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

Dionne CE, Bourbonnais R, Fremont P, et al. **A clinical return-to-work rule for patients with back pain.** CMAJ. 2005;172:1559-67.

Clinical impact ratings: GIM/FP/GP ★★★★★☆☆

QUESTION

In patients with nonspecific 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 18 to 64 years of age (mean age 39 y, 58% men, 32% with persistent back pain, 46% with recurrent back pain) who consulted for nonspecific 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 back 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) categorized as success, partial success, failure after attempt, and failure.

MAIN RESULTS

At 12 weeks, about 50% of patients reached the RWGH success category, compared with 18% at 6 weeks. At 2 years, close to 20% of patients were still in the "failure after attempt(s)" and failure groups combined. 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 4 to 10 (on a scale of 0 [none] 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 to 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 vs failure after attempt plus failure) are in the Table.

CONCLUSIONS

In patients with nonspecific 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.

Source of funding: Quebec Institute for Occupational Safety and Health.

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Measures of validity for a clinical prediction rule developed from 7 baseline variables for predicting the 2-year work disability status in nonspecific back pain*

Sample	Cutpoint	Sensitivity (95% CI)†	Specificity (CI)†	+LR	–LR
Validation set (*n* = 506)	Failure or FAA vs success or partial success	74% (70 to 78)	62% (58 to 66)	1.95	0.42

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

COMMENTARY

The bottom line for clinicians: Don't use the prediction rule by Dionne and colleagues for several reasons. First, it should be validated in another setting, and its clinical use should be shown to cause more good than harm. Second, the rule's potential use is suspect, considering that 40% of predictions in the validation sample were erroneous. Finally, the outcome being predicted—return to work in good health—is an unstable psychosocial construct that is highly influenced by interpersonal, economic, and political factors. Wasson and colleagues warned against using such sociological or behavioral outcomes in their seminal article on prediction rules (1).

The psychosocial nature of the outcome is underscored by the fact that the best single predictor was the patients' own premonition of their future status: "Do you think you will be back to your normal work within 3 months?" Is this an example of dispassionate foresight or self-fulfilling prophecy? Because the rule predicted failure to return to work 2 to 3 times more often than what was actually observed, it is possible that informing patients of an ominous prediction would adversely influence outcomes further. Another striking observation is that outcome status at 12 weeks had a predictive accuracy of over 90%. That prolonged disability seals one's fate is a long-standing reproach to all involved in workplace health and safety. How the persistence of disability renders back pain unremitting is a conundrum for clinical investigation. The answer may be hiding in studies such as this by Dionne and colleagues.

Living with back pain reflects the psychosocial assaults on our coping capacity that operate at home and at work (2). Furthermore, this psychosocial context has a temporal component, includes the vortex of disability determination itself, and is bedeviled by the idiosyncrasies of life. No wonder a "predictive rule" for job absenteeism in the setting of back pain is a will-o-the-wisp.

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