Reducing central line associated bloodstream infections within the neonatal unit at the Royal Hospital for Children, Glasgow

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Introduction
Central line associated bloodstream infections (CLABSI) are hospital-acquired infections which can result in increased mortality and morbidity, including neurodevelopmental delay in preterm infants. Reducing the incidence of CLABSI has been a key focus of the Maternity and Children Quality Improvement Collaborative (MCQIC) neonatal programme within the Scottish Patient Safety Programme (SPSP).

The neonatal unit at the Royal Hospital for Children in Glasgow also identified this as a local priority.

Method
To build national quality improvement capacity and develop a safety culture, MCQIC adopted the Breakthrough Series Collaborative Model2 advocated by the Institute of Healthcare Improvement (Figure 1). This entailed biannual national learning sessions that brought together the community to share and learn from one another.

A CLABSI prevention bundle was developed by MCQIC in collaboration with the neonatal community. Supported by the national team during action periods, frontline staff were able to use improvement methodology to test local changes with the aim of increasing bundle compliance (Figure 2).

Multiple tests of change were tried simultaneously. These included improving line insertion procedures with the use of hat, mask, gown and gloves and an associated teaching package.

Selection of the correct skin cleaning solution was supported by development of flowchart posters and physical labelling of the lower concentration of two available options (Figure 3).

Maintenance checklists were made visible by the cot side and prompts for action added to the drip stands. Run charts were displayed prominently in the unit to demonstrate progress.

Results
With improvement in process compliance, a reduction from a baseline median of 9.5 to 3.3 CLABSI per 1000 line days was seen. This is a 65% reduction (Figure 4).

Conclusions
A national approach to delivering and supporting quality improvement, adopted locally, resulted in a significant reduction in harm due to central line associated bloodstream infections.

References:
1. Maternity and Children Quality Improvement Collaborative. ihub.scot/spsp/maternity-children-quality-improvement-collaborative-mcqic/

Figure 1: IHI Breakthrough Series Collaborative

Figure 2: NHS Greater Glasgow and Clyde NICU - CVC bundle compliance

Figure 3: Labelling of lower concentration solution

Figure 4: NHS Greater Glasgow and Clyde – CLABSI rate