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Zero Risk for CLABSI... is this realistic?

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Central line associated bloodstream infections (CLABSI) are one of the most common healthcare associated infections and result in morbidity, prolonged hospitalizations, and increased healthcare costs [1–3]. Over the past decade, and particularly since the Institute of Medicine put hospital-acquired infections in the category of “preventable adverse events,” CLABSIs have become a well-accepted benchmark for hospital quality and patient safety initiatives. Significant efforts have been made to reduce CLABSIs, with many successes reported in the literature. While some studies have focused on novel technology such as antibiotic/antiseptic impregnated catheters, needleless connectors, and antiseptic catheter dressings, other recent studies have focused on practice change [4–7]. These practice change interventions generally involve a comprehensive strategy of bundling simple and proven strategies at all levels of catheter insertion without using novel technologies. Hand hygiene before catheter insertion, the use of maximal sterile barrier precautions at the time of insertion, using a chlorhexidine containing skin antiseptic, and instituting a checklist to insure each step is followed comprise the usual practice change intervention. Nurses may be empowered to stop the procedure if they see any breaks in aseptic technique or deviation from the bundle[4]. These studies have demonstrated impressive reductions in CLABSI rates that have been sustained over time.

In this issue of Critical Care Medicine, McLaws and Burrell describe a practice change intervention in 37 ICUs in New South Wales as part of a quality improvement collaborative. (reference). During this 18-month study, they showed that they were able to extend the lowest risk period for CLABSI from the first 7 days to the first 9 days of dwell time for most central catheters. Importantly, they report that there was no catheter dwell time identified as being zero risk for CLABSI. This was a very large study, and was unique in that it focused on identifying the lowest risk period for CLABSIs. Strengthening this study, the authors also reported their catheter dwell times, giving the reader insight as to how quickly catheters were removed, and perhaps the important role catheter removal plays in the reduction of CLABSI rates. In this study, although not the primary endpoint for their analysis, McLaws and Burrell reported that CLABSI rates had gone from 3.8/1000 catheter days to 1.6/1000 catheter days, a 58% reduction in CLABSI rates, and adds to the broad assertion among stakeholders that zero CLABSI rates are an achievable and sustainable goal. But is this realistic? And are we sending the correct message to patients when we say that all CLABSIs are preventable?

McLaws and Burrell pose this question in their title: Zero-risk for CLABSI: Are we there yet? The obvious implication is that a zero risk is achievable. But risk for CLABSI depends

on a variety of factors, including, but not limited to, insertion techniques that have been the focus of the practice change bundle. Although this practice change presents challenges that require sustained efforts to achieve very low rates, other risk factors for CLABSI are not easily modified. For example, the need for vascular access for life-saving therapies is not easily altered, and prolonged dwell times may be unavoidable. Likewise, the universal presence of microorganisms in the human environment can never be completely eliminated. While it may be true that a zero rate can be reported for a defined place or unit, and for a defined period of time, it is likely not sustainable indefinitely.

The broad acceptance by stakeholders that zero CLABSI rates are always achievable [8], have set up unrealistic expectations and unintended consequences for patients and healthcare providers. First, patients have now been given a false sense of security that there is no risk for infection if the bundled strategy is followed. Second, healthcare providers in the US will receive only limited re-imburement from the Centers for Medicare and Medicaid Services for any CLABSI acquired in the hospital, as this is now accepted as “preventable.” Lastly, given these pressures to achieve a zero rate, there are new concerns about the validity of reported CLABSI rates, calling into question the methods used to determine rates [9, 10]. Studies have shown inconsistencies among institutions in applying CLABSI surveillance definitions, making inter-institutional comparisons invalid [9, 10].

McLaws and Burrell have shown an impressive extension of the lowest risk period for CLABSI with the use of the practice change bundle. But the risk for CLABSI, albeit quite low, was never zero in this study. Nor will it ever be zero for any patient receiving a central venous catheter. Very low rates of CLABSI are achievable, but as healthcare providers and invested stakeholders in this quality initiative, we must be realistic about our messaging to other stakeholders and not over-promise. Otherwise we risk being unable to meet the expectations of our patients, or payers, and our employers.

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