An algorithm comprising 7 baseline variables predicted the 2 year work disability status in non-specific back pain


Clinical impact ratings GP/FP/Primary care

In patients with non-specific back pain associated with ≥1 day’s absence from work, what variable or set of variables best predicts the 2 year work disability status?

METHODS

Design: a cohort study (Recherche sur les Affections Musculo-Squelettiques [RAMS]; Prognosis Study) with a qualitative phase to identify additional predictors, and a quantitative phase for prediction analysis. More than 100 potential predictors were measured at baseline and at 6 and 12 weeks. Predictive models of 2 year outcome were developed with recursive partitioning on a 40% random sample of the cohort, and validated in the rest.

Setting: 7 primary care settings in Quebec City, Quebec, Canada.

Patients: 860 adult workers (mean age 39 y, 58% men) who consulted for non-specific back pain associated with ≥1 day’s absence from work.

Description of prediction guide: the final model had 7 questions pertaining to patients’ recovery expectations, radiating pain, previous surgery, self reported pain severity, frequent change of position because of back pain, irritability and bad temper, and difficulty sleeping.

Outcomes: return to work in good health (RWGH) categorised as success, partial success, failure after attempt, and failure.

MAIN RESULTS

The probability of success was highest (0.84, 95% CI 0.77 to 0.91) for patients without previous back surgery who expected to recover within 3 months and rated their pain as mild (0 to 10) but who did not change their positions frequently to get comfortable, and lowest (0.25, CI 0.18 to 0.32) in patients with radiating pain (into the arms or legs) who did not expect to recover within 3 months. Patients with the lowest probability of success also had the highest probability of failure (0.46, CI 0.38 to 0.54). The probability of partial success varied from 0.08, CI 0.02 to 0.14 (in patients with the highest probability of success) to 0.45, CI 0.30 to 0.60 (in patients without previous back surgery who anticipated to recover within 3 months, rated the pain as 4–10, changed positions often to get comfortable, were more irritable than usual but who slept as usual). Sensitivity and specificity and positive and negative likelihood ratios for the collapsed outcome (success plus partial success) to 0.60 (in patients without previous back surgery who anticipated to recover within 3 months, rated the pain as 4–10, changed positions frequently to get comfortable, and were more irritable than usual but who slept as usual). Sensitivity and specificity and positive and negative likelihood ratios for the collapsed outcome (success plus partial success v failure after attempt plus failure) are in the table.

Conclusions

In patients with non-specific back pain associated with ≥1 day’s absence from work, the best, although limited, prediction of the 2 year work disability status was obtained with 7 baseline variables.

Abstract and commentary also appears in ACP Journal Club.

Measure of validity for a clinical prediction rule developed from 7 baseline variables for predicting the 2 year work disability status in non-specific back pain

<table>
<thead>
<tr>
<th>Sample</th>
<th>Cut point</th>
<th>Sensitivity (95% CI)*</th>
<th>Specificity (CI)*</th>
<th>+LR</th>
<th>-LR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Validation set (n = 506)</td>
<td>Failure or FAA v success or partial success</td>
<td>74% (70 to 78)</td>
<td>62% (58 to 66)</td>
<td>1.95</td>
<td>0.42</td>
</tr>
</tbody>
</table>

*FAA = failure after attempt. Diagnostic terms defined in glossary; LRs calculated from data in article.
†95% CIs provided by author.