Reducing Central Line Associated Blood Stream Infection in Unfunded Dialysis Patients

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Background

Central line associated blood stream infections associated with the use of a tunneled, cuffed dialysis catheters (HD-CLABSI) are known to be a significant cause of morbidity and mortality in End Stage Renal Disease (ESRD) patients treated with hemodialysis via cuffed tunneled catheters. In recent years, there has been explosive growth in the number of unfunded dialysis patients at the Parkland Acute Dialysis Unit (PMH-ADU). These patients do not have access to regular, scheduled dialysis. Over 80% of these patients receive hemodialysis through a tunneled dialysis catheter, which is inserted through the internal jugular vein, providing direct access to the right atrium.

In fiscal year 2014 the infection rate was 8.49%. The flora of organisms were a majority gram positive, with most gram positive organisms represented by commensal skin organisms such as Staphylococcus epidermidis. We have also observed that patient catheter care is not optimal as evidenced by large numbers of patients returning to dialysis with an improper (or no) dressing and engaging in behavior (such as showering over the dressing) which increases infection risk. Overall, a reduction of the number of patients admitted because of CLABSI’s would be very economical for the hospital. CLABSI treatment in the ICU is estimated to cost $33,000 to $44,000.

AIM

Our aim was to reduce commensal bacterial infections by 20% at Parkland’s Acute Dialysis Unit for unfunded patients by June 2016.

Project Design

We began by defining the scope of our patient population and setting concrete aims for our project. Next we surveyed our patients to measure their understanding or proper catheter care. We also interviewed nurses to get an understanding of how they have been teaching patients. We analyzed the data we’ve obtained using Pareto analysis, process maps, and CTQ trees. Then we created new a new handout as well as a video that addressed the gaps in patient understanding. Finally we developed a new process to standardize how nurses were educating patients.

Analysis:

Out of 83 patients, 2 answered all 9 question correctly. A Pareto analysis was used to identify the top 80% of questions missed by patients.

A process map was made to identify gaps in the patients’ education process.

Based on the feedback that patients gave from the survey, we created a critical-to-quality tree to find the drivers that help patients take better care of their catheter.

Outcomes:

A new process was implemented to help nurses deliver quality education to patients efficiently. The team also did an FMEA to ensure easy implementation.

Based on the drivers in the CTQ and the results of the Pareto analysis, a team consisting of the staff at PMH-ADU, Parkland’s patient education team, and ID specialist created a new handout and a video to educate patients.

Conclusion

In the process of this project, we’ve learned that by carefully examining every component of the current process, we can find gaps, such as the original handout. Also, we’ve learned creating educational material cannot happen without a multi-disciplinary team.

Future Steps

Our next step is to make the developed materials easily accessible to the nurses and train them on how to use it. After a few months we will conduct another survey to see if more patients get all 9 questions right demonstrating understanding of proper catheter care.