Health Care Systems Engineering Case Study

Sutton Coldfield *Aspiring to Clinical Excellence (ACE)* Primary Care Team Uses the Health Care Systems Engineering (HCSE) Approach to Reduce Unplanned Admissions in the Elderly and Deliver Better Services for Patients

NHS Birmingham CrossCity Clinical Commissioning Group

Organisations:

A joint project between three GP Practices within Birmingham Cross City CCG which was then extended to six practices. Partner organisations included Good Hope Hospital, Community Social Services, West Midlands Ambulance Trust, Birmingham Community Healthcare Trust, the Ambulatory Care Team and the Palliative Care team.

Profile:

These practices covered 32,000 patients initially, which doubled when the additional three practices joined the project. They jointly applied for funding for a pilot project to reduce unplanned admissions.

The team decided they should concentrate on unplanned admissions in the elderly. This was where they thought they could have maximum impact since over 80% of unplanned admissions to their local hospital occurred in patients over the age of 70 years.

Headline Improvements:

Compared with the previous two year period this project demonstrated in the period July 2014—Aug 2016:

- 80 fewer deaths in hospital which was a 20% reduction in hospital mortality.
- 5,800 reduction in hospital bed days.
- The ACE practices showed an additional saving of £324,000 over 2 years due to reduced admissions and length of stay.

Detailed Journal Article:

A detailed article is available which gives the full story of the analysis and changes made by the Sutton Coldfield ACE team.

"It's been a massive learning curve and a real eye-opener to analyse everything step by step and really have input to the team discussions about changes that could have real impact for our patients. I don't even consider making any changes now without using the mapping tools first. I would absolutely definitely recommend this approach to other teams — it's wonderful!"

Elaine Glover, ACE Community Nurse, Sutton Coldfield

"Using the HCSE approach helped ensure we followed a structured process to properly diagnose the problems in our system and help us to develop a clear action plan. The analytical approach meant we could measure the impact of what we then implemented. We were surprised and delighted with the reduction in mortality."

Dr Peter Ingham, GP member of the ACE Team, Tudor Practice, Sutton Coldfield

The ACE team within the Birmingham Cross City CCG designed their pilot project to reduce unplanned admissions for people aged over 70. They have reduced mortality for patients, improved patient flow through Good Hope Hospital, and have generated financial savings that exceeded the ACE funding. They are now keen to enable the positive outcomes to be magnified for the benefits of a larger population of patients and the wider health economy.

Background

In June 2014, Birmingham Cross City CCG invited bids from constituent practices for an innovative pilot to allow nine sites across Birmingham to look at how to better manage long-term conditions and reduce unplanned admissions.

Three like-minded practices were already looking to work much closer together and agreed to put in a joint proposal focused on reducing unplanned admissions in the elderly. The project was called "Aspiring to Clinical Excellence (ACE)" and they believed it that was an exciting and unique opportunity for joined up thinking, enabling them to work in innovative ways for the benefit of their patients and their CCG. In January 2016, another three practices joined the project, doubling the patient population.

Using the HCSE Approach

Simon Dodds, an expert in health care systems engineering (HCSE) and service design, was engaged by the team to lead the data analysis and guide them through service improvement in weekly review sessions. They mapped the current pathways and determined appropriate options that would produce the intended outcome of a reduction in non-elective admissions in the over 70s. All the doctors and nurses involved in this project completed a Foundations of Improvement Science in Healthcare (FISH) online course.

Design Phase

Recognising the importance of

protected time to undertake the project, each practice released one partner for one session on a weekly basis.

It was also clear that successful implementation of this project would require the employment of suitably qualified community nurses who would be able to assist in the design and implementation of the improved pathways.

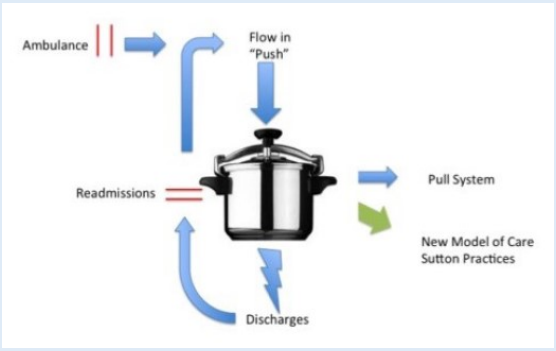
The team met for a four-hour session on a set day each week. They created a web-based blog to log their activity and to share their learning across their wider partnerships. An update was posted to the blog after every meeting and emailed to all clinical staff. This ensured that all the nurses and doctors were engaged with the project.

Studying data for the over 70s non-elective admission showed that there was a concentration of short stay admissions. These were likely to be the least complicated cases where community intervention would be most effective. There was also a large rise in costs for patients staying for two or more nights so the team decided to further analyse the main reasons for these admissions.

It was important that the team concentrated on patient problems that they could influence and for this reason they chose to concentrate on patients admitted with urinary tract infections (UTIs).

The ACE nurses visited two patients from each practice with an admission code of UTI and discussed the patient journey and compared that with the discharge summary detail and our conclusion was that this diagnosis appeared to be a proxy for frailty. It also became clear that there were many opportunities to improve the patient journey and avoid admissions and readmissions. A similar exercise with patients admitted with respiratory infection was undertaken and the team came to the same conclusion.

Key Learning—The "Pressure Cooker"



"The pressure cooker analogy explains how in-patient numbers are a function of the number of patients flowing through the system and their length of stay. We found that we were reducing the flow to the detriment of LOS as the pressure was reduced within the hospital system. We realised that unless we enabled patients to be safely discharged sooner we were not going to reduce the length of stay. We understood that the longer patients stay in hospital, the more likely they are to become deconditioned and acquire other complications. This would also affect our ability to make the required savings." Dr Rahul Dubb, Ley Hill Surgery, Sutton Coldfield

Working across an extensive group of stakeholders and partner organisations, the ACE nurses and the staff in these organisations developed a number of key actions.

Post-Discharge Review: The nurses assessed each patient post-discharge and created a standard report that was passed back to each practice on the same day. This addressed any outstanding clinical actions required for patients post-discharge and gave patients and their families the confidence to contact the ACE nurses as a first port of contact.

Admission Avoidance: The ACE Nurses received referrals via GPs and community teams regarding patients who were "in crisis" and at risk of urgent and potentially avoidable hospital admission. This referral takes immediate priority and often required a rapid home visit for assessment.

Early Safe Discharge: Six months into the project, the team introduced a pull-design that was called "early safe discharge". The single most important factor for the delivery of the overall outcomes was the ability to use the new Urgent Care Dashboard system. This identified the placement of patients within the acute system within nine hours of admission to Good Hope Hospital.

Benefits

During the period of the ACE project there were a number of system wide changes which were introduced across the Birmingham Cross City CCG health system.

However when the ACE team assessed the impact of their actions compared to non—ACE practices they were able to show the following results comparing the two years July 2014—Aug 2016 with the previous two year period.

- Significantly greater reductions in average length of stay and cost of admissions for patients in the ACE practices.
- Reduction in mortality of 80 deaths representing a 20% reduction comparing the ACE patients against all other over 70s admissions.
- Destination after discharge changed with fewer patients moving directly to NHS Nursing Care Homes and a large rise in patients moving to "non NHS run Care Home" and an increase in those returning home.