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## Editorials

# The rational clinical examination in emergency care

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We should tell patients that even highly sensitive tests miss some cases

Understanding the patient's history and interpreting the clinical examination can be challenging in emergencies. Although the immediate presenting problem may be clear—"I've hurt my hand" or "I have a cough"—confounding factors such as pain and anxiety may obfuscate the symptoms and mask the signs. In these circumstances a rational approach to clinical assessment is essential.<sup>1</sup>

The Ottawa ankle rules are probably the most well known and frequently used clinical decision support rules for use in emergencies.<sup>2 3</sup> Evidence based approaches have, however, been developed to help in many other emergency situations, including head injury in adults and children,<sup>4 5</sup> neck injury,<sup>6</sup> knee injury,<sup>7</sup> mandibular trauma,<sup>8</sup> and risk assessment after self harm.<sup>9</sup>

In the linked study (doi:[10.1136/bmj.a2428](https://doi.org/10.1136/bmj.a2428)), Appelboom and colleagues extend this work with the results of the SWEET study—a multicentre prospective diagnostic cohort study that investigates a simple clinical test (extension of the supine elbow) for detecting elbow fracture.<sup>10</sup> The authors assessed 1740 adults and children with acute elbow injury and found that inability to extend the elbow fully was highly sensitive for the presence of an elbow fracture. They conclude (with a few caveats about olecranon fractures and uncritical use in children) that the two thirds of patients who cannot fully extend their elbows at presentation should be sent for radiography, but that a fracture can be ruled out in the remainder, who need no further tests.

However, knowing that a clinical test that they apply is not infallible seems to worry clinicians more than knowing nothing about a test. Thus the five fractures (out of 316) missed in adults and the 12 (out of 222) missed in children in this study are likely to cause more concern than can be rationally justified. This is probably because a defined risk, however small, seems greater than an undefined one. Furthermore, ignoring a known risk (and therefore missing a fracture in this case) seems less defensible than ignoring an unknown risk. After all, any adverse events that occur when the risk has

not been quantified can always be attributed to the inevitability of occasional errors of even expert clinical judgment.

This highlights a serious point. If we are to progress and accept the consequences of rational clinical examination, we need to define how much risk we are willing to accept on our patients' behalf—in other words, how much risk we interpret as no significant risk. In emergency practice, a clinical or laboratory test with 95% sensitivity is often considered to be sensitive enough that a negative test rules out the target condition. By this measure the elbow extension test is easily fit for purpose. At this level of sensitivity we know that 5% of patients with the target condition will have a negative test, but we don't usually say that to patients or think it ourselves. Thus when the 5% chance comes about it is usually seen as an error by the clinicians and the patient.

The level of risk that we accept needs careful consideration to reflect both the clinical consequence of a missed diagnosis and the views of patients. Missing a myocardial infarction is clearly worse from a clinician's perspective than missing a fracture, particularly one with little functional effect. However it is not clear whether patients have the same view—they may expect a clinician to diagnose both conditions with equal certainty. The authors of the SWEET study state that to be clinically acceptable as a single test to rule out elbow fracture, the elbow extension test should have a sensitivity of 99%. They certainly set themselves a hard target—higher than the 97.6% pooled sensitivity of the widely used Ottawa ankle and foot rules.<sup>11</sup> They have been sensibly pragmatic in their conclusions in the face of a measured sensitivity of 98.4%.

But how should we communicate our decisions based on rational clinical examinations, such as the elbow extension test, to our patients? Do we say “You don't need an x ray because you have no fracture,” or do we phrase our statements in a more measured way by introducing an appropriate element of doubt? This last approach is certainly more honest and will avoid later accusations of error, but it is more likely to result in an immediate demand for further tests.

The authors of the SWEET study are to be congratulated on extending the reach of the rational examination to the acutely injured elbow. As we apply this and other tools to our patients we should start to view emergency medical practice more as a means of managing risk rather than of making a diagnosis. We then need to share and communicate this with our patients in a way they understand and accept.

## Notes

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## Footnotes

- [Research, doi:10.1136/bmj.a2428](https://doi.org/10.1136/bmj.a2428)
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