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Characteristics of patients who are acutely admitted to hospital under surgical care and do not have a surgical procedure – Is there an alternative to admission?☆

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ABSTRACT

Introduction: Previous work has shown that 56% of all acute surgical admissions in Ireland in 2012 did not have a formal surgical procedure. In light of the pressures on health systems internationally and the lack of relevant data on this topic in the literature, we examined the characteristics of this cohort of patients in Ireland.

Methods: Discharge data on acutely admitted patients who did not undergo a surgical procedure was extracted from the Hospital Inpatient Enquiry (HIPE) database for the year 2013. These were analysed by age, sex, diagnoses, procedures performed and length of stay in hospital.

Results: In 2013, 63,079 patients were admitted acutely under surgical care and then discharged without undergoing a formal surgical procedure compared to 49,903 who had a surgical procedure. Most of the discharges not having formal surgery were treated by general surgical specialities (n = 41,434) and the average length of stay was 4.8 days. Approximately half of these patients (n = 32,194) did not have any HIPE coded procedure, surgical or otherwise, during their admission into hospital.

Conclusions: A considerable number of patients were admitted to Irish surgical units in 2013 and were discharged again without any formal surgical intervention. We postulate that some of these patients may not require admission to hospital and outline mechanisms which may prevent admissions Such mechanisms could allow for greater capacity for scheduled patients in currently overstrained surgical units.

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Introduction

Collaborative institutions (National Clinical Programmes) have been set up to optimise the quality of patient care in Ireland through the efficient and effective use of the available resources.[1] The Irish health system has become increasingly challenged by an ever greater burden of illness, demographic changes, and resource, capacity and economic pressures leading to difficulties in the provision of surgical care, prolonged waiting lists and frequent cancellations.[2,3] One approach to resolving some of these problems is to recognise present inefficiencies and waste, analyse their extent and then to adopt new and better practices and performance behaviours.

As part of the Model for Care for Acute Surgery, published in 2013, we were surprised to observe that 56% of all patients admitted acutely into hospitals in Ireland under surgical care did not undergo a formal (knife-to-skin) surgical procedure prior to discharge.[4] As there is a paucity of relevant data, nationally or internationally, addressing this topic we have set out to examine the characteristics of this cohort of patients in the Irish setting. Leading from this we will endeavour to outline some alternative evidence based strategies in ambulatory emergency care which are aimed at reducing hospital admissions for this group of patients.

Methods

Cohort characteristics

Patient data was extracted from the HIPE (Hospital Inpatient Enquiry) database for the year 2013; all patient episodes of care were included if they were acutely admitted under surgical care but did not have a formal surgical procedure performed whilst in hospital. Information about the patients sex, age, day of admission and discharge, primary diagnosis made in hospital, non-surgical procedures completed, model of hospital in which the patient was admitted and the length of stay in the hospital were all recorded.

Patients admitted acutely under surgical care who did not have a formal surgical procedure were analysed to see if they had undergone some other procedure that was recorded in HIPE. This could have included such things as endoscopy, radiological procedures or allied health interventions. For the purposes of this study we identified these as "non-surgical procedures".

Data source

Data was obtained from the Hospital Inpatient Enquiry (HIPE) system which is run by the Healthcare Pricing Office as part of the Health Service Executive.[5] The system gathers discharge data from 54 hospitals. Each patient episode is coded using the International Classification of Disease, 10th Edition, Australian Modification (ICD-10-AM) for diagnosis, and the Australian Classifications for Health Interventions (ACHI) for procedures performed in hospital.[6] These codes can be grouped into Clinical Classifications System (CCS) categories which sub-divide the numerous ICD codes ($n = 18,955$) and amass them into clinically meaningful CCS categories ($n = 264$).[7] We acknowledge the well-recognised limitations of administrative databases such as this.[8]

Hospitals can be sub-classified into four models based on the levels of activity/complexity of procedures/conditions cared for in them, as described in the Acute Medicine Model of Care.[9] This describes 4 levels of acute hospitals: model 4 – tertiary hospital; model 3 – general hospital; model 2 – local hospital with selected (mostly GP referred) medical patients; and model 1 – community/district hospitals mostly run by GPs.

Statistical analysis

Data was stored in a Microsoft Excel® spreadsheet (Windows, Redmond, WA). Rank lists of the cohort were created using the Subtotal function in Excel, with basic descriptive statistics carried out using the formulae function. Other statistical analysis (ANOVA, Tukey HSD) was carried out using SPSS Statistics 21 (IBM, Armonk, NY). Graphical display of the data was created using Microsoft Excel®.

Results

Patient, hospital and surgical specialty characteristics

In 2013, there were 483,838 acute and elective surgical discharges (162,935 inpatient and 320,903 day cases) from Irish hospitals, of which 112,982 had been admitted acutely (98,375 inpatient and 14,607 day cases).

There were 63,079 acute surgical discharges that did not have any formal surgical procedure, representing 13% of all surgical discharges. This included 53,956 inpatients (33.1% of all surgical inpatient discharges) and 9123 same day discharges (2.8% of all surgical day cases) and, of these, 51% were female and 49% male.

Their age distribution is shown in Fig. 1. The majority of patients were discharged from Model 3 ($n = 34,266$, 54%) or Model 4 Hospitals ($n = 26,412$, 42%), with only a small percentage of patients being discharged from Model 2 Hospitals ($n = 2,012$, 3%) or traditionally non-surgical hospitals (rehabilitation, hospices, respiratory, psychiatric etc.; $n = 389$, 1%).

Most patients were discharged having been under general/gastrointestinal surgical specialties ($n = 41,434$), with orthopaedics ($n = 6514$), otolaryngology ($n = 3304$), gynaecology ($n = 2922$), and urology ($n = 2160$) making up the bulk of the remaining discharges from all the surgical specialties.

Diagnoses

The twenty most common ICD-10 diagnoses seen in the cohort are listed in Table 1.

Most of the diagnoses relate to conditions causing abdominal symptoms (non-specific abdominal pain, diverticulitis, constipation etc.), soft tissue infections and head injuries. Grouping the diagnoses into CCS categories (Table 2) affords a more meaningful examination of groups of clinically relevant diagnoses; this again shows the predominance of abdominal conditions, soft tissue infections, genitourinary,

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