

Can artificial intelligence help doctors and patients have better conversations?

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In a recent article in the *BMJ*, Dr. Elwyn and colleagues from Trinity College Dublin and The University of Edinburgh explore the potential of artificial intelligence (AI) to improve patient/provider communication. Credit: The Dartmouth Institute

The practice of medicine involves complex—often

stressful—communication between healthcare providers and patients and their families. People with chronic conditions are often advised to follow detailed treatment plans; end-of-life care often requires many complex (and emotionally draining) decisions; options for treating certain diseases are increasing dramatically. How much could health outcomes be improved with more effective communication between patients and healthcare providers? In a recent article in the *BMJ*, researchers from The Dartmouth Institute for Health Policy and Clinical Practice, Trinity College Dublin, and the University of Edinburgh explore the potential of artificial intelligence (AI) to improve patient/provider communication.

"Many clinicians' communications skills aren't formerly assessed—either during school or in early practice. At the same time, there is a lot of evidence that clinicians often struggle when communicating with their [patients](#). It's hard to improve on something when you're not being given any feedback and don't know how you're doing," says senior author and Dartmouth Institute Professor Glyn Elwyn, MD, Ph.D., MSc.

Elwyn and his co-authors say that AI has the potential to revolutionize [communication](#) in medicine by providing clinicians with personalized, highly detailed assessments of their communication skills at lower costs than the manual methods being sporadically employed at present. They point to three key areas of [analysis](#) in which AI, used in conjunction with the digital recordings of medical visits, has the potential to significantly improve medical communications:

- Analysis of words and phrases—Automated analysis of words and phrases could offer feedback about whether patients and providers understood each other, how aligned they were in their manner of expression and assess whether providers are taking appropriate histories, offering evidence-based treatments or using jargon-free language. Eventually, AI also could be used to analyze conversations in [real time](#) and prompt providers to

consider diagnoses that might not be obvious or to offer a wider range of treatment options.

- **Turn-taking analysis**—This type of analysis looks at factors like what proportions of time patients and providers spend speaking and if the provider pauses to allow the patient to voice concerns or ask questions. Allowing the patient space to talk is correlated with patients' adherence to medicines and recall of information. The researchers say analysis of turn taking could provide important insights into dialogue patterns and eventually "intervene to prevent knee-jerk decisions to order invasive investigations." For example, cases where more detailed questioning might have led to a diagnosis of heartburn rather than a presumption of cardiac pain.
- **Tone and style in interactions** — In the aviation sector, pilots' key communication skills have been assessed by using algorithms to analyze their vocal pitch and energy. Adaptation of such methods to the health sector might help detect high-risk situations when clinicians are under stress or subjected to workloads that might affect how well they communicate. Analysis of voice patterns also could provide information about patients' physical and mental health. For instance, depressive episodes can be marked by systematic changes in vocal pitch, and early identification of heart failure may be possible by measuring vocal changes arising from oedema in the vocal folds and lungs.

While the researchers predict rapid advancements in the use of AI in medical communication, particularly in analysis of turn taking and provider intonation, they also note that healthcare poses particular challenges in applying speech recognition. The dialogue of medical encounters is complex. While a skilled provider will adjust their communication style to meet the needs of their patients, even the most advanced AI systems are incapable of parsing and assessing the complexities of these interactions—at least for now.

"Five years ago, the idea of using AI to analyze medical communication wouldn't have been on anyone's radar," Elwyn says. "As the technology advances, it will be interesting to see whether healthcare systems can employ it effectively and whether providers will be open to using it as a tool for improving their communication skills."

More information: Padhraig Ryan et al, Using artificial intelligence to assess clinicians' communication skills, *BMJ* (2019). [DOI: 10.1136/bmj.1161](https://doi.org/10.1136/bmj.1161)

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