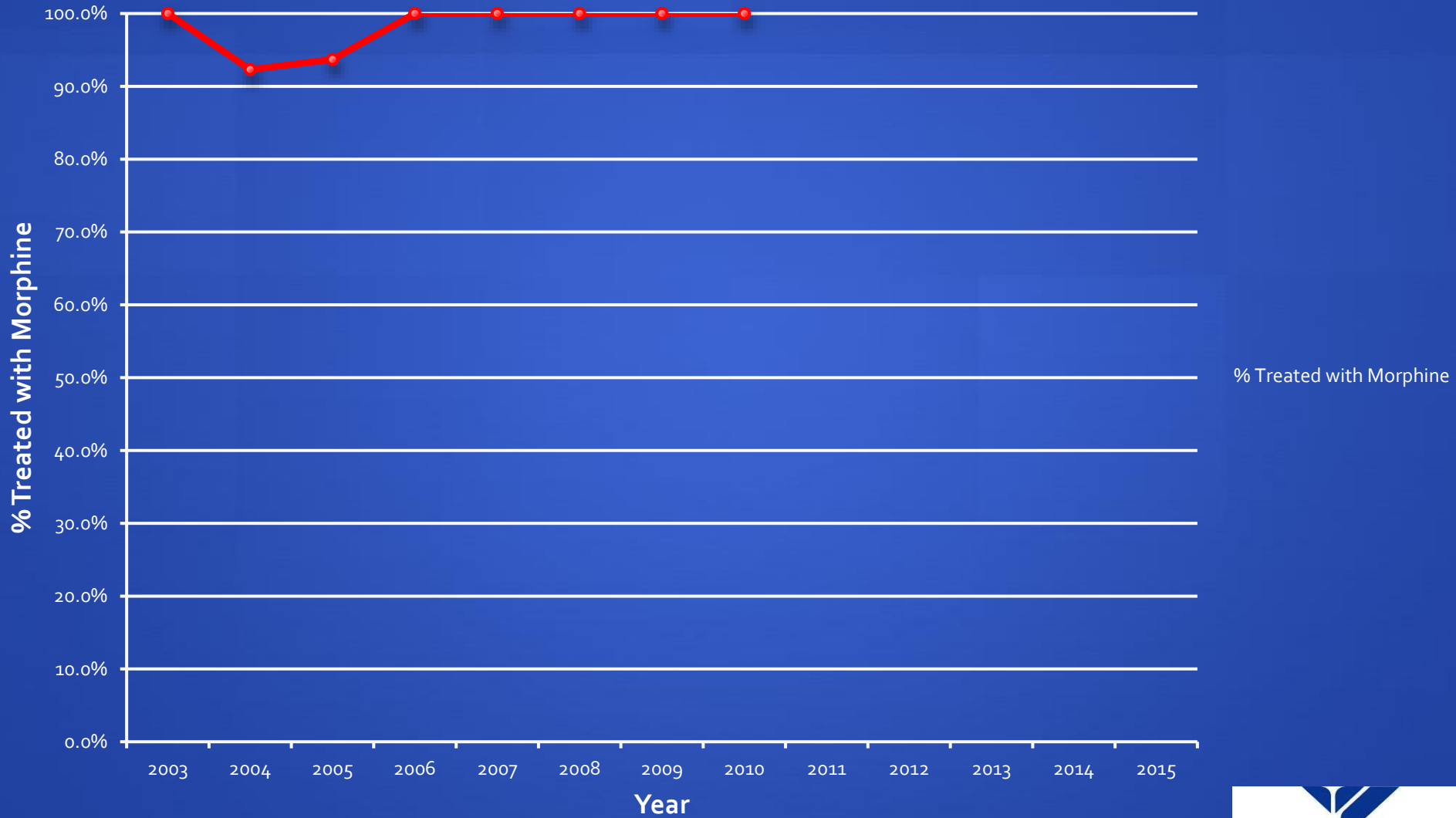
Length of Stay: Methadone exposed infants



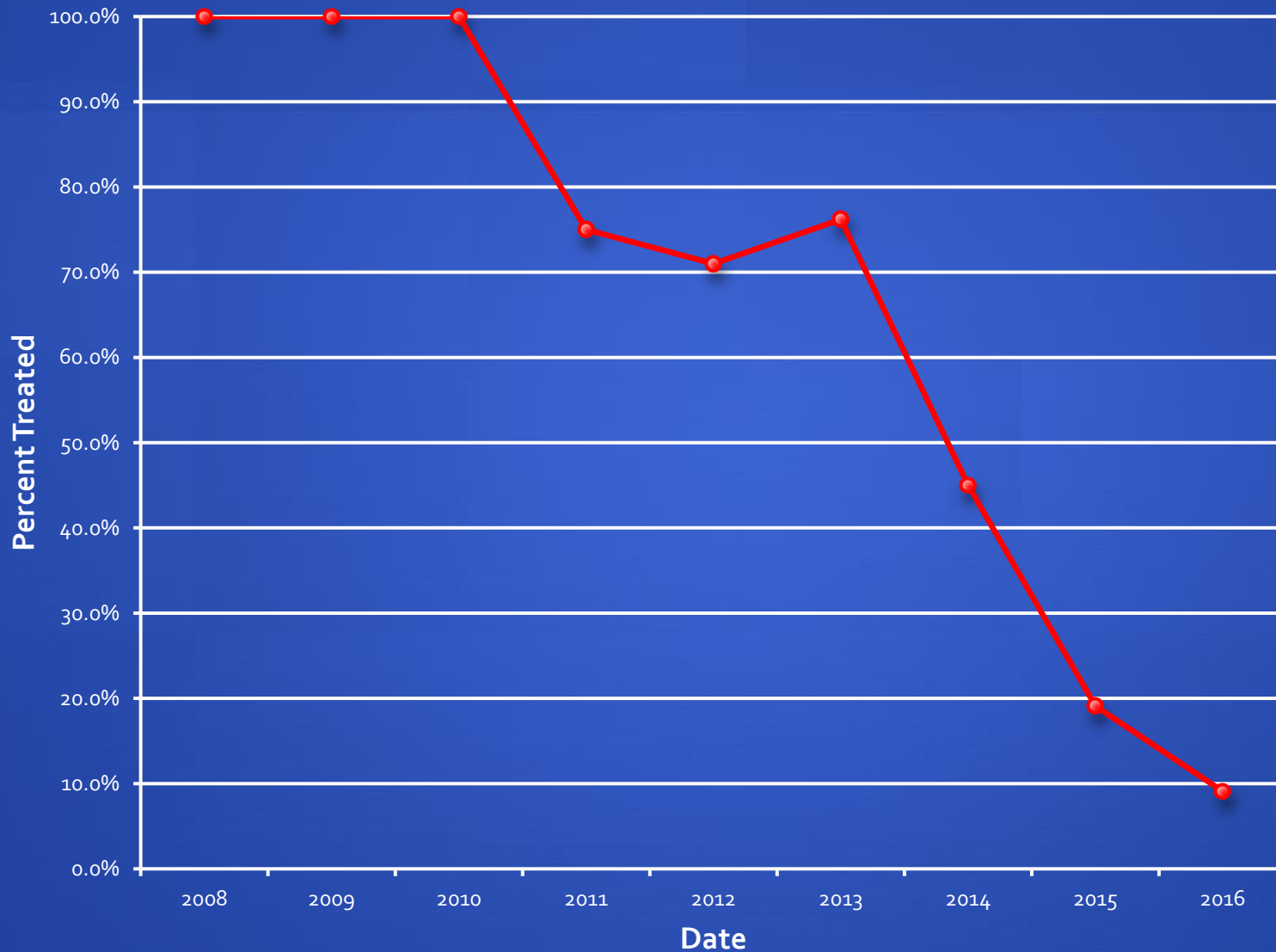
Average Length of Stay - Methadone Exposed Infants



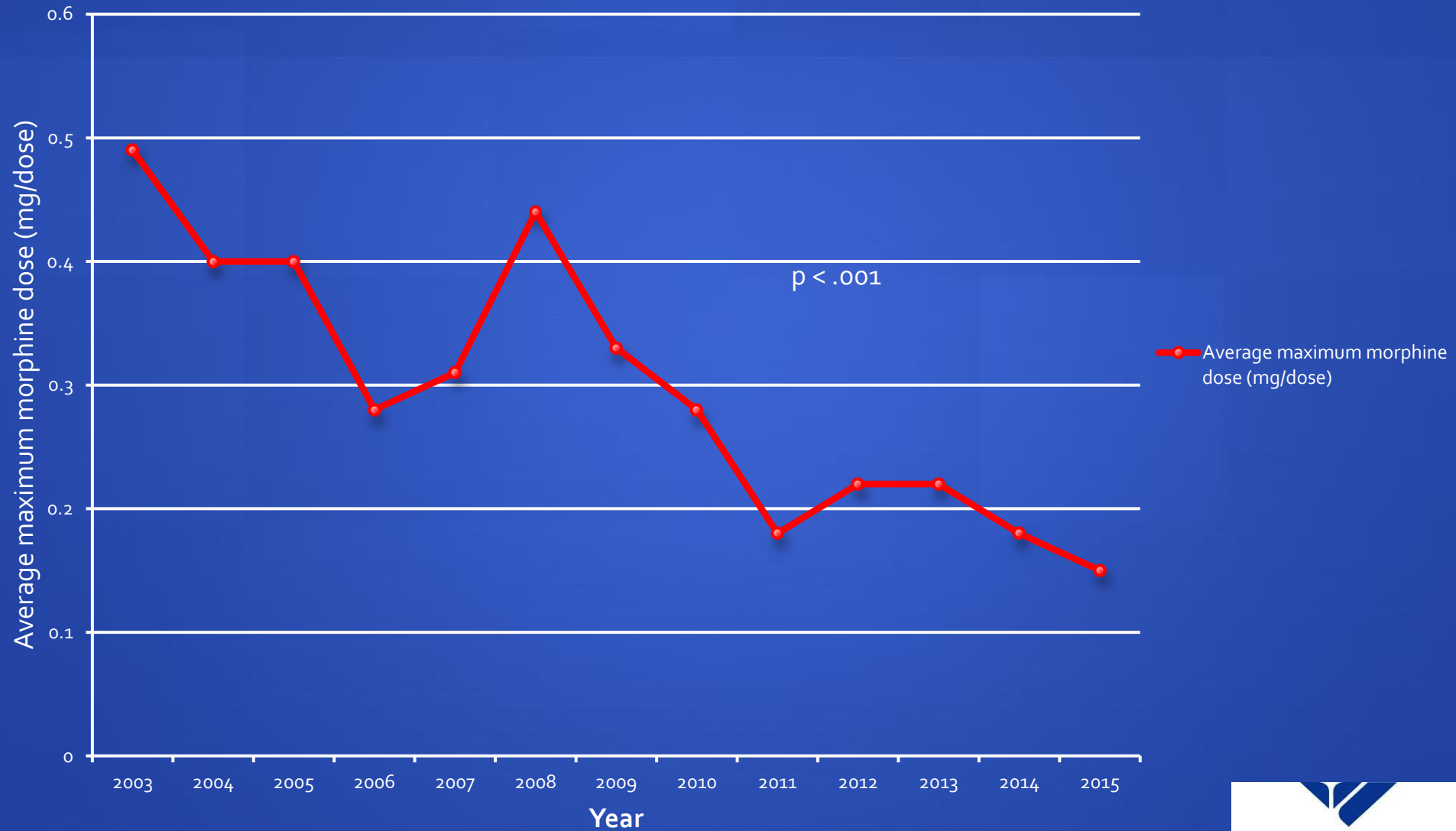
Percent of NAS Patients Treated with Morphine



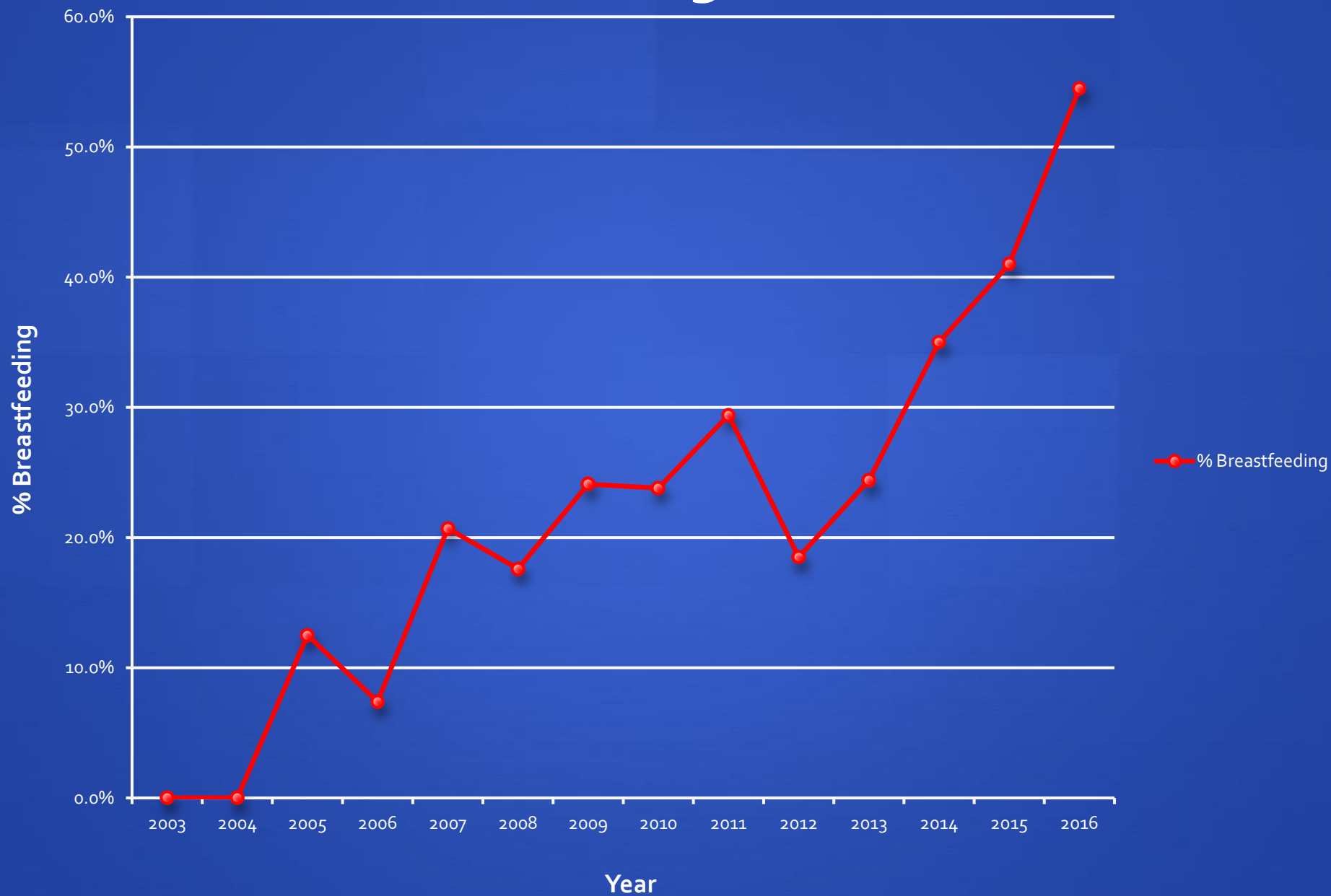
Percent Treated with Morphine



Average Maximum Morphine Dose



Breastfeeding Rate



Total Average Cost of NAS Care



Boston Medical Center

- Had been using FNASS approach
- Finnegan prioritization from June-November 2016
- Developed ESC approach as a scoring tool
- Piloting since December 2016

Eat, Sleep, Console Flowsheet

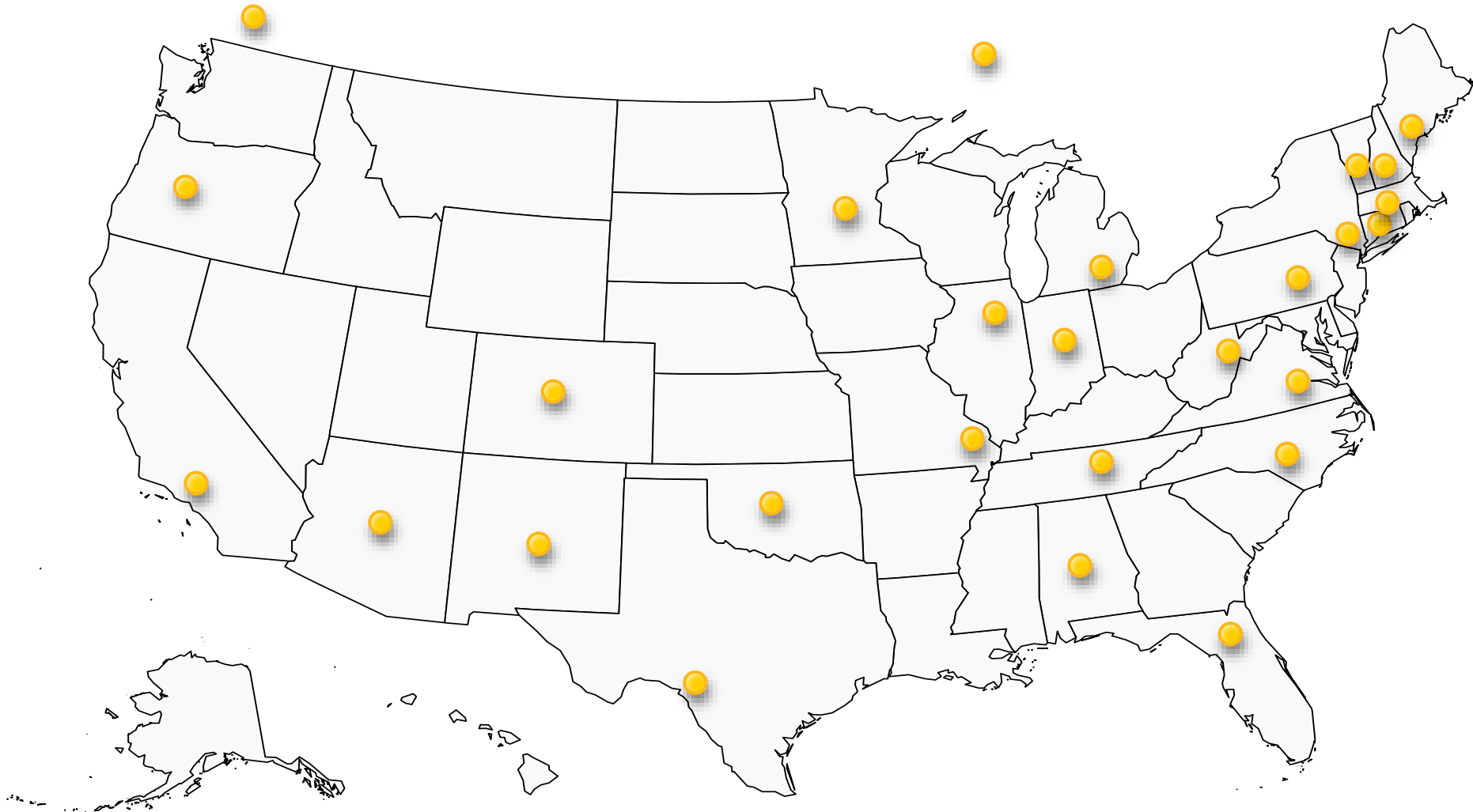


TIME	
EATING	
Poor feeding due to NAS – Y/N	
SLEEPING	
< 1 hr after feeding due to NAS – Y/N	
CONSOLABILITY	
<u>Please rate the infant's consolability:</u> Soothes with little support – 1 Soothes with some support – 2 Soothes with great support – 3	
Did the infant require >10 minutes to console – Y/N	

Boston Medical Center – Results

- Use of morphine decreased from 82% to 40%
- Length of stay decreased from 18 days to 10 days
- No readmissions

Additional Spread



Long-Term Outcomes

?

Conclusions

- Hugs before drugs
 - Empower families
 - Rooming-in
 - Non-Pharmacologic care as 1st line treatment
 - ESC approach
 - PRN meds
- Ask why



Source: Grossman Family Album

Acknowledgements

- David Hersh, MD
- Adam Berkwitt, MD
- Erin Nozetz, MD
- Marcelle Applewaite, RN
- Kim Carter, RN
- Liz O'Mara, RN
- Matt Bizzarro, MD
- Yogangi Malhotra, MD
- Jonathan Miller, MD
- Camisha Taylor, RN
- Rachel Osborn, MD