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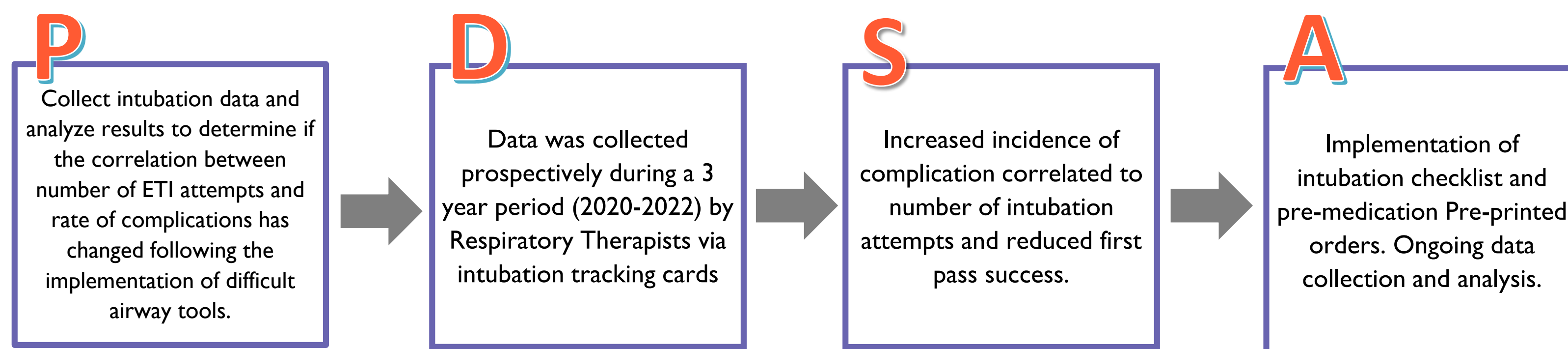
## Aim

Decrease complications during endotracheal intubation to improve neonatal outcomes at Royal Columbian Hospital.

## Importance

We previously analyzed the number of attempts and associated complication rates during ETI at our site. The findings support widely accepted literature, that multiple intubation attempts can lead to adverse outcomes<sup>1</sup>. The use of premedication has often been shown to reduce the number of attempts needed by all levels of care providers<sup>2,3,4</sup>. This prompted us to review premedication rates at our site and the associated complications during ETI.

## PDSA Cycle



## Results

<b>Total number of Endotracheal Intubation procedures captured:</b> 74 (excluding NRP/birth resuscitation)	<b>Intubation Time:</b> Day Shift (0701-1900) = 62% Night Shift (1901-0700) = 38%	<b>Urgency:</b> Emergent = 34% Urgent within 10 mins = 36% Elective (>10 mins) = 30%	<b>Gender:</b> Male = 62% Female = 38%
<b>Gestational Age:</b> 22 – 25+6 weeks =40% 26 – 29+6 weeks = 30% 30 – 34+6 weeks = 15% 35 weeks > =15%	<b>Weight:</b> 0 – 500g = 0% 501 – 1000g = 36% 1501 – 2000g = 12% 2001 – 2500g = 6% 2501 – 3000g = 9% 1001–1500g=22% >3000g=15%	<b>Indications</b> Respiratory failure = 46% Apnea = 7% Surfactant admin = 12% Unplanned Extubation = 16% ETT change = 10% Other = 9%	<b>1st Pass Success:</b> 1 <sup>st</sup> pass = 40% Premedicated = 70% Unmedicated = 30%

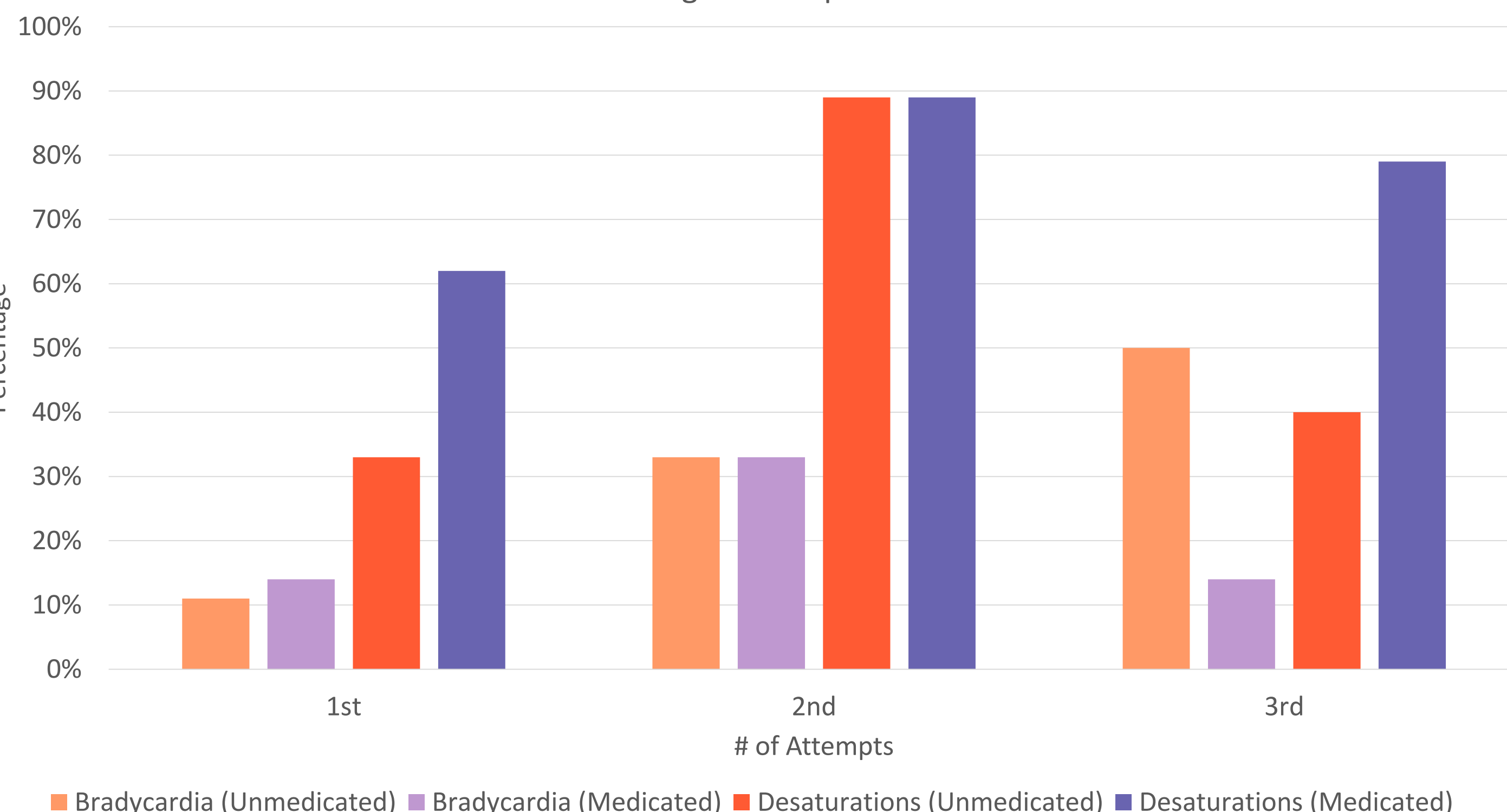
## Lessons Learned

- Capture rate was significantly lower than previous data set due to shorter time frame.
- Significant reduction in number of attempts with pre-medication.
- Low compliance with premedication pre-printed order set and intubation data card completion.
- Implementation of NICU Intubation Checklist to encourage pre-medication use and overall reduce number of attempts.

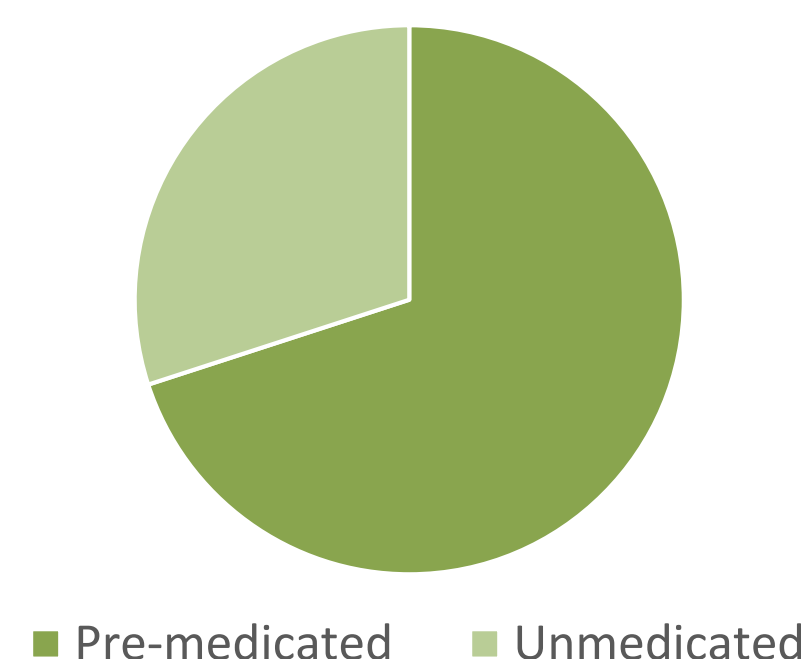
### NICU INTUBATION CHECKLIST

RT: _____ Physician: _____ Patient Label: _____	
<b>1) Patient identified</b>	
<b>2) Team member roles assigned</b> RT – Prepare intubation equipment. Discuss ventilation strategy with MRP and prepare ventilator. Assist with intubation. Confirm ETT placement. RN – Prepare/administer pre-medication. Auscultate. RN - Documentation. Physician – Intubation, PPV pre intubation if needed, discuss ventilation strategy and pre medication with team.	
<b>3) Medications Prepared</b> - see Regional Pre Printed Order	
<b>4) Airway Plan/Intubation Equipment</b> Plan A: _____ Plan B: _____ Plan C: _____ If unsuccessful with 3 intubation attempts, call anesthesia via OR Front Desk at 604-520-4602 or local 524602	
<b>Safety Equipment:</b> NeoPuff/JR Bagger + Mask Suction Code Pink Cart CO2 confirmation (circle one): EMMA ETCO2 Colormetric CO2	
ETT securement: Neobar (size measured) + tape *Ensure Neobar adhesive heat activated (warm in hands for 60 seconds or under warmer for 15 seconds)	
<b>5) Procedure</b> Patient positioned and vital signs optimized for intubation	
<b>6) Post Intubation Care:</b> <ul style="list-style-type: none"> <li>• ETT securement</li> <li>• CXR ordered- Assess for optimal MAP and ETT position</li> <li>• Documentation - Pink Card and Resuscitation Record completed</li> </ul>	
<b>7) Debrief and address any team questions or concerns</b>	

Percentage of Complications



1<sup>ST</sup> Pass Success



## References

1. Sauer CW, DO, Kong JY, MD, Vaucher, Yvonne E., MD, MPH, et al. Intubation Attempts Increase the Risk for Severe Intraventricular Hemorrhage in Preterm Infants—A Retrospective Cohort Study. *Journal of Pediatrics*. 2016;177:108-113.
2. Ozawa Y, Ades A, Foglia EE, et al. Premedication with neuromuscular blockade and sedation during neonatal intubation is associated with fewer adverse events. *Journal of perinatology : official journal of the California Perinatal Association*. 2019;39:848-856.
3. Le CN, Garey DM, Leone TA, Goodmar JK, Rich W, Finer NN. Impact of premedication on neonatal intubations by pediatric and neonatal trainees. *Journal of perinatology : official journal of the California Perinatal Association*. 2014;34:458-460.
4. Carbajal, Ricardo, MD, PhD, Eble B, MD, Anand, K.J.S., MBBS, DPhil. Premedication for Tracheal Intubation in Neonates: Confusion or Controversy? *Seminars in Perinatology*. 2007;31:309-317.