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Research

Primary-contact physiotherapists manage a minor trauma caseload in the emergency department without misdiagnoses or adverse events: an observational study

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KEY WORDS

Physical therapy
Diagnostic imaging
Extended scope
Emergency department
Musculoskeletal

ABSTRACT

Questions: What proportion of people who are managed by a primary-contact physiotherapy service in an emergency department experience adverse events? For people presenting to the emergency department with minor trauma, does the length of stay differ between those managed by the physiotherapy service and those managed by medical staff? For people presenting to the emergency department with minor trauma, is diagnostic imaging ordered as often by the physiotherapy service as it is by medical staff? **Design:** Prospective, observational, cohort study. **Participants:** A consecutive sample of 1320 people presenting to an emergency department and managed by the physiotherapy service was analysed. Where possible, these patients were matched by diagnostic codes – typically for minor trauma including closed fractures of the periphery – to patients who were managed by medical staff in order to generate two matched cohorts for comparison. **Outcome measures:** The outcome measures were adverse events among the patients managed by the physiotherapy service, the average length of stay of each cohort in the emergency department, and the proportion of patients in each cohort who underwent diagnostic imaging studies, including plain radiographs, computerised tomographic scans, and ultrasound imaging studies. **Results:** No misdiagnoses or adverse events were identified for any patient managed by the physiotherapy service. The patients managed by the physiotherapy service had a significantly reduced length of stay (mean difference 83 minutes, 95% CI 75 to 91) and significantly fewer requests for each type of imaging than the matched patients managed by medical staff. **Conclusion:** Primary-contact physiotherapists can manage a minor trauma caseload in the emergency department without adverse events. A physiotherapy service in the emergency department may result in a reduced length of stay and fewer requests for imaging. However, potential confounding of the results for length of stay and imaging must be recognised because matching diagnostic codes may not ensure completely equivalent cohorts. **[Sutton M, Govier A, Prince S, Morphett M (2015) Primary-contact physiotherapists manage a minor trauma caseload in the emergency department without misdiagnoses or adverse events: an observational study. *Journal of Physiotherapy* 61: 77–80]**

Introduction

Physiotherapists are highly skilled clinicians with the ability to diagnose and treat a wide range of physical disorders, including musculoskeletal conditions and minor trauma. The expertise of physiotherapists in assessing and managing these conditions and the functional deficits associated with them may improve patient outcomes in the emergency department.[1] Also, in the context of an increasing drive to improve patient flow through emergency departments in Australia, it has been proposed that primary-contact physiotherapists with extended roles may reduce length of stay in the emergency department setting.[1–3] However, limited evidence exists to support these claims. While there is strong consumer satisfaction associated with these roles, no evidence currently supports the role of primary-contact physiotherapists in emergency departments at either a systemic or provider level.[4]

Imaging investigations are valuable and, at times, necessary tools to assist healthcare professionals in the diagnosis of many musculoskeletal and trauma-related conditions. However, imaging modalities such as plain radiography and computerised tomography (CT) do expose patients to substantial amounts of ionising radiation, so the rate and appropriateness of referral for these examinations are important safety issues. Any reduction in imaging rates would provide potential safety benefits for emergency department patients, as well as reducing associated healthcare costs. Reduced imaging rates may also improve productivity in the emergency department due to the large number of processes and staff requirements for imaging studies. Analyses have shown that imaging is an independent predictor of increased length of stay in the emergency department.[5,6] Thus, any reduction in the rates of imaging will potentially improve productivity, healthcare costs and patient safety.

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The main aim of this study was to evaluate the safety of a primary-contact physiotherapy service through the identification of any adverse events and misdiagnoses in the emergency department of a major metropolitan tertiary hospital in Australia. Secondary aims were to compare the length of stay and use of diagnostic imaging between two matched cohorts of patients with minor trauma: those managed by the physiotherapy service and those managed by the usual emergency department medical officers. Therefore, the research questions for this study were:

1. What proportion of people who are managed by a primary-contact physiotherapy service in an emergency department experience adverse events?
2. For people presenting to the emergency department with minor trauma, does the length of stay differ between those managed by the physiotherapy service and those managed by medical staff?
3. For people presenting to the emergency department with minor trauma, is diagnostic imaging ordered as often by the physiotherapy service as it is by medical staff?

Method

Design

This study was undertaken as part of an evaluation of a primary-contact physiotherapy service commencing in October 2012, and part of a national program to evaluate the impact of extended scope of practice roles for non-medical practitioners. All people presenting to the emergency department over a 12-month period were considered for inclusion in the study. All patients managed by the primary-contact physiotherapy service were analysed in order to identify the number of adverse events and misdiagnoses that occurred, using data collected by electronic capturing systems used as part of routine care.

All people presenting to the emergency department are assigned a diagnostic code as part of routine care by the treating physiotherapist, medical officer or nurse. This code is based on the International Classification of Disease (ICD) coding system developed by the World Health Organization, which contains over 13 000 separate diagnostic codes. Prior to study commencement, a list of all codes that were appropriate for the physiotherapy service, such as soft tissue injuries and simple closed peripheral fractures, was developed by the lead author and validated by a specialist in Emergency Medicine (MM). The final list included 444 diagnostic codes (Appendix 1). Any patient assigned one of these codes had additional data (length of stay, requests for medical imaging) collected by electronic capturing systems used as part of routine care for possible analysis in the study. These patients were then split into those managed by the physiotherapy service and those managed by usual medical staff. For each patient managed by the physiotherapy service, a patient with the same ICD code was sought amongst the medically-managed patients. Where more than one patient with the same code was available among the medically-managed patients, the match was selected randomly. These two matched cohorts were then compared for length of stay and for the proportions of patients for whom radiograph, CT and ultrasound diagnostic imaging were requested.

Patients, therapists, centre

The study was conducted within an emergency department at a tertiary metropolitan hospital in Australia. The physiotherapy service consisted of three physiotherapists, all with postgraduate masters qualifications in musculoskeletal and/or sports physiotherapy. All physiotherapists had at least 10 years of experience in the field of musculoskeletal physiotherapy. The physiotherapy service was provided 7 days a week during daytime working hours and it managed both adult and paediatric presentations. Conditions managed by the service included closed limb fractures, non-traumatic spinal pain, and soft tissue conditions such as strains and sprains. Patients that were eligible to be seen by the physiotherapy service were identified by the physiotherapists themselves, based on the information provided by the patient at time of triage nursing assessment.

Outcome measures

The primary outcome was the number of adverse events among all of the patients managed by the physiotherapy service. Adverse events were identified by a review of re-presentations to the emergency department within 28 days, a review of consumer complaints, and incidents reported on the local safety reporting systems over the study period. Re-presentations within 7 days are routinely reviewed by an emergency medicine consultant; this was performed by reviewing both the electronic capturing systems and the case notes, if necessary. Re-presentations between 7 and 28 days were reviewed by the lead author.

One secondary outcome was the length of stay in the emergency department in each matched cohort, which was defined as the duration of time from initial presentation at triage to discharge from the emergency department. The other secondary outcomes were the proportion of patients in each matched cohort who were referred for radiographic, CT and ultrasound imaging in each cohort.

Data analysis

The number of patients managed by the physiotherapy service who experienced an adverse event was estimated as a population proportion, reported with a 95% CI. Length of stay was reported as a mean (SD) for each of the two matched cohorts and the difference between the cohorts was analysed using an independent-samples t-test. The number of patients referred for each type of imaging was reported as a percentage for each matched cohort and the difference between the cohorts was analysed as the absolute difference in these percentages, again reported with a 95% CI. The 'number needed to treat' statistic was also calculated to indicate the number of patients that would need to be managed by the physiotherapy service instead of the medical staff to prevent one request for imaging, and reported with a 95% CI. Data are presented with 95% CIs to indicate the precision of the estimate and, for between-cohort comparisons, whether the difference is statistically significant.

Results

Flow of patients and therapists through the study

A total of 71 880 patients presented to the emergency department during the study period. Of these, 1320 were managed by the physiotherapy service and were analysed for adverse events. Of the 71 880 patients, 9037 (12.6%) were diagnosed with ICD9 codes that had been nominated as appropriate for the physiotherapy service. Of these 9037 patients, 1249 (14%) were managed by the physiotherapy service and 7788 (86%) were managed by the medical team. The diagnostic codes of the other 71 patients who were managed by the physiotherapy service were ineligible because they were too broad to warrant inclusion in the final list of codes, such as 'injury unspecified' and 'unspecified follow up'. These 71 patients were therefore excluded from the cohort matching process (Figure 1).

What proportion of patients managed by the physiotherapy service experienced adverse events?

Analysis of re-presentation data, consumer complaints and safety reporting systems showed no adverse events associated