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Emergency Care Network

Surgical Ambulatory Emergency Care

Better Emergency Surgical Care: The Huddersfield Model

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Background

Calderdale and Huddersfield NHS Foundation Trust is a two-site hospital employing around 6,000 staff and serving a population of over half a million people. In recent years, it has seen A&E attendances rise to over 450 a day.

In previous years, it experienced high numbers of outliers and some long lengths of stay, primarily caused by delayed transfers of care or a lack of timely intervention at the front door. Five years ago, the Trust joined the Ambulatory Emergency Care (AEC) Network seeking support to launch a medical Ambulatory Assessment Unit (AAU) on each of its two sites, for patients requiring urgent medical care. Calderdale and Huddersfield re-joined the AEC Network in April 2016, at the same time as launching an ambitious Trust-wide patient flow programme called SAFER. A successful improvement programme followed. (See the case study entitled Ambulatory Emergency Care, Calderdale and Huddersfield, October 2017).

Alongside the medical AAUs, the surgical department developed a separate surgical AAU at the previously centralised emergency general surgical care single site (Huddersfield). The department already had a well-established and high-functioning day surgery unit for elective surgical procedures and aimed to use this experience and apply it to emergency surgical admissions. The aims of the surgical AAU were to streamline and ultimately reduce the number of admissions to the department, encourage ambulatory treatment of non-operated patients and, for those patients who required surgery, make the process as efficient and safe as possible.

By 2016, Calderdale and Huddersfield had a well-established medical and surgical model of AEC. Having laid such solid foundations, the organisation wanted to improve quality and safety, as well as increase the uptake, capacity and efficiency of its AAUs. The aims were to save more bed days, reduce length of stay, reduce outliers and reduce the number of winter escalation beds needed.

Introduction

In 2011, the Royal College of Surgeons (RCS) published their 'Standards for Unscheduled Surgical Care', which were a set of guidelines for the emergency surgical patient. There were a number of recommendations within this document and included targets for timely consultant assessment of a patient after admission and consultant-delivered (rather than consultant-led) care.

It soon became apparent that it would be impossible to meet these standards with a traditional on-call rota, which usually consisted of just one main post-take ward round a day. Further, in line with most surgical departments, out-of-hours operating was often limited to life-or-limb saving surgery alone and as such, daytime emergency operating was becoming ever busier. The third contributing factor to poor emergency outcomes was the simple fact of ever greater referrals and admissions with no increase in infrastructure or staffing to deal with them.

The surgical department was challenged to develop new modes of working to see if it was possible to deliver the standards contained within the RCS guidelines and, over a period of around nine months, designed and implemented several change-initiatives to develop emergency surgical care at the Trust.

The approach

There were a number of issues that were barriers to the standards being met. These included, but were not exclusive to:

- Very few alternatives to admission for surgical emergency patients; once referred, they had to be admitted and assessed
- Delayed surgery for less acute patients, such as incision and drainage of abscess or treatment of uncomplicated appendicitis
- A significant proportion of patients staying in for between one and two days but not requiring any surgical intervention at all
- Patients being admitted to several wards around the hospital, resulting in longer and less efficient ward rounds and concurrent pulls on junior doctors who had unwell patients in different places; inevitably, discharge summaries were delayed which led to prolonged length of stay
- Traditional on-call rotas, which included long periods of on-call time, meant that there tended to be just one ward round a day and emergency non-urgent operating was confined to daytime hours only; this meant that patients waiting for minor acute surgery often waited greater than 24 hours for their operation

The surgical team, working closely with forward-thinking and supportive departmental managers, designed and implemented several changes to address these issues. They realised that a small change in itself would not be enough and set in motion several work streams to deal with each issue in turn. Their approach was to ensure that consultant surgeons were always able to see patients soon after admission and enable improvements in patient care, allowing for the earliest possible discharge for patients without compromising safety or outcomes. As with most units in the UK, there was minimal extra investment available in terms of staffing (consultant or junior staff) or infrastructure at the outset of the project and so the principle was to take what existed already and improve it.

Starting the Surgical Improvement project

The main streams of work for the improvement project were:

i. Change the consultant on-call rota to enable the group to meet the standards for emergency surgical care
ii. Develop the Surgical AAU area to create a genuine space that was an alternative to admission for emergency surgical referrals
iii. Change the on-call structures of the junior doctors to streamline and improve the experience for both patients and trainees
iv. Develop a general surgery-only emergency operating list (CEPOD list) that did not have multiple specialties pulling on it

How the change was made – the Surgical AAU and junior doctor rotas

The Surgical AAU was first introduced in 2013 and initially comprised a registrar-delivered 'hot clinic'. This was a clinic run from the SAU, which saw up to eight patients a day and aimed to reduce admissions for stable patients. Consultant surgeon Arin Saha was a registrar at the Trust when the first AEC project took place (for the Medicine directorate) and although there was no direct surgical involvement at the outset of that project, he saw the benefits that developing ambulatory care had yielded for medical patients. As such, he and the general surgery department used many of the lessons learned from the AEC Network and implemented changes into the Surgical AAU. The clinic was developed, with dedicated radiology (ultrasound and CT) slots associated with appointments. A waiting area was developed and all patients who were stable were brought to the AAU rather than to a bed. The registrar on-call rota was split to allow a dedicated registrar for emergency admissions and a separate registrar for emergency operating, leading to fewer pulls on the time for the on-call team and much improved training opportunities. The importance of data collection and analysis was the key learning experience from the AEC Network. The performance dashboard was able to show real time improvements when the AAU was functioning well and deterioration when the AAU had been converted to beds.

The nursing workforce has played a crucial role in the development of the AAU. It soon became apparent that the ever present members of the team were the nurses and the position of SAU Co-ordinator was created. This is a senior nurse who takes the details of the referrals and triages to the emergency department (ED), the ward or the AAU. The senior nurse has direct access to the consultant and registrar on-call for difficult or unusual referrals. The nursing workforce has also been developed and refined to have dedicated staff within the AAU who are protected from being brought into the ward areas. The nursing staff have also been empowered to suggest improvements within the unit which has led to unprecedented satisfaction levels and resulted in the SAU being one of the few ward areas in the Trust with full employment.

Since the introduction of the Surgical AAU, the number of patients going through ambulatory care has increased by 11% and the proportion of same-day discharges has increased from less than 20% to 33%. Overall length of stay has reduced by 2.5 days and the department has been able to incorporate a real reduction of eight beds without significant effect on elective patients.

How the change was made – the general surgery CEPOD list

A common problem that had been encountered was that many specialties laid claim to the emergency theatre and acute but stable general surgery patients often waited significant lengths of time for their operation. This led to prolonged lengths of stay and dissatisfaction amongst patients. Each consultant surgeon gave up one half-day theatre list per week to allow the creation of 10 extra emergency sessions. These were amalgamated into a single theatre (Theatre one) and became the emergency general surgical CEPOD list. Although the general surgeons do allow some specialties to use the list if clinically indicated, other specialties broadly now find space on their own elective lists rather than the CEPOD general surgery list.

The team also worked closely with the Anaesthetics directorate, and in particular Dr Nikki Ross, and the concept of a morning CEPOD team brief was introduced. This meeting takes place at 8am every day, seven days a week, and includes the surgeons, anaesthetists and theatre staff from the outgoing night teams and the incoming day teams to plan the day's operating. This meeting has led to a significant increase in pre-9am surgery start times and much greater efficiency of operating through the day.

How the change was made – the consultant on-call rota

Perhaps the key change within the department has been the change in on-call rotas for the consultant surgeons. The intensity of work and the patterns of admissions meant that consultants could only realistically provide one ward round a day and patients admitted after the morning round, unless unstable, were seen on the next round the next morning. This was, and still is, a standard 'surgical day'.

The consultant body proposed changing the rota to have a dedicated night consultant surgeon on call with no elective duties at all during the day. The old and new rota structures are detailed in Figures 1 and 2 below.

Week	Mon	Tue	Wed	Thur	Fri	Sat	Sun
1	48 hours on call		CEPOD	Elective	Elective		
2	Elective	Elective	Elective	Elective	Elective		
3	Elective	Elective	Elective	Elective	Elective		
4	Elective	Elective	Elective	Elective	72 hours on call		
5	CEPOD	Elective	48 hours on call		CEPOD		
6	Elective	Elective	Elective	Elective	Elective		
7	Elective	Elective	Elective	Elective	Elective		
8	Elective	Elective	Elective	Elective	Elective		
9	Elective	Elective	Elective	Elective	Elective		
10	Elective	Elective	Elective	Elective	Elective		

Week	Mon	Tue	Wed	Thur	Fri	Sat	Sun
1	Day	Day	Day	CEPOD	Night	Night	Night
2	Night	Night	Night	Night	Rest		
3	Rest	Rest	Rest	Elective	Elective		
4	Elective	Elective	Elective	Elective	Elective		
5	Elective	Elective	Elective	Elective	Elective		
6	Elective	Elective	Elective	Day	Day	Day	Day
7	CEPOD	Post Take	Elective	Elective	Elective		
8	Elective	Elective	Elective	Elective	Elective		
9	Elective	Elective	Elective	Elective	Elective		
10	Elective	Elective	Elective	Elective	Elective		

Figures 1 and 2. Emergency On-call rotas, before and after the rota change

This rota, originally designed by senior surgeon Brian Dobbins, allowed the day-surgeon to perform two ward rounds a day and, crucially, see all the acute patients and not just the newest admissions. This meant that patients had consultant-delivered care and assessment throughout their in-patient stay and not just on the day of admission. Further, the presence of the night consultant meant that surgeries and treatment required out-of-hours had fewer impediments or constraints. If a patient requires a laparotomy at 4am, they get it at 4am, rather than following a policy of resuscitation and planned surgery at 8am.

The new rota also allowed consultants to personally review patients in the surgical AAU which led to a far greater proportion of patients being discharged from AAU rather than admitted. As a general principle, it has been previously noted that junior surgeons admit for a decision whereas consultants admit for treatment and by designing a system that gets the consultant to the patients rapidly, the number of admissions has been controlled despite a steady and sustained increase in referrals.

The initial results of the rota change were clear and again highlighted the importance of accurate data collection and analysis (Figure 3):

	Before rota change	After rota change	P
Consultant review <12 hours	22%	76%	**0.001**
Time till consultant review (hours) [Median, IQR]	18.7 (12.7-23.5)	7.2 (4.2-11.5)	**<0.001**
Length of stay (hours) [Median, IQR]	55 (23.1-110)	42.1 (19-96.4)	**0.037**
Length of stay < 1 day	25%	31%	**0.048**
Re-admissions	18%	19%	**0.671**

Figure 3. After the rota changes, there were significant improvements in length of stay and timely consultant review with no increase in re-admission rate

Benefits of the changes

Although the aims of the changes in the emergency surgical service were to meet the standards for unscheduled care, the department started noticing some significant and unexpected results. The most striking changes were in outcomes after major emergency laparotomy for which a national audit, the NELA (National Emergency Laparotomy Audit) study had started collecting data in 2013. After the rota change, there were major improvements in both process and outcome (Figure 4).

	2013/2014 (pre rota change)	2015/2016 (post rota change)
Predicted mortality >5%	55%	54%
Return to theatre	3%	3%
Unplanned move to HDU/ITU	7%	<1%
Post-operative 30 day death	12%	6.4% (P<0.001)
Observed: Expected Mortality Ratio (EMR)	0.78	0.51 (P<0.001)
National average (NELA)	15%	11%

Figure 4. There was a halving of mortality after the rota change alongside a sharp fall in the ratio between observed to expected mortality

These improvements led to the unit having amongst the lower mortality in the UK and the lowest in Yorkshire and led to the department being awarded the National Patient Safety Award for Surgical Care in 2017 and making the final shortlist for BMJ Surgical Team of the Year. The department also won the inaugural NELA Prize, awarded at the yearly Association of Surgeons of Great Britain and Ireland National Conference in 2016.

There were some other unexpected changes. Though there had been some loss of elective activity to incorporate a week of nights into each consultants' rota, there was a freeing up of elective sessions which were used to make three new consultant job plans without any extra infrastructure investment (theatre, clinic and endoscopy time). Patients are all seen twice a day and key decisions are made quicker and more efficiently. Though there were concerns about a loss of autonomy and training for higher surgical trainees, the shorter shift patterns for the consultants encourages them to teach and train rather than simply perform cases alone. Registrars now get to present cases more regularly directly to a consultant which allows for greater numbers of assessments to be completed and genuine, personal feedback and development.

There have been several changes of 'culture'. The rota relies upon consultants trusting each other and working together to ensure that the level of care is the same at midnight as it would be at midday. There is a genuine commitment to openness and honesty and a rigorous morbidity and mortality process to discuss any cases where management could have been different. There has also been a change of culture in theatres; there is an acceptance now that the unit tries to clear the day's operating regardless of the time to ensure that patients are not kept waiting and to reduce length of stay. This has led to much greater efficiency in the CEPOD list; for example, there has been a near-trebling in the rate of acute laparoscopic cholecystectomy with all the financial and bed-related benefits that go with this. Finally, there is a change of culture on the wards themselves and amongst the patients; once patients are in a bed, changed into pyjamas, they see themselves as staying for the night (as indeed do the majority of staff). By changing this to having patients in an assessment area, patients and staff are challenging traditional views of emergency surgical patients. Now, the unit asks why a patient can't go through the ambulatory area rather than whether they can.

What has been the impact on patients?

The team has engaged regularly with patients and relatives and 'Friends and Family' scores for the admitting wards have regularly been above 90%. The nursing staff have also developed novel ways to encourage patient feedback, such as a patient 'graffiti' board and educational resources about the AAU and its function.

The regularity of personal consultant review has meant that nurses have more support and the breaks between shifts mean that the consultant now has the time and the energy to really talk to patients and relatives and to genuinely understand the aims and aspirations that patients have for their own healthcare. It is perhaps unsurprising that the number of complaints has fallen and patients are now much more aware of who is looking after them, what management is being undertaken and why.

Arin says "this may seem like an obvious aim, but all too often we hear that lack of time makes these interactions difficult and our new way of working has allowed us to provide this vital part of care for our patients and their relatives".

Completing the change

Although there were early demonstrable improvements, the surgical AAU faced the common problem of being turned into beds whenever the hospital experienced an acute bed shortage. In the early days of the unit's evolution, novel techniques were used. For example, Arin once took the curtain rails down in the ambulatory area to ensure that it wasn't bedded overnight! However, it was using the data analysis tools and experience from the AEC Network that allowed the department to prove the efficacy of the surgical AAU. When the Trust implemented a full Electronic Patient Record (EPR) system in May 2017, the AAU area was designed to only have chairs and no beds. As such, it became impossible to have patients in beds in the AAU area as the computer system had no capacity to place patients there.

The department also produced guidance for the ED and for junior doctors to ensure that patients were admitted to an AAU appropriately and safely. The nursing team developed a system for recording times, analogous to the triage systems in ED, to highlight patients who had waited considerable time for senior assessment. There were clear exclusion criteria for patients who were not appropriate for the AAU (such as potential acute vascular diagnoses). In addition, the nursing workforce was made available to administer opioid analgesia and monitor patients.

And finally…

The improvements in care and in lifestyle for everyone involved in emergency surgical care at Calderdale and Huddersfield have been clearly demonstrated and the unit is now excited to develop things further. The aim is to develop treatment pathways and start moving management of stable, GI inflammatory conditions from the in-patient bed to an ambulatory pathway, analogous to the management of cellulitis by the physicians.

The unit plans to work closely with colleagues in the Trust to develop specialist roles on the surgical AAU and to pioneer novel workforce models and has recently successfully introduced Physician Associates onto the Surgical AAU.

Perhaps most importantly though, are the lessons learned from the quality improvement process as a whole. By empowering the whole department, from the porter to the consultant, to suggest changes and by showing the improvements in care, everyone feels part of the project and proud of the results.

Figure 5. The General Surgery team at CHFT

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Version 1.0 - January 2019