





#### Background

- Bloodstream infections (BSI) are associated with increased morbidity and mortality in VLBI admitted to the NICU.<sup>1,2</sup>
- Care bundles have been shown to reduce central line associated blood stream infections (CLABSIs) related to insertion and maintenance practices in the neonatal population.<sup>3,4</sup>
- There is a higher prevalence of peripheral Intravenous lines (PIV) in comparison to central access in the NICU.<sup>5</sup>
- Evidence suggests that units who implement a bundle of care for the insertion and management of PIVs can reduce the incidence of related complications and late onset sepsis.<sup>1,5,6,7</sup>

#### Plan

- Decrease the rate of late onset sepsis (LOS) related to peripheral access blood stream infections (PABSI) by 50% to reach an overall rate of LOS of <5%.
- Review the literature regarding rate of LOS and BSI in the NICU and the impact of protocolization.
- Evaluate how the number of venipunctures throughout hospitalization can impact the incidence of nosocomial infections (NIs).
- Reduce the harmful effects and complications of multiple venipunctures on preterm infants.
- Compare our NICU rates of late onset sepsis from skin venipunctures with the cumulative rates of infection in the NICU.

# Analyzing skin breaks and its impact on nosocomial infections Our experience at the Jewish General Hospital

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## Do

- Initial PIV protocol implemented in 2015.
- In 2021, our team questioned if our rate of NIs was attributed to the number of skin breaks and current PIV insertion practice.
- In 2022, our team implemented "Poke sheets" and a PIV insertion algorithm in the attempt to assess the number of skin breaks per infant admitted.
- With this poke sheet, the aim was to assess whether infants who had more skin breaks during their hospital stay would have a higher risk of NIs.
- The PIV insertion algorithm was implemented to decrease the number of skin breaks per patient.

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DATE	SHIFT	Heel sticks (each one)	PIV insertion (each attempt)	Blood culture (each attempt)	Other skin breaks (eg LP, chest tube, venous or arterial puncture)	PICC Insertion (each attempt)	Shift total	
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Totals for one week								

Figure1: Poke sheet

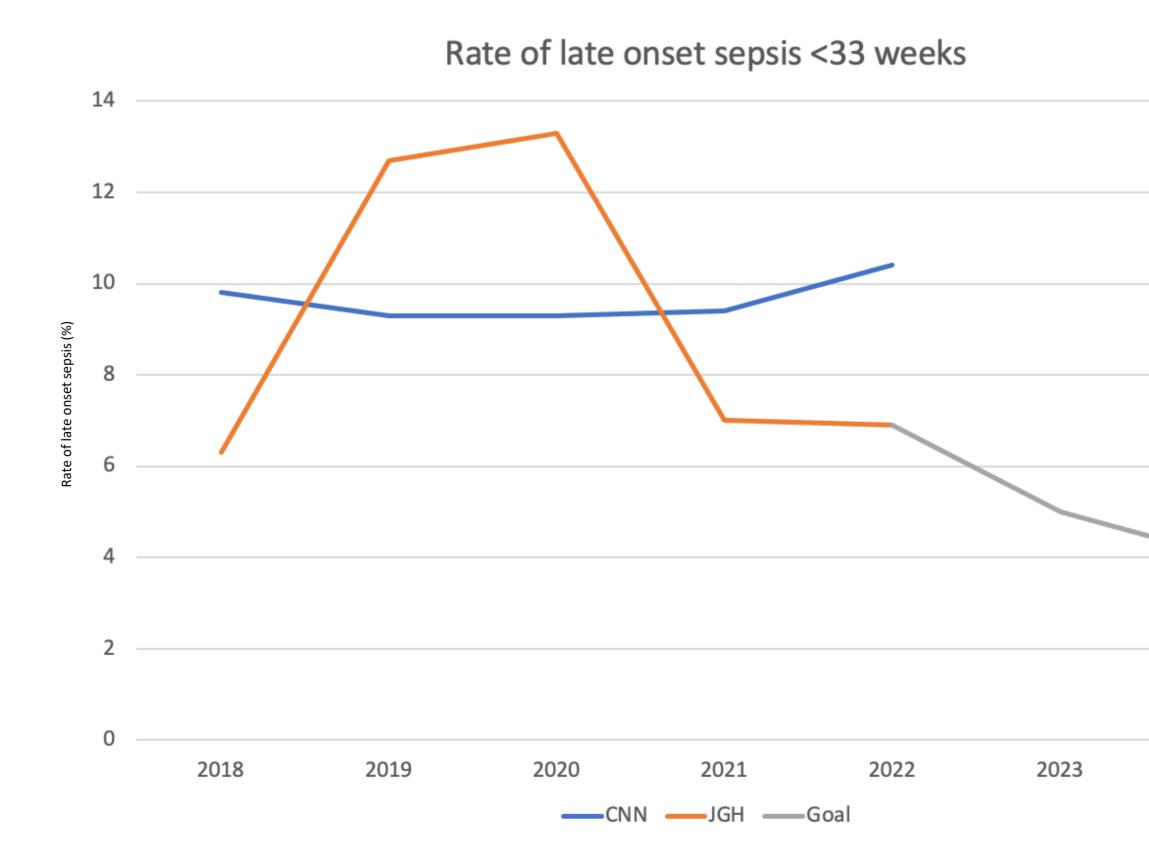


Figure 2: Rate of late onset sepsis compared to national average by year<sup>4</sup>

## Study

- Period of study: October 2022-May 2023
- Number of patients with poke sheet data: 216
- Out of the 8 late onset sepsis, 63% of sepsis was related to PABSI.

Table 1: Data collection							
Characteristics	Positive BCP (n=8)	Negative BCP or no BCP					
Gestational age (weeks)	28 ± 2.21	33.4 ± 4.38					
Weight (g)	1126 ± 570	2202 ± 922					
Average Number of Pokes	60 (19, 99)	9 (3, 19)					
CLABSI	1						
PABSI	6						
Other	1						

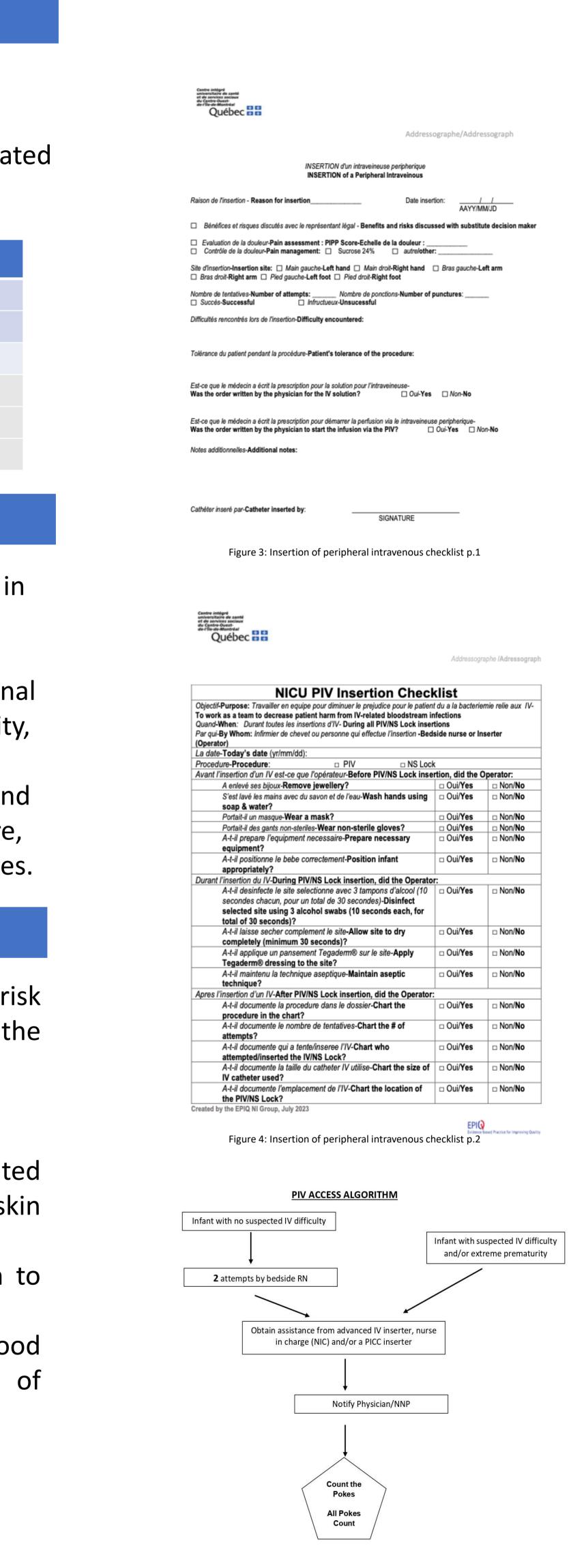
# Lessons learned

- Number of venipunctures was likely underestimated in both groups, but there is still a trend for increased venipunctures in the lower GA group.
- All positive blood cultures were in the lower gestational age group. This is likely related to extreme prematurity, illness severity and higher number of venipuncture.
- Need to standardize and protocolize venous access and cluster blood tests to avoid unnecessary venipuncture, iatrogenic blood loss and burden of painful procedures.

## Act

- Given the hypothesis that more skin breaks = high risk for NIs, we have looked at ways to decrease the frequency of skin breaks.
- PIV protocol updated:
  - Clearer guidelines for aseptic technique
  - □ PIV insertion algorithm implemented and updated after a first trial to decrease the number of skin punctures
  - □ Addition of a new check list for PIV insertion to aim at standardizing the practice
- Discontinuation of standing orders for routine blood work with the aim to decrease the number of venipunctures per patient.
- Implementation of new PIV-care bundle:
  - March 2024
  - □ Small group teaching sessions
  - Questionnaire to assess knowledge translation
  - Audits will be conducted, and feedback given
  - Sentinel events will be reviewed
- Our goal for implementation: decrease rate of PABSI and improve patient population outcomes.





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Figure 5: Algorithm for the insertion of a peripheral intravenous

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