

## ABSTRACT

**Introduction:** Infants of a drug-dependent mother are common in our inner city, urban population. The Vermont Oxford Network iNICQ collaborative addresses the standardization of the management of neonatal abstinence syndrome (NAS). In the initial VON iNICQ audit, we have identified aspects of improvement in our institution.

**Aims:** To identify areas for improvement in our process, to focus on means to standardize care of infants with NAS, and to identify outcome measures that can be used to assess our improvement interventions.

**Methods:** Baseline data collection on 30 patients in the last 3 months as part of the initial VON iNICQ audit was performed. Comparing with the VON data, we identified aspects in our institution's policies, practices, and performance that deviated from other centers. For the PDSA cycle, P: we plan to make changes in the following areas: 1) breastfeeding policy for NAS babies, 2) decrease length of hospitalization, and 3) improve parental education and involvement; D: we will do the outcome measures detailed below; S: pre- and post- intervention assessment of rates of breastfeeding, length of stay, and parental knowledge via survey; A: implementation of improvement strategies.

**Results:** We identified the following areas for improvement: 1) lack of breastfeeding policy for infants of mothers identified to have in utero drug exposure, 2) duration of hospitalization, though it is comparable to the VON data, 3) lack of a guideline for the use of adjunct pharmacologic agents, and 4) lack of educational materials and support for families to encourage involvement and satisfaction.

**Future Directions:** In the coming weeks and months, we will be implementing several strategies to improve our practice. First, we will institute a breastfeeding policy, as part of the improvement in overall breastfeeding rate in our hospital, but specific to infants of mothers with prior drug exposure based. For this, we will measure the number of infants who are breastfeeding, or fed breast milk. Secondly, we will evaluate the adherence to prior institutional guideline regarding prompt adjustment of pharmacologic doses based on Finnegan scores, especially during the night. Also, we will institute guidelines for adjunct pharmacologic medications, i.e. clonidine and phenobarbital, based on existing evidence which will be useful for those infants with severe symptoms. For these, we will assess if length of stay would be shortened after implementation. Lastly, we will engage the families with educational materials, i.e. videos and instructional pamphlets, similar to "Purple Crying" to emphasize non-pharmacologic strategies and promote knowledge of NAS. Pre- and post-implementation surveys of parental knowledge and involvement will be collected to measure improvement in this area.

## BACKGROUND

- Hutzel Women's Hospital in the Detroit Medical Center has approximately 5000 deliveries per year
- Located in downtown Detroit, it serves an urban, inner city population
- High rate of prescription drug and illegal substance use during pregnancy
- Approximately 70 infants admitted per year for pharmacologic treatment of NAS

### AIMS

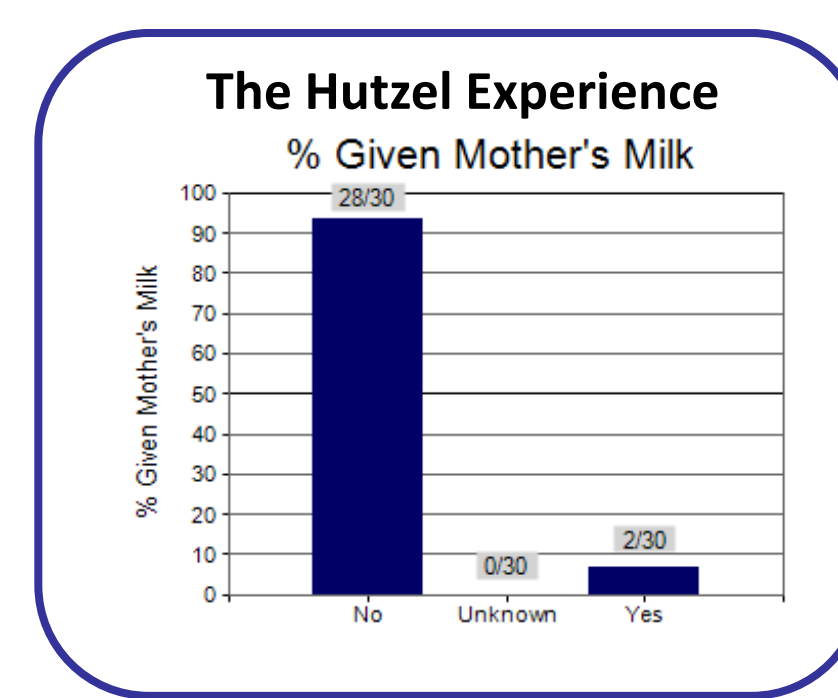
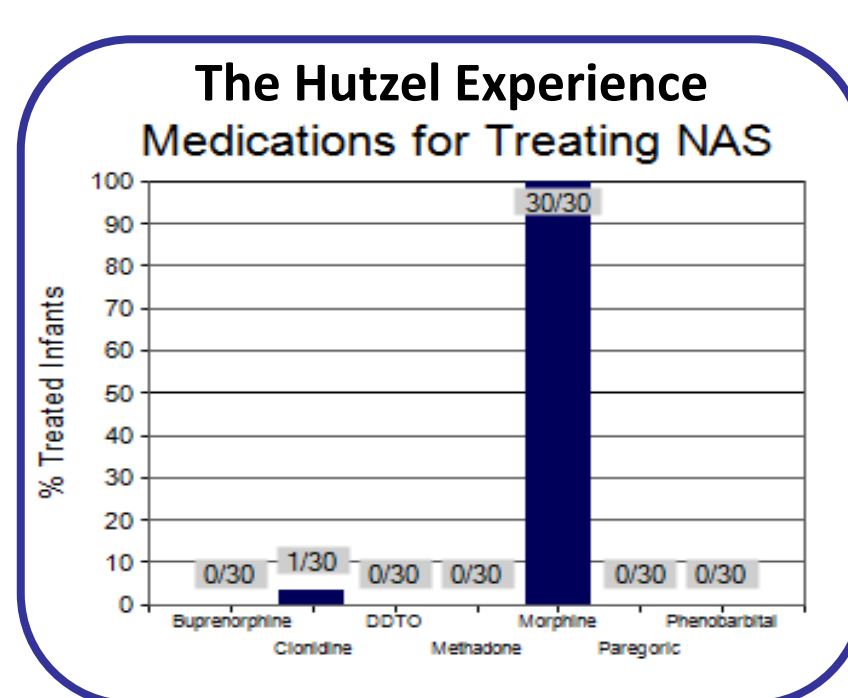
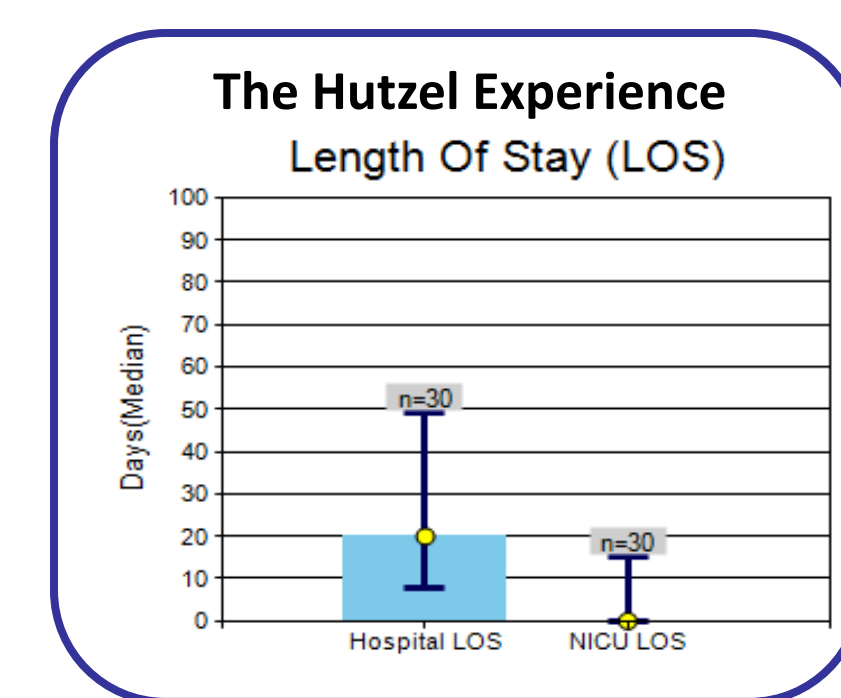
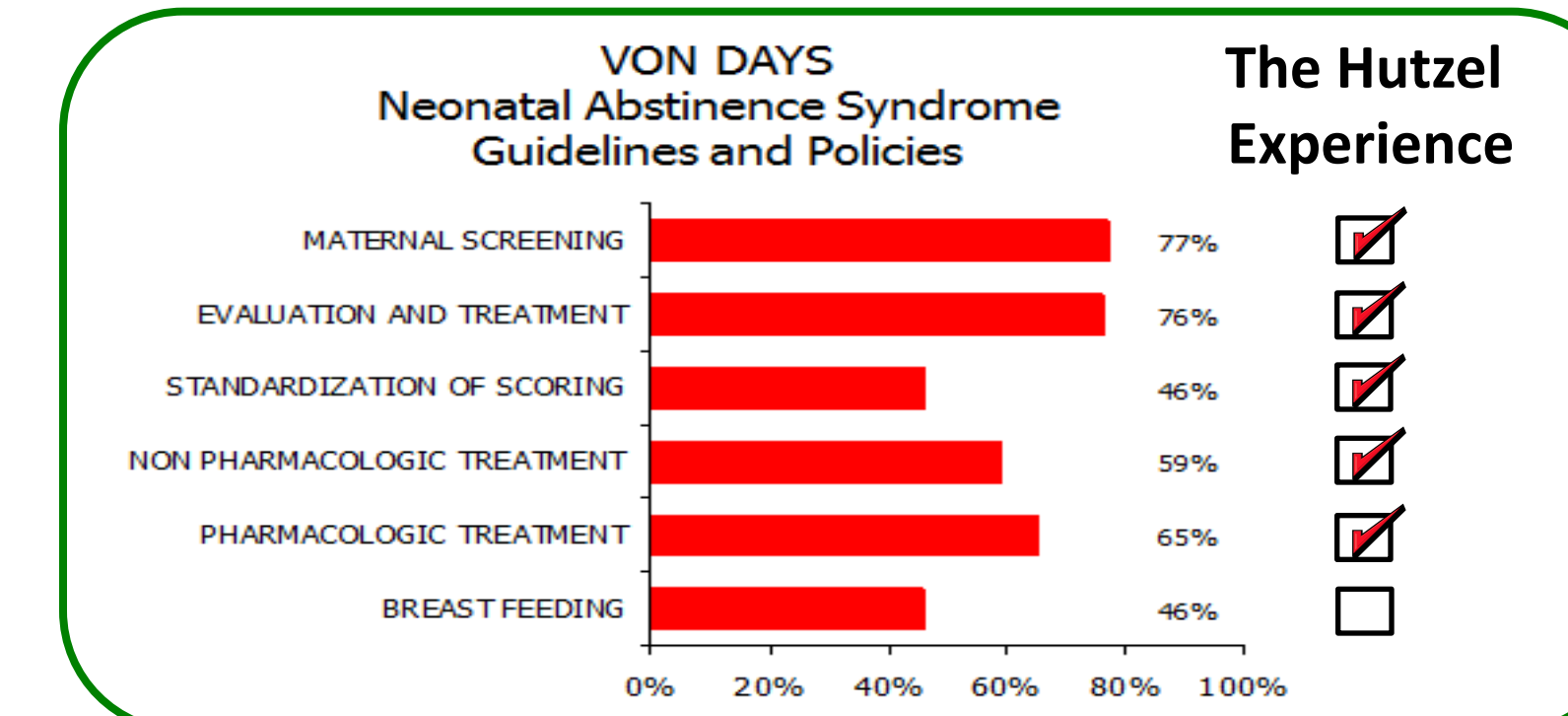
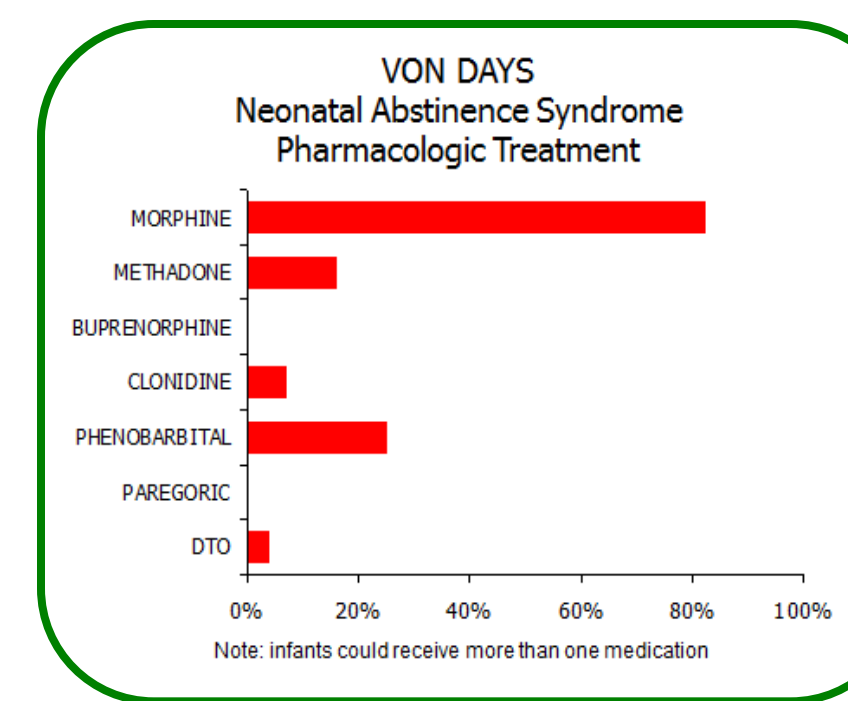
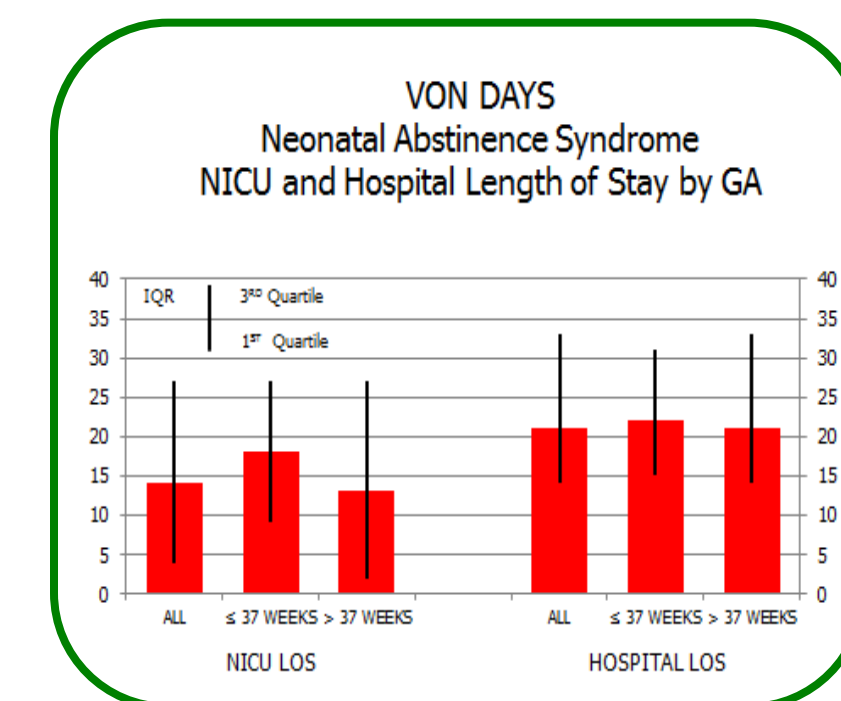
- To identify areas for improvement in our process
- To focus on means to standardize care of infants with NAS
- To identify outcome measures that can be used to assess our improvement interventions

## METHODS

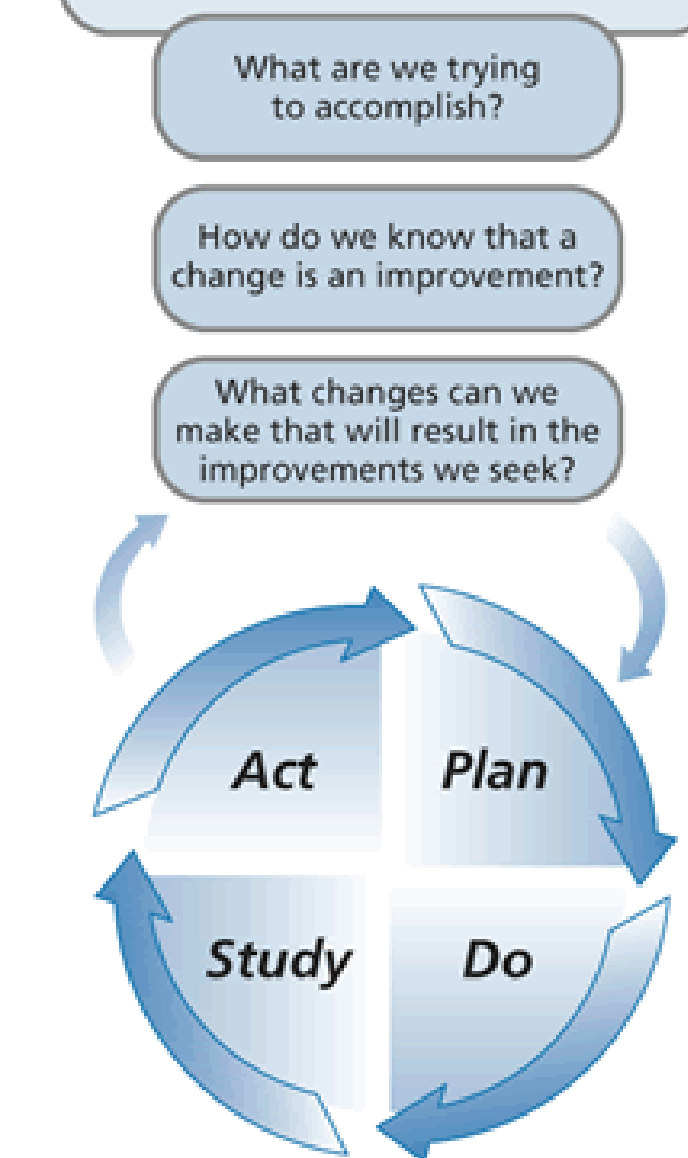
- Baseline data collection as part of first VON Audit (Feb 2013)
  - Institutional policy and procedure information
  - Individual characteristics of 30 patients
- Compared results with overall VON data
- Identified strengths and areas for improvement → PDSA cycles
- Data collection as part of second VON Audit (Aug 2013): 23 patients
- Changes implemented between 2 audits:
  - Reduced patient to nurse ratio
  - Cardiorespiratory monitor for all infants receiving medication therapy
  - Written guidance to providers at night for timely medication changes
- Compared results between 2 audits
- Ongoing PDSA cycles

## RESULTS

### First VON Audit



### Model for Improvement



Reference: Langley G, Nolan T, Norman C, Provost L (1996). The Improvement Guide: a practical approach to enhancing organisational performance. Jossey-Bass Publishers, San Francisco.

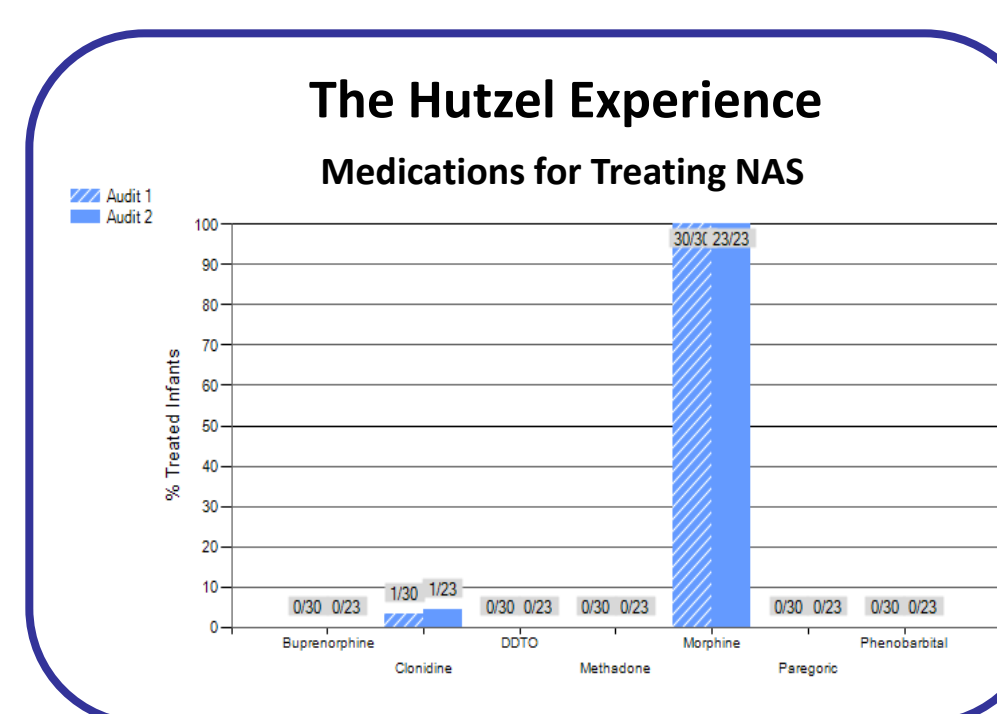
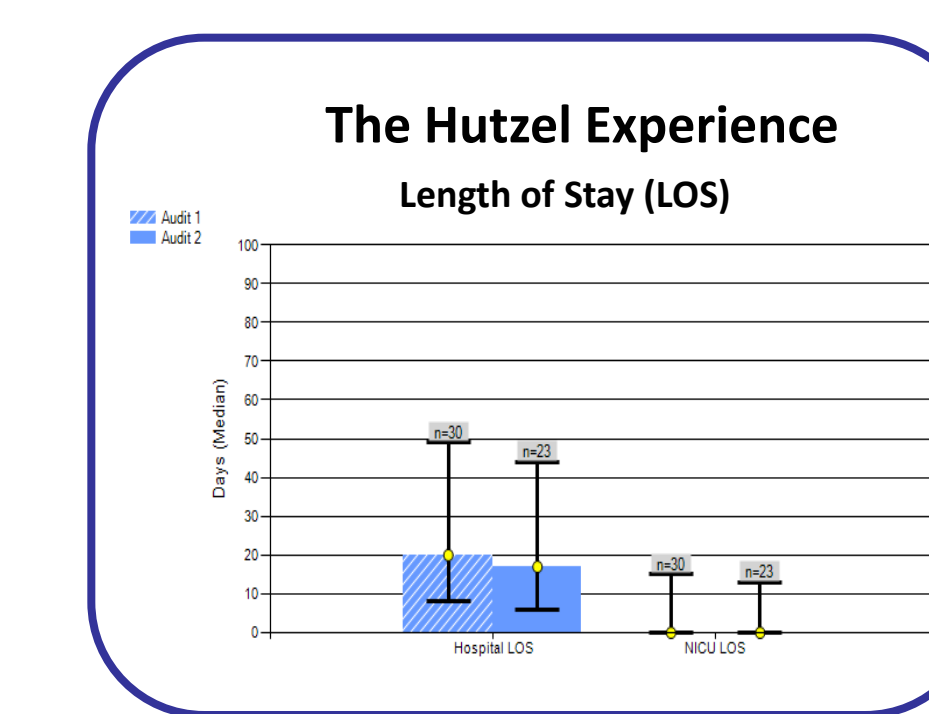
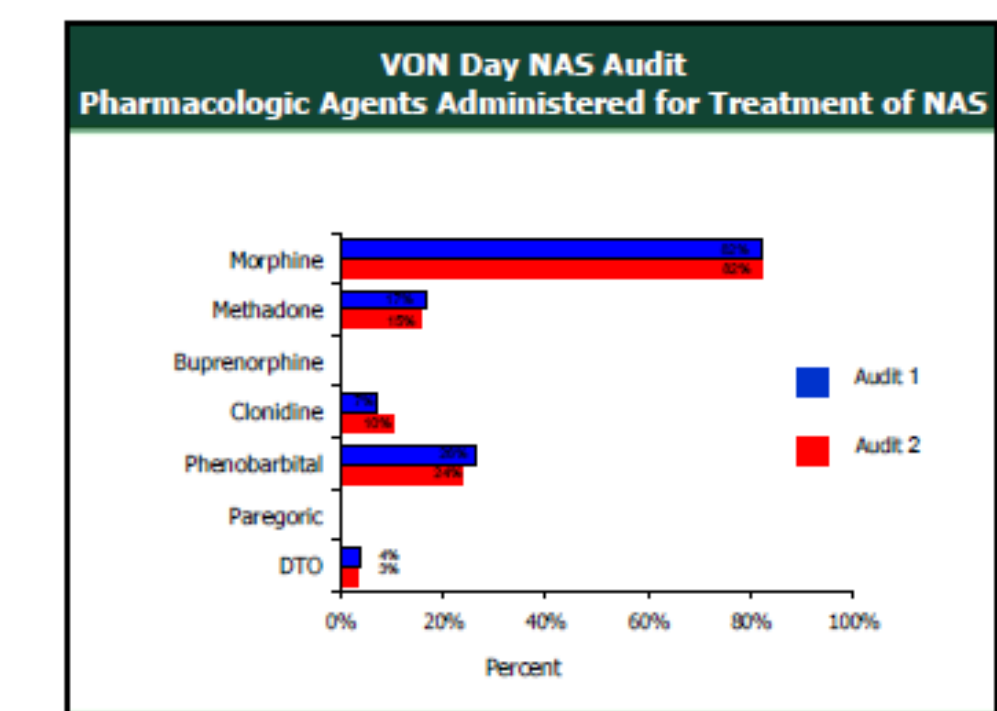
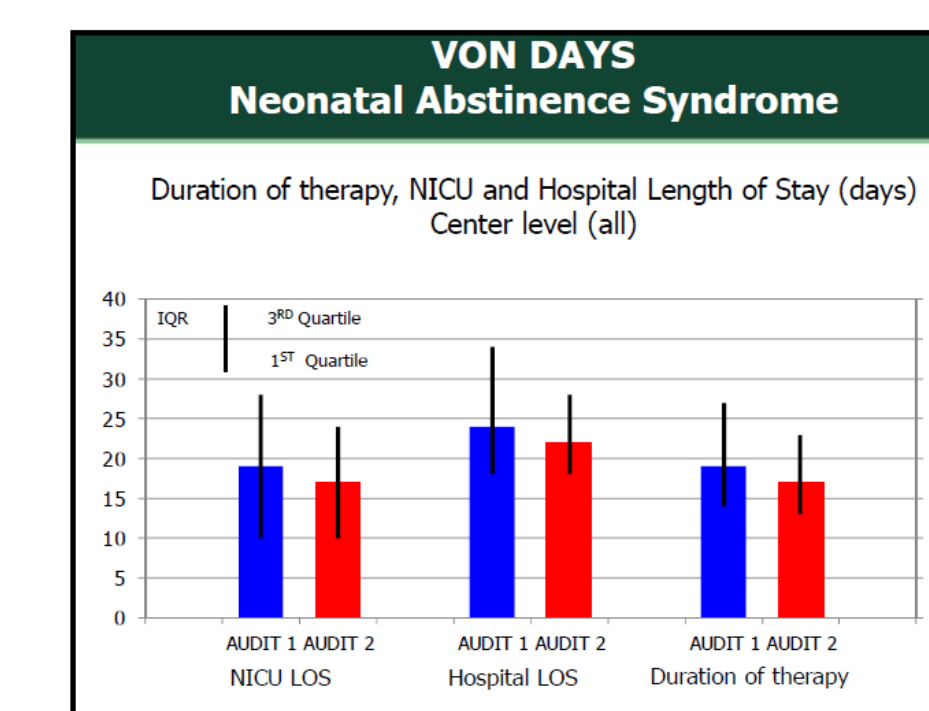
### STRENGTHS:

- Shorter length of hospital stay than overall VON cohort
- Uniformity of medication treatment algorithm due to management by single attending

### AREAS FOR IMPROVEMENT:

- Low rate of breastfeeding
- Duration of hospital stay could be improved further
- Lack of guidelines on adjunct pharmacologic treatment
- Lack of educational materials and support for families

### Second VON Audit



## OUR PROCESS (PDSA Cycles) FOR IMPROVEMENT

### A. Breastfeeding

- P – Improve breastfeeding rates in infants with NAS
- D – Add a statement for mothers with a history of drug use to existing breastfeeding policy
- S – Outcome measure: pre- and post- implementation breastfeeding rates
- A – Reinforce the breastfeeding policy and support breastfeeding mothers

### B. Duration of Hospitalization

- P – Decrease hospital length of stay for infants receiving pharmacologic treatment
- D – Enhancement of patient to nurse ratio; reinforcement of adjustment of medication doses based on Finnegan scores even at night and reinforcement of non-pharmacologic therapies by nursing staff
- S – Outcome measures: assessment of length of stay and number of prompt dose adjustment
- A – Continuous reinforcement of prompt dose adjustment by on-call clinicians and nurse ratio

### C. Adjunct Pharmacologic Therapy

- P – Investigate role of adjunct pharmacologic therapy
- D – Create a multidisciplinary, evidence based guideline for adjunct pharmacologic therapy, including indications, dosing and escalation/weaning parameters, monitoring for adverse events.
- S – Outcome measures: duration of hospital length of stay; adverse events; adherence to guidelines
- A – Institute guidelines for adjunct pharmacologic therapy; education of staff regarding guidelines

### D. Family Support

- P – Provide information regarding NAS to families of infants admitted with NAS
- D – Develop educational materials (e.g. pamphlets, manuals, videos) for families
- D – Institute developmental follow-up post-discharge from initial hospital stay
- S – Outcomes measure: Pre- and Post-Survey about parental understanding of NAS
- A – Continued education of families and staff regarding NAS and its management

## FUTURE PLANS

### Quality Improvement Projects for NAS management

- Breastfeeding guidelines and support
- Family support with educational materials
- Implementation of management guideline
- Continuing education with staff
- Developmental follow up

