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What do you know and how confident are you that you know it?

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## What Do You Know and How Confident Are You That You Know It?

Have you ever found yourself at a social gathering where someone in the group says “I remember that Gandhi once said...” Everybody in the group accepts that indeed Gandhi made this statement about the topic at hand, and it is only later we discover that, despite everyone’s agreement, Gandhi never made the statement. Instead, it was attributed to another individual who may not have even been from the same country or shared the same basic philosophy, but by then it is too late to correct the speaker. Moreover, we realize that the misquoter would have vehemently defended the original quote, and no one would have had proof of the statement’s accuracy while standing in the social setting.

Unfortunately, we often find ourselves living in a world of misinformation provided by authoritative individuals, and this information, although incorrect, gains acceptance by those who hear these individuals. Knowledge is liberating when it is correct, but it may be confining if inaccurate. The problem is that as constant students we rely upon good and correct information, and this means we trust that what we are told is factual in nature.

I recently attended a meeting where a colleague, Dr Don Curtis, professor at the University of California, San Francisco, School of Dentistry, described knowledge and strength of knowledge, explaining how we oftentimes become inundated with information that may not be correct. For this reason, I’ve asked Prof Curtis to explain this concept in the remainder of this editorial.

—Steven E. Eckert

There are three issues in Dr Eckert’s illustration; first is the accuracy of the Gandhi quote and second is the confidence of the person making the statement. Seldom are both accuracy and confidence considered together, but jointly they are a measure of calibration. Being confident when you are correct and unsure when you are incorrect is a gauge of calibration. Calibration may not be so critical in casual social gatherings, but it is considered increasingly important in clinical decision-making and in professional development. The third important element is the impact of what is said. If the Gandhi quote was stated with conviction, was incorrect, and resulted in adverse events, then this reflects both a lack of calibration and a resulting unfavorable outcome.

About 30% of all adverse medical outcomes occur because of cognitive errors, and many of those mistakes result from the miscalibration of confidence and correctness. Sometimes we are appropriately confident, while other times we are confident when prudence and reflection would be more suitable. When incorrect but confident, we are less likely to seek additional consultation before initiating treatment and less likely to ascribe an adverse outcome to errors in our planning or thinking. Calibration is the correspondence of accuracy and confidence and is an important attribute of a true expert, and therefore, something worth considering in our own professional development.<sup>1</sup>

Calibration may be an important issue to consider in dentistry, since we seldom consider cognitive errors as a basis for adverse outcomes. In dentistry, we tend to externalize adverse outcomes. When the porcelain on an implant crown fractures, this is often considered a complication related to patient factors of excessive force or limitations of materials. When a crown does not fit, it is a distortion of the impression material or a tooth that has shifted. We seldom consider adverse outcomes as errors in judgment or planning. We often remain optimistic and confident in our abilities. The question is how confident should we be in our decision-making, and does confidence bias our ability to “own up” to unfavorable outcomes?

The calibration of confidence and correctness is especially important in dentistry, since we have few sources of effective feedback by which to monitor the effectiveness of our treatment or our professional development. Unlike our medical colleagues who are granted privileges by credentialing committees from their respective hospitals, dentists tend to practice independently, deciding themselves which procedures are offered to their patients. It is easy for the clinician to make the same mistake multiple times and find “externalized” explanations, or see the errors in prior treatment of a recently referred patient but not their own treatment. We often forget that human judgment is distorted by cognitive, perceptual, and motivational biases, and that these biases are often recognized in others but not in ourselves.<sup>2</sup>

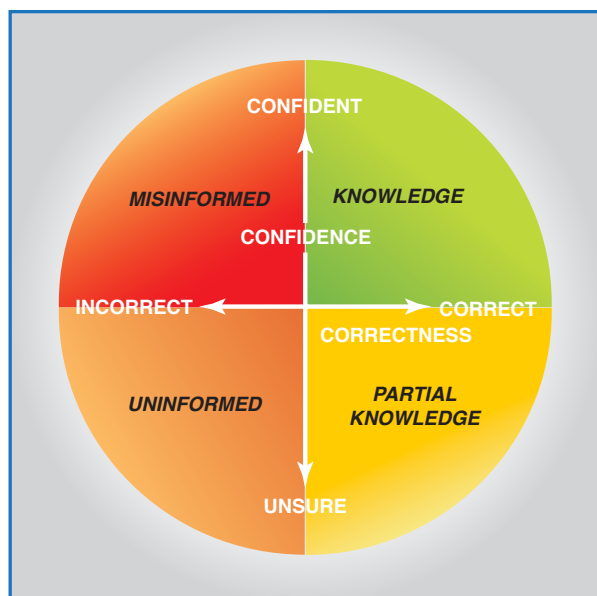
Although cognitive errors in dentistry are seldom discussed or quantified, educators in medicine have outlined the three most common diagnostic cognitive error categories: (1) lack of synthesis of relevant information, (2) over- or underemphasizing signs or symptoms, and (3) premature closure in gathering data by which to make a decision.<sup>3</sup>

Many of us that have been providing clinical care for a while have developed lectures on complications, often based on treatment we have provided. Humble pie is a healthy first step. Recent national meetings have included scientific sessions devoted to nothing but complications. However, missing from these lectures and scientific forums is a health discussion of cognitive errors. We all make errors in judgment. Consideration of cognitive errors as a basis for adverse outcomes and development of a taxonomy of cognitive errors in dentistry would be a welcome start to providing relevant feedback to clinicians that could ultimately improve patient outcomes. That's right, the accuracy, conviction, and impact of your Gandhi quote matters.

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Calibration includes consideration of both correctness and confidence. Ideally, a clinician will be confident and correct most of the time (*green*). Being correct but having some doubt (*yellow*) is also acceptable, since there is hesitation before action. Of the incorrect responses, if you are incorrect and unsure, you do not know something but in general do not make major mistakes because you are tentative and unsure (*orange*). However, if you are incorrect and confident, you are less likely to seek help or hesitate before making a clinical decision, are often refractory to recognizing your error, and less likely to ascribe an adverse outcome to your actions (*red*). Errors in judgment are more likely to occur when an individual is misinformed (*red*).