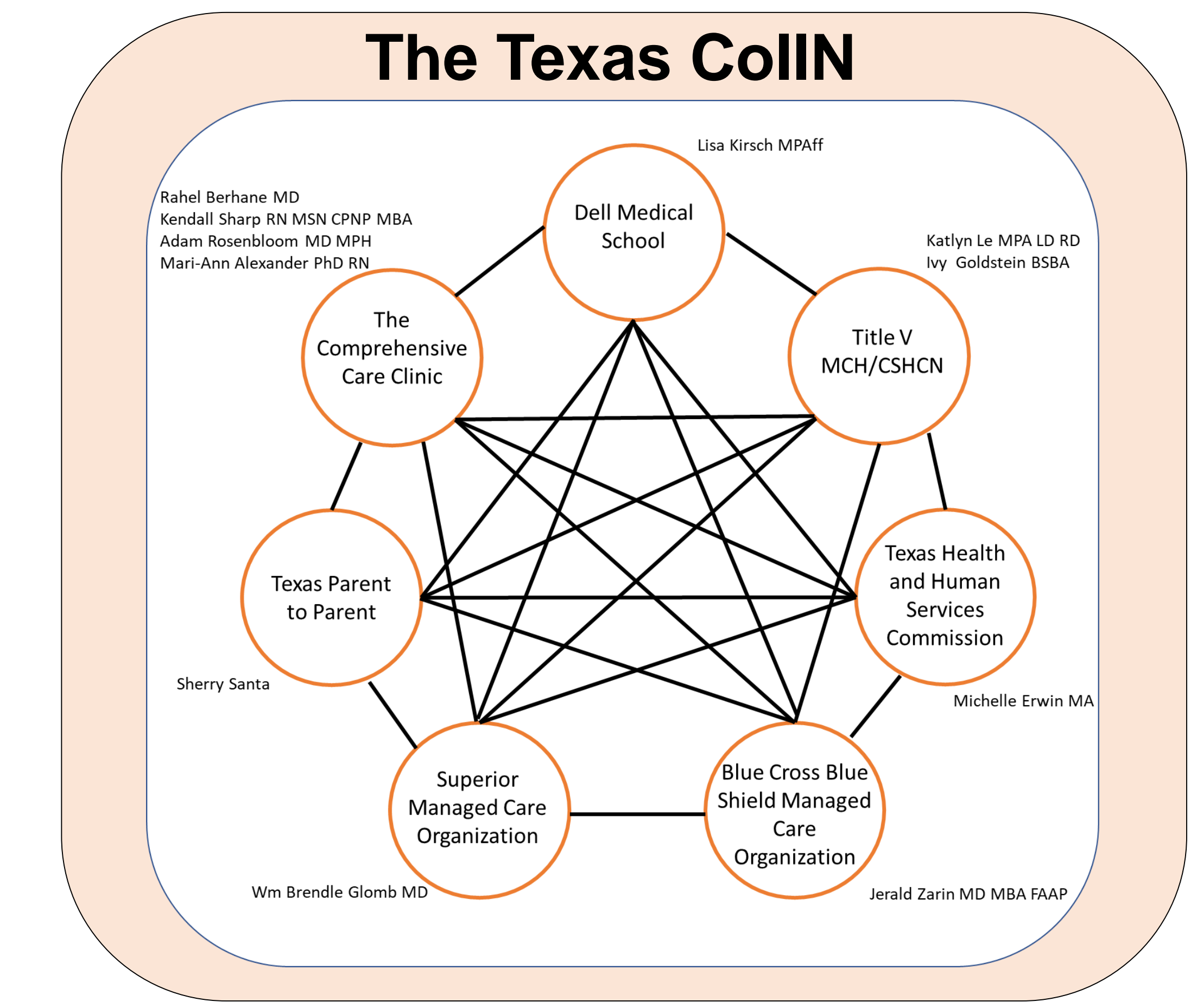


Background

The Collaborative Improvement and Innovation Network (CoIIN) to Advance Care for Children with Medical Complexity (CMC) is a project aimed at testing and spreading innovative care delivery and payment models for CMC. CMC are defined as those who have multiple significant health problems that affect multiple organ systems and result in functional limitations, high health care need or utilization, and often the need for or use of medical technology. CMC comprise of less than 3% of all children in the U.S., but generate substantial costs, including 40% of child Medicaid expenditures, of which 50-80% is for inpatient care. (1,2,3)



The Comprehensive Care Clinic (CCC) is a dedicated medical home for over 600 CMC in the central Texas region. The core multidisciplinary team consists of a pediatrician, a RN nurse case manager, and a medical assistant. Wrap-around services are provided by social workers, dietitians, child life specialists and embedded specialized staff including a child psychiatrist and a developmental neuropsychologist. The medical home is the hub of the child's healthcare with regular case reviews and creations of treatment plans for proactive management. Dell Children's Medical Center (DCMC) is a dedicated free-standing pediatric hospital with 248 beds, multispecialty care services, and a Level 1 Trauma center.

Background (continued)

In one study over 2-years across 5 large CMC medical home programs, CMC's experienced a mean of 3.1 +/- 2.8 admissions, a mean length of hospital stay per admission of 12.2 +/- 25.5 days, and a 30-day hospital readmission rate of 25.4%. (4) Hospitalizations for CMC are rising. A study of Hospital utilization across the country found CMC accounted for 8.9% of US pediatric admissions in 1997 and 10.1% of admissions in 2006. These admissions used 22.7% to 26.1% of pediatric hospital days, used 37.1% to 40.6% of pediatric hospital charges, accounted for 41.9% to 43.2% of deaths. (5)

The Comprehensive Care clinic uses 24/7 communication access to primary providers with extensive knowledge of the child's medical history and long-standing relationship with the family. This enhanced access to providers, as well as anticipation, early recognition and contingency plans, helps prevent unnecessary emergency room visits and hospitalizations. One of the Texas CoIIN's project aims is to "Decrease by 50% from baseline the number of Children With Medical Complexity cohorts who have non-elective hospitalization by September 2019."

Expert consensus is that reducing hospitalizations among CMC requires "seamless, comprehensive hospital transitions" using "Peer-Peer Connection" and "Care Transitions". (6) This is why the primary driver of this aim is to provide better communication through co-management with inpatient team, pre discharge call/visit by primary RN, post hospitalization phone call.

Methods

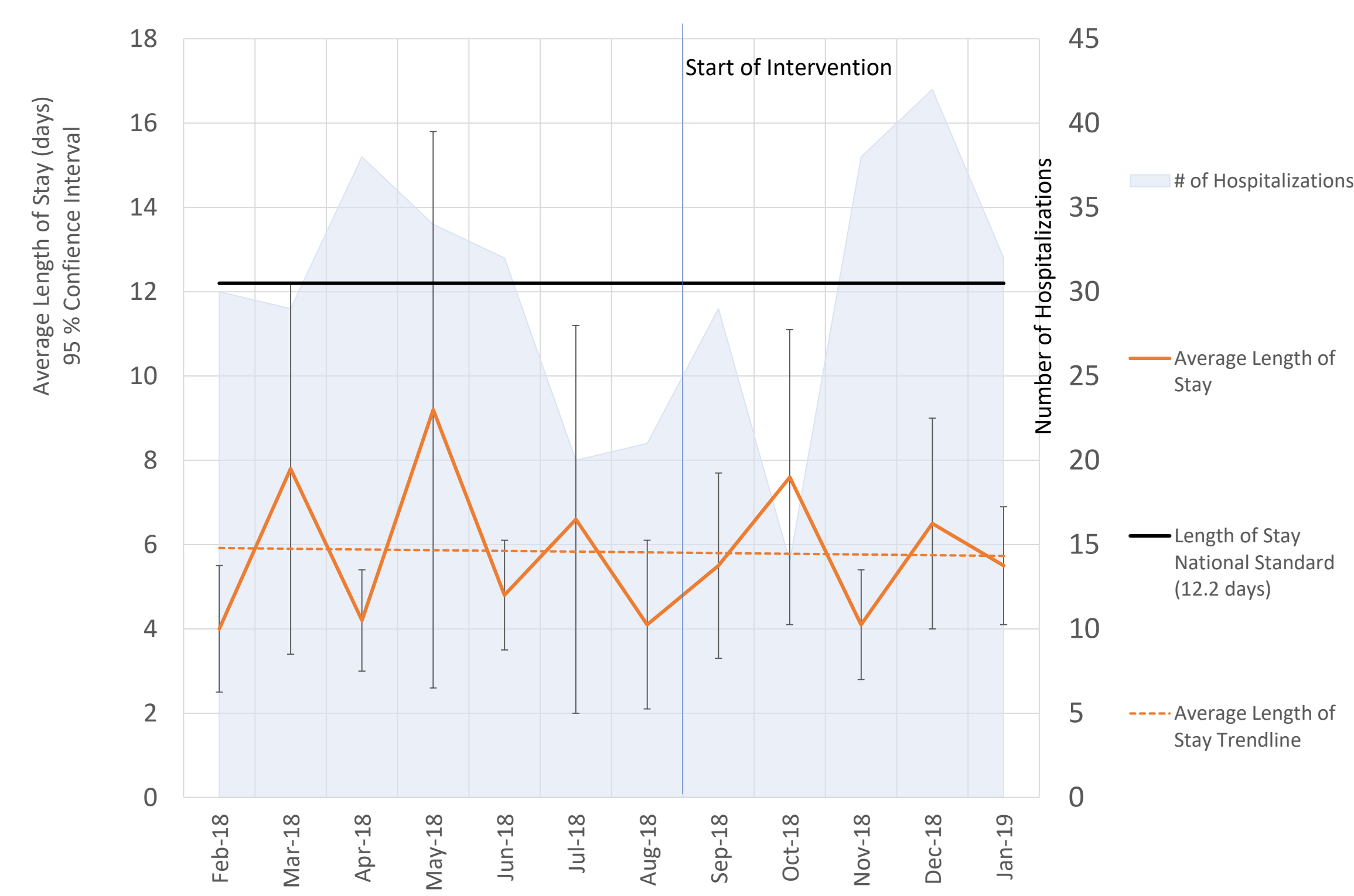
The CMC using the Children's Comprehensive Care Clinic as their primary medical home are identified as they are admitted into the hospital by multiple methods. This includes on-call correspondences resulting in referred ER visits, manual searches of the inpatient census, EMR notification systems, and inpatient teams reaching out to the CCC. Data was recorded and analyzed manually.

Communication between the primary CCC core team and the DCMC team take multiple forms including discussions over the phone, HIPAA compliant text messaging, or face to face during visits to the Hospital. In one iteration, a co-rounding model was employed, where the CCC team would join the inpatient team during rounds using a teleconference video chat. Communication occurs during the first day of hospitalization, throughout the hospitalization, or upon discharge. The process underwent multiple PDSA cycles to improve the process. The project was started in September of 2018 and is ongoing.

Results

- Content of the correspondences included:**
- Placing the current illness in the context of an exacerbation of a chronic disease
 - Agreeing upon an inpatient plan of care
 - Medication Reconciliation
 - Agreeing upon discharge criteria
 - Preparing for case management needs
 - Involvement of primary Specialists in Plan of Care
 - Primary care team transferring of trust to bridge a trust deficit with the inpatient team
 - Address ongoing social concerns
 - Discuss follow up appointments

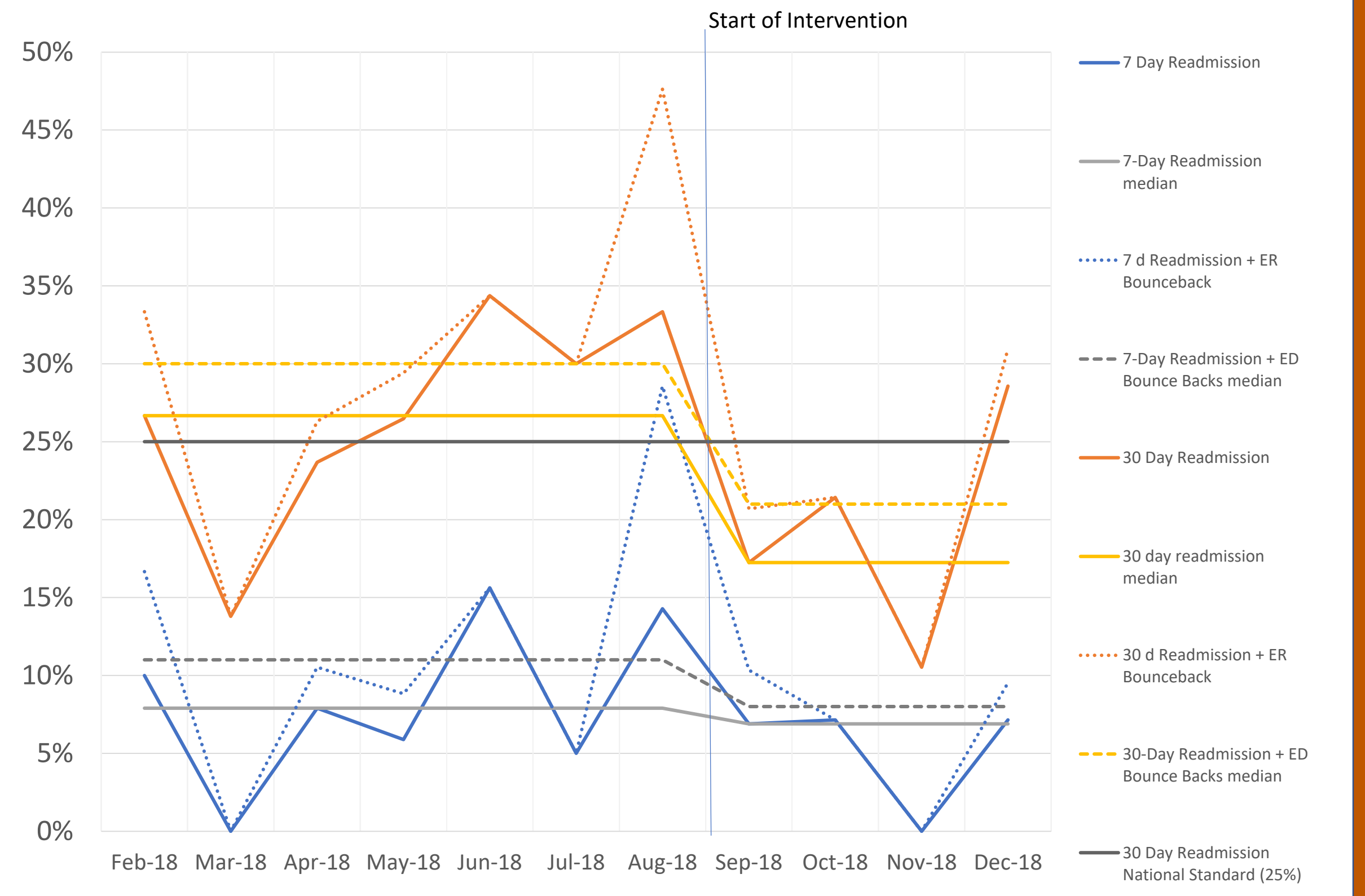
The following chart illustrates the number of hospitalizations and the average length of stay of hospitalizations from February 2018 to January 2019 among CMC enrolled in the CCC.



Over the previous year, the average number of hospitalizations among our cohort of approximately 600 patients is 30 per month. The average length of stay is 5.8 days. This is substantially lower than the length of stay average of 12.2 days among 5 large pediatric CMC programs.(4) No significant change to LOS was made as a result of this intervention.

The following chart shows 7 day and 30 day readmissions as a proportion of total number of hospitalizations of the cohort (readmission rates). The dotted lines represent readmissions and ED visit "Bounce Backs" that did not result in hospitalization.

Results



Before intervention, the median 30 day readmission rate was 27%, above the national standard of 25.4% (4). After the start of intervention, the median 30 day readmission rate was 17%, or a reduction of 37%. Before intervention, the median 7 day readmission rate was 8%. After the start of intervention, the median 7 day readmission rate was 7%, or a reduction of 12.5%. There is no discernible relationship between volume of hospitalizations and LOS or readmission rates. Future outcomes for further study include Patient and Provider satisfaction in the process, effect of the intervention on flow of work, sustainability of the intervention, and effect on overall quality of life.

Conclusion

An intervention of more communication and care integration between primary care providers and inpatient hospitalists for CMC produced a significant change to hospital readmission rates. No significant change to LOS was made by this intervention. Reasons may include the low baseline LOS for this particular population compared to national standards and the low opportunity for improvement. Challenges with tele-rounding included timing of co-rounding, technology quality issues, and difficulty with integrating interpreter services. Areas of further inquiry include comparing this data to administrative data, finding preventable causes to readmissions, and continuing to monitor data for sustainable results.

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