Review: clinical gestalt strategies and clinical prediction rules have similar discriminate pretest probabilities of pulmonary embolism

Chunilal SD, Eikelboom JW, Attia J, *et al*. Does this patient have pulmonary embolism? *JAMA* 2003;**290**:2849–58.

Clinical impact ratings GP/FP/Primary care ★★★★★☆☆ IM/Ambulatory care ★★★★★☆☆
Cardiology ★★★★★☆☆ Internal medicine ★★★★★★☆ Respirology ★★★★★★☆

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Q In patients with suspected pulmonary embolism, how do clinical prediction rules (using explicit features of clinical examination) compare with clinical impression based on routine data (the clinical gestalt) for determining the pretest probability of pulmonary embolism?

METHODS

Data sources: Medline (1966 to March 2003) and reference lists.

Study selection and assessment: English language studies were selected if patients with suspected pulmonary embolism were included; clinical assessment was done blinded to the results of diagnostic testing; pretest probability of pulmonary embolism was estimated using the clinical gestalt or a clinical prediction rule; and assessments were compared with validated diagnostic methods for confirming or refuting pulmonary embolism. Studies that derived a clinical prediction rule had to systematically collect clinical data from consecutive patients and have >50 patients with confirmed pulmonary embolism. Clinical gestalts must have been based on patient history and physical examination data without predetermined elements or a standardised score and must have been assessed before other diagnostic testing.

Outcomes: accuracy of pretest probability assessments for pulmonary embolism using clinical gestalt strategies and clinical prediction guides.

MAIN RESULTS

16 studies (8306 patients) met the selection criteria. 7 studies used clinical gestalt strategies and 10 studies used clinical prediction rules. The table lists the accuracy of pretest probability assessments for pulmonary embolism using clinical gestalt strategies and clinical prediction guides for distinguishing among patients who have a low, moderate, or high pretest probability.

CONCLUSION

Clinical gestalt strategies of experienced physicians and clinical prediction rules used by inexperienced physicians have similar accuracy for discriminating among patients who have a low, moderate, or high pretest probability of pulmonary embolism.

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Commentary

The presence of clinical prediction rules can serve to allow translation of a standard approach and perhaps improve the diagnostic accuracy. Even within the context of various trials for the diagnosis of pulmonary embolism, the gap between pretest likelihood is greatly variable and dependent upon the completeness of clinical information presented. Thus, a clinical characteristic alone (eg, dyspnoea following prolonged immobilisation) in the absence of such data as arterial blood gases (hypoxaemia and hypocapnoea) decreases the clinical sensitivity for the diagnosis.

How are busy clinicians to use such information in a timely, meaningful, and more standardised format? Clinical prediction rules are a step in the right direction but they must be simple in their construction and easy to apply in a busy practice setting. Furthermore, they make the interpretation of the diagnostic accuracy of various emerging confirmatory markers all the more applicable and would likely lead to less clinical bias of misinterpretation. The clinical prediction criteria proposed by Wells *et al*[1] meet the criteria of simplicity to derive a probability estimate for pulmonary embolism.

Although the evidence reviewed by Chunilal *et al* does not seem to offer a clear advantage for prediction rules over gestalt, it should be recognised that such information is gathered in controlled environments where the power of suggestion plays an integrative role in the clinician's response. Although it is my own ''gestalt'' that suggests that the time may be here to embrace a clinical prediction rule to assist in the diagnosis of pulmonary embolism in the real world, more research is needed to support the use of such clinical prediction rules.

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1 Wells PS, Anderson DR, Rodger M, *et al*. Excluding pulmonary embolism at the bedside without diagnostic imaging: management of patients with suspected pulmonary embolism presenting to the emergency department by using a simple clinical model and d-dimer. *Ann Intern Med* 2001;**135**:98–107.

Accuracy of pretest probability assessments for pulmonary embolism

Assessment types	Pretest categories	Range of pulmonary embolism rates (%)	Range of likelihood ratios
Clinical Gestalt (7 studies)	Low	8% to 19%	0.13 to 0.53
	Moderate	26% to 47%	0.67 to 1.1
	High	46% to 91%	1.9 to 12
Clinical prediction guide (10 studies)	Low	3% to 28%	0.05 to 0.93
	Moderate	16% to 46%	0.72 to 2.0
	High	38% to 98%	1.4 to 66