

## **There is nothing medically magical about machine learning**

Coates and de Koning <sup>1</sup> warn us wisely. An appropriate well-understood scientific evidence base is always needed before attempting automation. Racial, gender and socio-economic bias may creep in, even in critical care training data. Informatic oversight via comprehensive clinical reviews and meta-analyses <sup>2</sup> are essential.

Without a ‘human in the loop’, medicine is not health care. Machine learning is just complicated statistico-mathematical modeling and as Box <sup>3</sup> says “All models are wrong but some are useful”. ML or AI still requires the validating and qualifying steps described <sup>4</sup> as the TRL5-8 stages of development. Not just clinical validity in critical care, but utility, contraindications, cost effectivity, impact on health budgets, operationalisation and continuing quality audit and reviews needs examining. Moreover, the right data to probe this critically may not currently be in digital EHRs, specially designed trials may be needed.

Relying solely upon “Computer says ... yes/no” is not an acceptable way to deal with human beings, even under the urgent demands of rapid responses. Blind acceptance of AI in clinical decision-making runs the risk of promulgating Automated Idiocy. Informed informatic and trusted clinical judgment must be embedded to challenge, put into context or indeed correct automated decisions.

Human beings are not widgets and ML/AI is not exceptional.

### **Declarations**

Competing interest: I am a Royal Society Industrial Fellow with the Oxford Centre for Industrial Applied Mathematics and Life Fellow of the Royal Society of Medicine. These are personal opinions.

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### **Reference**

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