

PROCESS AND SYSTEMS **Process of care and activity in a clinically inclusive ambulatory emergency care unit: progressive effect over time on clinical outcomes and acute medical admissions**

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ABSTRACT

Clinically relevant outcomes for same-day emergency care provided by ambulatory emergency care units (AECs) are largely unknown. We report the activity and outcomes for a large UK adult AEC operating an ambulatory-care-by-default model without specific exclusion criteria.

The AEC consultant triaged all acute medical referrals to either the AEC or the standard non-ambulatory 'take' pathway during AEC opening hours.

The proportion of acute medical referrals seen in the AEC increased to 42% (mean 700 referrals seen per month) in the last 6 months of the study and numbers seen in the non-ambulatory pathway fell. The most common diagnoses were for chest pain, pneumonia, cellulitis, heart failure and urinary system disorders. Seventy-four point eight per cent of patients completed their care in a single visit. In the last calendar year, the conversion rate from AEC to inpatient admission was 12%, and the 30-day readmission rate was 6.9% and 18% for the AEC and non-ambulatory pathways, respectively. Across the whole study period, the 30-day mortality was 1.6% and 6.9% for the AEC and non-ambulatory pathway, respectively.

This ambulatory approach is safe and effective.

KEYWORDS: Ambulatory emergency care, same-day emergency care, medical emergencies, zero length of stay

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Introduction

Over the 12 years to 2018, emergency hospital admissions in England increased by 42% to 6.02 million per annum, while NHS hospital bed numbers fell by 16.2% to 106,374.^{1,2} Over the 5 years to 2018, unplanned emergency admissions to our hospital increased by 9.7%, with no increase in inpatient medical beds.³

Ambulatory emergency care units (AECs) provide hospital-level urgent medical services without the need for an overnight stay. This service, termed 'same-day emergency care (SDEC)' by NHS England, is a key element of 2019's *The NHS Long Term Plan*, aimed at reducing demands on inpatient medical facilities and improving patient experience.⁴

Our AEC opened at the end of 2015 in a large, university-affiliated UK hospital. Prior to this, the general medical service undertook around 13,000 emergency patient assessments each year, predominantly in a medical emergency assessment unit (EAU) co-located with the emergency department (ED).

Instead of specific referral criteria for selecting patients for the AEC, a senior clinician triages referrals. All external medical referrals are taken by the AEC phone holder, who is either a consultant or a middle-grade doctor under direct, always-present consultant supervision. Constant consultant presence in the AEC ensures rapid senior decisions in the patient journey.

The utilisation and outcomes of AECs in the UK have been little reported, despite a major shift in NHS strategy towards ambulatory care.^{4,5} We analysed the activity and outcomes of our AEC over 3 years and assessed its impact on the pre-existing non-ambulatory pathway.

Methods

We obtained hospital spell data for patients admitted to the Oxford University Hospitals NHS Foundation Trust from December 2015 and discharged by the end of March 2019 with a treatment function of acute general medicine, geriatric medicine or ambulatory medicine (spells represent complete hospital stays as described by NHS Digital).⁶ The outcomes included the monthly number of medical attendances (counting spells), admission rate, readmission rate at 30 days and mortality at 30 days. Data analysis is described in the supplementary methods section (supplementary material S1).

Operational aspects of the AEC

The AEC was additional to the existing model whereby acute medical patients were clerked by the on-take medical team in EAU or the emergency department (ED; Fig 1). The AEC was not co-located with either EAU or ED. The AEC medical team was on site between 08:00 and 21:00 (09:00–19:00 at weekends) and led by a consultant physician who was physically present in the unit.

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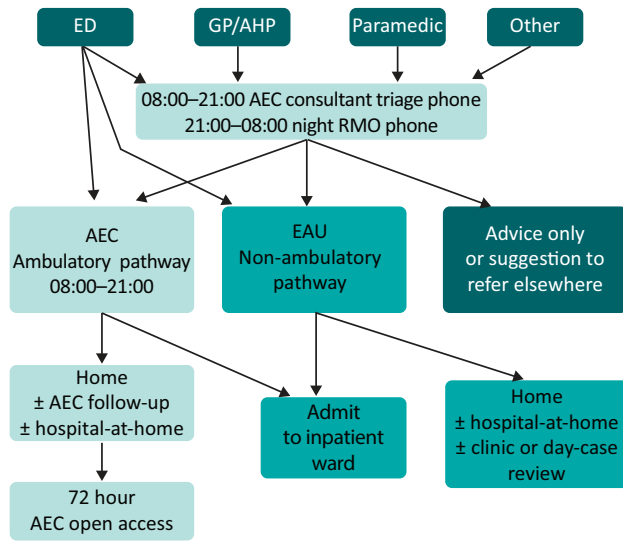


Fig 1. Pathways for acute medical patients. AEC = ambulatory emergency care unit; AHP = allied healthcare professional; ED = emergency department; EAU = emergency assessment unit; GP = general practitioner; Other = other source including community hospitals; RMO = resident medical officer.

which contained four beds each and the other two contained four reclining chairs each), plus two side rooms and a rapid nurse assessment room.

There were no specific exclusion criteria for adult patients. From 08:00–21:00, all external medical referrals went to the AEC phone holder, who triaged patients to AEC or the medical take. The phone holder was either the AEC consultant or a middle-grade doctor (for training purposes) taking calls under direct consultant supervision. Internal referrals could be made to the AEC phone holder or the on-take middle-grade doctor. Other referral outcomes included redirection to separate daily TIA (transient ischaemic attack) clinics or daily DVT (deep vein thrombosis) clinics, telephone advice, signposting to community services or recommendations to consult another speciality. Internal referrals to AEC were accepted from the ED team, and ED triage nurses could refer patients who had not seen a doctor. AEC clinicians undertook active surveillance of ED patients to proactively move those with medical problems to the AEC. Overnight, the referral phones were held by the generic hospital at night on-take team (middle grade), who could accept AEC referrals for the next day(s).

Phone holders wrote initial plans for incoming patients, who were booked in at reception on arrival, then seen by a nurse. This initial assessment included vital signs, venepuncture, cannulation and electrocardiography if appropriate. Mobile patients then sat in the waiting room and immobile patients or those with markers of severe illness were moved to a bay. Board rounds led by the consultant and senior nurse occurred at least twice daily to coordinate patient care and flow. On discharge, patients were given written information with AEC phone numbers and open

Nursing staff provided care until 23:00. By the end of the study period, daily medical staffing included two or three registrars, two to four senior house officers / core medical trainees / foundation-year 2 doctors and a physician associate. At peak times, a second consultant was rostered. The unit comprised four bays (two of

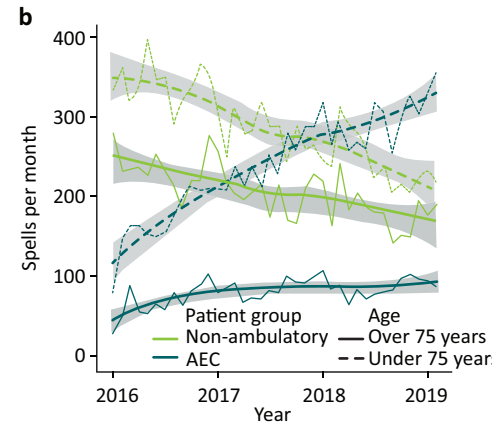
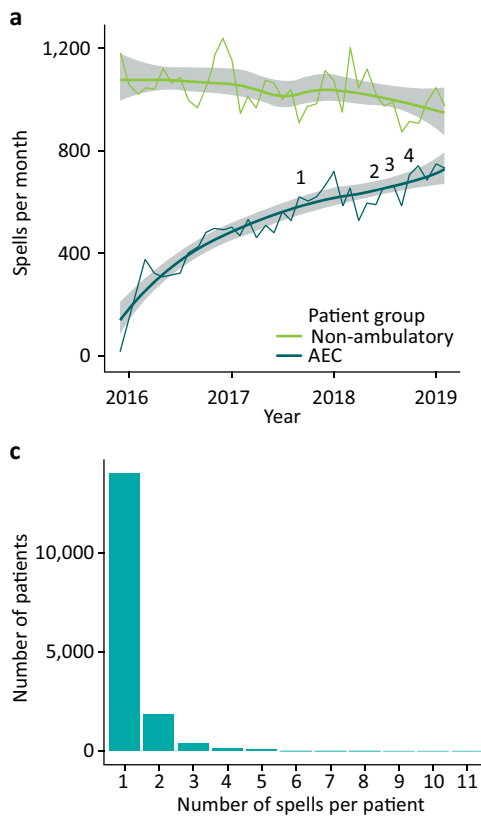
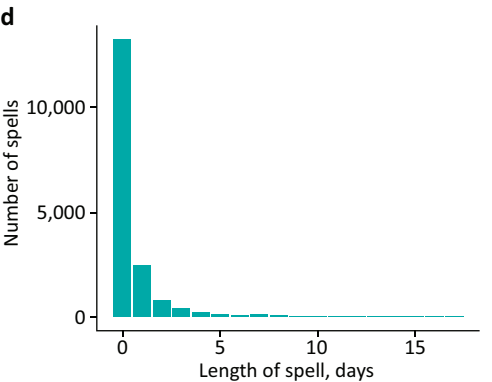
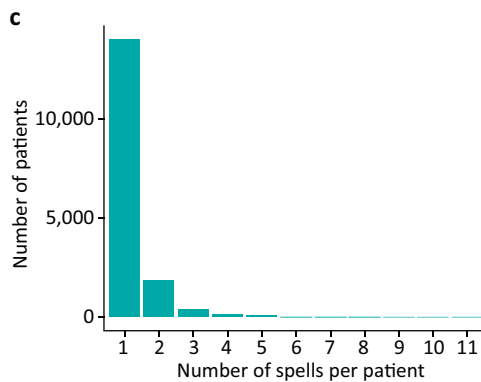


Fig 2. Patient spells on ambulatory emergency care unit (AEC) or the pre-existing non-ambulatory pathway. Counts are plotted by month of spell initiation. a) Counts for all spells on AEC or the non-ambulatory pathway. Numbers indicate upgrades to the AEC pathway: 1 = phone referrals opened to ambulance paramedics and dedicated weekday computed tomography / ultrasound slots for AEC patients; 2 = AEC pharmacy opened; 3 = dedicated weekday magnetic resonance imaging slot for AEC; 4 = appointment of full-time AEC physiotherapist specialising in frailty. b) Counts of first spells after opening of AEC stratified by age group. c) Number of patients with the specified number of AEC spells over the study period. d) Number of AEC patient spells by length of spell in days.



access to return for up to 72 hours. Some patients were electively brought back for follow-up; others were discharged with hospital-at-home nursing care overseen by AEC clinicians. During their visit, patients could be referred to any specialist team, including the heart failure, respiratory or acute oncology teams (including joint weekly virtual oncology rounds) and the occupational therapist / physiotherapist specialising in frailty. Patients who needed admission were moved to an inpatient ward under the care of the general medical take or specialty team as appropriate.

Results

Opening of an AEC with an inclusive acceptance policy was associated with a fall in numbers of patients on non-ambulatory pathways

The AEC opened in December 2015 and successive service improvements were subsequently implemented. These included a move to a larger ward, direct telephone access for the ambulance service to AEC doctors, rapid nurse assessment, a satellite pharmacy in the unit and a full-time physiotherapist with expertise in frailty (Fig 2a). During the 38-month study period 20,125 patient spells were completed, comprising 16,497 individual patients (Fig 2a–c). The number of AEC spells increased from 4,390 in

year 1 to 6,536 in year 2 and 7,702 in year 3, and the number of non-ambulatory pathway spells decreased by 6% over this period (year 1: 12,851; year 2: 12,231; year 3: 12,057). For the last 6 months of the study, the mean monthly number of spells on AEC was 700 and overall, 42% of the acute medical spells were on AEC. The mean age of AEC patients was 59.5 years (range 16–103), compared with 67.3 years (range 16–105) for the non-ambulatory pathway. Most AEC referrals were from primary care (47.2%) and the ED (20.8%), with the remainder mainly from paramedics and a small number from community hospitals. The number of patients aged ≤ 75 years increased to be consistently higher in the AEC than in the non-ambulatory pathway after 18 months (Fig 2b). Within a single spell, an AEC patient might attend once or return for reviews on other days (Fig 2d). Seventy-four point eight per cent of spells consisted of only a single visit and 14.0% of spells spanned 2 consecutive days.

We surveyed the clinical problems seen on AEC by analysing three-digit ICD-10 codes for the final primary diagnosis (Table 1). The highest number was for a 'symptom'-based code used to refer to chest pain and the second most common code was for pneumonia.

For some diagnoses, the absolute numbers of patients seen on AEC increased such that, over time, the majority were seen on AEC (supplementary material S2, Fig S1). These codes typically described a general symptom or problem and included chest

Table 1. Spell numbers for the most common ICD-10 diagnostic codes for ambulatory emergency care unit and the non-ambulatory pathway

Rank	Ambulatory emergency care unit	Number of spells	Non-ambulatory pathway	Number of spells
1	Pain in throat and chest	1,919	Pneumonia, unspecified organism	4,925
2	Pneumonia, unspecified organism	1,127	Other disorders of urinary system	2,348
3	Cellulitis and acute lymphangitis	819	Pain in throat and chest	1,759
4	Heart failure	784	Other chronic obstructive pulmonary disease	1,506
5	Other disorders of urinary system	642	Other sepsis	1,310
6	Abnormalities of breathing	631	Heart failure	1,044
7	Atrial fibrillation and flutter	553	Unspecified acute lower respiratory infection	858
8	Unspecified acute lower respiratory infection	521	STEMI and non-STEMI	792
9	Pulmonary embolism	428	Atrial fibrillation and flutter	759
10	Other and unspecified soft tissue disorders, not classified elsewhere	423	Headache	720
11	Other chronic obstructive pulmonary disease	420	Cellulitis and acute lymphangitis	651
12	Other disorders of fluid, electrolyte and acid–base balance	363	Asthma	627
13	Headache	347	Infectious gastroenteritis and colitis, unspecified	604
14	Syncope and collapse	319	Syncope and collapse	571
15	Viral infection of unspecified site	296	Acute kidney failure	570
16	Iron deficiency anaemia	294	Other symptoms and signs involving the nervous and musculoskeletal systems	494
17	Abnormalities of heartbeat	266	Other diseases of digestive system	488
18	Abdominal and pelvic pain	253	Angina pectoris	464
19	Acute kidney failure	246	Other disorders of fluid, electrolyte and acid–base balance	459
20	Phlebitis and thrombophlebitis	238	Influenza due to other identified influenza virus	444

STEMI = ST-elevation myocardial infarction.

pain, cellulitis, abnormalities of breathing, unspecified soft tissue problems, palpitations and phlebitis/thrombophlebitis. For some conditions where the severity and complexity of patients' problems can vary, such as atrial fibrillation, broadly equal numbers of patients were seen on AEC and the non-ambulatory pathway. Headache and syncope only showed a major shift towards AEC in the third year. For iron deficiency anaemia, there was a large increase in AEC spells with no change in the small number of cases seen through the non-ambulatory pathway. The primary diagnosis was cancer in around 10 AEC patients per month (supplementary material S2, Fig S2).

Admission rate and inpatient bed utilisation for AEC patients

We determined the number of patients who were seen on AEC, but then admitted directly to an inpatient bed under the inpatient medical teams (for specialties). Patients triaged to the non-ambulatory pathway and seen on EAU were either admitted to an EAU bed or an inpatient ward elsewhere, or discharged from EAU. To contextualise the AEC admission rate, we compared it with the corresponding admission rate from EAU (Fig 3a). The mean admission rates were 13.8% from AEC (9.6% and 18.0% in patients aged ≤ 75 and >75 years respectively) and 54.9% from EAU (47.3% and 62.4% in patients aged ≤ 75 and >75 years,

respectively). The AEC admission rate fell from 16.6% in the first full calendar year to 12% in the last calendar year.

For the 20 most common diagnoses on AEC, the admission rate was highest for acute kidney failure (24.1%), pneumonia – unspecified organism (20.4%), heart failure (19.7%), other disorders of the urinary system (16.3%) and other chronic obstructive pulmonary disease (14.3%) (see supplementary S3, Table S1, for comparison with EAU). The diagnoses with the lowest admission rates from AEC included abnormalities of breathing (0.4%), abnormalities of heartbeat (0.6%), pain in throat and chest (1.1%) and diagnoses of 'other – unspecified soft tissue disorders' (0.9%) and 'viral infection of unspecified site' (2.7%).

The mean number of beds occupied overnight in the hospital was 13.9 for patients coming through the AEC pathway and 165.4 for medical patients in the non-ambulatory pathway. Although the number of patients seen on AEC increased substantially over time, the number of beds occupied by patients admitted from AEC remained constant over 3 years (Figs 3b and 2a).

Mortality of patients assessed on AEC compared with EAU

The mortality of patients selected for ambulatory care on an AEC using an inclusive approach such as ours is unknown. The 30-day mortality for the AEC patients was 1.6%, compared with 8% for patients in the non-ambulatory pathway. Following discharge, mortality remained lower for AEC patients than for EAU patients over time, with 28.9% of patients seen on EAU having died within 3 years compared with only 14.6% of those seen on AEC (Fig 4). We stratified patients into subsets by age and by whether they were admitted to an inpatient ward from AEC or EAU. Increased age and the requirement for admission to an inpatient bed from either AEC or EAU were associated with increased mortality at 30 days (see Table 2 and supplementary material S3, Table S2, for mortality by diagnosis) and beyond (supplementary material S2, Fig S3). For all corresponding subsets, mortality at 30 days was higher among EAU patients than AEC patients (Table 2).

Thirty-day readmission rates are lower for patients selected for the ambulatory pathway compared with the non-ambulatory pathway

We determined how many patients were readmitted within 30 days of discharge from AEC or from the non-ambulatory pathway (Fig 5a). We defined readmission as one of the following: a return to EAU, an admission to medicine from the ED or a return to AEC resulting in inpatient admission. As expected, the readmission rate was higher for older patients compared with those aged ≤ 75 years (Fig 5b). After the first few months, the readmission rate for the AEC was lower than that for the non-ambulatory pathway. The overall readmission rate to the non-ambulatory pathway from AEC in the last calendar year of follow-up was 6.9%, compared with 18.0% for the non-ambulatory pathway. For the 20 most common diagnoses on AEC, the readmission rate from AEC was lower than that from EAU (supplementary material S3, Table S3).

Discussion

In a recent national audit, 95% of UK hospitals had some form of ambulatory unit, but patient selection is not standardised and the outcomes are largely unstudied.⁷ Ambulatory pathways may be restricted to specific clinical presentations and highly selective

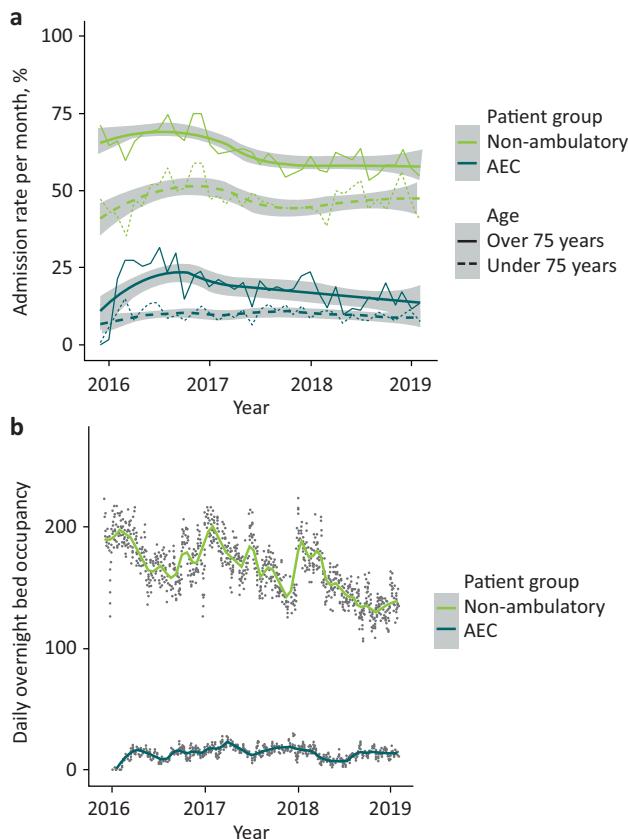


Fig 3. a) Monthly admission rates from emergency assessment unit and ambulatory emergency care unit stratified by age. b) Daily counts of nightly bed occupancy. AEC = ambulatory emergency care unit.

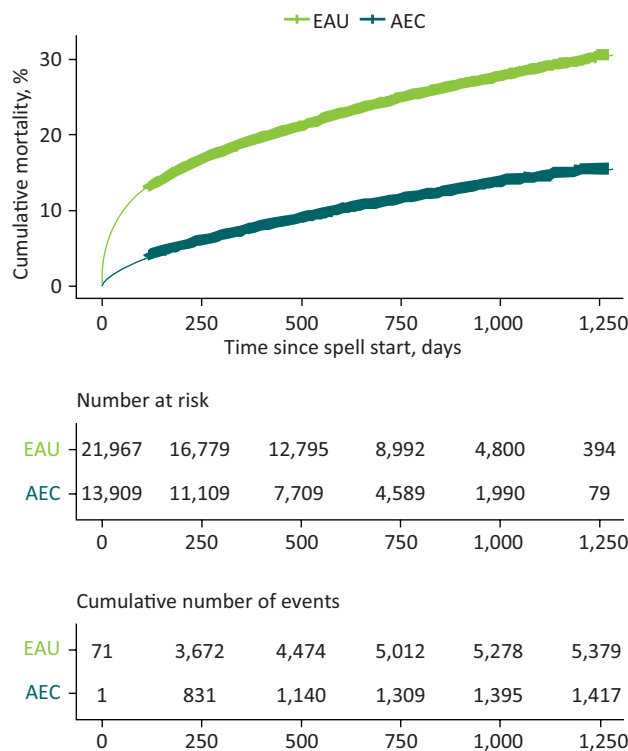


Fig 4. Cumulative mortality in ambulatory emergency care unit and non-ambulatory pathway patients following the start of their first spell. AEC = ambulatory emergency care unit; EAU = emergency assessment unit.

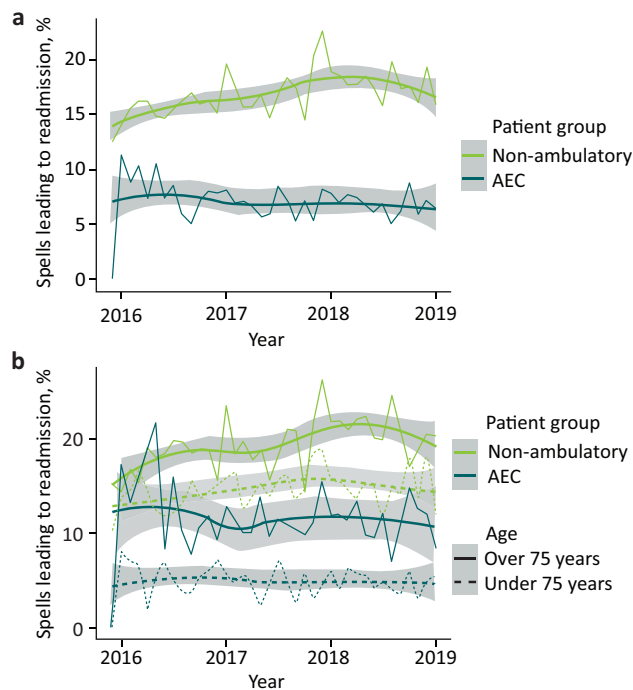


Fig 5. Readmission rates at 30 days from ambulatory emergency care unit and non-ambulatory pathways. a) Overall monthly readmission rates. b) Monthly readmission rates stratified by age. AEC = ambulatory emergency care unit.

in their patient intake. We studied the activity and outcomes of an ambulatory unit that operates without any restrictive referral criteria, but with a policy of full discretion for clinicians to make individualised decisions about ambulation based on assessment and consultation with each patient.

Over the 3 years since the AEC opened, the number of medical patients managed through the ambulatory pathway rose rapidly and the number managed through the traditional non-ambulatory pathway fell. Factors contributing to increased ambulatory activity included proactive outreach recruitment of patients to AEC from the ED, encouraging primary care to refer patients to AEC rather

Table 2. Mortality at 30 days following the start of a patient’s first spell stratified by age, whether admitted to an inpatient bed and whether admitted from ambulatory emergency care unit or emergency assessment unit

Age (years)	Admitted	Mortality (%)	
		AEC	EAU
≤75	No	0.6	1.9
≤75	Yes	2.8	6.2
>75	No	2.5	9.6
>75	Yes	11.0	15.7

AEC = ambulatory emergency care unit; EAU = emergency assessment unit.

than send them to the ED, enthusiastic staff, support from senior management, availability of hospital-at-home services and full, rapid access to most hospital diagnostics.

The rise in AEC activity was greater than the decline in the non-ambulatory pathway. However, the fall in non-ambulatory activity occurred in the context of a 13.4% rise in ED attendances in our hospital over 5 years and a 28% rise in emergency admissions across the NHS over 10 years.^{3,8} Several factors may contribute to a smaller fall in the non-ambulatory pathway than the rise in AEC activity. Patients who were proactively recruited from ED to the AEC might otherwise have been discharged directly by ED. Ease of access to AEC may have lowered the barrier to referral and, for example, referrals of patients with iron deficiency anaemia increased steadily, paralleling a 53% rise from 2014 to 2018 in ambulatory attendances for anaemia across the NHS.⁹

For conditions such as pulmonary embolism, there was a shift to the majority being seen on AEC. NHS England targets incentivise ambulatory management of low-severity pulmonary embolism and we have demonstrated that ambulatory management is safe with more severe pulmonary embolism.^{10,11} Respiratory infection was the most common diagnosis on AEC, but was more common in the non-ambulatory pathway, probably reflecting the need for oxygen or prolonged intravenous fluids and possible delirium or poor mobility in older patients. New cancer diagnoses are common in the AEC and a weekly virtual oncology ward round tracked progress of these patients. There were similar numbers of patients with cellulitis on AEC and the non-ambulatory pathway, but a striking summer peak on AEC suggests a difference in the clinical context, with seasonal issues such as insect bites affecting the AEC numbers (supplementary material S2, Fig S1). Future

analyses of secondary diagnoses and comorbid illnesses will be needed to understand this further.

Inpatient admissions from AEC fell over time and contributory factors may include increasing experience of patient suitability for ambulation by AEC clinicians and referrers, increased availability of specialist frailty occupational and physiotherapists and greater use of a hospital-at-home service. The 'AMB score' has been used elsewhere to select patients for an ambulatory pathway, but scoring components such as need for intravenous therapy are less relevant with a good hospital-at-home service.^{12,13} The National Early Warning Score 2 (NEWS2) has been used pre-hospital to predict mortality and need for critical care, but is untested as a tool for determining safety of ambulation.^{14–16}

The lower mortality in AEC patients compared with patients in the non-ambulatory pathway suggests that, even without referral criteria, clinicians selected patients with lower severity. In patients over 75 years old admitted to hospital, the lower mortality in those admitted via AEC suggests that admission through AEC is not disadvantageous.

We sought to minimise readmission by planned follow-up visits to AEC, 72-hour open access and hospital-at-home for monitoring and intravenous therapy. Readmission rate at 30 days is a standard NHS quality indicator and our rate of 7% is lower than the overall 2018/19 NHS rate of 14.4% in England.^{6,17} Data on readmission rates from ambulatory care are sparse and rates will vary with patient selection – a UK AEC with a 1.3% inpatient admission rate reported a 'negligible' readmission rate.⁵

Our experience highlighted several useful steps in establishing an AEC. To allay initial concerns from some clinicians about the safety of ambulation, we undertook robust clinical governance including review of all deaths within 30 days of discharge. Medical trainees rotated through both AEC and inpatient pathways. Referral audit helped ensure that existing community pathways were not inappropriately circumvented. The service expanded rapidly, and a second duty consultant was able to reduce pressure on the phone holder.

Early identification of patients requiring inpatient admission is important, along with a clear operational plan for moving them before the unit closes. It is important for the radiology department to understand that rapid diagnostic imaging is essential for the hospital to run an AEC. A hospital-at-home team can mitigate risk by monitoring patients at home and facilitating intravenous therapy, especially with once-daily intravenous antibiotics under microbiological guidance. Learning from patient feedback, we now give patients an early estimation of how long they might be on the AEC. Overall, patients are positive about the AEC and the avoidance of hospital admission.

Planned developments include increased point-of-care testing and video calls with our ambulance service for triage to home, ambulatory or inpatient care. Longer opening hours may capture patients who are sent to the non-ambulatory pathway and then discharged home. Training clinicians in risk management and strengthening evidence to guide decisions on ambulation will be important moving forwards. With our ambulation-by-default approach, there is one standard pathway for all urgent medical care, which includes an early fork for the minority who need admission to an inpatient bed. Ambulatory care reduces inpatient bed requirements and our outcomes demonstrate the value and safety of an inclusive, clinician-driven approach policy to patient selection. ■

Supplementary material

Additional supplementary material may be found in the online version of this article at www.rcpjournals.org/FHJ:

- S1 – Supplementary methods.
- S2 – Supplementary figures.
- S3 – Supplementary tables.

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References

- 1 Steventon A, Deeny S, Friebe R, Gardner T, Thorlby R. *Emergency hospital admissions in England: which may be avoidable and how?* The Health Foundation, 2018. www.health.org.uk/publications/emergency-hospital-admissions-in-england-which-may-be-avoidable-and-how [Accessed 3 September 2020].
- 2 McKeon A, Blunt I, Edwards N, Smith P. *NHS hospitals under pressure: trends in acute activity up to 2022*. Nuffield Trust, 2014. www.nuffieldtrust.org.uk/resource/nhs-hospitals-under-pressure-trends-in-acute-activity-up-to-2022 [Accessed 3 September 2020].
- 3 Trust C. *Oxford University Hospitals NHS Foundation Trust: Annual report and accounts 1 April 2017 – 31 March 2018*. Oxford University Hospitals, 2020. <https://www.ouh.nhs.uk/about/publications/documents/ouh-nhs-ft-full-accounts-2017-18.pdf> [Accessed 10 April 2020].
- 4 NHS. *The NHS Long Term Plan*. NHS, 2019. www.longtermplan.nhs.uk/wp-content/uploads/2019/01/nhs-long-term-plan-june-2019.pdf [Accessed 03 September 2020].
- 5 Carter A. The ambulatory care unit at Derriford Hospital. *Clin Med* 2014;14:250–4.
- 6 NHS Digital. *Hospital Episode Statistics (HES)*. NHS, 2020. <https://digital.nhs.uk/data-and-information/data-tools-and-services/data-services/hospital-episode-statistics> [Accessed 14 April 2020].
- 7 Lasserson DS, Subbe C, Cooksley T, Holland M. SAMBA18 report – a national audit of acute medical care in the UK. *Acute Med* 2019; 18:76–87.
- 8 NHS Digital. *Hospital Admitted Patient Care Activity 2018–19*. NHS, 2019. <https://digital.nhs.uk/data-and-information/publications/statistical/hospital-admitted-patient-care-activity/2018-19> [Accessed 14 April 2020].
- 9 NHS Digital. *Ambulatory care sensitive conditions (ACSC)*. NHS, 2019. <https://digital.nhs.uk/data-and-information/data-tools-and-services/data-services/innovative-uses-of-data/demand-on-health-care/ambulatory-care-sensitive-conditions#zero-length-of-stay> [Accessed 14 April 2020].
- 10 Reschen ME, Raby J, Bowen J *et al*. A retrospective analysis of outcomes in low- and intermediate—high-risk pulmonary embolism patients managed on an ambulatory medical unit in the UK. *ERJ Open Res* 2019;5:00184–2018.
- 11 Commissioning for Quality and Innovation (CQUIN). *CCG indicator specifications for 2019–20*. NHS, 2020. www.england.nhs.uk/wp-content/uploads/2019/03/ccg-cquin-1920-indicator-specifications-feb-2020.pdf [Accessed 14 April 2020].
- 12 Ala L, Mack J, Shaw R *et al*. Selecting ambulatory emergency care (AEC) patients from the medical emergency in-take: the derivation and validation of the Amb score. *Clin Med* 2012;12:420–6.
- 13 Thompson A, Wennike N. Testing the AMB score – can it distinguish patients who are suitable for ambulatory care? *Clin Med* 2015;15:222–4.

- 14 Royal College of Physicians. *National Early Warning Score (NEWS) 2*. London: RCP, 2017. www.rcplondon.ac.uk/projects/outputs/national-early-warning-score-news-2 [Accessed 03 September 2020].
- 15 Abbott TEF, Cron N, Vaid N *et al*. Pre-hospital National Early Warning Score (NEWS) is associated with in-hospital mortality and critical care unit admission: A cohort study. *Ann Med Surg (Lond)* 2018;27:17–21.
- 16 Shaw J, Fothergill RT, Clark S, Moore F. Can the prehospital National Early Warning Score identify patients most at risk from subsequent deterioration? *Emerg Med J* 2017;34:533–7.
- 17 NHS Digital. *3.2 Emergency readmissions within 30 days of discharge from hospital – Specification 1.4*. NHS Digital, 2020.

https://digital.nhs.uk/data-and-information/publications/statistical/ccg-outcomes-indicator-set/specifications/3.2-emergency-readmissions-within-30-days-of-discharge-from-hospital_1_4 [Accessed 03 September 2020].

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