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Primary contact physiotherapy services reduce waiting and treatment times for patients presenting with musculoskeletal conditions in Australian emergency departments: an observational study

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Primary contact physiotherapy services reduce waiting and treatment times for patients presenting with musculoskeletal conditions in Australian emergency departments: an observational study

Abstract

Question: Can primary contact physiotherapists reduce waiting and treatment times and facilitate faster discharge in Australian emergency departments?

Design: Data on patients treated by primary contact physiotherapists were collected prospectively and compared with historical and concurrent cohorts of patients treated by other clinicians, using diagnosis and urgency.

Participants: Twenty-nine primary contact physiotherapists, working at 10 sites, treated a total of 14 452 patients with musculoskeletal conditions in triage categories 3, 4 and 5.

Outcome measures: Data were analysed for two time periods: baseline (historical control) and implementation (12 to 15 months). A concurrent control cohort within the implementation period was selected using diagnosis (ICD-10-AM) and urgency of treatment (triage category). Waiting time, treatment time, and time to discharge from the emergency department were compared across periods and between cohorts.

Results: Significant differences were found in waiting and treatment times. On average, patients treated by primary contact physiotherapists waited 31 minutes less than those treated by other practitioners and had an average treatment time of 108 minutes compared with 148 minutes. Overall, 93% of patients treated by primary contact physiotherapists and 75% treated by other practitioners were discharged from the emergency department within a 4-hour time period. To address concerns that these results could be due to other differences between cohorts, multiple regression models were used and the results were still significantly in favour of the primary contact physiotherapists.

Conclusion: A primary contact physiotherapist model in hospital emergency departments can reduce waiting and treatment times for patients with musculoskeletal presentations, resulting in better performance in achieving discharge within the 4-hour national target.

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Research

Primary contact physiotherapy services reduce waiting and treatment times for patients presenting with musculoskeletal conditions in Australian emergency departments: an observational study

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KEY WORDS

Primary contact physiotherapist
Emergency department
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ABSTRACT

Question: Can primary contact physiotherapists reduce waiting and treatment times and facilitate faster discharge in Australian emergency departments? **Design:** Data on patients treated by primary contact physiotherapists were collected prospectively and compared with historical and concurrent cohorts of patients treated by other clinicians, using diagnosis and urgency. **Participants:** Twenty-nine primary contact physiotherapists, working at 10 sites, treated a total of 14 452 patients with musculoskeletal conditions in triage categories 3, 4 and 5. **Outcome measures:** Data were analysed for two time periods: baseline (historical control) and implementation (12 to 15 months). A concurrent control cohort within the implementation period was selected using diagnosis (ICD-10-AM) and urgency of treatment (triage category). Waiting time, treatment time, and time to discharge from the emergency department were compared across periods and between cohorts. **Results:** Significant differences were found in waiting and treatment times. On average, patients treated by primary contact physiotherapists waited 31 minutes less than those treated by other practitioners and had an average treatment time of 108 minutes compared with 148 minutes. Overall, 93% of patients treated by primary contact physiotherapists and 75% treated by other practitioners were discharged from the emergency department within a 4-hour time period. To address concerns that these results could be due to other differences between cohorts, multiple regression models were used and the results were still significantly in favour of the primary contact physiotherapists. **Conclusion:** A primary contact physiotherapist model in hospital emergency departments can reduce waiting and treatment times for patients with musculoskeletal presentations, resulting in better performance in achieving discharge within the 4-hour national target. **[Bird S, Thompson C, Williams KE (2016) Primary contact physiotherapy services reduce waiting and treatment times for patients presenting with musculoskeletal conditions in Australian emergency departments: an observational study. *Journal of Physiotherapy* 62: 209–214]**

Introduction

Emergency departments across Australia require multidisciplinary teams of medical, nursing, allied health and administrative staff in order to provide quality care in a timely fashion.[1] Australian emergency departments are under pressure to reduce waiting and treatment times because funding is linked to key performance targets such as the National Emergency Access Target (NEAT), also known as the '4-hour rule'.[2] This 'rule' requires that 90% of patients are discharged from the emergency department within 4 hours. The number of presentations continues to increase; there were 7.4 million emergency department attendances reported in Australia during the 2014-2015 financial year, which is an increase of over 2% from the previous year.[3] A significant portion of these were musculoskeletal cases that could be managed primarily by physiotherapists working in an extended role. In the emergency department setting and in the context of this study, this extended role is referred to as a Primary Contact Physiotherapist (PCP). A PCP is able to assess, treat and manage patients without review by medical staff.[4] A physiotherapist working in a more traditional role within the emergency department is termed a Secondary Contact Physiotherapist and treats patients after assessment and referral by medical staff.[5,6] Having a physiotherapist perform the PCP role may reduce waiting and treatment times, and allow faster discharge for musculoskeletal patients presenting to the emergency department[1,2,4(p 30-35; 53-70)] but reviews suggest that these potential benefits have not yet been convincingly demonstrated.[1,7]

Several studies of the PCP model in Australian emergency departments have addressed efficiency, productivity and acceptability to other team members and the patients that were treated. One Australian study demonstrated shorter length of stay for musculoskeletal patients seen by PCPs rather than Secondary Contact Physiotherapists.[6] Another found shorter waiting time and length of stay for musculoskeletal patients seen by a PCP compared with similar patients seen by medical staff.[5] A more recent study found reduced length of stay in the emergency department, and no

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misdiagnoses or adverse events for the musculoskeletal patients seen by PCPs.[8] Another found shorter waiting times and length of stay during hours when a PCP was on shift compared with similar hours where there was no PCP.[9] Through semi-structured interviews, this study also found high levels of both staff and patient satisfaction with the PCP service.[9] All of these studies were of a smaller scale than the current study, in that they focused on just one institution[5,8,9] or a maximum of three.[6] Similarly, evaluations of PCP models of care in the United Kingdom have also shown improvements in emergency department performance, but all focused on single institutions and therefore the effectiveness of the model may have been highly influenced by the effectiveness of the individual practitioner(s) serving that hospital.[10–13]

In 2012, 10 hospitals received funding from the Australian Government under the Health Workforce Australia (HWA) *Expanded Scopes of Practice – Physiotherapists in the Emergency Department* (ESOP-PED) program to initiate or expand PCP roles in their emergency departments. Two sites with existing PCP models embedded in practice acted as *lead* sites (and enhanced implementation within their own organisation) and the remaining eight sites were *implementation* sites. A research team within the Australian Health Services Research Institute, University of Wollongong, was commissioned to evaluate the program and assess its suitability for wider implementation.[4] This study presents key findings from the evaluation, focusing on the impacts of the PCP model on key performance indicators, namely waiting times, treatment times and percentage of patients discharged within the 4-hour national target.

Therefore, the research question for the prospective cohort study was:

> Can PCPs reduce waiting and treatment times and facilitate faster discharge in Australian emergency departments?

Methods

This was a prospective cohort study of patients treated by PCPs. Because of the constraints of a national program evaluation, a randomised controlled trial was unfeasible. Instead, a quasi-experimental design was adopted in order to provide evidence to support attribution of outcomes to the program. Primary diagnosis codes (using the International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Australian Modification-ICD-10-AM) for patients treated by PCPs were used to select a concurrent control cohort of patients treated by other practitioners during the same time period. The baseline period (before the PCP model was implemented) provided a historical control group of patients, also with the same principal diagnosis as the intervention patients. Relevant diagnoses included musculoskeletal conditions such as sprains, strains, dislocations and minor injuries. Cohorts were also selected by urgency of treatment, using triage categories assigned when they arrived at the emergency department. As the PCP model targeted less urgent, musculoskeletal cases, only patients in triage categories 3, 4 and 5 were included. A complete list of ICD-10-AM codes used to define the patient cohorts is available online.[4(Table 53 on page 133)]

Data collection

Data were collected from 10 hospitals across five states and territories in Australia. Routine data from each hospital were provided for all emergency department presentations and additional specialty data items were captured for patients treated by PCPs. Data collected during two time periods were included and analysed. The 'baseline period' was defined as the period from 1 October 2011 to 30 September 2012, reflecting usual care in the emergency department prior to the introduction of the HWA-funded PCP model. The 'implementation period' was defined as the period from 1 October 2012 to 31 December 2013.

Data analysis

Three outcomes were calculated for each site for both data collection periods: waiting time, treatment time and the percentage of patients discharged within 4 hours. Waiting time was calculated in minutes as the time from presentation to commencement of service. Treatment time was calculated as the time from commencement of service to the end of the episode of service. Time to discharge was calculated as the time in minutes from presentation to discharge from the emergency department. For the implementation period, the results for patients treated by PCPs were compared with the results for patients treated by other practitioners. Performance on the three outcomes was also compared between the baseline and implementation periods for all musculoskeletal presentations.

Statistical comparisons for mean waiting time and mean treatment time were made using Welch's t test with the assumption of unequal variances. Chi-squared tests were used to compare the percentage of patients discharged within 4 hours across periods and between cohorts within the implementation period. These statistical methods were also used to check for variation in performance of the indicators according to site and triage category. Multiple regression and logistic regression models were used to determine the contribution of the PCP model to variation in waiting/treatment times and time to discharge, controlling for other relevant factors. These models adjusted for possible confounding variables such as age, diagnosis, Indigenous status, gender, arrival mode, episode end status and site. Statistically significant differences were identified using *p*-values, odds ratios (OR) and confidence intervals (CI) with alpha set at 0.05.

Results

Compliance with the study protocol

There were four minor deviations from the study protocol. First, one hospital used ICD-9 codes. These codes were mapped to ICD-10-AM codes prior to selection of the matched cohort. Second, diagnoses were missing for 13 535 (2.2%) patients treated by medical staff during the implementation period, so it was impossible to determine whether they were musculoskeletal. These patients were not included in the analysis. Third, PCPs treated a total of 548 patients that were classified as not being in the musculoskeletal cohort. These patients were not included in the analysis. Fourth, among the 10 sites, the duration of data collection for the implementation period varied between 12 and 15 of the intended 15 months, as presented in Table 1.

Generation of the study cohort

There were 608 553 presentations across all of the sites during the implementation period, ranging from 30 436 to 89 950 per site, highlighting the diversity among the healthcare facilities. Triage category 3, 4 and 5 musculoskeletal presentations accounted for approximately 25% of all emergency department presentations (147 632 musculoskeletal presentations). The PCPs treated 14 512 cases, representing 9.5% of all musculoskeletal presentations and 2.4% of all emergency department presentations across all sites.

The analysed cohort treated by PCPs during the implementation period consisted of 13 964 musculoskeletal patients. The concurrent control cohort matched by diagnostic codes and treated by other practitioners consisted of 133 668 patients. The historical control cohort (also matched by diagnostic codes but selected from the baseline period before the PCP model was implemented) consisted of 122 969 patients.

The proportion of musculoskeletal patients treated by PCPs varied by site, ranging from almost 22% at Site 4, a major tertiary

Table 1
Number of emergency department presentations by site and triage category during the implementation period.

	Data collection *(months)*	Monthly presentations[a] *(n)*	PCPs[b] *(n)*	Total PCP presentations		Monthly PCP presentations[a] *(n)*
				(n)	*(%)*	
Site						
1	15	4950	10	2127	2.9	142
2	11	2767	[c]	1222	4.0	111
3	15	2912	3	1176	2.7	78
4	15	3457	4	2975	5.7	198
5	12	4457	3	728	1.4	61
6	15	3554	4	590	1.1	39
7	15	5644	1	1533	1.8	102
8	12	4947	1	744	1.3	62
9	14	4826	1	1625	2.4	116
10	15	5997	2	1792	2.0	119
Triage category						
1	[d]	359		1	0.0	0
2	[d]	4942		59	0.1	4
3	[d]	16 398		1238	0.5	88
4	[d]	18 027		9505	3.8	679
5	[d]	3731		3657	7.0	261
Total[e]	-	4378		14 512	2.4	104

PCP = Primary Contact Physiotherapist.
[a] Monthly presentations are calculated as the monthly average number of presentations during the implementation period, specific to each site.
[b] Number of PCPs refers to individuals and not FTE positions.
[c] Site 1 and Site 2 had a total of 10 PCPs between them.
[d] An average of 14 months was applied to triage categories.
[e] Missing/invalid triage category are included in the total (ie, total is by site). A total of 158 records had a missing/invalid triage category.

teaching hospital, to 4.5% at Site 5 (Figure 1). Site 1 was a major tertiary referral teaching hospital and had the largest volume of musculoskeletal patients, with just under 10% treated by a PCP.

Characteristics of the study cohort

Although the comparison group for the baseline period was matched with patients in the implementation period using only diagnosis types and triage categories, the group profiles were also similar on a number of other important variables (Table 2). These results emphasise the validity of making comparisons of performance across these two periods. Some differences in demographic characteristics were found between the concurrent control cohort and the intervention cohort. However, the multiple regression analysis enabled a comparison between these two cohorts by statistically controlling for these differences.

Waiting time

The average waiting time for all musculoskeletal patients across all sites was consistent between baseline and implementation periods (53 and 52 minutes, respectively) despite the addition of the PCP role and an increase of over 24 000 in the total number of musculoskeletal presentations in the implementation period.

At every site, patients treated by PCPs had shorter waiting times than those treated by other practitioners, with mean differences ranging from 14 to 52 minutes (Table 3). The site with the largest difference was a lead site (Site 7) that had a well-established PCP model in place prior to the implementation period. The mean difference in waiting time was around 30 minutes for each triage category and overall. The confidence intervals in Table 3 show that mean differences in waiting times were statistically significant for each site, each triage category and overall, indicating that the total

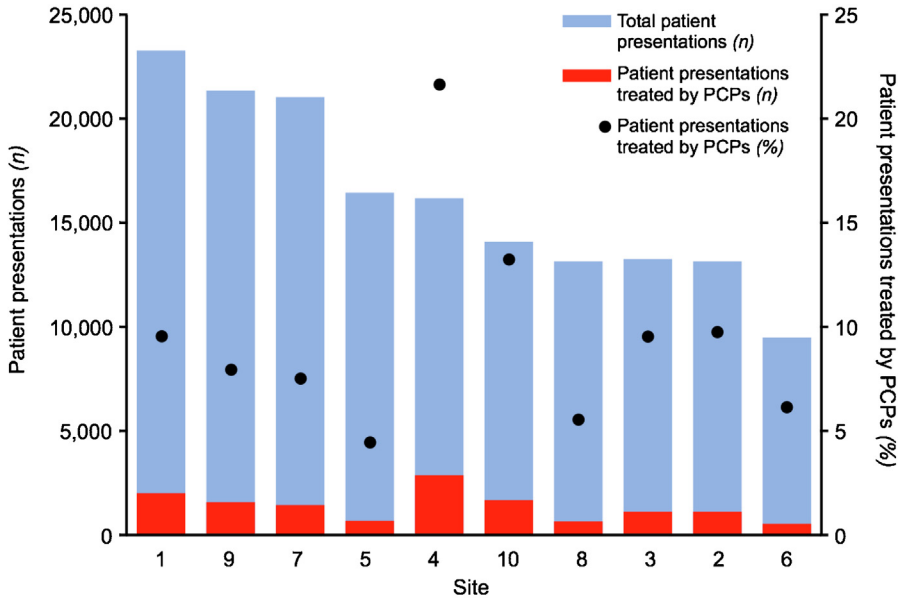

Figure 1. Number of musculoskeletal patient presentations to the emergency department during the implementation period at each site, with the number and percentage treated by Primary Contact Physiotherapists (PCPs).

Table 2
Characteristics of musculoskeletal patients treated during the baseline and implementation periods.

Characteristic	Patients treated during the baseline period	Patients treated during the implementation period		
		All	Treated by PCP	Treated by other
Age *(y)*, mean / median	37.6 / 33.0	38.5 / 34.0	38.7 / 35.0	36.6 / 33.0
Gender, % male	52.6	51.9	51.8	53.6
Indigenous origin, %				
Aboriginal but not TSI	4.6	4.6	4.8	2.4
TSI but not Aboriginal	0.4	0.4	0.4	0.2
Aboriginal and TSI	0.2	0.2	0.3	0.2
Not Aboriginal nor TSI	94.4	94.3	94.1	96.4
Unable to answer	0.0	0.2	0.2	0.2
Not stated[a]	0.3	0.3	0.3	0.6
Triage category, %				
3	28.1	28.2	30.2	8.5
4	58.9	58.4	57.6	66.4
5	13.0	13.4	12.2	25.0
Mode of arrival, %				
Ambulance, air ambulance or helicopter rescue	17.7	17.6	18.9	5.7
Police / correctional services vehicle	0.4	0.5	0.5	0.3
Other[b]	77.8	77.5	77.0	82.7
Not stated[a]	4.1	4.4	3.7	11.3
End status, %				
ED service episode completed, admitted to same hospital	17.2	19.7	21.3	5.0
ED service episode completed, non-admitted[c]	80.9	78.2	76.5	94.2
ED service episode completed, referred[d]	1.1	1.0	1.0	0.3
ED service episode not completed[e]	0.7	1.1	1.1	0.2
Not stated[a]	0.1	0.0	0.0	0.3

ED = Emergency department, PCP = Primary Contact Physiotherapist, TSI = Torres Strait Islander.
[a] Not stated or inadequately described.
[b] Walk, private/public transport, community transport, taxi.
[c] Departed without being admitted or referred to another hospital.
[d] Referred to another hospital for admission.
[e] Left at own risk after been attended by a healthcare professional but before the ED service episode was completed.

waiting time for patients treated by PCPs was shorter than for similar patients treated by other practitioners.

Treatment time

The average treatment time for all musculoskeletal patients decreased from 156 minutes during the baseline period to 144 minutes during the implementation period. It is possible that the PCPs contributed to this difference, as shown by the results in Table 4. On average, PCPs were able to treat their patients more quickly than other practitioners were able to treat similar patients, with an overall significant difference of around 40 minutes across all sites. The mean difference in treatment time ranged from 7 minutes at Site 2 to over 1.5 hours at Site 10. When analysed by triage category, PCPs were able to treat patients in triage categories 3 and 4 more quickly than other practitioners but took, on average, 7 minutes longer to treat triage category 5 patients.

Time to discharge

Comparison between periods

To be consistent with the definition of the NEAT,[2] 'discharged' refers to patients who physically left the emergency department

Table 3
Average total waiting time for triage category 3, 4 and 5 musculoskeletal patients by site, triage category and primary treating practitioner during the implementation period.

	Waiting time[a] *(minutes)*				
	Treated by PCP		Treated by other		Difference
	n	Mean (SD)	n	Mean (SD)	Mean (95% CI)
Site					
1	2040	20 (18)	19 189	35 (34)	−15 (−16 to −14)
2	1174	19 (21)	10 811	35 (37)	−15 (−17 to −14)
3	1153	34 (32)	10 574	84 (67)	−50 (−52 to −48)
4	2898	17 (65)	10 439	51 (61)	−34 (−37 to −32)
5	711	24 (33)	14 996	45 (50)	−21 (−23 to −18)
6	557	43 (37)	6843	57 (59)	−14 (−18 to −11)
7	1433	47 (42)	18 075	99 (98)	−52 (−54 to −49)
8	697	23 (25)	11 768	50 (53)	−28 (−30 to −26)
9	1585	20 (22)	18 184	50 (50)	−30 (−31 to −29)
10	1662	16 (17)	10 826	37 (42)	−21 (−22 to −20)
Triage category					
3	1185	16 (74)	39 826	45 (56)	−29 (−33 to −24)
4	9231	24 (35)	75 695	60 (65)	−36 (−37 to −35)
5	3494	27 (32)	16 184	57 (63)	−31 (−32 to −29)
Total	13 910	24 (39)	131 705	55(62)	−31 (−32 to −30)

PCP = Primary Contact Physiotherapist.
[a] Waiting time is defined in minutes as 'the time from presentation to commencement of service' and is calculated as the difference between the date and time patient presents and the date and time of commencement of service.

Table 4
Average total treatment time for triage category 3, 4 and 5 musculoskeletal patients by site, triage category and primary treating practitioner during the implementation period.

	Treatment time[a] *(minutes)*				
	Treated by PCP		Treated by other		Difference
	n	Mean (SD)	n	Mean (SD)	Mean (95% CI)
Site					
1	2040	115 (82)	19 189	171 (170)	−55 (−60 to −51)
2	1174	122 (67)	10 811	129 (113)	−7 (−11 to −2)
3	1153	87 (69)	10 572	114 (124)	−27 (−32 to −23)
4	2898	146 (108)	10 439	211 (189)	−65 (−70 to −59)
5	711	85 (81)	14 996	127 (144)	−41 (−48 to −35)
6	557	95 (77)	6843	112 (98)	−17 (−24 to −11)
7	1433	104 (90)	18 075	181 (184)	−77 (−83 to −72)
8	697	100 (58)	11 768	120 (144)	−20 (−25 to −15)
9	1585	74 (51)	18 184	109 (99)	−35 (−38 to −32)
10	1662	91 (77)	10 826	190 (172)	−99 (−104 to −94)
Triage category					
3	1185	145 (127)	39 826	204 (187)	−59 (−66 to −51)
4	9231	110 (83)	75 693	132 (135)	−22 (−24 to −20)
5	3494	91 (69)	16 184	84 (81)	7 (5 to 10)
Total	13 910	108 (86)	131 703	148 (153)	−40 (−41 to −38)

PCP = Primary Contact Physiotherapist.
[a] Treatment time is defined in minutes as 'the time from commencement of service to episode end' and is calculated by the difference between the date and time of commencement of service and the date and time that the episode ends.

Table 5
Number and percentage of musculoskeletal patients in triage category 3, 4 and 5 who were discharged within 4 hours: comparison between baseline and implementation periods.

	Patients discharged within 4 hours				
	Baseline		Implementation		Difference *(%)*
	n	%	n	%	Mean (95% CI)
Site					
1	11 913	73.9	17 614	83.0	−9.0 (−9.9 to −8.2)
2	10 394	81.3	10 111	84.4	−3.1 (−4.0 to −2.1)
3	6947	71.7	8978	74.1	−2.4 (−3.6 to −1.2)
4	6195	59.3	8438	63.3	−4.0 (−5.2 to −2.8)
5	13 143	82.2	12 645	80.5	1.7 (0.9 to 2.6)
6	5938	80.7	7270	80.9	−0.2 (−1.4 to 1.0)
7	8160	56.4	10 982	56.3	0.1 (−0.9 to 1.2)
8	8364	73.5	10 267	82.3	−8.9 (−9.9 to −7.8)
9	12 238	77.3	17 486	88.4	−11.2 (−11.9 to −10.4)
10	5999	67.3	8757	70.1	−2.8 (−4.1 to −1.6)
Triage category					
3	20 723	60.0	27 230	65.8	−5.5 (−6.2 to −4.8)
4	54 469	75.2	67 712	78.7	−3.4 (−3.8 to −3.0)
5	14 099	88.1	17 606	88.9	−0.7 (−1.4 to 0.0)
Total	89 291	72.6	112 548	76.4	−3.6 (−4.0 to −3.3)

via the following methods: discharged, admitted to hospital, or transferred to another hospital for treatment. From the baseline to the implementation period, there was a significant improvement in the percentage of patients discharged within the 4-hour target of around 4% across all sites (Table 5). Triage category 3 had the largest improvement from baseline to implementation of almost 6%. Although the improvement in performance for triage category 5 patients was slight, it was statistically significant.

Comparison between practitioners

Across all sites, 92.7% of patients treated by PCPs were discharged within the 4-hour target, compared with 74.5% of similar patients treated by other practitioners (Table 6). At every site, performance on this indicator was significantly better for PCPs than for other practitioners. Nearly 70% of all patients treated by PCPs were triage category 4 patients and PCPs were able to meet the 4-hour discharge target for almost 93% of these patients, compared with 77% for triage category 4 musculoskeletal patients treated by other practitioners.

Table 6
Number and percentage of musculoskeletal patients in triage category 3, 4 and 5 who were discharged within 4 hours: comparison between those treated by Primary Contact Physiotherapist and those treated by other practitioners during the implementation period.

	Patients discharged within 4 hours				
	Treated by PCP		Treated by other		Difference *(%)*
	n	%	n	%	Mean (95% CI)
Site					
1	1974	96.8	15 640	81.5	15.3 (14.4 to 16.2)
2	1098	93.5	9013	83.4	10.1 (8.5 to 11.7)
3	1113	96.1	7865	71.8	24.3 (22.9 to 25.7)
4	2467	85.4	5971	57.2	28.2 (26.6 to 29.8)
5	667	93.8	11 978	79.9	13.9 (12.0 to 15.8)
6	517	92.8	5458	79.7	13.1 (10.8 to 15.4)
7	1245	86.9	9737	53.9	33.0 (31.1 to 34.9)
8	680	97.6	9587	81.4	16.2 (14.9 to 17.5)
9	1559	98.4	15 927	87.6	10.8 (10.0 to 11.6)
10	1564	94.1	7193	66.4	27.7 (26.3 to 29.1)
Triage category[a]					
3	1002	84.9	25 859	64.8	20.1 (18.0 to 22.2)
4	8552	92.7	58 287	76.8	15.9 (15.3 to 16.5)
5	3330	95.2	14 223	87.5	7.7 (6.8 to 8.6)
Total	12 884	92.7	98 369	74.5	18.2 (17.7 to 18.7)

PCP = Primary Contact Physiotherapist.
[a] The overall performance was 65.8% for triage category 3, 78.7% for triage category 4 and 88.9% for triage category 5.

Multivariate analyses

After adjusting for covariates using multiple regression modelling, the PCP model was an independent predictor of both waiting and treatment times. Patients treated by other practitioners waited 28 minutes longer (95% CI 27 to 29), and their treatment times were on average eight minutes longer, than patients treated by PCPs (95% CI 5 to 10). The time-to-discharge target was more likely to be met during the implementation period than the baseline period (OR 1.504, 95% CI 1.471 to 1.537). During the implementation period, this target was more likely to be met by PCPs than other practitioners (OR 3.009, 95% CI 2.782 to 3.254).

Discussion

To our knowledge, this is the largest Australian or international study, to date, to evaluate the impact of the PCP model on waiting time, treatment time and time to discharge. It included data from 29 PCPs working in 10 hospitals across five states and territories in Australia, over an extended time period.

An important driver of extended roles for physiotherapists in the emergency department is the assumption that such roles will improve efficiency through shorter waiting and treatment times and quicker discharge. By taking primary responsibility for musculoskeletal patients within their scope, PCPs are expected to reduce waiting and treatment times for these patients. The current study provides evidence to support this assumption, demonstrating that the PCP model can improve emergency department performance for target patients compared with similar patients treated by other practitioners. Multivariate analyses demonstrated that these differences in performance remained, even after controlling for potentially confounding factors. In addition, it is assumed that the PCP model will help to free up doctors' time, enabling them to see other patients who require medical attention more quickly.[14] By comparing baseline and implementation periods, this study provides preliminary evidence that the presence of PCPs in the emergency department is associated with better overall emergency department performance.

Unlike previous evaluations, which were limited in scope to just one[5,8,9] or three[6] hospitals, this study presents data from 10 hospitals that ranged widely in size, volume of presentations and location. Sites were located in metropolitan, regional and rural/remote areas and included major tertiary referral teaching hospitals, a community hospital, and regional, metropolitan and specialist teaching hospitals. At all these sites, patients treated by PCPs had shorter waiting and treatment times than similar patients treated by other practitioners. These differences were seen across two of the three triage categories targeted by the PCP model. Patients in the lowest urgency triage category had slightly longer treatment times if treated by a PCP, although they still had significantly shorter waiting times.

The current study addressed a recognised need for evaluation in this area[1,5–7,12,15] by providing robust evidence of the contribution PCPs can make to improve key indicators of emergency department performance and help meet performance standards such as the NEAT (time to discharge). These findings are consistent with and extend previous Australian studies that have demonstrated benefits from the PCP model.[5,6,8,9] An important contribution of the current study was the comparison of time to discharge during the implementation period to a baseline (reference) period, in an attempt to identify improvements attributable to PCPs (Table 5 and Table 6). Time to discharge performance improved at each site, and this could be attributed, at least in part, to the activities of the PCPs; to our knowledge, no other Australian study has demonstrated this.

In interviews prior to implementation of the program, other emergency department clinicians expressed concerns that PCPs would take longer to treat patients and would therefore have an adverse effect on treatment time.[4] Richardson and colleagues[11] also suggested that physiotherapists might be overcautious in their

new roles and feel less time pressure than other emergency department staff, and therefore might take longer for consultation. The data presented here clearly indicate that such concerns were not justified: treatment times decreased, on average, by around 40 minutes for patients under management of a PCP (Table 4).

A number of limitations must be acknowledged. This study did not include measures of functional or health outcomes for patients, or misdiagnoses.[4,7,11] One indicator of quality of care is whether the patient returns to the emergency department within the short term (up to 96 hours) because their condition does not improve or worsens (unplanned re-presentation). Data on unplanned re-presentations were requested, but some sites were unable to provide it, precluding systematic analysis. At the sites that provided this information, no unplanned re-presentations were reported. A further limitation of this study was the inability to control for factors such as staffing and policy changes occurring during the implementation period that might have influenced the results. Sites had differing numbers of PCPs and different hours of PCP operation, which contributed to variation in performance. Further, this study was unable to control for differences in workload distribution between PCPs and other treating clinicians. Due to hospital policy, Site 3 was unable to provide paediatric data, which represented approximately 30% of the site's total emergency department activity. Nevertheless, the diversity of sites can also be seen as a strength, indicating that the PCP model can make a contribution to emergency department performance across a wide range of settings and is potentially robust to changes in policies and practices in these environments. The current research was part of a larger study that captured and triangulated data from numerous sources to build a wholistic picture of the PCP model's impacts and the factors contributing to successful implementation.[4]

The implementation of a PCP model for musculoskeletal presentations to Australian emergency departments can reduce waiting and treatment times for this patient cohort, as well as contribute to better performance in achieving the NEAT (time to discharge) target. Given the large scale of the study and the consistency of results across sites and triage categories, together with contextual data from the wholistic evaluation,[4,16] this study provides important information about the potential for the PCP model to improve emergency department performance at a national level.

What is already known on this topic: Emergency departments often struggle to maintain adequate waiting times and treatment times. Data from isolated centres shows that physiotherapists manage musculoskeletal patients in emergency departments well, with no misdiagnoses and with shorter waiting times and/or length of stay.
What this study adds: Implementation of a primary contact physiotherapist role across 10 emergency departments showed consistent reductions in waiting time, treatment time and time to discharge, across all sites. The benefit of having a Primary Contact Physiotherapist in an emergency department can be anticipated regardless of the particular site or therapist.

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