Inpatient Delirium Reduction and Early Acute Management (iDREAM): Phase I Program Results

Objectives: The Inpatient Delirium Reduction and Early Acute Management (iDREAM) program was started to utilize healthcare systems engineering concepts to create a comprehensive, organizational-wide initiative for the identification, prevention, and management of inpatient delirium by applying evidence-based practices, engaging in clinical education, and standardizing clinical processes.

Methods: The iDREAM program uses systems engineering concepts to create a multidisciplinary, standardized approach to inpatient delirium care. The initial Phase I process consisted of a system-wide analysis of the pharmacological drivers for delirium for our patient population, the development of an integrated delirium rounding team, identification of targeted educational opportunities for non-pharmacologic interventions, and standardization of the nursing screening and training processes. For the baseline data analysis, all patients admitted to the hospital system over the age of 65 were analyzed between 2016 and 2021. Median over the mean length of stay was used for the analysis. Diphenhydramine, metoclopramide, scopolamine, zolpidem, benzodiazepine, and digoxin were studied for the pharmacologic analysis. Odds ratios for medications effects on delirium were calculated and utilized Pearson Chi-Square for significance. A $p<0.05$ based on a two-tailed analysis was considered significant. Run charts were used to determine special cause variation after the implementation of the new screening process during the transition from bCAM to NuDESC. All statistical calculations were performed using IBM SPSS v28. Run charts were created and analyzed in excel using QI Macros v2022. The iDREAM program was submitted to IRB and approved as non-human subject research, quality process improvement initiative.

Results: Baseline data analysis over the study period showed a total of 31,372 admissions with a total of 5883 cases of documented delirium. The average yearly delirium rate was between 18%-21% with only mild variability year to year. Of those admitted patients, the median length of stay was 4 days which increased to 6 days in those diagnosed with delirium. Of the pharmacologic agents studied, benzodiazepine (OR 1.39, CI 1.30-1.49, $p < 0.001$) and Digoxin (OR 1.29, CI 1.20-1.39, $p < 0.001$) had statistically significant impact. Based on this information, the iDREAM team utilized a multidisciplinary approach to round on high-risk and active delirium patients to encourage de-escalation of contributing medication, identification of reversible causes, and training of nursing staff on non-pharmacologic interventions. These rounds became formally standardized across the organizational system and were led by the quality department as a strategic priority. In addition to the rounding process, the iDREAM team assisted with the transition from the bCAM to NuDESC delirium screening tool as it was found to be easier to use and document by nursing staff in the EMR. As anticipated, the average delirium rate was 15.5% using the bCAM system in the 6 months prior to the transition. After training and transition to the NuDESC, the average delirium rate increased to 22%, with a 29% rate during the first month of utilization which was represented as significant, special cause variation in the run chart analysis.

Conclusions: The iDREAM program during Phase I of its development was able to identify baseline risk factors for delirium patients in our patient population, create a dedicated multidisciplinary delirium team to educate on prevention and intervention strategies that targeted those identified risk factors, and improve on the screening of delirium through training and transition to the NuDESC tool. During Phase II, the program hopes to further standardize and expand these clinical intervention strategies while improving on the significant gains made during the first year of implementation.