SHORT REPORT

Mental ill-health and second claims for work-related injury

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Background
There is some evidence that mental ill-health (MIH) is associated with injury at work, but data are sparse.

Aims
To examine, within a cohort of workers with a first workers’ compensation claim, whether those with a history of MIH had a higher than expected number of second claims.

Methods
All Workers’ Compensation Board (WCB) records in Alberta, Canada from January 1995 to December 2004 were linked to administrative health records, and a physician diagnosis of MIH in the 48 months prior to the first WCB claim extracted. The first and second (if any) claim for each worker were identified and time to second claim calculated. Survival time to second claim was estimated by Cox regression with history of MIH as a covariate.

Results
Results were available for 389,903 WCB first claimants. Of these 53% of men and 38% of women had a second claim, with a median time between claims of 549 days (men) and 568 days (women). Those with a history of MIH were somewhat more likely to make a second claim and, in the survival analysis, to make this claim sooner. Type of injury at first claim did not appear to modify this effect.

Conclusions
Workers with a recent history of MIH at the time of making a first WCB claim for a work injury are at greater risk of a second injury, leading to a new claim. Strategies to get workers back to work after the first injury/claim should include management of MIH to reduce the risk of further injury.

Key words
Injury; mental ill-health; repeat claims; workers’ compensation.

Introduction

Although there are some data suggesting that workers with mental ill-health (MIH), particularly those taking medication for such conditions, may be at greater risk of injury at work, the evidence is fairly sparse [1,2,3,4], albeit supported by work on the effects of psychoactive drugs [5,6]. Affective illness, even without medication, may lead to lower attention to work risks [7]. Given this limited evidence it was of interest to examine the data linked for another study [8] to see whether those with a physician diagnosis of MIH prior to a Workers’ Compensation Board (WCB) claim were more likely than claimants without MIH to have a second injury claim or a shorter period between first and second claim.

Methods

The method of data linkage has been described elsewhere [8]. Briefly, all WCB claims in Alberta Canada from January 1995 to December 2004 were linked to administrative health data. All physician billing and hospital discharge records with ICD-9 codes 290-319 (mental illness) were identified during (i) the 12 months prior to the WCB claim and (ii) >12–48 months prior to the claim. Only those residents in Alberta throughout were included. All claims for the same individual within the 10 years were identified, and the first and any second claim extracted. Occupation at first claim and details of this claim (type of injury, type of incident, body part) were re-coded to the groups used by Alberta WCB [9]. Claims were restricted to those aged 18 to 65 years who could be matched with certainty to an earlier data file [9]: to preserve confidentiality, personal health number was not retained in the mental health database.

The record of a second claim was examined, stratified by sex, by MIH in the two periods of interest. For those with a second claim, the median number of days between...
the first and second claims was also examined. An initial survival analysis (Cox regression) of time to second claim adjusted just for age and occupation. The data were then stratified by type of injury, accident or body part in the first claim, examining MIH effect within the three most common categories of each factor. A final survival analysis fully adjusted for all available occupational and injury data.

**Results**

All but 40 of the original 490,230 individuals [9] could be unambiguously linked to the mental health data set. Of these, 389,903 had been resident in Alberta throughout the 48 months prior to the first WCB claim: 68% (266,351) were male, with 26% of men and 49% of women found to have had MIH in the 48 months prior to the first WCB claim (Table 1). Men (53%) were more likely than women (38%) to have a second claim, and among those that did, the median number of days between claims was somewhat shorter for men (549 days) than women (568 days). For both, the likelihood of a second claim increased modestly with MIH, most strongly for those with an MIH record in both the previous 12 months and more distantly (Table 1). The time between claims was longer for those without MIH (Table 1). In the survival analysis the hazard ratio (HR) was increased for MIH either recently or more distantly (Table 1). Further analysis showed no evidence of an interaction between the two periods (details not shown).

The data were then stratified to examine whether the effect of MIH on a second claim was influenced by the type of injury or incident at first WCB claim. The observed differences were small. The HR associated with any MIH was somewhat larger for an injury to the lower extremity (HR = 1.17, 95% CI 1.15–1.20) than for an injury to the trunk (HR = 1.12, 95% CI 1.10–1.14) and perhaps larger also for contact with an object/equipment (HR = 1.17, 95% CI 1.15–1.199) than for falls (HR = 1.12, 95% CI 1.09–1.16), with bodily reaction/exertion intermediate (HR = 1.14, 95% CI 1.12–1.16), but this more detailed analysis did not suggest that the type of injury was an important effect modifier.

The final, fully adjusted, survival analysis showed clear separation of those with no MIH and those with MIH in both periods, but for those with MIH only in one period, the effect on a second claim was very similar (Figure 1).

**Discussion**

This analysis suggests that a history of MIH was associated with a higher risk of second injury, leading to a new WCB claim. The increase in risk was not large but appeared to be independent of type of first claim and very similar for men and women. There were, however, three important limitations to the data. First, we know nothing about the employment of those without a second WCB claim: some may not have returned to work at all. If this happened disproportionately in those with MIH, this would bias our estimate of the effect of MIH towards the null. Similarly, if a worker did return to work, we do not know how soon. If those with a recent history of MIH took longer to return to work, their time at risk for a second claim would be shorter, and the bias would again be towards the null. Third, we are using WCB claim as a proxy for injury, although we know that only about 60% of injuries that should be reported to the WCB do indeed get reported [10]; given the relatively small estimated effect, it could be that the MIH leads to a greater

**Table 1. MIH and second WCB claim**

<table>
<thead>
<tr>
<th>Time of diagnosis of MIH before WCB claim</th>
<th>Men</th>
<th>Survival analysis</th>
<th>Women</th>
<th>Survival analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>(%)</td>
<td>Median days to second claim (in those with 2 claims)</td>
<td>n (%)</td>
</tr>
<tr>
<td></td>
<td>n</td>
<td>(%)</td>
<td>HR 95% CI</td>
<td>n (%)</td>
</tr>
<tr>
<td>No MIH in 4 years before claim</td>
<td>196,564</td>
<td>103,632 (53)</td>
<td>566</td>
<td>1.00 –</td>
</tr>
<tr>
<td>MIH in 1–4 years before claim</td>
<td>52,774</td>
<td>28,000 (53)</td>
<td>504</td>
<td>1.14 1.12–1.15</td>
</tr>
<tr>
<td>MIH in 0–12 months before claim</td>
<td>14,085</td>
<td>7,773 (55)</td>
<td>517</td>
<td>1.12 1.10–1.15</td>
</tr>
<tr>
<td>MIH in both periods</td>
<td>29,28</td>
<td>16,88 (58)</td>
<td>519</td>
<td>1.23 1.17–1.29</td>
</tr>
<tr>
<td>Total</td>
<td>266,351</td>
<td>141,093 (53)</td>
<td>549</td>
<td>– –</td>
</tr>
</tbody>
</table>

x² = 59  P < 0.001

x² = 125  P < 0.001

a Number of second claim.

b HR (Cox regression) allowing for age and occupation at time of first claim (censored at earlier of 31 December 2004 or 65th birthday).
tendency to make a WCB claim given that an injury has occurred, rather than a greater risk of the injury itself.

The conclusion from this analysis is that workers with a recent history of MIH (very largely affective disorders) [8] and who have an injury resulting in a WCB claim are somewhat more likely to have a second injury, resulting in a further claim. It may be that policies encouraging a successful return to work after the first injury need to also address support for those at risk of both further episodes of MIH and of further injury.

**Key points**

- In North America the great majority of injuries at work are covered by a Workers’ Compensation Board, with Workers’ Compensation Board data providing an (imperfect) indication of the characteristics of injuries and injured workers.
- The gap between successive claims by an individual worker may tell us something about high risk groups.
- Workers with a history of mental ill-health are more likely to have a second injury, leading to a new claim, and consequently better management of mental ill-health may help to reduce workplace injuries.

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**Conflicts of interest**

None declared.

**References**

A leaky vessel

Arthur works on a production line making chemical fertilizers. He works with six other colleagues in an enclosure containing three chemical vessels. Arthur is referred to occupational health because of a skin rash which he feels is due to a toxic substance leaking from one of the vessels. Arthur has had skin problems previously and when working for another company was off work for four months. At the consultation the exact cause of the problem is uncertain but it is possible that he has developed a recognized condition consistent with exposure to a noxious substance. No other workers are experiencing the same problem. Arthur feels management have not taken his concerns seriously; they see him as a bit of a moaner; he insisted on a referral to occupational health because he didn’t want to go off sick again and he says that ‘companies are not supposed to make their employees ill’.

The occupational physician reports a problem and expresses concerns that one of the vessels may be leaking a toxic substance. Management have a procedure to risk assess and evaluate the competency of the vessel but the substance is hard to measure directly so the objectivity of the assessment is limited. Management interpret the evidence as equivocal and non-conclusive. A problem with the vessel is not acknowledged. Nonetheless, Arthur is moved to a different environment fortunately with no financial detriment.

Meanwhile management seek the possibility of screening out potentially vulnerable employees at the pre-appointment stage. The occupational physician reports this would be unnecessarily discriminatory on the grounds that skin problems are common and the adverse reaction relatively rare. Six months later another worker presents with a skin problem and he considers it due to the same leaky vessel as did Arthur. This time the employee is in danger of losing his job as redeployment will be difficult.

Management don’t like the occupational health advice to fix the problem. Their internal assessment has exonerated them of the problem and they consider the employee has an alternative agenda. However the occupational physician feels there still may be a work-related condition and so visits the site and talks to employees. They raise a concern about the vessel but are not sufficiently affected to take it further. Others have moved out as soon as possible. The occupational physician reviews the risk assessment and questions the appropriateness of the assessment and its interpretation. It confirms concerns about exposure to a toxic influence. On meeting his own line manager the occupational physician is told of complaints about his ‘one-sided’ reports. They have no evidence for a leaking vessel or toxic substance.

Now replace the leaky vessel with ‘line manager’, skin disorder with ‘anxiety and depression’, vulnerability with ‘anxious personality’, risk assessment with ‘stress risk assessment’, toxic with ‘bullying management style’. The occupational physician is told he should not infer there is a ‘problem manager’; he should not criticize management and only see one side and by the way the contract might be in jeopardy.

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