Discussion & Implications: Other facilities should adapt a multiplatform model which addresses the growing computer literacy of patients while simultaneously assisting low literacy patients.

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Outcomes Resilience after System Stress: A Rapid-Cycle Response to Mitigate the Impact of Care Delivery System Stress on Primary Blood Stream Infections

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Topic Significance & Study Purpose/Background/Rationale: Immunocompromised children are at high risk for primary blood stream infections (BSI) and the associated morbidity and mortality. Prevention of BSIs depends on highly reliable care. The purpose of our study was to rapidly mitigate the impact of system stress on the rate of BSIs in a high risk population.

Methods, Intervention, & Analysis: After a dramatic increase in patient volume and acuity coupled with an increase in new and float nurse staff at a large, quaternary children's medical center, BSI rates more than doubled. A failure-mode analysis of key processes identified poor adherence to daily hygiene guidelines, high rates of nurses requiring assistance to complete high BSI-risk procedures, and an unreliable system to escalate concerns from the bedside to unit leadership. Iteratively implemented mitigation strategies included a standard process to improve daily hygiene adherence, increased awareness of high BSI-risk patients, assistance for nurses performing high BSI-risk procedures, and improved allocation of resources to deescalate system stress.

Findings & Interpretation: Since the mitigation strategies were fully implemented there have been no further BSIs in >100 days (6000 line days). Key processes have become more reliable: 100% of dressing changes are completed with the new, 2 person standard; daily hygiene adherence has increased from 25% to 70%; 100% of bedside nurses are approached daily by nurse unit leaders to identify and plan for patients at risk for a BSI.

Discussion & Implications: Stress to a complex care delivery system for high-risk patients can degrade BSI rates. Rapidly identifying failures in key processes and improving their reliability can quickly stabilize outcomes.

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Impact of Addition of Alcohol-Impregnated Port Protectors to Post Central Line Insertion Bundle in the Adult Blood and Marrow Transplant Population

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Topic Significance & Study Purpose/Background/Rationale: Central venous catheters (CVC) are a commonly used tool in hematopoietic stem cell transplant (HSCT). Several risks are associated with the use of CVCs including infection and thrombosis. The incidence of blood stream infection in HSCT recipients has been observed at 13-60% (Dix, Yeung, Rule & Ma, 2011). Poutsiaka et al. (2007) found that blood stream infection was independently associated with increased mortality after HSCT. On average a CLABSI increases a patient's length of stay by 7.5 days and costs $16,550 to treat (Sacks et al., 2014).

In NHSN's 2012 summary of device-associated infections, the median CLABSI rate for the more than 178 participating general hematology oncology facilities was 0.8 for permanent central lines and 1.2 for temporary central line catheters. The median was 1.3 and 2.4 for more than 54 participating hematopoietic stem cell transplant units. OUMC's CLABSI data does not differentiate between permanent and temporary central lines, but the CLABSI rates during the six month control period were higher than the national median for the two types of lines combined. Between July 1, 2013 and December 31, 2013, nine CLABSIs occurred in the Bone Marrow Transplant Unit, a CLABSI rate of 10.5/1,000 central line days.

Methods, Intervention, & Analysis: An interdisciplinary team developed an intervention to reduce the number of CLABSIs in the Adult Blood and Marrow Transplant Unit, in addition to the standard central line maintenance bundle.

An observational pre-intervention/post-intervention trial was conducted in an adult blood and marrow transplant unit university-affiliated acute care teaching hospital. During the intervention alcohol-impregnated port protectors were used in place of alcohol wipes for hub care. The intervention period was compared with a historical control.

Findings & Interpretation: A total of 466 central line days and 1 CLABSI were documented during the intervention period, compared with 762 central line days and 9 CLABSIs during the control period.

Discussion & Implications: The addition of alcohol-impregnated port protectors to central line maintenance can assist in reduction of CLABSI incidence in the blood and marrow transplant population, which should reduce the morbidity and mortality associated with infection in the immune-compromised patient.