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A Continuous Improvement Project in NICU - to Reduce Central Line-Associated Bloodstream Infection Rate

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Introduction

Central line associated-bloodstream infection (CLABSI) is associated with increased mortality and morbidity in NICU. Previously thought of as unavoidable complications of hospital care, CLABSI is now regarded as preventable. In the NICUs of 9 provinces of China, the CLABSI rate was reported as 0.66 per 1000 line days while the rate was 0.855 per 1000 line days according to a report in USA. In 2014, the CLABSI rate was 4.52 in our NICU and there was room for improvement.

Objectives

To decrease CLABSI rate through a continuous quality improvement (CQI) program.

Methodology

A CQI team was set up in mid-2015 and we named it the PICC team. It consists of doctors and nurses from different ranks. The PICC team wrote up the standard of care including the insertion bundles and maintenance bundles based on the 2011 Center of Disease Control (CDC) guideline with local adaptation to our hospital. The PICC team reflected on our old practice and highlighted some areas in the insertion bundles and maintenance bundles with room for improvement. For example, in the past simple hand soap without antiseptics had been used on gowning up for PICC insertion. The PICC team then recommended antiseptic soap. In the past a single operator had been working in sterile field inserting PICC. The PICC team then recommended two operators for this job. The PICC team ensured there was a wide space for operators to put on maximal sterile barrier whereas in the past the operators had been doing in a small space. The PICC team recommended liberal use of drapes for sterile field as in the past drapes had been more restrictedly used and sterile field could have been inadequately created. The PICC team recommended changing dressing for PICC once there was early sign of dressing being loosened, damp or visibly soiled whereas in the past we had been used to place additional tapes to secure loosened PICC and had changed dressing reluctantly. The PICC team

advocated two nurses and one doctor performing the job of changing dressing whereas in the past it had often been done by one nurse and one doctor. The implementation of this standard of care in the care of PICC was overlooked by members of the PICC team. The occurrence of CLABSI in the last three years was monitored. We adopted the definition of CLABSI as written by the CDC/National Health Safety Network (NHSN) in 2008.

Result

There was reduction of CLABSI rate last year after start of the CQI program. The rates of CLABSI per 1000 line days were 4.52 (7 per 1550) in 2014, 4.31 (6 per 1391) in 2015, and 0.54 (1 infection per 1858 line days) in 2016.