Development and use of the Eating, Sleeping, Consoling (ESC) Care Tool to promote healthy beginnings for opioid-exposed newborns and their families in Northern New England

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Healthy Moms/Healthy Babies
NAS QI/Learning Collaborative formed in 2015

16/17 NH, 11/12 VT & 4 ME hospitals participating

Monthly webinars, regional trainings, provider & family education, clinical care guidelines, QI initiatives, sharing of materials, peer strategizing, brainstorming & support

**NNEPQIN NAS “BUNDLE”**

- Prenatal / parental education
- Maternal presence and rooming-in
- Breastfeeding if no concerning maternal substance use
- Baby-centered care / scoring
  - Care / score based on infant’s waking & feeding schedule
  - Skin-to-skin & (breast)feed pre-scoring
  - Skin-to-skin / hold during scoring
- Involve family in care / scoring
Indicate **Yes** if **Poor eating is due to NAS/opioid-withdrawal symptoms:**
- Unable to coordinate feeding **within 10 minutes** of showing hunger **OR**
- Unable to sustain breastfeeding for **at least 10 minutes** **OR**
- Unable to feed with **at least 10 mL** by bottle or other feeding method *(or other age-appropriate duration / volume)*

Indicate **Yes** if **Sleep < 1 hour is due to NAS/opioid-withdrawal symptoms** *(e.g., tremors, increased startle)*

Indicate **Yes** if **Unable to Console within 10 minutes**
*due to NAS/opioid-withdrawal symptoms* *(e.g., tremors, increased startle)*

<table>
<thead>
<tr>
<th>TIME</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>EATING</td>
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**Parental / Caregiver Presence**
- 0: No parent present
- 1: < 1 hour
- 2: 1-2 hours
- 3: 2-3 hours
- 4: ≥ 3 hours

**Non-Pharm Care Interventions**
- Rooming-in: Increase / Reinforce
- Parent/caregiver presence: Increase / Reinforce
- Skin-to-skin contact: Increase / Reinforce
- Holding by caregiver / cuddler: Increase / Reinforce
- Safe swaddling: Increase / Reinforce
- Optimal feeding at early hunger cues: Increase / Reinforce
- Quiet, low light environment: Increase / Reinforce
- Non-nutritive sucking / pacifier: Increase / Reinforce / Not Needed
- Additional help / support in room: Increase / Reinforce
- Limiting # of visitors: Increase / Reinforce
- Clustering care: Increase / Reinforce
- Safe sleep / fall prevention: Increase / Reinforce
- Parent/caregiver self-care & rest: Increase / Reinforce
- Optional Comments:
<table>
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<th>NON-PHARM CARE INTERVENTIONS</th>
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Opening image of a mother holding her newborn baby.
Review ESC behaviors q ~3 hr with parents
Educate re: Non-Pharm Care Interventions (NPIs)

- Poor eating
- Sleep < 1 hr
- Unable to Console within 10 min

Perform **Formal Parent/Caregiver Huddle** to review
NPIs to be optimized further

Continued difficulties with Eating, Sleeping, or Consoling or other significant concerns present?

- **No**
  - Continue to review ESC behaviors q ~3 hr, reinforcing & educating parents on additional NPIs that can be increased further

- **Yes**
  - Perform **Full Care Team Huddle** to review if symptoms are opioid-related and ensure all NPIs implemented to fullest possible
  - Initiate medication if symptoms opioid-related & non-pharm care maximized as much as possible
  - **Pharm Rx if severe symptoms (apnea, seizures) or other significant NOW concerns present**
### Where We Are Now
Pre-ESC Jan 2016 to May 2017
Post-ESC Intro June 2017 to Aug 2018

<table>
<thead>
<tr>
<th>All Newborns &gt;35wks with prenatal opioid exposure</th>
<th>Number Patients</th>
<th>Percent Pharm Tx</th>
<th>Mean LOS</th>
<th>Weight Change Day of Life 4</th>
<th>Breastfeeding: MBM at Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-ESC Intro</td>
<td>124</td>
<td>19.4%</td>
<td>7.0</td>
<td>-6.5%</td>
<td>58%</td>
</tr>
<tr>
<td>Post-ESC Intro</td>
<td>96</td>
<td>12.5%</td>
<td>6.6</td>
<td>-6.9%</td>
<td>67%</td>
</tr>
</tbody>
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<tr>
<th>Newborns &gt;35wks with prenatal opioid exposure, no other NICU indication</th>
<th>Number Patients</th>
<th>Percent Pharm Tx *</th>
<th>Mean LOS</th>
<th>Weight Change Day of Life 4</th>
<th>Breastfeeding: MBM at Discharge</th>
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<tr>
<td>Pre-ESC Intro</td>
<td>102</td>
<td>14.7%</td>
<td>5.9</td>
<td>-7.0%</td>
<td>66%</td>
</tr>
<tr>
<td>Post-ESC Intro</td>
<td>76</td>
<td><strong>6.6%</strong></td>
<td>5.5</td>
<td><strong>7.7%</strong></td>
<td>70%</td>
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<td>Pre-ESC Intro</td>
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<td>13.3%</td>
<td>5.8</td>
<td>-7.0%</td>
<td>67%</td>
</tr>
<tr>
<td>Post-ESC Intro</td>
<td>68</td>
<td><strong>4.4%</strong></td>
<td>5.7</td>
<td><strong>7.7%</strong></td>
<td>71%</td>
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*Statistically significant using 1-tailed Test of Proportions; **Statistically significant using 1 and 2-tailed Test of Proportions;
Percent Opioid-exposed Newborns Requiring Pharmacologic Treatment ≥ 35 weeks

- UCL
- ESC webinars started
- 1st ESC training CHaD roll out
- WWD CMC roll outs
- 2nd and 3rd ESC trainings
- MMC roll out
- 4th ESC training Elliot rollout
- Concord UVM roll outs

36%
Length of Stay (LOS) for all Opioid-exposed Newborns  > 35 weeks

11.2 days

~8 days
WHAT ABOUT LONG-TERM OUTCOMES?

Visual problems?
Strabismus, reduced visual acuity, nystagmus, refractive errors, cerebral visual impairment

Visual motor problems?
Decreased eye-hand coordination, visual-spatial ability of organization
WHAT ABOUT LONG-TERM OUTCOMES?

Developmental Problems?

- Some studies show no differences in Bayley Mental and Psychomotor Developmental Indexes for infants \( \leq 12 \text{ mo} \) but differences \( > 12 \text{ mo} \)
  - However, studies have methodological limitations (e.g., varied opioid & other exposures not controlled for, case control studies, etc.)

- Recent study by Kaltenbach, *et al* of 96 children followed over 3 years demonstrated no significant neurodevelopmental affects
  - Only 2/37 had significant findings for buprenorphine or methadone exposed children
WHAT ABOUT LONG-TERM OUTCOMES?

Behavioral / Cognitive Problems?

- Some studies suggest hyperactivity, impulsivity, attention problems, impaired verbal and performance skills, visual-motor weakness, memory and perceptual problems
  - Similar methodological limitations – unclear of impact of other prenatal & postnatal exposures / home environment, etc.
**Prevention is Key!**

- **Primary Prevention:** Community education, limiting opioid prescriptions, optimizing alternative measures of pain control, increased supports / resources for families for social determinants of health

- **Secondary Prevention:** Prenatal care, MAT, prenatal/parental education, optimal in-hospital baby- and family-centered care, ESC assessments, non-pharm care optimized to fullest, opioid Rx only if baby w/ significant opioid w/d symptoms, referrals to early intervention / VNA, safe transitions to home for mother-baby dyad with close primary care and neurodevelopmental follow-up, community referrals for mom, baby and family, etc.

- **Tertiary Prevention:** Increased early intervention & neurodevelopmental services if concerns present