**Trust in medical technologies and confidence in clinical decision-making**

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Medical tests are essential for clinical decision-making. Traditionally tests are carried out by trained lab clinicians. In recent decades, point-of-care tests have become increasingly prevalent. They are often designed to be used at the patients' bedside, by a lay person, and can produce results quickly.

Despite these benefits, introducing the point-of-care tests into routine clinical settings has proven more difficult than anticipated. We argue that an important reason for this is a lack of trust in new and unfamiliar medical technologies. Compared to existing laboratory tests, point-of-care tests are frequently less accurate. Recent advances in decision theory predict an inter-dependency between decision making and confidence, defined as the second-order attitude towards first-order judgment[1]. This dependency predicts that decisions with higher risks would require greater confidence. A low level of trust in the testing tools would bias clinical judgment and subsequent decision making towards safer options.

Consider commonly used pH paper tests for siting a blindly inserted nasogastric tube for feeding. A high pH (>5.5) of tube aspirates suggests that the feeding tube might be outside the stomach, thus requiring confirmation by chest x-rays. By contrast, a low pH (<=5.5) is considered as evidence for stomach intubation and feeding can safely start[2].

However feeding into the wrong sites is far more risky than sending patients for an x-ray, which is the gold-standard. The theory predicts that clinicians require greater confidence in reaching the judgment of a low pH compared to the judgment of a high pH. Lacking trusts (as is the case with pH papers) has led to anxiety experienced by clinicians and a bias towards safer actions. In the case of nasogastric tube feeding, this manifests as an over-utilisation of chest x-rays which we observe in real clinical settings.

In conclusion, trust in medical technologies is important for clinical decision making for which risks are prevalent. Adequate consideration of trust and confidence could improve adoption and utilisation of medical technologies.

References

1. Bradley, R. Decision Theory with a Human Face. Cambridge University Press. 2017.
2. Ni MZ, Huddy JR, Priest OH, et al Selecting pH cut-offs for the safe verification of nasogastric feeding tube placement: a decision analytical modelling approach. BMJ Open 2017;7:e018128.