

North Pacific Surgical Association

Acute care surgery: the impact of an acute care surgery service on assessment, flow, and disposition in the emergency department

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Abstract

BACKGROUND: Acute care surgery (ACS) services are becoming increasingly popular.

METHODS: Assessment, flow, and disposition of adult ACS patients (acute, nontrauma surgical conditions) through the emergency department (ED) in a large health care system (Calgary) were prospectively analyzed.

RESULTS: Among 447 ACS ED consultations over 3 centers (70% admitted to ACS), the median wait time from the consultation request to ACS arrival was 36 minutes, and from ACS arrival to the admission request it was 91 minutes. The total ACS-dependent time was 127 minutes compared with 261 minutes for initial ED activities and 104 minutes for transfer to a hospital ward ($P < .05$). Forty percent of patients underwent computed tomography (CT) imaging (76% before consultation). The time to ACS consultation was 305 minutes when a CT scan was performed first.

CONCLUSIONS: An ACS service results in rapid ED assessment of surgical emergencies. Patient waiting is dominated by the time before requesting ACS consultation and/or waiting for transfer to the ward.

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Acute care surgery (ACS) is a distinct surgical service dedicated to the urgent assessment and treatment of adult patients with general surgical emergencies.¹ More specifically, this model of health care surrounds the optimal treatment of patients with intra-abdominal surgical crises.¹ In Canada, this excludes patients with traumatic injury because of separate and highly organized trauma services.² Despite the immense pop-

ularity of this new service delivery model in both Canada and the United States, the local delivery and structure can vary significantly from hospital to hospital. However, irrespective of regional differences, common principles in a mature, dedicated ACS program should incorporate the following: (1) surgeons with a focused academic and clinical interest in patients with surgical emergencies; (2) the evolution of a fellowship training program specific to this subspecialty; and (3) evidence-based research centered on improving outcomes in patients with nontrauma emergencies.¹

Emergency department (ED) overcrowding occurs when the demand for acute care exceeds the resource pool of

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physicians and nurses able to provide timely and quality resuscitations, diagnostics, and therapies.^{3–5} This increasingly common issue has become a significant hurdle to providing quality health care to patients in their most significant time of need. There is a recent suggestion that the implementation of a formal ACS service may decrease ED length of stay for patients with both appendicitis^{6,7} and other general surgical diagnoses.⁸

The Calgary Health Region is a centrally organized health care system that cares for all patients in a geographically diverse area comprised of over 1 million people. This centralized structure and population-based capture has allowed for the development of ACS services at each of our adult medical centers that share dominant guiding principles as well as the acquisition of truly population-based data. The Calgary ACS service (Acute Care Emergency Surgery Service [ACCESS]) was established on February 1, 2004. The primary goal of this study was to evaluate the flow of patients with urgent general surgical issues through the ED in the context of an ACS/ACCESS service. The secondary objective was to compare patient-related variables between 3 medical centers within the Calgary health region.

Material and methods

Data for all ED visits at each of the 3 Calgary adult hospitals (Foothills Medical Centre [FMC], Peter Lougheed Centre [PLC], and Rockyview General Hospital [RGH]) from March 1 to 31, 2011, that involved an ACCESS consultation request was obtained through the Regional Emergency Department Information System (REDIS). Patient identifiers, the hospital site, disposition, admitting service, and time stamps ED triage, emergency room physician (ERP) assessment, ACCESS request, hospital admission request, and ED time stamps discharge/disposition were examined. Start times for operating room (OR) procedures were provided by the Operating Room Information System.

Health record chart reviews were conducted to confirm data provided through REDIS and collect time stamps for consultations and designation of the initial ACCESS responder (36 [7%] data elements were incorrect). Time stamps were also collected for diagnostic procedures and consultations by other specialty services. Most patients were referred by ERP, but data also captured patients referred to ACCESS via other sources (eg, direct referrals to general surgery, consults from other hospital services, and transfers from other medical facilities). If a patient left against medical advice, the discharge times indicated by REDIS were considered inaccurate.

Calculated wait times included the time from ED triage to the ERP initial assessment, the time from the ERP initial assessment to the ACCESS request, the time from the ACCESS request to the initial consultation, the time from the initial consultation to the admission request, the time from the admission request to ED discharge, and the total time from

ED triage to ED discharge. Wait times were also compiled with regard to CT scan request and patient arrival in the OR.

Although all 3 Calgary centers share similar ACS-related principles (dedicated ACCESS surgeon for a 7-day interval), each center delivers ACCESS care in a slightly different manner. FMC is most commonly staffed with both a junior and senior call resident but has no “home” ward for ACCESS inpatients. PLC has a mixture of junior and/or senior residents and dedicated OR time 4 days a week for ACCESS-specific cases. However, postoperative patients are removed from the ACCESS service and transferred to the operating surgeon’s elective practice. RGH has the highest volume experience in conjunction with a significant clustering of patients on a single inpatient ward and dedicated OR time. It is also often functions without resident trainees on call.

Analysis was performed using Stata version 8.0 (Stata Corp, College Station, TX.). Data were reported as means when normally distributed and medians when nonnormally distributed. Means were compared using the Student *t* test and medians using the Mann-Whitney *U* test. Differences in proportions among categorical data were assessed using the Fisher exact test. A *P* value less than .05 was considered to represent statistical significance for all comparisons.

Results

During the 1-month study period, 447 adult patients were referred for assessment and/or care by the ACCESS team (FMC = 142, PLC = 138, and RGH = 167). Overall, 70% (314/447) of all referred patients were admitted by the ACCESS service compared with 21% admitted to other services and 9% discharged/left against medical advice.

The median wait times for each stage of a patient’s voyage through the ED are described in Table 1. The overall wait time from ACCESS request to actual consultation was 36 minutes. This remained constant for patients (314) who were actually admitted to the ACCESS service (36 minutes) but was shorter when compared with patients eventually admitted to a non-ACCESS service (51 minutes). The overall wait time from the initial ACCESS team arrival to the decision to admit was 91 minutes. FMC was slower with regard to both the time to arrival of the ACCESS team and the time from ACCESS arrival to the decision to admit when compared with both PLC and RGH (*P* < .05). RGH also displayed a shorter time from ACCESS arrival to the decision to admit than FMC and PLC (*P* < .05). The overall wait time from the ACCESS consultation request to actual admission to a non-ACCESS service was 391 minutes.

When grouped together, the total ACCESS-dependent ED wait time (time from the ACCESS request to admission) was 127 minutes compared with 261 for all initial ED activities and 104 minutes for waiting for transfer to a hospital inpatient bed (total = 365 minutes). If admitted to the ACCESS service, the total ACCESS-dependent time decreased to 115 minutes (*P* > .05).

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