ORIGINAL ARTICLE

Do emergency department physiotherapy Practitioner's, emergency nurse practitioners and doctors investigate, treat and refer patients with closed musculoskeletal injuries differently?

Stephen T E Ball, Kate Walton, Stephen Hawes

Emerg Med J 2007;**24**:185–188. doi: 10.1136/emj.2006.039537

Introduction: This paper aims to assess whether emergency department physiotherapy practitioner's (EDPPs), emergency nurse practitioner's (ENPs) and emergency department doctors investigate, treat and refer patients with closed musculoskeletal injuries differently.

Method: The emergency department records of patients who fitted the departmental criteria for being treated by either ENPs, EDPPs or doctors were selected retrospectively during a 2½ month period between 1 March and 15 May 2005. The investigation, management and referral or discharge of these patients were analysed.

Results: There was no significant difference between the proportion of patients sent for x ray and the type of clinician. ($p=0.17$) There was also no significant difference between the proportions of x rays found to have fractures/dislocations with each type of clinician ($p=0.99$). All fractures and dislocations were found to have been managed following the written departmental protocols. Consequently, further analysis was for soft tissue injuries only. For soft tissue injuries, senior house officers gave more patients analgesia/ non-steroidal anti-inflammatory drugs compared with other clinicians (86%, $p<0.001$). ENPs gave more structural support (bandages, etc) compared with other clinicians (80%, $p<0.001$). Consultant's arranged the least formal follow-up although this was not significant (7.6%, $p=0.054$) and middle grades offered the most follow-up (17%, $p=0.054$) with this again not being significant. However, EDPPs referred significantly more patients for physiotherapy follow-up (9.2%, $p=0.031$).

Conclusion: ENPs, EDPPs and doctors of all grades investigated patients with fractures and dislocations similarly and managed them following the written departmental guidelines. However, there were statistically significant differences in the way patients with closed soft tissue injuries were treated and followed-up.

See end of article for authors' affiliations

Correspondence to:
S T E Ball, Medical Student,
Emergency Department,
Wythenshawe Hospital,
Manchester, M23 9LT, UK;
steball@doctors.org.uk

Accepted 24 November
2006

Emergency nurse practitioners (ENPs) were introduced in the UK in 1984.¹ The vast majority of UK emergency departments now have a formal ENP service mainly seeing patients with minor injuries or illnesses independently of medical staff.² ENPs were introduced to the emergency department at Wythenshawe Hospital in 1999.

Emergency department physiotherapy practitioners (EDPPs) have been introduced more recently in an attempt to provide care for patients with musculoskeletal problems in a more holistic fashion, adding to the emergency department team through their specialist expertise and skills and also reducing waiting times. EDPPs were first introduced in the emergency department of Wythenshawe Hospital in November 2002. Training was given which included the requesting and interpretation of x rays and the prescription of analgesia and non-steroidal anti-inflammatory drugs. Prior to this, since 1991, a more traditional physiotherapy service existed within the emergency department for patients referred from medical staff to be seen in physiotherapy clinics within the department.

There is no official definition of an EDPP. The role is a relatively new one and according to the Network of Accident and Emergency Physiotherapists in 2004, only about 30 hospitals in the UK had some sort of physiotherapy service based in the emergency department at that time with the precise role varying between Trusts.³ For this study, EDPPs were defined as physiotherapists who assess and manage patients with musculoskeletal conditions independently, without the need to be seen by medical staff. ENPs have a similar scope of

practice to EDPPs, but ENPs do not currently see patients with knee or spinal injuries.

The literature about the work of ENPs in the emergency department, mainly compares them with senior house officers (SHOs) and many studies also involved the patients' views and perspectives on the care they received. All of the studies concluded that patients were satisfied with the care offered by ENPs and that SHO and ENP standards are similar.^{4–11} The literature about the work of EDPPs is somewhat sparse, but generally found a high level of patient satisfaction.^{3 13 14} Satisfaction was found to be higher among patients seen by EDPPs than either ENPs or doctors on four grounds: advice and information given, explanation of the results of the assessment, what would happen next and the overall care given. However, there was only a trend towards improved outcomes compared with other staff.¹² EDPPs have been found to be less likely to miss significant injury or make inappropriate referrals to trauma clinics than emergency department SHOs and to deliver this service more cost effectively,^{14 15} and to treat soft tissue injuries more appropriately and quickly than ENPs or medical staff. Their patients have been found to wait half as long for treatment as those in the rest of the minors stream.^{3 14 16}

This paper aims to compare the investigation and management of patients with closed musculoskeletal conditions by ENPs, EDPPs and medical staff at SHO, middle grade and consultant level.

Abbreviations: EDPP, emergency department physiotherapy practitioner; ENP, emergency nurse practitioner; SHO, senior house officer

METHOD

A retrospective case-note review was performed between 1 March and 15 May 2005. This was to allow enough time for the new SHO's to have settled in the department. The patients involved were those that would be eligible for treatment by either ENPs, EDPPs or medical staff. These were patients with closed musculoskeletal injuries to the shoulder, clavicle, upper arm, lower arm, wrist, hand, fingers, ankle, foot or toes. These were split into 4 groups;

- Group 1: Shoulder, clavicle and upper arm;
- Group 2: Lower arm and wrist;
- Group 3: Hands and fingers; and
- Group 4: Ankle and foot.

These patients were selected from the discharge listings. Patients without trauma or open wounds were excluded, as well as those patients who were referred to another member of the emergency department team for advice or further management. However, this was only possible if the clinician recorded that they had sought advice from a fellow colleague. Patients who reattended the department after an earlier consultation for the same problem were also excluded. Children were also excluded.

The number of patients analysed for each type of clinician was based on the numbers seen by the EDPPs—that is, all patients seen by EDPPs meeting the inclusion criteria were included. For example, the EDPP's saw 22 patients having shoulder, clavicle and upper arm injuries. This same number was selected for the other types of clinicians by systematic sampling, but because of the various exclusions noted above the numbers for other types of clinicians were somewhat less. However, the consultant group was the smallest as they saw the lowest numbers of patients in these categories (table 1).

The emergency department records were analysed for each patient and information extracted on the following;

- Patients *x* rayed;
- Fractures or dislocations present;
- Patients recorded as given advice;
- Patients recorded as given or advised about analgesia;
- Patients recorded as given bandages/support; and
- Follow-up.

The statistical formulae χ^2 and Fisher-Freeman-Halton exact were applied to the results. A value of $p < 0.05$ was taken as significant. Ethical approval was not considered necessary for this study, as it involved no additional patient contact.

RESULTS

Fractures and dislocations

The graph shown compares the percentage of patients *x* rayed and the percentage of positive *x* rays for each type of clinician (fig 1).

ENPs were found to *x* ray the greater proportion of patients (82%) and consultants the least (68%), but this was not found to be significant ($p = 0.17$). Consultants had the greatest number of positive *x* rays (39%) and EDPPs the least (36%). Again there was no significant difference found between all types of clinicians ($p = 0.99$).

ENPs saw the greatest proportion of fractures/dislocations (31%) and consultants saw the least (26%), but again there was no significance between the types of clinician ($p = 0.91$).

All fractures and dislocations were found to have been treated as following the set departmental protocols and guidelines.

Soft tissue injuries

EDPPs recorded giving advice either orally or through leaflets more frequently than any other clinician (96%) whereas consultants recorded doing this the least (81%, $p = 0.007$). This was significant.

SHOs recorded giving or advising about analgesia/non-steroidal anti-inflammatory drugs the most (85.71%), with consultants the least (51%, $p < 0.001$). ENPs recorded giving the most structural support (88%) with EDPPs giving the least (53%, $p < 0.001$). However, for lower limb injuries, consultants were recorded as being most likely to provide patients with crutches (26%), compared with EDPPs who recorded giving these the least (1.7%, $p < 0.001$). These were all significant.

Consultants discharged patients with the least formal follow-up (7.6%) and middle grades the most (17%), but there was no significant difference between the types of clinicians ($p = 0.054$). However, EDPPs arranged significantly more physiotherapy follow-up (9.2%, $p = 0.031$).

DISCUSSION

There was no significant difference between the proportion of patients *x* rayed by each group of clinicians. Both this, the lack of statistical significance between the proportion of fractures/dislocations seen by all types of clinician and that the clinicians saw a similar number of patients with closed musculoskeletal injuries affecting areas of the body included in the study implies that the case mix was similar for all clinicians. In view of this and the finding that all patients with fractures/dislocations were managed along the lines of the written departmental protocols, we concluded that their overall investigation, management and referral was similar by all clinician groups.

When looking at the treatment of patients with closed soft tissue injuries as a whole—that is, comparing advice recorded as given, analgesia recorded as given/advised and structural support given, there were statistically significant differences between the clinicians.

EDPPs were more likely to record that they had given advice and from the documentation in the notes it was far more specific than any other type of clinician. However, it is not possible to reliably assess the quality of advice given to patients from the notes because this could simply reflect the quality of

Table 1 Showing the final numbers of patients for each group

	Cons, n	M/Grade, n	SHO, n	ENP, n	EDPP, n
Group 1	5 (11)	12 (21)*	15 (22)	14 (22)	13 (22)
Group 2	11 (22)	27 (43)	19 (43)	31 (43)	34 (43)
Group 3	19 (45)	27 (61)	25 (61)	32 (61)	44 (61)
Group 4	37 (48)	69 (86)	71 (84)*	65 (86)	73 (86)

EDPP, emergency department physiotherapy practitioner; ENP, emergency nurse practitioner; SHO, Senior House Officer

Number of case notes looked at are indicated in the brackets.

*Because of human error, the intended numbers of notes were not looked at.

Figure 1 Percentage of patients x rayed and the percentage of positive x rays. EDPP, emergency department physiotherapy practitioner; ENP, emergency nurse practitioner; SHO, Senior House Officer.

documentation. It is also possible that the lack of prescribing or advice on analgesia could reflect the quality of documentation. For example, it is possible that those prescribing the least might have advised patients to either buy or use their own analgesia more with this not being documented.

However, it is more likely that the structural support given is a reflection of practice. ENPs were the most likely group to provide this with EDPPs the least. It is possible that EDPPs concentrate more on advice and mobilisation than on providing bandaging and other support, which is less likely to promote this.

There was no overall statistical difference between the clinicians in arranging formal follow-up, although there was a trend for consultants to arrange formal follow-up the least. Also EDPPs referred significantly more patients than other groups for physiotherapy.

The major limitation to this paper was that it was a retrospective rather than a prospective study. As only case notes were analysed it was difficult to evaluate the quality of advice given and assess the accuracy of the documentation. There was noted to be differences in the note keeping and this could be looked at in further studies. Also case notes from a specified time period were analysed and although attempts were made to have equal numbers for each type of clinician, this was not possible, as certain patients did not fulfil the specified criteria. This was for a number of reasons, for example, other healthcare professionals giving advice or taking over patient care due to a change of shift.

Performing a randomised prospective observational study would deal with the above problems and enable areas such as the quality of the advice given and the quality of treatment generally to be analysed. This could be achieved through observed consultations. In addition, patient satisfaction and outcomes could be analysed by interviewing or sending a questionnaire to patients after consultation for their evaluation of their care.

Further, studies should also look at the cost effectiveness of these new practitioners. Areas looked at would include the number of hours spent on the shop floor, number of patients seen per hour, amount of time spent completing non-clinical work, etc.

How the work and practise of SHO's changes as they gain experience and confidence during their time within the emergency department could also be analysed.

Table 2 Overall results for each type of clinician.

	Cons	M/Grade	SHO	ENP	EDPP	p Value*
Total number of patients	72	135	130	142	164	
Fracture/dislocation (all patients)	19 (26%)	40 (30%)	39 (30%)	44 (31%)	44 (27%)	p=0.91
Treatment (STI's only)						
STI's	53 (74%)	95 (70%)	91 (70%)	98 (69%)	120 (73%)	
Advice recorded- yes	43 (81%)	85 (89%)	74 (81%)	82 (84%)	115 (96%)	p=0.007
Analgesia/NSAID-given/advised	27 (51%)	76 (80%)	78 (86%)	71 (72%)	78 (65%)	p<0.001
Structural support	36 (67%)	66 (69%)	50 (55%)	86 (88%)	64 (53%)	p<0.001
Discharge-SOS/GP (STI's only)	49 (92%)	79 (83%)	80 (88%)	90 (92%)	105 (88%)	p=0.34
Follow-up (STI's only)	4 (8%)	16 (17%)	11 (12%)	8 (8%)	15 (13%)	p=0.054

EDPP, emergency department physiotherapy practitioner; ENP, emergency nurse practitioner; NSAID, non-steroidal anti-inflammatory drugs; SHO, Senior House Officer; STI, soft tissue injury.

*p Value showing if there was any statistical difference between the clinicians and the number of fracture/dislocations seen, advice recorded as given, analgesia/NSAID given or advised, etc.

Table 3 Structural support and follow-up given by each type of clinician for soft tissue injuries

Structural support	Cons	M/Grade	SHO	ENP	EDPP	p Value
Bandages	11 (21%)	38 (40%)	35 (38%)	55 (56%)	52 (43%)	p<0.001
Splints	10 (19%)	11 (12%)	8 (8.8%)	13 (13%)	8 (6.7%)	p=0.42
Slings	1 (1.9%)	4 (4.2%)	3 (3.3%)	10 (10%)	3 (2.5%)	p=0.45
POP	0	1 (1.1%)	0	0	0	*
Crutches	14 (26%)	12 (20%)	4 (7%)	8 (15%)	1 (1.7%)	p<0.001
Follow-up						
Clinic	0	5 (5.3%)	1 (1.1%)	0	0	*
Review clinic	0	6 (6.3%)	4 (4.4%)	2 (2%)	4 (3.3%)	*
Physiotherapy	4 (7.6%)	5 (5.3%)	4 (4.4%)	5 (5.1%)	11 (9.2%)	p=0.031
OPD speciality (hand)	0	0	2 (2.2%)	1 (1%)	0	*

EDPP, emergency department physiotherapy practitioner; ENP, emergency nurse practitioner; OPD, out patient department; SHO, Senior House Officer.

*Not analysed statistically because of low numbers.

CONCLUSION

This study showed that ENPs, EDPPs and doctors of all grades investigated patients with fractures/dislocations similarly and managed them according to departmental protocols.

The treatment of closed soft tissue injuries as a whole—that is, advice, analgesia and structural support reported as given—showed statistically significant differences between the types of clinicians. There was no statistically significant difference overall between the types of clinicians when arranging formal follow-up. However, looking individually at the types of clinicians referring for physiotherapy, EDPPs were shown to refer significantly more patients for follow-up physiotherapy.

Further research is needed to investigate what effect these new roles have on the delivery of service and patient outcome. However, non-medical specialist skills need to be used to maximise the benefits of these extended roles to enhance patient care and to use the whole emergency department team effectively.

ACKNOWLEDGEMENTS

Dr K Challen, Research Fellow in Emergency Medicine, Wythenshawe Hospital.

Authors' affiliations

Stephen T E Ball, Kate Walton, Stephen Hawes, Emergency Department, Wythenshawe Hospital, Manchester, UK

Competing interests: None declared.

REFERENCES

- 1 Tachakra S, Deboo P. Comparing performance of ENPs and SHOs. *Emerg Nurse* 2001;**9**:36–9.
- 2 Cooper MA, Hair S, Ibbotson TR, *et al.* The extent and nature of Emergency Nurse Practitioner services in Scotland. *Accid Emerg Nurs* 2001;**9**:123–9.
- 3 Smith M, Buckley S. Collaborative working. *Emerg Nurse* 2004;**12**:16–18.
- 4 Anonymous. Nurse practitioners in emergency. *Aust Nurs J* 2005;**12**:39.
- 5 Moser S, Riyad B, Van Beek CA. Attitude of emergency department patients with minor problems to being treated by a nurse practitioner. *J Canadian Asso Emerg Physicians* 2004;**6**:246–53.
- 6 Walsh R. Patient satisfaction with emergency nurse practitioners. *Emerg Nurse* 2001;**8**:23–9.
- 7 Brebner JA, Ruddick-Bracken H, Norman JN, *et al.* The nurse practitioner: management of minor trauma. *Accid Emerg Nurs* 1996;**4**:43–6.
- 8 Sakr M, Angus J, Perrin J, *et al.* Care of minor injuries by emergency nurse practitioners or junior doctors: a randomised controlled trial. *Lancet* 1999;**354**:1321–6.
- 9 Bland A. Developing the emergency nurse practitioner role in accident and emergency: a bottom-up approach. *Accid Emerg Nurs* 1997;**5**:42–7.
- 10 Byrne G, Richardson M, Brunsdon J, *et al.* An evaluation of the care of patients with minor injuries in emergency settings. *Accid Emerg Nurs* 2000;**8**:101–9.
- 11 Neades B. Emergency nurse practitioners: what lies ahead? *Emerg Nurse* 2002;**10**:11.
- 12 McClellan C, Greenwood R, Bengner J. Effect of an extended scope physiotherapy service on patient satisfaction and the outcome of soft tissue injuries in an adult emergency department. *Emerg Med J* 2006;**23**:384–7.
- 13 Richardson B, Shepstone L, Poland F, *et al.* Randomised controlled trial and cost consequences study comparing initial physiotherapy assessment and management with routine practice for selected patients in an accident and emergency department of an acute hospital. *Emerg Med J* 2005;**22**:87–92.
- 14 Bethel J. The role of the physiotherapist practitioner in emergency departments: a critical appraisal. *Emerg Nurse* 2005;**13**:26–31.
- 15 Jibuikie O, Paul-Taylor G, Maulvi S, *et al.* Management of soft tissue injuries in an accident and emergency department: the effect of the introduction of a physiotherapy practitioner. *Emerg Med J* 2003;**20**:37–9.
- 16 Sexton J. Managing soft tissue injuries. *Emerg Nurse* 2002;**2**:16–18.