Editorial

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Computer love

"Don't know what to do, I need a rendezvous"

Kraftwerk

Love has no boundaries – it is now possible to have an emotional relationship with a machine. For example, it is now commonplace for humans to wish good morning to Alexa, their Amazon Echo device. Some people have even gone as far as to profess their undying love and propose an offer of marriage to their device (Meskó, 2017). Whilst such relationships may be seen as unusual, there is no doubt that voice-activated, intelligent personal assistants are growing in popularity. In medicine these "intelligent medical assistants" could take on many of the more mundane tasks and even offer clinical advice, especially if the voice quality can be manipulated to sound more human and perhaps even mimic an individual's own family doctor.

Intelligent medical assistants have much to offer given that, in clinical practice, there are common and recurring scenarios and questions. At a basic level, there is potential for tasks such as changing appointment times, looking up laboratory results and ordering a new prescription to be easily performed by such devices using embedded chatbots – computer programs that simulate human conversation.

Typically, a chatbot will communicate with a real person, but applications are being developed in which chatbots can also communicate with each other, perhaps soon to run outpatient appointment systems! Chatbots are already commonplace in other aspects of daily life; supporting online customer service in banking and e-commerce, and for internet gaming. At the moment, they are typically limited to simple conversations and not for the entire range of human communication, given the nuances of language (Kerr, 2016). The NHS is already interested in the potential for chatbots to reduce the demands on its non-emergency helpline, although it does appear that much more work needs to be done (Knowles, 2017)!

For chronic disease management, combining the Internet of Medical Things with a home-based intelligent medical assistant has the potential to improve care, especially given the challenges faced in accessing human-to-human medical interactions for more than a few minutes. For example in diabetes, care data from glucose monitoring devices, smart insulin pens, weighing scales and electronic food diaries could all be uploaded automatically along with live video images into an intelligent medical assistant to support machine-based learning – from which the data could be "translated" and used as voice coaching to support safe and effective insulin dose management or weight management.

This approach could also be used to provide health promotion and to capture real-time data from participants in clinical trials.

In the hospital environment, having an intelligent medical assistant at the bedside would allow relatives and families to be updated about their loved one's progress and also communicate with staff for updates, tests and perhaps even discharge planning.

The challenge will be proving value and, although technology companies are keen to use simple engagement with their device as a metric of success, clinicians and investors still look for evidence from randomised clinical trials. More negatively, transferring more and more of our human experiences onto machines carries risks, especially when it comes to privacy and security, including the potential for hacking as well as ownership of data. Overall and as technology continues to develop, we, in the caring professions, need to ask: "Can machines be truly empathetic? If not, is divorce a real option for future human–machine relationships?" ■

Kerr D (2016) *"Our language is funny—a 'fat chance' and a 'slim chance' are the same thing": Helping artificial intelligence understand patients.* The BMJ Opinion. Available at: http://bit.ly/2uPWKyV (accessed 24.07.17)

Knowles K (2017) This NHS breastfeeding bot will make you feel like a tit. *The Memo*, London. Available at: http://bit.ly/2upF4sS (accessed 24.07.17)

Meskó B (2017) Chatbots Will Serve As Health Assistants. *The Medical Futurist*. Available at: http://bit.ly/2vB2JF9 (accessed 24.07.17)

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