# Neonatal Stabilization– New Guidelines & Outreach Opportunities

Oklahoma Neonatal Resuscitation Needs Assessment

https://forms.gle/J1yMLV3rShp8TZn86

Please use the QR Code to complete the survey.

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# Objectives

- Simulation Mock Code
- Debrief
- Therapeutic Hypothermia Criteria Review
- NRP 9th Edition Updates
- Preliminary Responses to Oklahoma Neonatal Resuscitation Assessment Survey

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# Mock Code Scenario

- Location: L&D with Level 1 Nursery
- Maternal Information: 32 yo G3 P2 **without prenatal care**. **Presumed Term**
- Mother reports **no fetal movements for last 8 hours**.
- **Category 2 strip**

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# How should bed be set up prior to delivery?

- Assign roles- Head of Bed, Respiratory, Vitals, Additional support

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# How should bed be set up prior to delivery?

- Warmer turned on
- Hat available
- EKG leads available and plugged in
- Pulse ox available and plugged in (to place on R hand)
- Test CPAP with mask- PEEP 5, PIP 25
- Intubation supplies identified and anticipated sizes easily reachable

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# Initiate Mock Code

- Term appearing baby delivers and is handed to NICU team

- **Baby is not making any respiratory effort, appears limp and cyanotic**

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1 minute

HR: 65

SpO2: 30%

# After stimulation, what is the initial intervention in a baby with apnea?

PPV

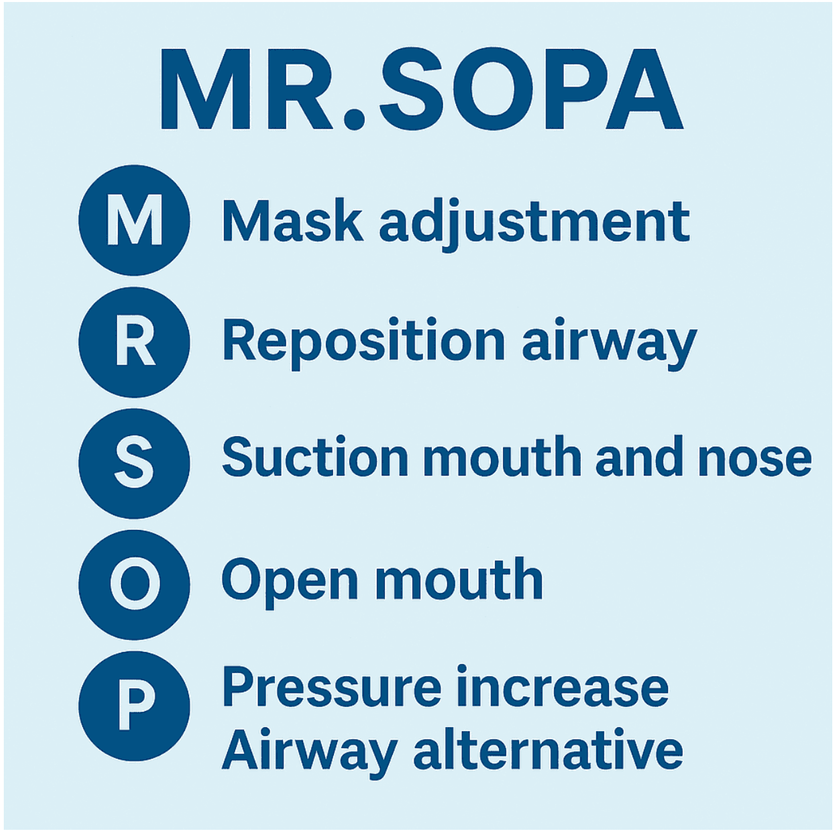
3 minutes

HR: 50

SpO2: 20%

# After ineffective PPV, what additional steps should be taken?

MR SOPA

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4 minutes
HR: 50
SpO2: 30%

# At what point should compressions be considered in relation to HR and airway?

After effective PPV through mask, LMA, or ETT with subsequent HR < 60

6 minutes

HR: 90

SpO2: 30%

8 minutes
HR: 120
SpO2: 70%

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15 minutes
HR: 140
SpO2: 90%

# Therapeutic Hypothermia

Dr. Ulana Pogribna, M.D.

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# Therapeutic Hypothermia Criteria A

- ≥ 35 weeks GA and ≥ 1800 grams or greater
- < 6 hours of AGE
- At least 1 of the following
  - APGAR ≤ 5 @ 10 minutes of life
  - Continued need for PPV at 10 minutes
  - Umbilical cord pH or Arterial or Venous blood pH within 60 minutes of birth ≤ 7.0
  - Umbilical cord base deficit or arterial or venous blood base deficit within 60 minutes of birth ≥ -16
- Contraindications: severe IUGR, severe chromosomal or congenital anomalies, unlikely to benefit from or respond to aggressive life support.

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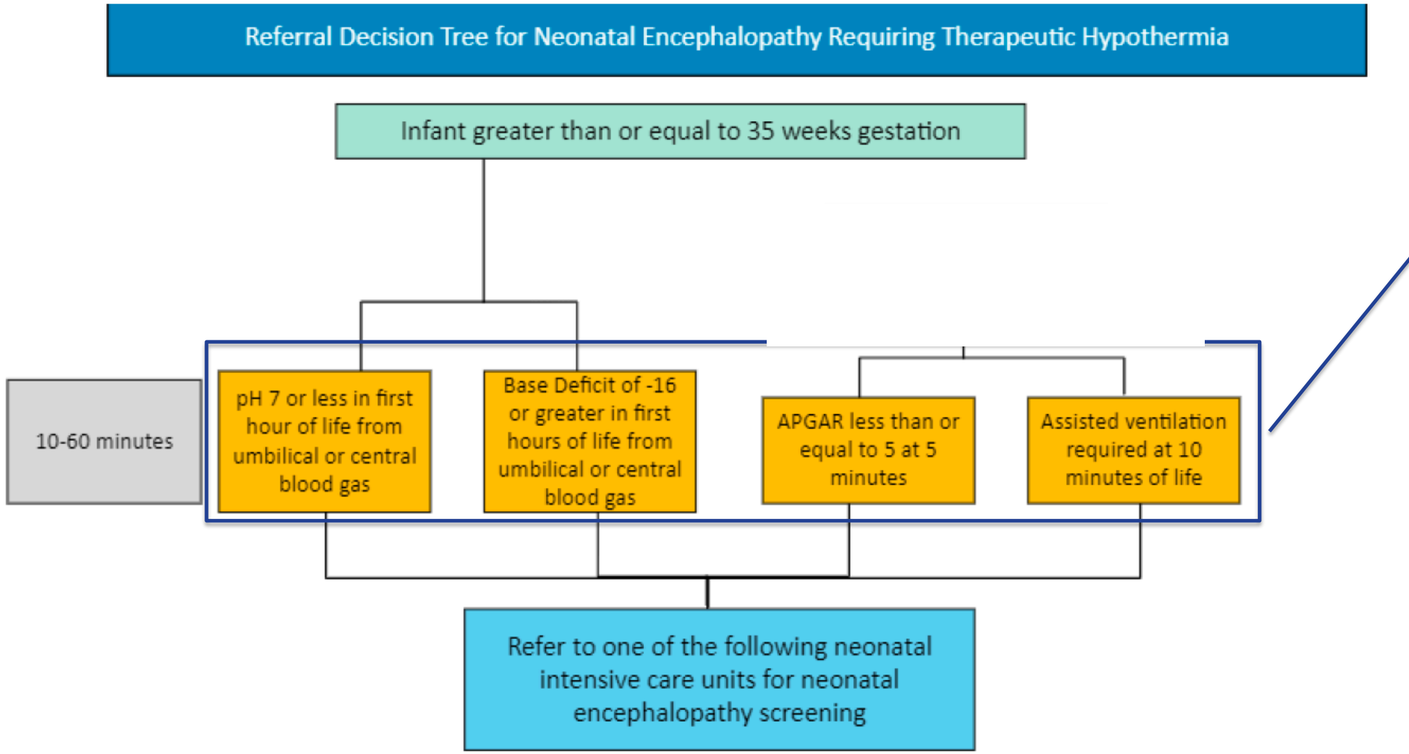
# Timely referral is the key




| Ascension St. John | Hillcrest Medical Center | Saint Francis Medical Center | Oklahoma Children's Hospital |
|---|---|---|---|
| Tulsa | Tulsa | Tulsa | Oklahoma City |
| (877) 774-0013 | (855) 551-2255 | (918) 502-1000 | (833) 543-2471 |

- If Meeting any of criteria A, please make referral asap.

- Neurological assessment will be ongoing.
- **Do not start passive cooling** unless instructed by accepting facility.

- https://opqic.org/therapeutic-hypothermia/

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# Debriefing

Dr. KarMan Low, M.D.

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# Debriefing

## With Audience Inclusion

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The goal of a debrief is to discuss what went well and what can be improved.

Everyone's opinion is valuable.

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# How did it go?

# What do you think went well?

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# What could have been done differently?

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# What is something you learned today?

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# Would you like to try again?

# The bed is set up and team roles assigned.

- Warmer turned on
- Hat available
- EKG leads available and plugged in
- Pulse ox available and plugged in (to place on R hand)
- Test CPAP with mask- PEEP 5, PIP 25
- Intubation supplies identified and anticipated sizes easily reachable

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# Initiate Mock Code

- Term appearing baby delivers and is handed to NICU team

- **Baby is not making any respiratory effort, appears limp and cyanotic**

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# After stimulation, what is the most appropriate next step?

MR SOPA

CPAP

PPV

Chest Compressions

# After stimulation, what is the most appropriate next step?

PPV

2 minutes

HR: 50

SpO2: 20%

# What is the most appropriate next step?

MR SOPA

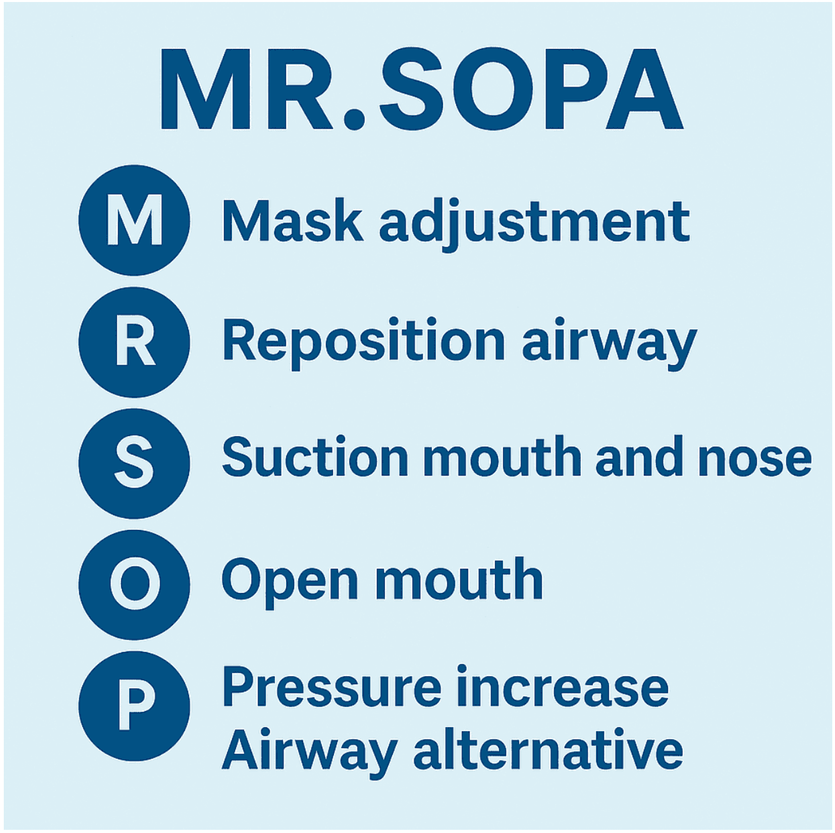
Intubation/Laryngeal Mask

CPAP

Chest Compressions

# What is the most appropriate next step?

MR SOPA

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3 minutes

HR: 50

SpO2: 30%

# What is the most Appropriate next step?

MR SOPA

Intubation/Laryngeal Mask

CPAP

Chest Compressions

# What is the most Appropriate next step?

## Intubation/Laryngeal Mask

5 minutes
HR: 120
SpO2: 70%

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15 minutes
HR: 140
SpO2: 90%

# Therapeutic Hypothermia

Dr. Ulana Pogribna, M.D.

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# SARNAT Scoring for Neonatal Encephalopathy

- SARNAT Scoring is used for serial neurological assessment.
- Baby does not need to meet these criteria prior to transfer.
- Transport team and accepting facility will perform SARNAT.
- Call the referral center if there is change in clinical status
  - Abnormal movement
  - Seizure
  - Rapid clinical deterioration

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# Therapeutic Hypothermia Criteria B

| Sarnat Staging: Moderate/Severe encephalopathy is the presence of 3 of 6 categories from moderate or severe column | | |
|---|---|---|
| Category | Moderate | Severe |
| 1. Level of consciousness | Lethargic | Stupor / Coma |
| 2. Spontaneous Activity | decreased activity | No activity |
| 3. Posture | Distal Flexion, Complete Extension or frog legged | Decerebrate |
| 4. Tone | Hypotonia (focal or general) | Flaccid |
| 5. Primitive Reflexes<br>Suck<br>Moro | <br>Weak<br>Incomplete | <br>Absent<br>Absent |
| 6. Autonomic System<br>Pupils<br><br>Heart rate<br><br>Respiration | <br>Constricted<br><br>Bradycardia<br><br>Periodic Breathing | <br>Deviation, dilated, NR<br><br>Variable Heart Rate<br><br>Apnea |

- Seizure Activity **OR** Presence of 3 of 6 categories from moderate or severe column of Sarnat Staging for Encephalopathy

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# NRP 9th Edition Updates

Dr. Birju Shah, M.D.

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# New NRP 9th Edition Courses

- NRP Cardiac- for infants with congenital heart disease
- Resuscitation in NICU- hybrid course for NICU environment critical care situations
- **Prehospital Professionals- E-learning to build knowledge for neonatal emergencies in the field. (Coming Early 2026)**
- **Recent Webinar:** What's New in the What's New in the NRP® 9th Edition Webinar

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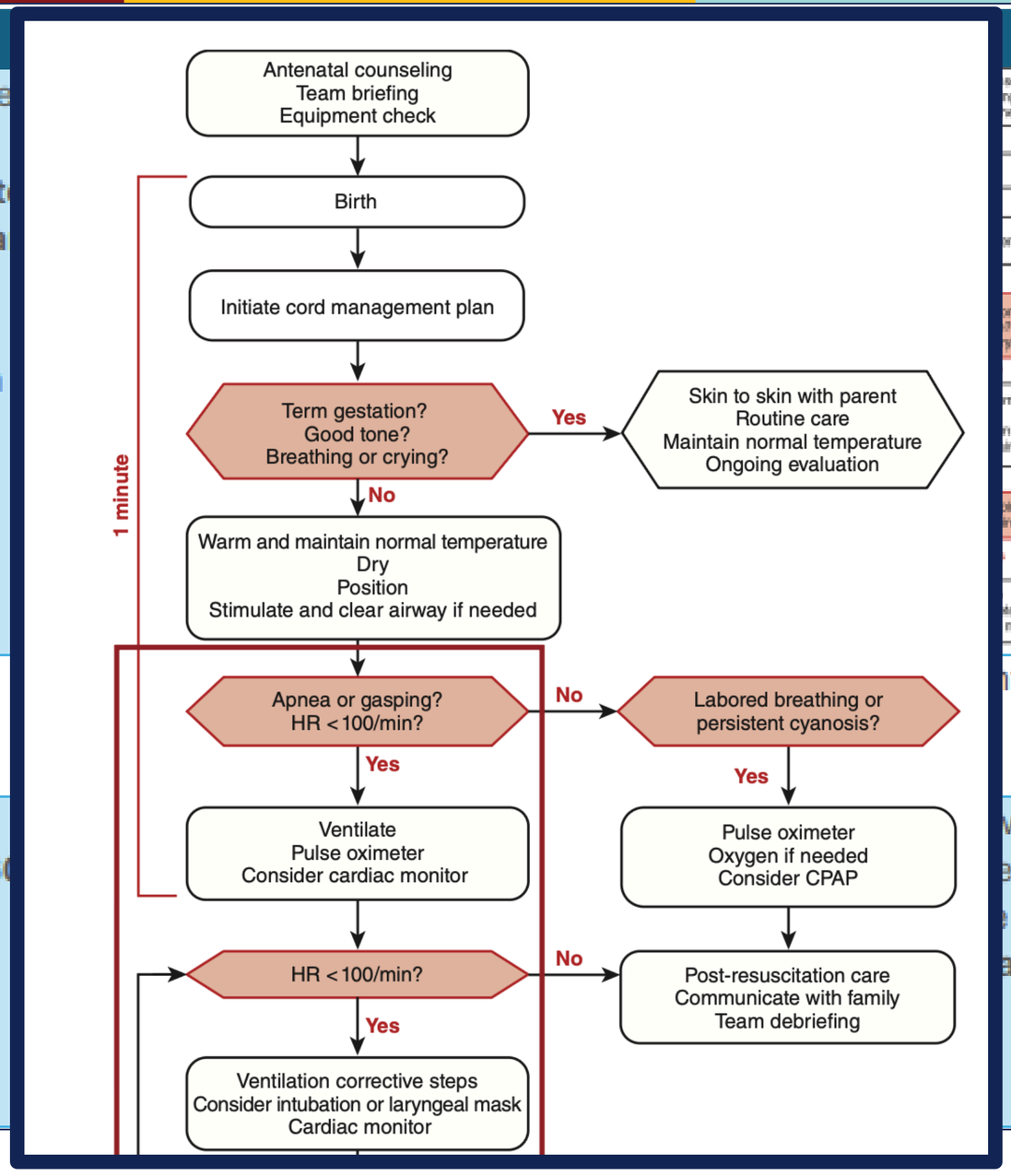
## Change

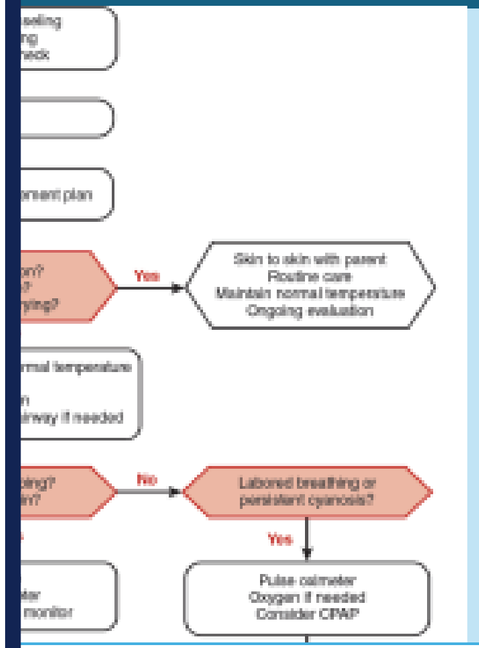
Changes have been made to the algorithm:

- Added **Birth and Initiat Cord Management Pla** as actions in the first 1 minute.
- Removed **suction** from Warm, dry, stimulate, position the airway, suction if needed.

**Terminology updates** to be consistent with AHA/AAP Guidelines

**Deferred Cord Clamping** duration increased to **at least 6 seconds**.



ntilation

wborn infants who do not ediate resuscitation, e umbilical cord should be at least 60 seconds.

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<table>
<tr>
<td>Umbilical cord milking for non-vigorous term and late preterm newborn infants (35-42 weeks' gestation) may be a reasonable alternative to early cord clamping.</td>
<td>For newborns less than 28 weeks' gestation, umbilical cord milking is not recommended because it has been associated with an increased risk of intraventricular hemorrhage.</td>
<td>- For term and late preterm newborn infants (35-42 weeks' gestation) who remain non-vigorous despite stimulation, milking the intact umbilical cord from the placenta toward the baby may be a reasonable alternative to early cord clamping.<br>-For non-vigorous preterm infants born at 28 to 34 weeks' gestation, there is not enough evidence to recommend routinely milking the intact umbilical cord.<br>- Intact umbilical cord milking is not recommended for preterm newborn infants less than 28 weeks' gestation because it has been associated with an increased risk of severe intra-ventricular hemorrhage.</td>
</tr>
<tr>
<td>Target Oxygen Saturation Table now starts at 2 minutes versus 1 minute.</td>
<td>
<table>
<tr><th colspan="2">Target Oxygen Saturation Table</th></tr>
<tr><td>1 minute</td><td>60%-65%</td></tr>
<tr><td>2 minutes</td><td>65%-70%</td></tr>
<tr><td>3 minutes</td><td>70%-75%</td></tr>
<tr><td>4 minutes</td><td>75%-80%</td></tr>
<tr><td>5 minutes</td><td>80%-85%</td></tr>
<tr><td>10 minutes</td><td>85%-95%</td></tr>
</table>
</td>
<td>
<table>
<tr><th colspan="2">Target Oxygen Saturation Table</th></tr>
<tr><td>2 minutes</td><td>65%-70%</td></tr>
<tr><td>3 minutes</td><td>70%-75%</td></tr>
<tr><td>4 minutes</td><td>75%-80%</td></tr>
<tr><td>5 minutes</td><td>80%-85%</td></tr>
<tr><td>10 minutes</td><td>85%-95%</td></tr>
</table>
</td>
</tr>
</table>

<table>
<tr>
<td>Initial oxygen concentration for preterm infants is further broken down to identify levels for 32 to 34 weeks' gestation and gestational age less than 32 weeks' gestation.</td>
<td>Oxygen Concentration ($FIO_2$)
<table>
<tr><td>Weeks' gestation</td><td>Initial Setting</td></tr>
<tr><td>≥35 weeks</td><td>21%</td></tr>
<tr><td>< 35</td><td>21% - 30%</td></tr>
</table></td>
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<tr><td><32 week</td><td>≥30%</td></tr>
</table></td>
</tr>
<tr>
<td>Ventilation rate target is expanded to 30 to 60 breaths per minute.</td>
<td>The ventilation rate is 40 to 60 breaths per minute.</td>
<td>The ventilation rate is 30 to 60 breaths per minute.</td>
</tr>
<tr>
<td>Initial peak inflation pressure (PIP) has been simplified (25 cm $H_2O$) with an acceptable range based on gestational age.</td>
<td>Start with a PIP of 20 to 25 cm H2O.</td>
<td>The suggested initial PIP is 25 cm $H_2O$.
<table>
<tr><td>Weeks' gestation</td><td>Acceptable range</td></tr>
<tr><td>≥32 weeks</td><td>25-30 cm $H_2O$</td></tr>
<tr><td>< 32 weeks</td><td>20-25 cm $H_2O$</td></tr>
</table></td>
</tr>
<tr>
<td>Time period extended to 15 to 30 seconds before beginning ventilation corrective steps.</td>
<td>If the heart rate is not increasing within the first 15 seconds of PPV and you do not observe chest movement, start the ventilation corrective steps.</td>
<td>If the heart rate is not increasing within 15 to 30 seconds of starting ventilation and you do not observe chest movement, start the ventilation corrective steps.</td>
</tr>
</table>

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<table>
<tr>
<td>Ventilation corrective steps may be performed in the order most likely to be helpful.</td>
<td>You will perform the corrective steps sequentially until you achieve chest movement with assisted breaths.</td>
<td>Based on your assessment of the infant and clinical situation, you may choose the steps that are most likely to be helpful and prioritize the order in which you perform them.</td>
</tr>
<tr>
<td>A laryngeal mask may now be used as a primary device for ventilation instead of as an alternative airway when face mask and intubation are unsuccessful.</td>
<td>If the baby cannot be successfully ventilated with a face mask and intubation is unfeasible or unsuccessful, a laryngeal mask may provide a successful rescue airway.</td>
<td>In most cases, ventilation is initiated with a face mask or laryngeal mask.</td>
</tr>
<tr>
<td>Endotracheal tube size table has been adjusted including recommendations for newborn infants < 800 grams. The weight cutoff for a 2.5 mm tube has been increased to 1200 grams and a 3.0 mm tube to 2200 grams.</td>
<td>
<table>
<tr><th>Weight (kilograms)</th><th>Gestational Age (weeks)</th><th>Endotracheal Tube Size (mm ID)</th></tr>
<tr><td><1kg</td><td><28</td><td>2.5</td></tr>
<tr><td>1-2kg</td><td>28-34</td><td>3.0</td></tr>
<tr><td>>2</td><td>>34</td><td>3.5</td></tr>
</table>
</td>
<td>
<table>
<tr><th>Weight (grams)</th><th>Gestational Age (weeks)</th><th>Endotracheal Tube Size (mm ID)</th></tr>
<tr><td><800</td><td>22-25</td><td>2.5*</td></tr>
<tr><td>800-1,200</td><td>26-28</td><td>2.5</td></tr>
<tr><td>1,201-2,200</td><td>29-34</td><td>3.0</td></tr>
<tr><td>>2,200</td><td>>34</td><td>3.5</td></tr>
</table>
*A 2.0 mm ID endotracheal tube (optional) may be considered.
</td>
</tr>
<tr>
<td>The endotracheal tube depth is measured to the anterior edge of the baby's upper (maxillary) gum in the midline instead of the lip (tip-to-gum instead of tip-to-lip).</td>
<td>Insert the endotracheal tube so that the marking on the tube corresponding to the estimated insertion depth is adjacent to the baby's lip.</td>
<td>Insert the endotracheal tube so that the marking on the tube corresponding to the estimated insertion depth is adjacent to the anterior edge of the baby's upper (maxillary) gum in the midline.</td>
</tr>
</table>

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# New NRP 9th Edition – KEY TAKE HOME POINT

- VENTILATION - PPV
- VENTILATION – MR SOPA
- VENTILATION – AIRWAY PLACEMENT
  - Intubation
  - LMA

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# Survey Responses

Dr. KarMan Low, M.D.

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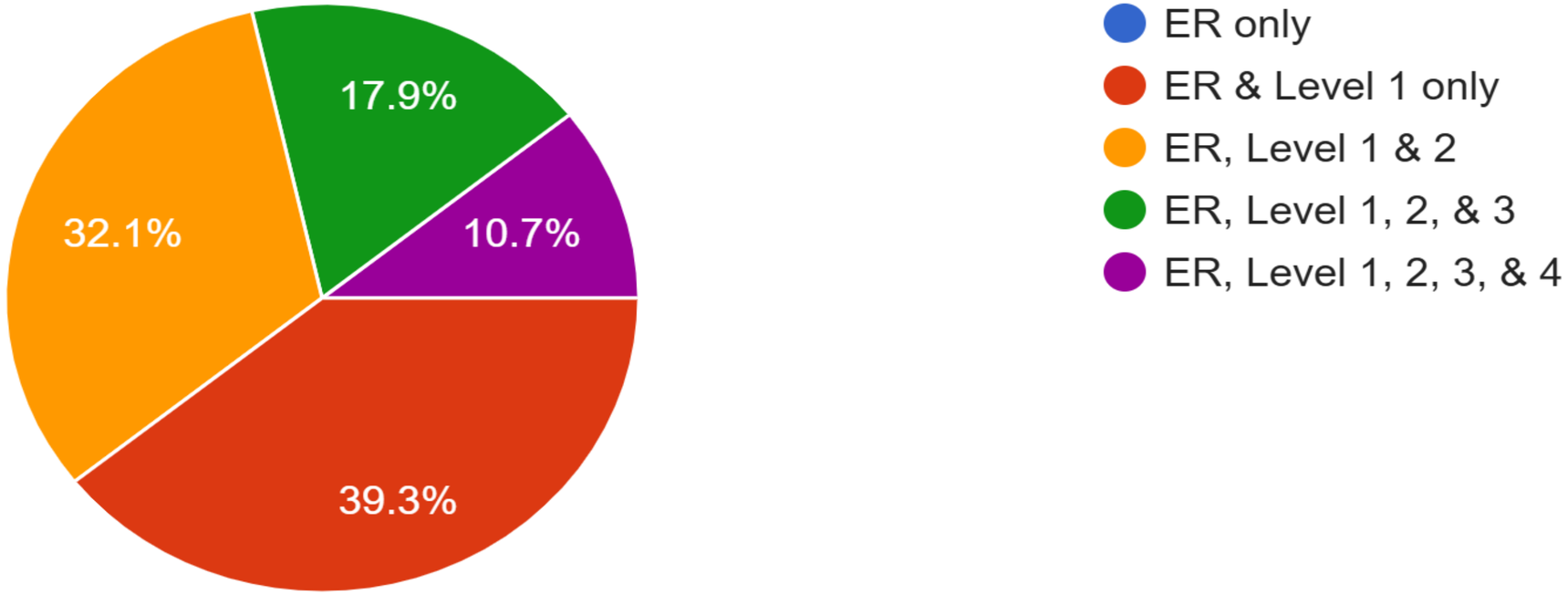
# Survey Responses (28 responses thus far)

What Level of newborn care is provided at your facility? (choose 1 option)

28 responses

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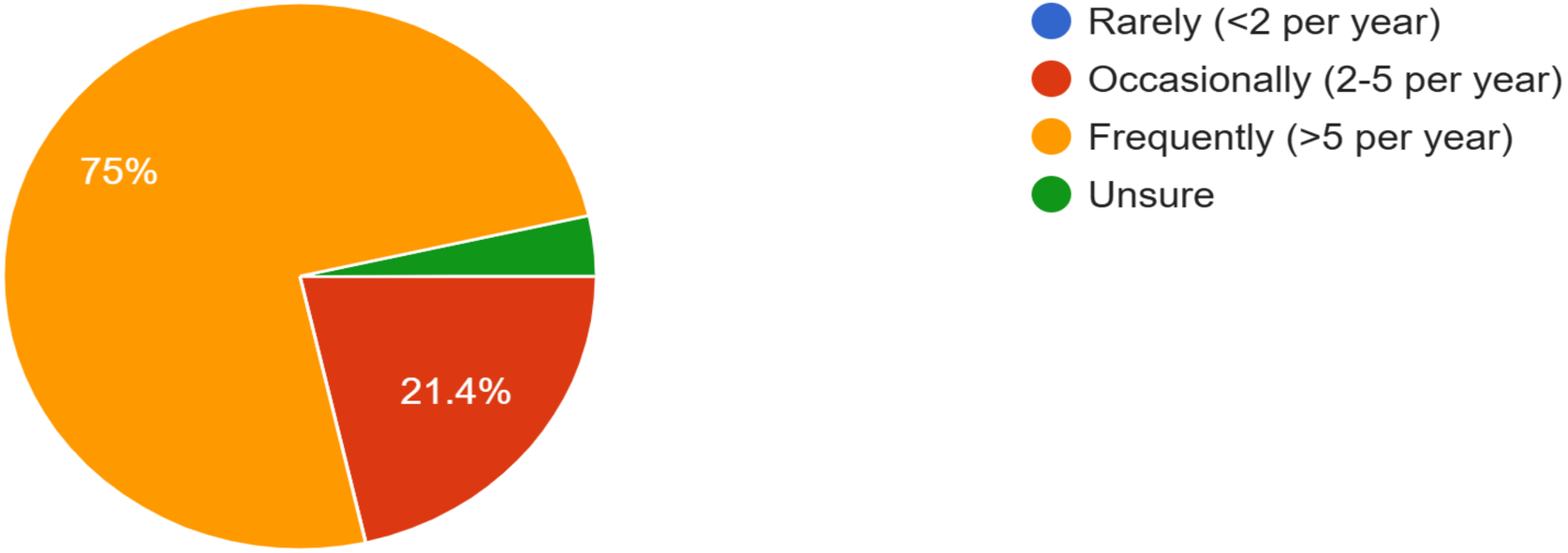
How often does your department perform neonatal resuscitation (infants less than 3 days of age)? (choose one)

28 responses

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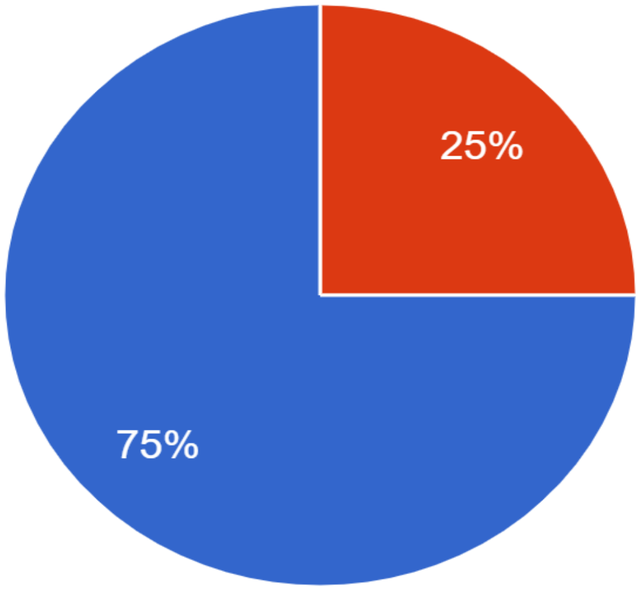
When a newborn requires advanced resuscitation such as intubation or chest compressions, what is your  department's preference in addressing?

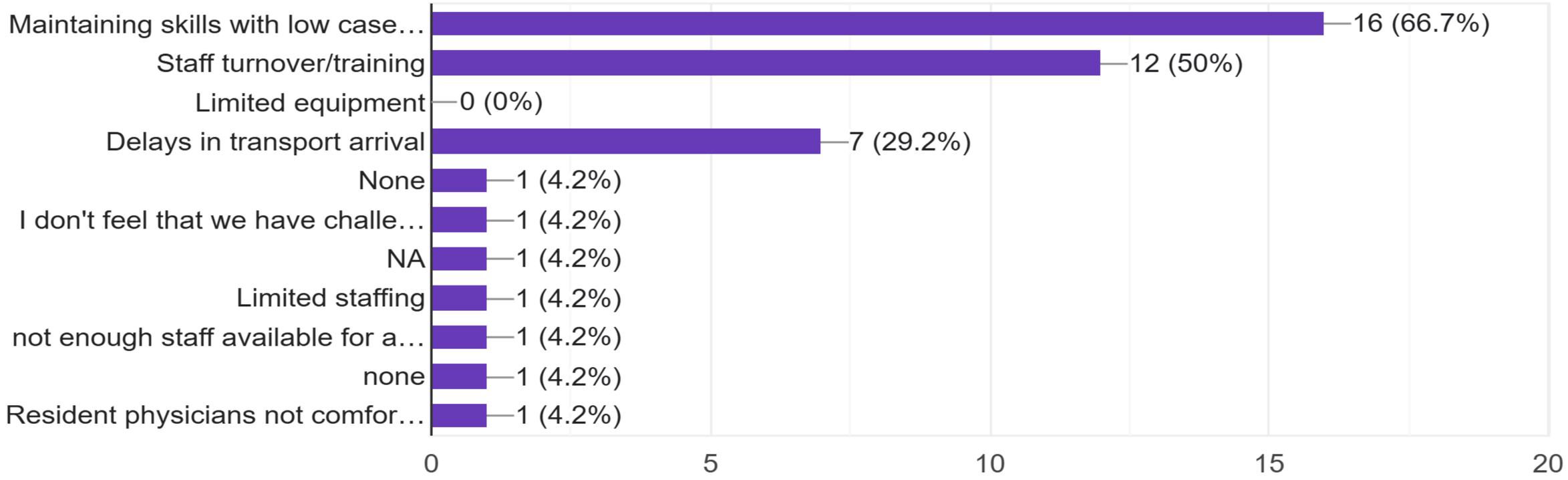
28 responses




- We have staff comfortable performing these skills
- We initiate but prefer immediate transfer
- We rely on transport team to initiate
- We use telehealth as primary assistance until higher support arrives

## What challenges does your team face during neonatal resuscitation? (check all that apply)

24 responses

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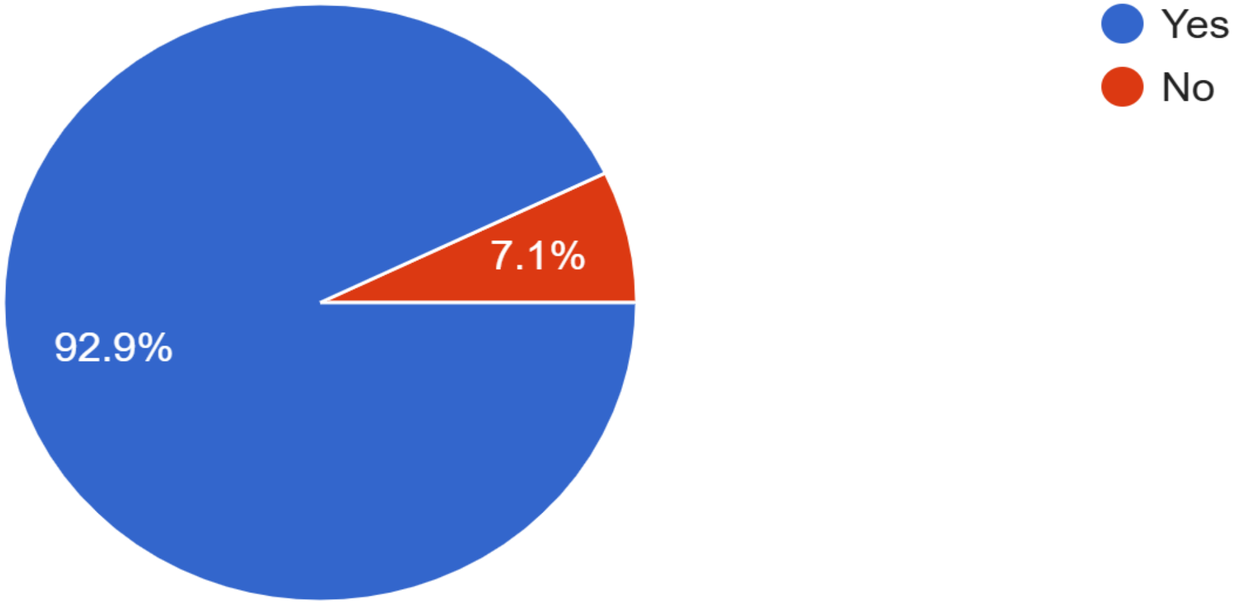
Would your team be interested in hearing updates on patients that were transferred for higher care?

28 responses

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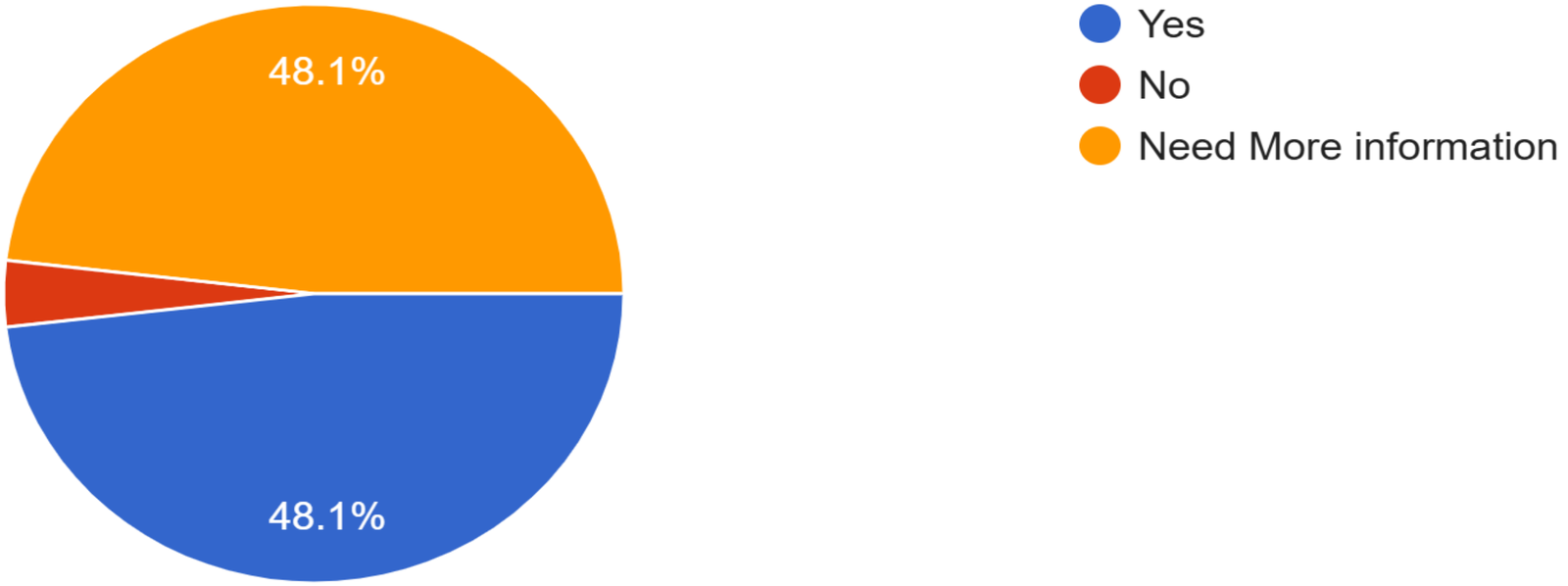
Would you be willing to participate in a pilot outreach project for training & resuscitation support?

27 responses

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# Comments or Questions?

Oklahoma Neonatal Resuscitation Needs Assessment

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Please use the QR Code to complete the survey.

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