SHORT REPORT

Can emergency physicians predict severity and time away from work?

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Background Emergency and primary care physicians are often asked to estimate patients' likely duration of sickness absence or temporary disability following work-related injury or illness. However, return to work is a complex interaction of multiple factors and often difficult to predict accurately.

Aims To compare physician estimates of expected time away from work and severity of injury, made at the time of the initial presentation, with actual duration of temporary disability following work-related shoulder or knee injury.

Methods Patients aged 18–65 with work-related shoulder or knee injuries who attended one of three Edmonton Emergency Departments were recruited. For each participant the treating physician made an estimate of severity and expected time before they would return to work. This was compared with information on actual temporary disability (TDdays) obtained from the Alberta Workers' Compensation Board (WCB) data.

Results Over the study period, 443 (88%) of 501 patients were enrolled into the study; however, only 177 (35%) agreed to linking their data with WCB. Median TDdays increased with the physicians' estimates of both severity and likely temporary disability. Physicians tended to underestimate time off work for those with long duration of TDdays, but overestimated this for those with short durations.

Conclusions Emergency physicians' estimates of expected lost work time and severity of injury were correlated with actual temporary disability, although their accuracy was fairly low. Further work to define why differences between estimated and actual temporary disability occur could help physicians and others planning return to work.

Key words Estimated; injury; occupational; return to work; temporary disability; work-related.

Introduction Physicians are often asked to provide an opinion on likely sickness absence or temporary disability following illness or injury. The accuracy of such estimates has not previously been studied in detail although it is known that sickness absence is a complex phenomenon and that personal, illness-related, and psychosocial factors may all affect recovery. Recovery may understandably take longer following severe injury [1,2], or if unexpected complications occur. For hand injuries, the usefulness of a severity score in predicting sickness absence has been reported [2–4], but these findings may not be valid for other types of injury.

This project aimed to compare physicians’ estimates of likely temporary disability and severity of illness with actual temporary disability so as to gauge their agreement. The availability of this information might allow improved estimates of recovery, which in turn would potentially allow the provision of additional support to individuals experiencing problems.

Methods Patients aged 18–65 with work-related shoulder or knee injuries attending one of three participating emergency departments (EDs) in Edmonton, AB during the period July 2006–May 2008 were identified. The initial categorization of an injury as work-related was made at registration and confirmed by physician billing to the Alberta Workers’ Compensation Board (WCB).
Those with more than 4 weeks between date of injury and presentation, or with severe multiple injuries, were excluded.

Data were collected from ED records using a structured form. The treating physician also completed a 100 mm visual analogue scale (score '0' corresponding to the least severe injury of this type and '100' the most severe) and an estimate of the duration of time away from work, or temporary disability, the individual would require, considering the severity of injury and nature of the individual’s work.

More than 6 months after injury WCB administrative data sets were searched for each participant for the injury in question. Data including actual duration of temporary disability (TDdays) were extracted. Physician estimates of injury severity and expected duration of temporary disability were compared with TDdays. Spearman correlation coefficients, calculated through SPSS/PASW (release 18), were used to estimate \( P \) values.

All participants provided written informed consent. Ethics approval was obtained from the University of Alberta Human Research Ethics Board.

Results

A total of 501 patients attended with a relevant injury during the recruitment period, and of these, 443 (88%) agreed to provide initial information. However, only 177 (125 male, 52 female) agreed to data linkage with WCB data sets (35%). Their mean (standard deviation) age was 39 (13), and 71% were male. Age, sex and proportion with shoulder or knee injury did not differ significantly between included and excluded patients (data not shown).

Estimated severity was available for 168/177 and estimated temporary disability for 161/177. The majority of these 177 participants had a knee (60%) rather than a shoulder injury (40%). Most injuries were surface abrasions (24%) or soft tissue injuries (59%), with few fractures or dislocations (14%). The industry sector with the largest proportion of participants was construction (23%). Public administration (14%) and healthcare/social assistance (13%) also contributed a sizeable proportion.

Median TDdays increased with estimates of both severity and temporary disability (Table 1). The range of TDdays within each category of severity was wide; some individuals with low severity scores had prolonged TDdays (up to 362 days), while some with high severity had few TDdays. Similarly some individuals with short estimated temporary disability (≤5 days) had prolonged TDdays (up to 362 days), while some with longer estimated temporary disability had few TDdays.

Comparisons were then undertaken of the difference between TDdays and estimated temporary disability. Median difference (TDdays – estimated temporary disability) was not associated with age or sex of the individual.

### Table 1. Physicians’ estimate of severity and likely temporary disability versus TDdays

<table>
<thead>
<tr>
<th>Physicians’ estimate of severity</th>
<th>Median TDdays (IQR)</th>
<th>( P ) valuea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low (0–30)</td>
<td>83 0 (0–8)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Moderate (31–50)</td>
<td>61 4 (0–26)</td>
<td>(Spearman’s rho 0.223)</td>
</tr>
<tr>
<td>High (&gt;50)</td>
<td>17 13 (0–53)</td>
<td></td>
</tr>
<tr>
<td>Physicians’ estimate of likely temporary disability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low (0–5 workdays)</td>
<td>92 1 (0–14)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Medium (6–20 workdays)</td>
<td>39 0 (0–19)</td>
<td>(Spearman’s rho 0.233)</td>
</tr>
<tr>
<td>High (&gt;20 workdays)</td>
<td>37 25 (13–69)</td>
<td></td>
</tr>
</tbody>
</table>

aInterquartile range.

P value estimated using Spearman non-parametric correlation.

Discussion

This study found that physicians’ estimates of severity and temporary disability were both correlated to TDdays but there was variation in the closeness of these measures. While the pattern of difference suggested that physicians underestimated temporary disability when the number of days away from work was more than 20, they overestimated when there was little or no time lost (TDdays zero). Previous studies have reported measures of severity (such as the hand injury severity score) to be associated with sickness absence [1–4] but we identified no previous reports that compared estimated temporary disability, allowing for severity and the nature of an individual’s work, with actual days off work/disability.

In addition to those taking longer than expected to return to work, some participants took less time than predicted. If factors associated with this behaviour could be identified, they might suggest ways to reduce disability for

### Table 2. Median and interquartile range of difference between TDdays and estimated temporary disability categorized by different periods of TDdays

<table>
<thead>
<tr>
<th>Actual TDdays</th>
<th>( n )</th>
<th>TDdays – estimated likely temporary disability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Median</td>
</tr>
<tr>
<td>0</td>
<td>73</td>
<td>-5</td>
</tr>
<tr>
<td>1–20</td>
<td>46</td>
<td>0</td>
</tr>
<tr>
<td>&gt;20</td>
<td>42</td>
<td>+49</td>
</tr>
</tbody>
</table>

\( P \) value <0.001 (Spearman non-parametric correlation: Spearman’s rho 0.730).
However, it is debatable whether patients should be encouraged effectively to ignore medical advice. A better understanding of temporary disability would be helpful to physicians, potentially removing some concerns they have when certifying sickness absence [5–7].

This study had several limitations. Firstly, the nature of industry in Edmonton may be different in other centres, limiting its generalizability. Secondly, the low rate of consent to link with WCB data raises the possibility of bias, with those planning a slow return to work being less willing to consent. Thirdly, it is possible that participating physicians modified their estimates of severity and temporary disability because of a Hawthorne effect. The effect of this on duration of estimated disability cannot be predicted. Finally, the physicians in this study were emergency physicians and may differ from other physicians in some relevant ways (e.g. being less aware than family physicians of factors in the home).

The study demonstrates that emergency physicians can estimate likely temporary disability taking account of severity and an individual’s work, although at an individual level these estimates may not be very accurate. Further work to define where and why differences between estimated and actual temporary disability occur could help physicians making such estimates, as well as insurers and other third parties planning return to work.

**Key points**

- Emergency physicians’ estimates of the severity of knee and shoulder injury and of anticipated resulting sickness absence are better than expected by chance.
- For knee and shoulder injuries at least they tend to overestimate expected sickness absence when actual sickness absence is short and underestimate it when it is long.
- Closer study of those who return to work earlier than predicted may be warranted.

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**Conflicts of interest**

None declared.

**References**