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Research Article

Allocation of Extra Surgical Staff in Surgical Assessment Unit (SAU) - An Effective Strategy for Improvement?

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Abstract

Background: SAU is a recognized model of care in managing acute surgical patients, but limited resources and growing workload are affecting its efficiency. This study aimed to assess if the allocation of an extra registrar in surgical assessment unit would increase its efficiency.

Methods: We routinely record patient arrival, triage, junior doctor (house officer/senior house officer) and senior doctor review (registrar) times in our SAU. Data was collected retrospectively for all general surgical patient waiting times and number of patients discharged in June/July 2018 over 20 days. In the second part of the study, after allocation of a second duty registrar during peak times (14:00-18:00hrs), data was prospectively collected for the same parameters during June/July 2019. In both cycles of study, the data was collected from Monday to Friday between (08:00-20:00 hours). This allowed us to compare both sets of data fairly. We statistically analysed the data using 2 tailed t tests.

Results: The total number of patients in 1reg and 2reg studies were 182 and 196 respectively. In the 1reg group, the mean waiting times from patient triage to senior doctor review and junior to senior doctor review were 154 and 121 minutes respectively. These times were 110 and 75 minutes respectively in the 2reg group. Statistical analysis revealed that waiting times were significantly shorter (p=0.001, P=0.0003) in the 2 reg group. The number of patients discharged

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in 1reg and 2reg groups were 77 and 103 respectively (p=0.01). The patient triage times by nursing staff and junior doctor review times were not statistically different in both groups.

Conclusion: The allocation of a second registrar in surgical assessment unit allows earlier senior review and decision making which decreases the patient waiting time and increased number of patient discharges thereby improving quality of care provided to the patients.

Keywords

Registrar; Surgery; Assessment; Efficiency; Training; Safety

Introduction

Surgical Assessment Unit (SAU) is a model of care recognized in the management of non-elective general surgical admissions [1]. It has been introduced in many countries, including United Kingdom, Australia and New Zealand [2]. It was originally introduced in the UK in 2002 and Australia in 2005 [3-6]. This concept allows a quicker route to recognize acute cases by the on-call team. This in turn allows rapid diagnosis, and early access to operating theatres if required. In the past, before the concept of SAU was widely applied, general surgical emergencies would be fragmented and interrupted as the on-call team was also responsible for elective lists and Outpatient clinics [7]. Nowadays, SAU is an established and widely accepted model that has become the hub of emergency surgical activity. It facilitates the provision of care to all surgical admissions in one ward and there is a dedicated emergency team (on-call team) and NCEPOD (National Confidential Enquiry into Patient Outcome and Death) theatre list to deal with general surgical emergencies. It also provides good training and teaching opportunities for surgical doctors, medical students and nursing staff as acute surgical and urological cases are concentrated in the SAU [8].

An ageing population and higher pressure on health services has created a higher demand for surgical emergencies [9]. Currently emergency general surgery represents over fifty percent of the workload in a surgical department and the number of patients presenting as surgical emergencies is going up by nearly 5% per year [10-12]. The higher demands from SAU and A and E (Accident and Emergency) are causing difficulty in coping with the workload. There is also the challenge to meet the 4 hour patients' waiting target in the A and E department [11,12]. The A and E departments are increasingly busy and SAU helps to divert a substantial number of patients from A and E where patients can be rapidly assessed and managed by surgical team [8]. However, these units, which per se are already busy, have limited resources and should be staffed adequately to deal with the increasing workload. For the current higher demands, the present model of SAU needs to adapt in order to face such strains in the public sector.

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The rise in the number of patients referred to SAU has led to an increase in patient waiting times, leading to delays in management and treatment provided [13,14]. Postponements and delays in surgical treatment are frequently recognized as a risk factor to cause adverse consequences in emergency surgery and can progress to increased mortality rates [15,16]. There are multiple studies that show a higher rate of post-operative complications occurring when surgery is delayed [4,5,17]. The growing workload of emergency general surgeries for only one registrar and consultant may not be enough to tackle the prolonged waiting times. The waiting time situation can also be difficult to improve long-term if the variation in supply does not adapt to variation in demand [18,19]. Several clinical and non-clinical outcomes have been described after the implementation of SAU across a number of institutions in UK, Australia and New Zealand. Length of hospital stay and after-hours theatre time utilization were identified as the predominant outcomes at most centres [2,4,6,20-23]. To our knowledge, no study has been published in regard to the correlation between the addition of a second Registrar (SpR) in SAU and its consequent impact on the patient waiting times to see the doctors. In this study we aimed to assess the impact of the allocation of a second on call registrar on patient waiting times in SAU.

Methods

The SAU has been running in our hospital since 2008. There are six trolleys and 4 examination rooms for patients' assessment, with a seating area in the waiting room for 15 more patients. The unit is staffed 24 hours a day by at least 4 registered nurses during daytime and 3 during the night, trained in looking after acute surgical patients. The registered nurses are helped by health care assistants. There are dedicated ward clerks and ancillary support workers during working hours. The unit is also supported by laboratory and radiological services with computer link to the results and electronic patients record. The on call team comprises of a consultant, specialty registrar (ST3+), senior house officer (Core Trainee 1/2, Clinical fellow or Foundation Year 2) and House officer (Foundation Year 1). The consultants do 24 hours non-resident on call while junior doctors do 13-hour shifts. The dedicated-on call team has no elective commitments. For the purpose of the study, peak times were identified from the SAU database and an extra duty registrar was allocated during peak times to assess its impact on general surgical patients waiting times to see the doctor. Other surgical specialties including ENT, Orthopaedics, Urology, Ophthalmology and Maxillo-facial were excluded from the study.

The study presents a closed loop audit. We routinely record patient arrival, triage, junior doctor (house officer/senior house officer) and senior doctor review (registrar) times in our SAU. In the first cycle of study, data was collected retrospectively for all general surgical patient waiting times and number of patients discharged in June/July 2018 over 20 days. In the second part of the study, after allocation of a second duty registrar during peak times (14:00-18:00hrs), data

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was prospectively collected for the same parameters during June/July 2019. In both cycles of study, the data was collected from Monday to Friday between (08:00-20:00 hours). This allowed us to compare both sets of data fairly. We statistically analysed the data using 2 tailed t tests. A P-value of less than 0.05 was considered to be significant.

Results

On average, our SAU receives more than 200 acute surgical referrals per week. During the study period a total of 378 patients were included. Of these, 182 and 196 patients were included in the 1reg and 2reg data sets respectively. The time interval between arrival, triage and doctors' review in the unit were recorded. On arrival in the SAU, all patients were initially triaged by a registered nurse on arrival in the SAU. The times that patients waited to see a nurse, junior and senior doctors are shown in Table 1. In the 1reg study, 182 patients, for whom this information was recorded, had a mean waiting time (range) from triage to senior doctor review and junior to senior doctor review, of 154 (0-780) and 121 (0-710) minutes respectively. In the 2reg group the times were 110 (0-484) and 75 (0-420) minutes respectively, which were significantly shorter (p=0.001, p=0.0003).

The patient triage times by nursing staff and junior doctor review times were not statistically different in both groups. The addition of second registrar also led to increased number of patients discharged. The number of patients discharged in 1reg and 2reg groups were 77 and 103 respectively (Fig. 1) showing statistically significantly increased number of discharges in the 2reg group (p=0.01).

	1Reg (n=182)	**2Reg (n=196)**	**P-value**
Arrival to triage	28.3 (0-290)	28.6 (0-157)	NS
Arrival to JD	59.6 (0-680)	59.7 (0-365)	NS
Arrival to SD	180.3 (0-780)	130 (0-480)	0.0002
Triage to SD	154.4 (0-780)	109.7 (0-484)	0.001
JD to SD	121.4 (0-710)	75.1 (0-420)	0.0003

Table 1: Patient review times. (Table shows the mean waiting times and ranges in brackets for surgical patient review in SAU by junior (JD) and senior doctors (SD). Junior doctors are senior house officers (core trainee, clinical fellows year 1/2, foundation year 2) and house officers (foundation year1). Senior doctors are specialty registrar (ST3+). Time is shown in minutes).

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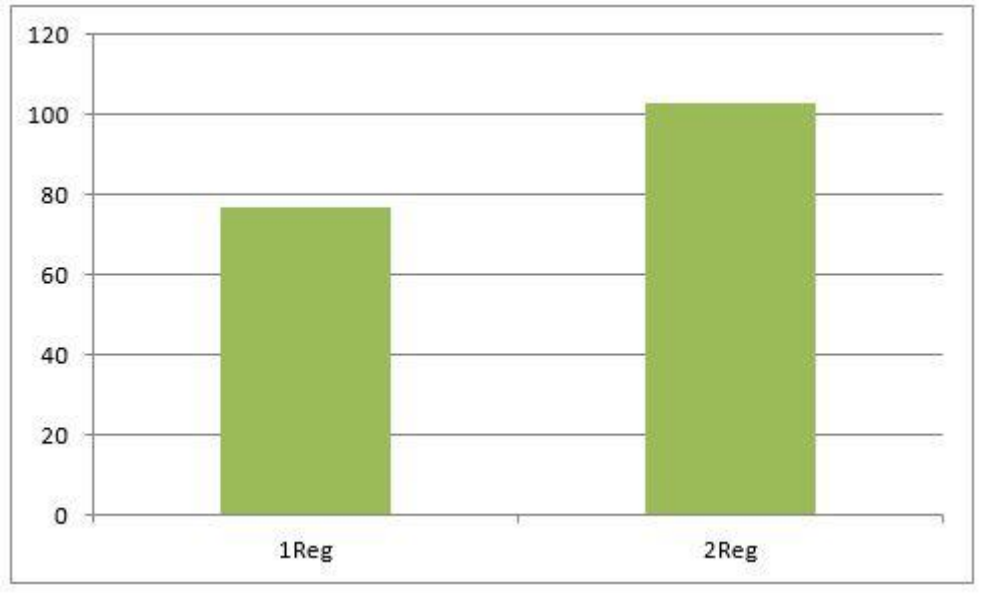

Figure 1: Comparison of number of patients discharged in both studies. (The number of patients discharged in the 2reg study were significantly more when compared to 1reg study (P=0.01)).

Discussion

The main goal of this paper is to outline how increased efficiency can be achieved in the current state of practice regarding the SAU model in UK. In our complete audit loop study, the significance of introducing a second on call registrar in SAU was explored. It is unique as we couldn't find another similar study in the literature. Our study supports the hypothesis that a second registrar in SAU decreases patient waiting times to see the senior doctors. This reduction in waiting times may reflect the improved patient flow through the surgical pathway in several areas including reduced waiting time for surgery, decreasing pressures on the accident and emergency department and a reduction in patient length of stay in SAU. Our study also showed that the impact of second registrar led to increased number of patient discharges from SAU. The fundamental aims of introducing SAU are to improve patient care and system efficiency. We have gone one step further in our study and demonstrated that addition of an extra registrar can further enhance the efficiency of SAU and improve patient care. The surgical patients are likely to receive treatment sooner and the ED may improve their National Emergency Access Target (NEAT) compliance rates [24].

Patients' length of stay is a key indicator for success of SAU model and central to addressing some of the prevailing issues faced by hospitals including increasing emergency surgical demands and increasing hospital costs [2,6,20-23]. Several studies have supported a reduced hospital length of stay (LOS) for acute general surgical patients with the implementation of SAU [6,20-22]. This shows that the SAU model decreases patient LOS. The efficacy of a SAU

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model also depends on low complication rates. Two studies showed a statistically significant reduction in postoperative complications with the SAU [21,23]. Additionally, two papers showed a statistically significant reduction in time to surgery with the SAU [20,22]. Reduced waiting time for a definitive procedure shortens overall LOS. Both early assessment and quicker time to surgery can lead to a reduction in both operative and general complications and may reduce the need for ongoing ward treatment and LOS. The addition of second registrar in our study facilitated early decision making and management of surgical patients which could potentially further decrease the LOS and complications.

The SAU model has proven its utility in decreasing pressure on A and E. Two studies demonstrated a reduction in time to ED assessment with the implementation of an SAU [2,6]. This is due to diversion of patients to SAU from General practitioners (GPs) who would have been seen in A and E and hence would occupy space in A and E. This utility will enhance even more if the SAU is run more efficiently. In our study there were increased number of patient discharges which led to improved patient flow and decreasing pressures on A and E. This increased number of discharges together with decreased LOS can also decrease the financial burden on NHS hospitals. This is so vital when NHS is already under much financial pressures. An efficient SAU can allow better operative list planning and reduced cancellations and disruptions to elective surgical lists too.

Our study has several limitations. It is a single institution study with half of the data collected retrospectively and it is not an experimental study. However, it is a closed loop audit which has exhibited improvement in the service provision. It has not included the financial impacts of implementing this SAU model of care. As the grade of the registrars is not mentioned in our study, the results are subject to a variation and bias considering their experience and expertise. The recorded times are reliant on human operators and there can be a spectrum of error. There is also potential for bias as the 2reg model would have been subjected to motivation by this audit to ensure timely review whereas the 1reg model was not subjected to a prospective audit. Further studies are required to appreciate the applicability of certain aspects of the SAU model, the cost of implementing such a model, staff satisfaction with the model and, importantly, patient outcomes.

Conclusion

The allocation of a second registrar in surgical assessment unit allows earlier senior review and decision making which decreases the patient waiting time and increases number of patient discharges thereby improving quality of care provided to the patients.

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Conflict of Interest

It is stated that there are no conflicts of interest between the proponents and participants in the present work.

References

1. Nagaraja V, Eslick GD, Cox MR. The acute surgical unit model verses the traditional 'on call' model: a systematic review and meta-analysis. World J Surg. 2014;38(6):1381-7.
2. Hsee L, Devaud M, Middelberg L, Jones W, Civil I. Acute surgical unit at Auckland city hospital: a descriptive analysis. ANZ J Surg. 2012;82(9):588-91.
3. Rowe PH, Lawrence WT, Fellows E. The management of emergency surgical patients in a surgical assessment unit. Bull R Coll Surg Engl. 2003;85(8):274-7.
4. Parasyn AD, Truskett PG, Bennett M, Lum S, Barry J, Haghighi K, et al. Acute-care surgical service: a change in culture. ANZ J Surg. 2009;79(1-2):120-8.
5. Cox MR, Cook L, Dobson J, Lambrakis P, Ganesh S, Cregan P. Acute surgical unit: a new model of care. ANZ J Surg. 2010;80(6):419-24.
6. Conrady DV, Hamza S, Weber D, Kalani K, Epari K, Wallace M, et al. The acute surgical unit: improving emergency care. ANZ J Surg. 2010;80(12):933-6.
7. Kinnear N, Britten-Jones P, Hennessey D, Lin D, Lituri D, Prasannan S, et al. Impact of an acute surgical unit on patient outcomes in South Australia. ANZ J Surg. 2017;87(10):825-9.
8. Mohamed MS, Mufti GR. The surgical assessment unit-effective strategy for improvement of the emergency surgical pathway? J R Soc Med. 2005;98(1):14-7.
9. Bugliosi TF, Meloy TD, Vukov LF. Acute abdominal pain in the elderly. Ann Emerg Med. 1990;19(12):1383-6.
10. Iain A. The future of emergency general surgery - a joint document. Assoc Up Gastrointest Surgeons G B Irel. 2015.
11. Campbell WB, Lee EJK, Van de Sijpe K, Gooding J, Cooper MJ. A 25-year study of emergency surgical admissions. Ann R Coll Surg Engl. 2002;84(4):273-7.
12. Chezhian C, Pye J, Jenkinson LR. The next millennium are we becoming emergency surgeons? A seven year audit of surgical and urological admissions in a rural district general hospital. Ann R Coll Surg Engl. 2001;83(2):117-20.
13. Kreindler SA. Policy strategies to reduce waits for elective care: a synthesis of international evidence. Br Med Bull. 2010;95:7-32.
14. Hansson J, Tolf S, Øvretveit J, Carlsson J, Brommels M. What happened to the no-wait hospital? A case study of implementation of operational plans for reduced waits. Qual Manag Health Care. 2012;21(1):34-43.
15. Karanikas, ID, Td L, Ss K, Se T, Ss D. Emergency operations in the elderly: management and outcome. Int Surg. 1996 Apr 1;81(2):158-62.
16. Kettunen J, Paajanen H, Kostiainen S. Emergency abdominal surgery in the elderly. Hepatogastroenterol. 1995;42(2):106-8.
17. North JB, Blackford FJ, Wall D, Allen J, Faint S, Ware RS, et al. Analysis of the causes and effects of delay before diagnosis using surgical mortality data. Br J Surg. 2013;100(3):41925.
18. Van Rooij P. Waiting lists and waiting times in health care -managing demand and supply. HOPE Standing Comm Hosp EU. 2001;49.
19. Silvester KLR, Bevan H. Reducing waiting times in the NHS: is lack of capacity the problem? Clinician in Management [Internet]. 12th ed. 2004 [last Accessed on: November 18, 2021] http://connection.ebscohost.com/c/articles/15289290/reducing-waiting-times-nhs-lack-capacity-problem
20. Shackleton SD, O'neill CJ, Shah K, Wills VL. Gs22 *the provision of a dedicated acute general surgical unit improves the management of patients with acute gall bladder disease. ANZ J Surg. 2009;79(s1):A29.

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21. Lehane CW, Jootun RN, Bennett M, Wong S, Truskett P. Does an acute care surgical model improve the management and outcome of acute cholecystitis? ANZ J Surg. 2010;80(6):438-42.
22. Pepingco L, Eslick GD, Cox MR. The acute surgical unit as a novel model of care for patients presenting with acute cholecystitis. Med J Aust. 2012;196(8):509-10.
23. Gandy RC, Truskett PG, Wong SW, Smith S, Bennett MH, Parasyn AD. Outcomes of appendicectomy in an acute care surgery model. Med J Aust. 2010;193(5):281-4.
24. Sullivan C, Staib A, Khanna S, Good NM, Boyle J, Cattell R, et al. The National Emergency Access Target (NEAT) and the 4-hour rule: time to review the target. Med J Aust. 2016;204(9):354.

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