raising additional concern and necessitating further investigation.

The use of stress echocardiography to detect myocardial ischaemia is beautifully illustrated but like all non-invasive assessments has limitations. It is available in a minority of centres and its predictive value is dependent on operator experience. Many cardiologists would have proceeded directly to coronary angiography, expediting definitive assessment and treatment at lower cost.

Competing interests: None declared.

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Commentary: Knowing and knowing about

Ed Peile

Miller's famous pyramid of competence starts with knowledge at the bottom level, when the clinician "knows" the facts.¹ Superior competence is achieved when the clinician can use knowledge in a particular context, "knows how." Better still, "shows how" indicates that when tested, the clinician can show practical application of the knowledge. The peak level of "does" refers to actual performance in practice. But is there not a missing concept here—that of "knows about"?

I was struck by a rapid response to Mrs Patel's case from a doctor who had previously shown his competence around the thyroid issue in the first week. "Catheterisation? Don't ask me—I'm only a GP," he said. This week the final episode focuses our learning on the role of stress echocardiography in the diagnosis of ischaemia.² Is this relevant to non-cardiologists who will never order one? Yes, I would suggest, it is relevant at the level of knowing about. Generalists' patients often want to discuss their specialist investigations, and even specialists in disciplines remote from cardiology can benefit from awareness of current practice.

Levels of awareness

Where then should we position knowing about? It is related to, but not part of, the assessable competencies of Miller's pyramid. It is an awareness of important knowledge that enables an individual to bring the subject into focus at the appropriate time, using tacit knowledge.³ (This is Polanyi's concept of our background knowledge which allows us to contextualise and make sense of what we are learning.⁴) Knowing about is a more advanced form of knowledge than mere "heard of" awareness. To know about something we have to have some understanding of the distinguishing features, as in this example of a diagnostic test in common use in specialist practice.

Less visible, perhaps, than the assessable competencies of Miller's pyramid, are the foundation levels of awareness (figure). We have to have heard of something, and indeed know a little about it from a general perspective, before we can begin to know it in detail. Even when we are not going to build advanced knowledge on what we know about, it may still influence our practice. Take the example of a generalist's knowledge and competence approaching a case like that of Mrs Patel after reading this interactive case

Miller's pyramid of assessable competencies adapted to include levels of awareness

report. The doctor's vast pool of "heard of" awareness knowledge is little changed, but the "knows about" awareness now includes stress echocardiography. Although the doctor might feel uncomfortable facing an exam question on the topic, practice could be changed at the level of "does," which for the generalist is about referring patients appropriately for cardiac investigation and treatment and discussing their results.

Epistemology, or the science of knowledge, is beloved by academics, who talk variously of the contributions of observation, logic, faith, and authority to the ways in which we know something. As a practical contribution to our clinical competence, I hope that case commentary learning continues to develop our "knowing about" as well as the more applied forms of knowledge.

Competing interests: None declared.

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