LETTERS

CLINICAL PREDICTION RULES

Assessing properly the usefulness of clinical prediction rules and tests

Huw Llewelyn *general physician and endocrinologist*

Nevill Hall Hospital, Abergavenny NP7 7EG, UK

Clinical prediction rules and other "tests" should be assessed not only in terms of sensitivity and specificity,[1] which show only how a test detects a single diagnosis in a defined population. Sensitivity is often set high and specificity low, so that a positive result suggests only a differential diagnosis. A test result with few differential diagnoses is helpful. To differentiate between such diagnoses, a finding has to occur commonly in at least one differential diagnosis and rarely in at least one other.[2]

It is not enough to use cut-off points to designate a result as high, normal, or low. Experienced doctors often use actual results. For example, haemoglobin concentrations of 100 g/L, 60 g/L, and 20 g/L are all low, but each has its own differential diagnosis. Also, an albumin excretion rate of 30 µg/min is abnormal, but the number needed to treat with an angiotensin receptor blocker to stop one patient getting diabetic nephropathy within two years is about 100.[3] However, if the abnormal rate is 60 µg/min, the number needed to treat is about 12.[3] Thus, even if the test result is abnormal, the value itself may be more useful when choosing whether to treat.

The ability of test results to suggest differential diagnoses, to differentiate between them, and to act as diagnostic and treatment selection criteria is currently not assessed adequately. This undermines evidence based medicine and the work of organisations such as the National Institute for Health and Clinical Excellence.

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1   Adams ST, Leveson SH. Clinical prediction rules. *BMJ* 2012;344:d8312. (16 January.)
2   Llewelyn H, Ang AH, Lewis K, Abdullah A. The Oxford handbook of clinical diagnosis. 2nd ed. Oxford University Press, 2009.
3   Llewelyn DE, Garcia-Puig J. How different urinary albumin excretion rates can predict progression to nephropathy and the effect of treatment in hypertensive diabetics. *J Renin Angiotensin Aldosterone Syst* 2004;5:141-5.

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huw.llewelyn@orange.net