Understanding the distribution of A&E attendances and hospital admissions for the case managed population: A single case cross sectional study

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ARTICLE INFO

ABSTRACT

Aim: To describe the characteristics of case-managed patients presenting at accident and emergency (A & E) and to explore the distribution of their attendances and admissions.

Background: Recently, the UK Government announced extended-hours primary care provision in an effort to reduce the growing utilization of A & E. No evidence is available to understand the use of acute services by this high-risk patient group.

Method: A cross-sectional design utilising routinely collected anonymsed A & E attendance and hospital admission data from 2010 to 2015.

Results: The case-managed population is typically 70 years and older and most often arrive at A & E via emergency services and during the night (00:00–08:59). A large proportion are subsequently admitted having a statistically significant A & E conversion rate. No variables were predictive of admission.

Conclusion: The high level of A&E conversion could indicate case-managed patients are presenting appropriately with acute clinical need. However, inadequate provision in primary-care could drive decisions for admitting vulnerable patients.

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1. Introduction

Long-term conditions (LTCs) are diseases, which currently have no cure but can be managed by medication and other therapies (Department of Health, 2005a). Patients with LTCs account for a large number of all inpatient bed days and pose an increasing burden on NHS resources (Department of Health, 2008). Preventing people from being admitted to hospital is a priority for the NHS for several reasons, including the high and increasing cost of this care in comparison to other forms of care, as well as disrupting elective care by increasing waiting lists (Department of Health, 2005b). The number of people suffering from one or more LTC is expected to rise with the ageing demographic and thus pose a significant burden to the NHS and healthcare organisations alike (Age UK, 2015). By 2020, 7 million people in England aged over 60 are likely to have two or more long-term conditions (NHS Confederation, 2016). The British government recognised this burden and implemented the NHS and Social Care long-term conditions model, which launched in England in 2005; the case management programme was the priority action for reducing this burden (Department of Health, 2005c). The purpose of this programme was to reduce hospital admissions and improve quality of life by offering integrated and holistic care management to patients with complex, multiple long-term conditions at risk of hospitalisation. The evaluation of the two-year pilot programme indicated that it had not reduced hospital admissions, but the patients and carers valued the service in other ways such as the case manager's clinical skills and availability and appreciated the service (Gravelle et al., 2007). In 2013, a £50 million pilot scheme was announced to extend the hours of primary health care over growing concerns of the burden on A & E and speculation that the operating hours of primary care were forcing patients to overuse A & E services out-of-hours (NHS England, 2014, Lazou, 2015). This raises the question of whether the Monday to Friday standard operating hours of the case management programme result in a disproportionate amount of out-of-hours hospital admissions for its patient population.

2. Background

The NHS and global healthcare is challenged with providing high quality care and support for people suffering with long-term conditions.

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It is estimated 17. 5 million adults in Great Britain are living with chronic disease (Department of Health, 2005b; Ham & Singh, 2006); moreover, individuals with chronic disease account for 80% of all GP consultations (Department of Health, 2005a). Five per cent of these patients also account for 42% of annual bed use and 33% of unplanned emergency admissions. In 2013/2014, there were over 2.2 million emergency admissions to English hospitals of people aged over 60, at a cost of £ 3.4 billion (NHS Confederation, 2016).

Prior to 2004, community provision was seen as inflexible, struggling and reactive rather than proactive (Department of Health, 2005b, 2005c). By reducing unplanned admissions and improving supportive care in the community, cost savings in the region of £400 million per year were estimated (Department of Health, 2005c). Policy drivers and the need to improve the quality of life of those with LTCs have been crucial in shaping this new model of care delivery by case management.

Case managers are highly skilled advanced nurses with Masters level training and independent prescribing skills and are seen as key in delivering planned, coordinated and personalised care to adults with long term complex needs (Department of Health, 2004, 2005b; Ham & Singh, 2006). In Department of Health policy, the strategic aim of introducing 3000 case managers was to reduce reliance on hospital care, increase the range and responsiveness of community services, improve the quality of care for people with LTCs and plan for, predict and prevent crises in care management. Hutt, Rosen, and McCauly (2004) wrote that case managers should support new ways of working to reduce unplanned admissions.

Much debate has arisen following the Gravelle et al. (2007) publication that indicated there was no reduction in emergency admission rates to hospital regarding the effectiveness of services. Hutt and Rosen (2005) and Roland, Dusheiko, Gravell, and Parker (2005) further emphasised weak evidence in the reduction of hospital admissions, work force and training issues, and patient selection and identification stratification methods used in case management. The overuse of acute services has drawn recent media attention following a report which indicated a 'weekend effect' and it has been suggested that extended service hours of community provision could reduce the burden on the acute setting (Hamilton, Roberts, Dawson, & Trimble, 2016). Traditionally, the case management of patients is delivered between the hours of 8 am and 6 pm advancing the question; do case managed patients rely on acute service provision out-of-hours?

3. Methods

3.1. Aim

The aim of this study was to describe the characteristics of case managed patients presenting at accident and emergency and to explore the distribution of their attendances and admissions. In doing so, an understanding of the use of A & E services and admissions to hospital during standard operating hours and out of hours periods could be derived.

3.2. Design

A cross-sectional observational design was adopted utilising routinely collected A & E attendance and hospital admission data of a case managed population from an acute hospital trust in the West Midlands for the period 01.04.10–31.08.15. Where appropriate, the data was compared with publically available national Hospital Episode Statistics (HES) (Health and Social Care Information System, 2014) for the participating Trust and the area for the period 01.04.13–31.03.14.

3.3. Participants

A single NHS Trust within the West Midlands region provided A & E attendance and hospital admission data for the case managed population.

The Trust serves an urban population of over 450,000 and sees in the region of 100,000 emergency department visits per year. The Trust also provides community care services and the case management service is delivered within a virtual ward model. The virtual ward model provides multidisciplinary case management using the staffing, systems and daily routines of a hospital ward to deliver preventive hospital admission avoidance care to patients in their own homes (Lewis et al., 2011).

No direct human participation was required to conduct this study as routinely collected administrative data was utilised in an anonymised format. All recorded A & E episodes for the case managed population within the Trust were included for the period of 01.04.10–31.08.15 with the exception of two records for patients who were aged below 18. Since the case management population is only provided for patients over the age of 18, these records were erroneous and consequently excluded.

3.4. Data collection

Anonymised hospital episode statistics for attendance to the accident and emergency department were extracted from the participating Trust's electronic record system. Data for the period 01.04.10–31.08.15 were downloaded into comma-separated value (CSV) files. Variables provided included: gender, ethnicity, age, attendance date and time, referral source, primary diagnosis, primary investigation, length of stay (admission data) and attendance disposal.

3.5. Ethical considerations

University research ethical approval was granted for this study. Local research and development approval was sought, and a letter of access was granted. Data was provided in an anonymised format in accordance with the Data Protection Act 1997. University data protection guidelines for the collection and storage of research data were followed.

3.6. Data analysis

Analysis was undertaken using Microsoft Office 2015, Excel 15.0 (Microsoft, 2015) and SPSS version 22 (IBM, 2013). Descriptive statistics were applied to the whole dataset and where relevant, compared to the publically available HES for the year 2013/14 (Health and Social Care Information System, 2014). HES Data for the participating NHS Trust is referred to as 'provider level' and for the local region as 'area level'. Where appropriate, inferential statistics were applied according to the data type. For categorical data, Chi Squared of number association was applied, and for continuous data t-tests were conducted, P values were two-sided and <0.05 was considered statistically significant. A binary logistic regression was preformed to identify predictive factors for being admitted to hospital. The degree to which various statistical models fitted the observed data was compared using the Nagelkerke R-square value of the all-variable outputs.

3.7. Validity, reliability and rigour

Clear description of the process of analysis in the research protocol was an important factor in demonstrating the reliability of the research process (Roberts, Priest, & Traynor, 2006). To ensure rigour, the data was analysed by two of the researchers separately and then reviewed by a third. This promoted accuracy, dependability, trustworthiness and consistency.

4. Results

For the period 01.04.10–31.08.15, there were 9008 type 1 attendances at A & E representing 3355 case managed patients. The mean number of attendances per patient was 5.36 (mode = 1, median = 2, 95% CI [5.3, 5.42], range: 1–92).