Assessing management of musculoskeletal disorders in the ambulance service

Sue Hignett, Paula Griffiths, Ian D. Murdey and Sandra L. Lee

**Background** Musculoskeletal disorders (MSDs) are the most common occupational illness in Great Britain affecting 1.1 million people a year. Paramedics, in particular, are known to have a high incidence of MSDs resulting, for many, in early retirement.

**Aim** To explore the management of MSDs at two ambulance services with respect to the implementation of policies and experience of staff.

**Methods** The data were collected at two ambulance services using document retrieval and semi-structured interviews. The first service used a functional-centred occupational health (OH) approach with patient participation. The second service used a more traditional medical model with the patient in a more passive role.

**Results** The first service reported their MSD management policies and procedures concurred with 28 of the 32 Faculty of Occupational Medicine guidelines (88%) in contrast to the second service, where only 17 (53%) concurred. For both services, the expected recovery pathways (management policies and procedures) had points of variance with the experienced recovery pathways. Both services had haphazard referral to OH resulting in limited referral for treatment in the first 4 weeks post-injury and no difference in median recovery times. These variances resulted in a convergence in the timing and type of treatment received by staff at both services.

**Conclusions** Both ambulance services were found to have variance in the experienced recovery pathway in comparison to the expected pathway. It was concluded that without systematic monitoring and regular audit, there was likely to be a lack of compliance with the policy and procedures.

**Key words** Emergency medical technicians; musculoskeletal diseases; occupational health; rehabilitation.

**Introduction**

Musculoskeletal disorders (MSDs) are the most common occupational illness in Great Britain affecting 1.1 million people a year [1]. They include problems such as low back pain (LBP), upper limb disorder and joint problems of various sorts, with LBP alone estimated to cost industry £3440 million every year [2]. There have been guidelines available for the management of MSDs (mostly LBP) in the UK for many years [3–10].

More recently, international comparisons have concluded that although there is general agreement on therapeutic and diagnostic recommendations, there has been a lack of attention to organizational barriers and cost implications [11,12]. Common assessment recommendations consist of diagnostic triage (screening for red flags and neurological problems) and the identification of potential psychosocial (yellow flags) and workplace barriers for recovery (blue and black flags) [12]. The recommendations suggest a management pathway that moves away from the traditional medical model (with the patient in a passive role) towards a function-centred approach that has the goal of increasing function-related capacity rather than reducing pain and expects the patient to take a more active and responsible role [4].

As a specific occupational group, paramedics are known to be at risk due to the ‘very heavy physical demand level’ of their work [13,14], resulting in a high incidence of MSDs, particularly LBP [15,16]. This paper reports two case studies exploring different MSD management strategies at two ambulance services. The first service, East Anglian Ambulance NHS Trust (EAAT) based their policy on a functional-centred approach with an in-house occupational health (OH) service. The second service, East Midlands Ambulance Service NHS Trust (EMAS) used a more traditional medical model with an externally contracted OH service.
Methods

The MSD management strategies were investigated using a top–down approach to identify the expected recovery pathway and a bottom–up approach by interviewing staff about their experienced recovery pathway. The data were presented as two case studies where each ambulance service was studied in detail as a real-world case study [17]. The method of case study is described as the ‘preferred strategy when “how” or “why” questions are being posed, when the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real life context’ [18].

The organizational and operational differences between EAAT and EMAS are summarized in Table 1.

Two data types were collected at each service to assess the management of MSDs: (i) review of policies and procedures (interviews with human resource and OH managers and document retrieval) and (ii) staff experience of policies and procedures in the event of an MSD sickness absence (interviews with 36 staff). The model for this type of mixed methods design has been developed within the context of real-world research [17] and intervention (ergonomics) analysis [21].

To map the expected recovery pathway, three lead managers from human resources, risk management and OH were interviewed to collect data on the policies and procedures at each service. The interviewees were selected if they managed the OH programme or were responsible for writing the policies and procedures. They were given a copy of the Faculty of Occupational Medicine (FOM) guidelines [4] before the interview and asked to self-assess the degree to which the MSD management in their service matched the guidance.

To map the experienced recovery pathway, interviews were carried out with staff who had experienced an MSD between February 2002 and November 2004. An invitation letter was sent to all potential participants by the human resources department at each service. Participants were identified by the Central Resource Centre of each service if they had experienced a musculoskeletal injury resulting in a single absence from work of at least 5 days between February 2002 and November 2004. Non-emergency staff, non-work-related chronic disorders and employees who had not yet returned to work were excluded.

Participants were informed about the nature of the study and written consent was obtained prior to interview. Sixty-two individuals from EAAT and 54 from EMAS volunteered to take part and from these 17 and 19 participants, respectively, were purposively sampled based on their location (urban or rural), injury, length of absence, age and sex.

A semi-structured interview schedule was developed from the FOM guidelines [4], background literature and expert advice from OH and rehabilitation experts and revised following a pilot interview at each service (Figure 1, available as Supplementary data at Occupational Medicine Online). Each interview lasted between 20 and 45 min and was, with permission, audiotaped. Interviews were transcribed verbatim and coded using NVIVO software [22]. A qualitative approach was used [23] to analyse the interview transcripts with additional data from the research project diary and post-interview notes to facilitate analysis [24]. The transcripts were then reviewed and compared with each other (constant comparison) until no further explanations could be extracted from the data, i.e. they were saturated and inclusive [25].

Although the terms validity and reliability are generally used to discuss quantitative research, the underlying concepts are applicable in qualitative research [17]. Validity addresses issues of credibility and trustworthiness (internal validity) and generalizability (external validity). These

<table>
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<tr>
<th>Table 1. Core organization data for the two ambulance trusts [19,20]</th>
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<td><strong>EAAT</strong></td>
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<tr>
<td>Formed in</td>
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<tr>
<td>Service area</td>
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<tr>
<td>Population served (million)</td>
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<tr>
<td>Emergency calls per year (approximately)</td>
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<tr>
<td>Staff complement</td>
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<td></td>
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<tr>
<td>MSDs</td>
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<tr>
<td>Median total number of days off per MSD injury</td>
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<td>Mean number of periods off work per MSD injury</td>
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were achieved in this project through the large number and variety of participants interviewed (sampling strategy), constant review by academic peers of the analysis (member checking) and through the search for negative cases that challenged the emerging hypotheses. Reliability (auditability or quality control) was addressed by a detailed audit trail during data collection (e.g. post-interview notes) and analysis [19,26]. This included memos containing the developing ideas to enable other researchers to see how interpretations were made and the role of the researchers in the interpretation of the data.

This study was approved by the Local Research Ethical Committees of EAAT, East Midlands Ambulance NHS Trust and Loughborough University Ethical Advisory Committee.

Results

Case study 1: EAAT

EAAT implemented a series of interventions to manage MSDs based on the recommendations of the European Agency for Occupational Safety and Health [27] and FOM [4]. In 2002, the Commission for Health Improvement found that EAAT had a reduction in work-related injuries associated with manual handling since recognizing it as a high risk area [28], but there was no evidence to specifically support the effectiveness of the interventions [29–31].

The managers from EAAT reported that their MSD management policies and procedures concurred with 28 of the 32 FOM guidelines (88%). There were four areas of non-compliance (Table 2, available as Supplementary data at Occupational Medicine Online).

The data from the interviews were compared with the policies and procedures and represented as expected and experienced pathways (Figure 2), with three main points of difference identified. The first was the initial contact with OH where the strategy expected that staff would make contact with OH as soon as an MSD problem occurred; however, staff reported that they tended to self-certify and/or visit their general practitioner (GP).

I didn’t think that you could go to somebody except your GP. I’ve always thought your GP was your port of call, and your only port of call ’til you got referred on to someone else. (Interviewee 25, EAAT)

The second point was at Week 6 with staff seeking alternative treatment (which OH sometimes funded) rather than attending the functional restoration programme:

But I have had some immediate results from acupuncture and, you know, I saw the osteopath when I originally went a couple of times ’cause he referred me to acupuncture and that’s really worked. (Interviewee 35, EAAT)

The final point of difference found that referral to functional restoration treatment was extremely effective for all those who went. However, this referral rarely followed the ideal of six sessions of physiotherapy and often came months after the initial injury had occurred, thus prolonging recovery and return to work:

But if I’d have had that in the December rather than the, what was it, May, June, July I’d have been back months and it wouldn’t have cost this lot half as much as it did. (Interviewee 36, EAAT)

Case study 2: EMAS

EMAS managers only scored 17 (53%) on the FOM guidelines. There were 15 areas of non-compliance (Table 2). At EMAS (Figure 3), there were four main points of difference in the expected and experienced recovery pathways for MSDs.

The first was the referral route where OH was supposed to be the first contact in the expected pathway via management referral; none of the interviewees reported this experience:

I’ve actually got a copy of the return to work interview that we have, I’ve got a copy of that in my locker, and on that is written that it is recommended that I should go forward to occupational health for a referral for a return to work but that never happened. (Interviewee 16, EMAS)

Secondly, the treatment route varied from the expected pathway of NHS physiotherapy. Many individual paramedics chose to use private specialists; none had been referred for physiotherapy by OH:

The only treatment I’ve had is via my GP saying ‘would you go to try physio? You’ve nothing to lose’. Which I did. (Interviewee 8, EMAS)

I actually went out of my own way then, I went out of my own pocket to pay for a chiropracter to sort me out, which he did. (Interviewee 16, EMAS)

Thirdly, absentees were expected to receive a return-to-work OH consultation. This appointment could take up to 1 month to arrange compared with the 10 days anticipated by EMAS:

I had to wait, as I say, I had to extend my sick, I had four weeks doing nothing waiting for an occy health appointment. (Interviewee 15, EMAS)

Finally, the provision of modified duties upon return to work was haphazard and varied from station to station.
The provision of modified duties appeared to depend on whether staff were available to cover:

The plan was, but it never happened, was that I was going to go out third manning, basically three of us in an ambulance so I could do the treatment of the patient but I wouldn’t have to do any lifting or handling of that person, but that never happened. (Interviewee 16, EMAS)

### Discussion

The key finding of this study was that the experienced return-to-work pathways differed from the expected pathways for two very different MSD OH management approaches. The management systems to identify those off work for >4 weeks did not happen consistently at either ambulance service resulting in delays for referral to OH (EAAT) and NHS appointments (EMAS). This could result in staff injuries moving into the chronic stage of MSD management. Additionally, the experienced pathways at the two services were found to have converged, with EAAT staff taking longer to be referred to physiotherapy treatment and EMAS staff receiving earlier treatment through private provision.

The strength of this study is the real-world context in which it was conducted, in spite of the limitations of
'complex, relatively poorly controlled and generally messy' situations' [17]. Using the case study approach, a greater understanding of the processes that impact intervention within an organizational context has been gained [32]. This paper has described what really happened when there was no impetus from academic involvement and/or time-limited interventions. The process at both services was investigated from top–down (management policies and procedures) and bottom–up perspectives [33] to compare the expected and experienced pathways. A direct comparison could not be made between the services due to differences in local conditions (urban and rural) and call rates (reflecting the different patient profiles in the two regions).

Most of the previous research on return to work has reported the outcome of specific interventions, e.g. work conditioning and functional restoration programmes [34]. These studies tend to focus on specific factors, e.g. yellow flags (psychosocial factors) in return-to-work programmes [35] and blue (social factors) and black (organizational culture) flags [36,37]. A recent study reported that ‘unforeseen organizational obstacles at one site . . . had a detrimental effect on uptake and delivery’ of the planned intervention [38]. The comparative strength of this paper is that the real-world context allowed flexibility to accommodate this type of problem, by seeing it as an integral part of the organizational context rather than a research obstacle.

Future research should include the use of mixed methods to support real-world evaluations [39]. This could combine quantitative and qualitative approaches for intervention studies as well as case studies. The appropriate research design can accommodate organizational changes so that a follow-up study can investigate the embedding of interventions in organizations as well as variance from the original strategy.

Despite having different OH strategies for dealing with musculoskeletal injuries, both ambulance services were found to have variance in the experienced recovery pathway in comparison to the expected pathway. The reasons for this included inconsistencies in the management of the pathways and similarities in the timing and type of treatment received at both services. As both services had differences between the expected and the

<table>
<thead>
<tr>
<th>Expected Pathway</th>
<th>Experienced Pathway</th>
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<tr>
<td>Days 1-7</td>
<td>Self-certification</td>
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<tr>
<td></td>
<td>Contact GP</td>
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<td></td>
<td>Week 4</td>
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<td></td>
<td>Referral to OH by manager</td>
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<td></td>
<td>(10 day waiting list)</td>
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<td>Week 6</td>
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<td></td>
<td>OH physician appointment</td>
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<td></td>
<td>Possible referral to Physio</td>
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<td></td>
<td>(NHS waiting list)</td>
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<td></td>
<td>Regular contact from manager</td>
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<tr>
<td></td>
<td>Weeks 12+</td>
</tr>
<tr>
<td></td>
<td>Physiotherapy</td>
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<td></td>
<td>Indefinite</td>
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<tr>
<td></td>
<td>Final OH consultation</td>
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<td></td>
<td>Return-to-work with light duties if necessary</td>
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<tr>
<td></td>
<td>Inconsistent contact from manager</td>
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<tr>
<td></td>
<td>Weeks 1 – 6+</td>
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<td></td>
<td>NHS waiting list or visit private specialist</td>
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<td></td>
<td>Indefinite</td>
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<tr>
<td></td>
<td>Possible referral to OH before return-to-work (waiting time up to 1 month)</td>
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<td>Return-to-work with possible duties if staff available</td>
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Figure 3. Expected and experienced recovery pathways for MSDs at EMAS (star = key differences in pathways).
experienced pathways, it would be beneficial for them to monitor and audit the implementation of their guidelines in the future.

**Key points**

- Management audit is needed to ensure that referral and treatment are delivered as stated on the MSD policy.
- Organizational policies and procedures may be misleading in comparison with actual MSD recovery pathways.
- A mixed methods approach is needed to explore real-world interventions when a control group is inappropriate for operational and/or ethical reasons.

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**Conflicts of interest**

None declared.

**References**


