Can social media bridge the gap between research and practice?

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If it doesn't spread, it's dead[1]

The ultimate aim of all clinical research should be to improve patient outcomes. Effective translation of evidence into practice is a prerequisite for this objective to be achieved. In many respects, performing a definitive, large-scale, randomised controlled trial (RCT) is a worthless endeavour unless clinicians implement the study's findings.

Gaps between evidence and practice are increasingly recognised in all areas of medicine. Health research funding bodies, cognisant of this, frequently require grant applicants to plan the dissemination of their results before completion of the trial, and there are a growing number of funding streams specifically for knowledge translation research (eg, National Health and Medical Research Council Translating Research Into Practice fellowships).

The spotlight fell on such research–practice gaps in 2001 with the report *Crossing the quality chasm*, which described the widespread failure to implement high-level evidence in the United States health care system.[2] This report highlighted the finding that the average lag time between the demonstration of an effective treatment and its implementation into practice was 17 years![3] The archetypal example is the use of thrombolytic therapy in acute myocardial infarction.[4] The first trial to report the efficacy of thrombolysis in acute myocardial infarction was published in 1959.[5] A meta-analysis of 24 RCTs of 6000 patients published by 1985 demonstrated that intravenous thrombolytic therapy reduced the relative risk of early death by 22% ($P < 0.001$).[6] However, even after more than 55 000 patients had been randomly allocated to trials of thrombolysis for acute myocardial infarction, and after publication of several more meta-analyses demonstrating benefit, large observational studies conducted across Europe and the US found implementation rates ranging from only 18%–55% into the mid 1990s.[7-9]

Knowledge translation is difficult to achieve for many reasons including financial barriers, entrenched institutional practices and the nature of medical education.[10] However, perhaps the foremost component of knowledge translation is winning the hearts and minds of practitioners. The publication of trial results in a high-profile journal alone does not achieve this. Ironically, the precise, understated conclusions that are the hallmark of high-quality scientific writing may actually impede this aim. Consider the following statement from the NICE-SUGAR study:[11] "our findings suggest that a goal of normoglycemia for glucose control does not necessarily benefit critically ill patients and may be harmful". This measured conclusion comes from a definitive randomised trial demonstrating a significant treatment effect on patient mortality, yet does not convey any urgency with respect to practice change.

This is important because the results of clinical trials are likely to be weighed against the biases of individual clinicians and against anecdotes. For example, the impact of the results of the DECRA trial[12] might be undermined by the narrative of an individual patient, treated with early decompressive craniectomy when death appeared imminent, who subsequently made a "miraculous recovery". Doctors, like all humans, are captivated by stories; it is easy for an RCT and a good story to assume equal weight in the battle to win their hearts and minds. This is partly because of the inherent cognitive biases that influence our decision making, such as the "availability heuristic",[13] in which the more easily something comes to mind, the more probable it seems.

Publication of high-quality trials in high-impact journals is important, but it is only a single step on the path of achieving beneficial practice change. The reality is that knowledge translation results from teaching at the bedside and conversations between clinicians. Traditionally, these conversations happened in hospital corridors, but increasingly they are occurring online, using social media and free, open-access medical education internet resources.[14] These virtual corridor conversations are potentially the most rapid means of achieving widespread dissemination of trial results to a global audience.

Social media and the internet are the modern communication paradigm and are already being used for knowledge translation in critical care. The CRASH-2 trial[15] investigators are using several internet-based strategies to increase the uptake of tranexamic acid into clinical practice in major trauma patients. These include a user-friendly study website with slides for download, links to various study-related videos, as well as a brief podcast outlining the trial results, and even a song![16] Meanwhile, the ARISE trial investigators[17] are tweeting updates on Twitter as @TheARISEstudy, and updates for the HEAT trial[18] are regularly tweeted by @DogICUma.

Researchers need to harness social media and the internet in a systematic way to sell their messages and make them stick, so that their research findings are translated into practice. In essence, this is a marketing exercise that needs to be carefully planned.

Clearly there are risks. Consider the example of delayed sequence intubation. Scott Weingart published his approach, described as procedural sedation to achieve oxygenation, in 2011 in the *Journal of Emergency Medicine* with minimal fanfare.[19] He subsequently created a podcast[20] on the topic that led to worldwide discussion, debate, early adoption and rapid refinement of the technique. All of this occurred despite a lack of any evidence stronger than theoretical plausibility and case reports. This could mean that more patients are receiving benefits sooner, but there are obvious dangers. Conventional translation is slow but traditional mechanisms of translation, including confirmatory studies and meta-analyses, reduce the likelihood of translating poor-quality evidence.

Even among high-profile trials, medical reversals (when therapies initially thought to be effective are found to be ineffective or harmful) are common.[21] The risk with social media is that knowledge dissemination and practice change may occur prematurely. Although this risk is real, rapid dissemination by social media and internet-based communication is here to stay, whether or not researchers get involved. There is also the opportunity to accelerate the reversal process through free and open discussion. Clinician–researchers are often recognised as opinion leaders and have the potential to be influential in the online environment. While some may feel uncomfortable with the ethics of self-marketing, researchers, despite potential conflicts of interest, are still arguably in a better position than most to weigh up evidence.

A structured approach to knowledge translation that harnesses social media and the internet may have tangible, practical benefits for researchers. Increased social media activity within the first 3 days of an article being published is associated with an increased citation rate.[22] Moreover, a recent study demonstrated that a release of research articles by social media increases the number of people who view and download those articles in the subsequent week.[23] Facebook, Twitter and various critical care blogs and podcasts including lifeinthefastlane.com, intensivecarenetwork.com, emcrit.org and crit-iq.com.au provide the means to deliver research directly to the end user, complementing traditional disemination methods. They provide researchers with a means to tell clinicians around the world what they believe their research means for clinical practice in a frank, honest and open way.

Researchers and clinicians must embrace this opportunity because there is a moral imperative to close the gap between research and practice. To defeat dogma and improve patient outcomes, we need to enter the battle for hearts and minds wherever it takes place, whether that is in the hospital corridors or on the internet.

Competing interests

None declared.

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