

AI could help clinicians with mechanical ventilation

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Artificial intelligence could be used in future to help guide when to use mechanical ventilation and the likelihood of complications in ventilation of patients. This is according to the first systematic review of studies in

this area, led by clinicians at Guy's and St Thomas' NHS Foundation Trust.

The review found 1,342 papers on AI and [mechanical ventilation](#) and looked in detail at 95 of these. They found that many were looking at early testing of AI technology and models. One was already at the next stage of clinical trials in patients, with many technologies on the cusp of this step.

The team of academics at Guy's and St Thomas' and King's College London made recommendations for further transparency, to help avoid bias and to facilitate rapid developments in this field.

Artificial intelligence shows great promise in guiding treatment in a number of diseases. Its ability to analyse large amounts of data could help clinicians in their decision making by calculating complex probabilities which might take clinicians a lot of time and experience.

Mechanical ventilation in particular is considered an area where AI could help, as patients put on mechanical ventilation can vary hugely, and AI may help to personalise approaches to an individual's characteristics. They may also be used to flag to a clinician exactly when a person should be taken off or put on to ventilation.

Of the 1,342 papers found in this area, the team looked in detail at 95 particularly relevant studies, where information specifically on AI applied to mechanical ventilation in humans was presented. They made recommendations for researchers to improve work in this field. These included improving the availability of data. They also recommended better reporting of characteristics like ethnicity and gender, to help scientists assess how well findings can be generalised across wider populations.

Dr. Luigi Camporota, consultant in [intensive care medicine](#) at Guy's and St Thomas' said: "Our systematic review of the literature revealed an exponential increase in the rate of publications on artificial intelligence as applied to mechanical ventilation in the past few years. Despite this increased scientific and clinical interest, [artificial intelligence](#) is still very little used in mechanical ventilators."

Dr. Jack Gallifant, from the Centre for Human and Applied Physiological Sciences at King's College London, said: "Artificial [intelligence](#) has the potential to improve the management of mechanical [ventilation](#) therapy. Our review highlights a need for greater code and data availability, and thorough validation that, combined with smaller bias, will facilitate translation of data science into improved patient care."

The researchers were supported by grants from the National Institute for Health Research, Wellcome Trust, the National Institute of Academic Anaesthetists and the Royal Academy of Engineering.

More information: Artificial intelligence for mechanical ventilation: systematic review of design, reporting standards and bias, *British Journal of Anaesthesia*, 2021.

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