

Is it Real or is it AI? (With Apologies to Memorex©)

Rob Graham, R.R.T./N.R.C.P.

I dedicate this column to the late Dr. Andrew (Andy) Shennan, the founder of the perinatal program at Women's College Hospital (now at Sunnybrook Health Sciences Centre). To my teacher, my mentor and the man I owe my career as it is to, thank you. You have earned your place where there are no hospitals and no NICUs, where all the babies do is laugh and giggle and sleep.

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He began by drawing a picture of a power plant and then transmission lines, leading to his last drawing, a house. The power plant, he explained, represented the medical school and the house of the communities in which graduates practice.

Pointing at the transmission lines and moving from the generating station to the community, he said that the voltage drop between here and there is tremendous (voltage being a proxy for knowledge)! Using his proprietary program, he claimed to be able to diagnose virtually (no pun intended) any patient's condition by answering a list of 100 questions. He demonstrated the efficacy of the program at some relatively well-known and respected institutions, providing diagnoses for patients who had clinicians stumped.

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Instead, let us explore how humanity stands to gain through the continued integration of man and machine. “Smart” vehicles promise to eliminate vehicular crashes eventually and, in doing so, greatly reduce admissions to trauma centres. This will be accomplished not only via vehicular control but also by eliminating human factors that contribute to crashes, such as inattention, fatigue, and “road rage.”

AI's potential to improve healthcare is huge. The former example is a prime illustration of how this may be accomplished. However, beyond instant access to knowledge and information a human being is not capable of, AI may:

1. seek out information without bias
2. evaluate the strength and quality of evidence
3. investigate all possibilities regardless of the probability
4. “listen” to the patient without the goal of proving them wrong in their observations
5. recognize when the patient does not fit the evidence and seek out alternatives to treat them
6. determine if multiple avenues to treatment are synergistic or design new ones altogether

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Today, AI is helping clinicians assess their patients through software such as “HERO©” to identify potential adverse drug interactions. Integrating AI into equipment such as oxygen saturation monitors and ventilators will enable much closer monitoring of and adherence to appropriate values. Servo-controlled oxygen delivery already exists but is not widely used at present. Close control of SpO₂ in the NICU could greatly reduce retinopathy of prematurity, oxidative stress, and the resulting epigenetic sequelae.

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There is more! More efficient diagnoses and clinical assessments could drastically reduce blood work and other diagnostic tests and procedures. The system benefits through cost savings, and patients are spared unnecessary pokes and prods, as well as their own time and money.

An obvious question is: To what extent will human beings be required to provide care, and should we fear losing our livelihoods? Efficiency may reduce the number of bodies required, but AI is (for the time being) a long way from replacing human touch and dexterity in the form of fully functioning humanoid machines. They are indubitably coming, and when they do, we can expect a quantum leap in successful outcomes and possibly even life expectancy (albeit while medicine is added to the list of careers not to choose for the next millennia!).

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Whether or not AI can and will learn the clinical acumen (gut feelings) of a human clinician remains to be seen. Regardless, we must be extraordinarily prudent in choosing the programming for bedside manner!

Other quandaries include:

1. Who is accountable for the actions of AI when it gets it wrong, mainly where harm is caused?
2. What are the consequences?
3. How does one “punish” a machine
4. Will AI require malpractice insurance?

With no emotion in play, AI is more likely to fess up when errors occur!

Yesterday’s science fiction is today’s fact. Already, the sentience of AI is being called into question. Have we unwittingly created a new form of “life”? Furthermore, what are the implications of a non-living entity being sentient? Will it be the dawning of a new age of “slavery”? Moreover, who, exactly, will be a slave to whom? I would not bet against AI!

And now confession time. Last month’s column was written, in part, with the help of AI. Could you tell the difference? I provided the premise, and AI filled in the proverbial blanks. It is my first time doing this, and I cannot promise not to do it again. Should I choose to, my challenge to you, dear reader, is to determine: Is it real, or is it AI?

Disclosures: The author receives compensation from Bunnell Inc for teaching and training users of the LifePulse HFJV in Canada. He is not involved in sales or marketing of the device nor does he receive more than per diem compensation. Also, while the author practices within Sunnybrook H.S.C. This paper should not be construed as Sunnybrook policy per se. This article contains elements considered “off label” as well as maneuvers, which may sometimes be very effective but come with inherent risks. As with any therapy, the risk-benefit ratio must be carefully considered before they are initiated.

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