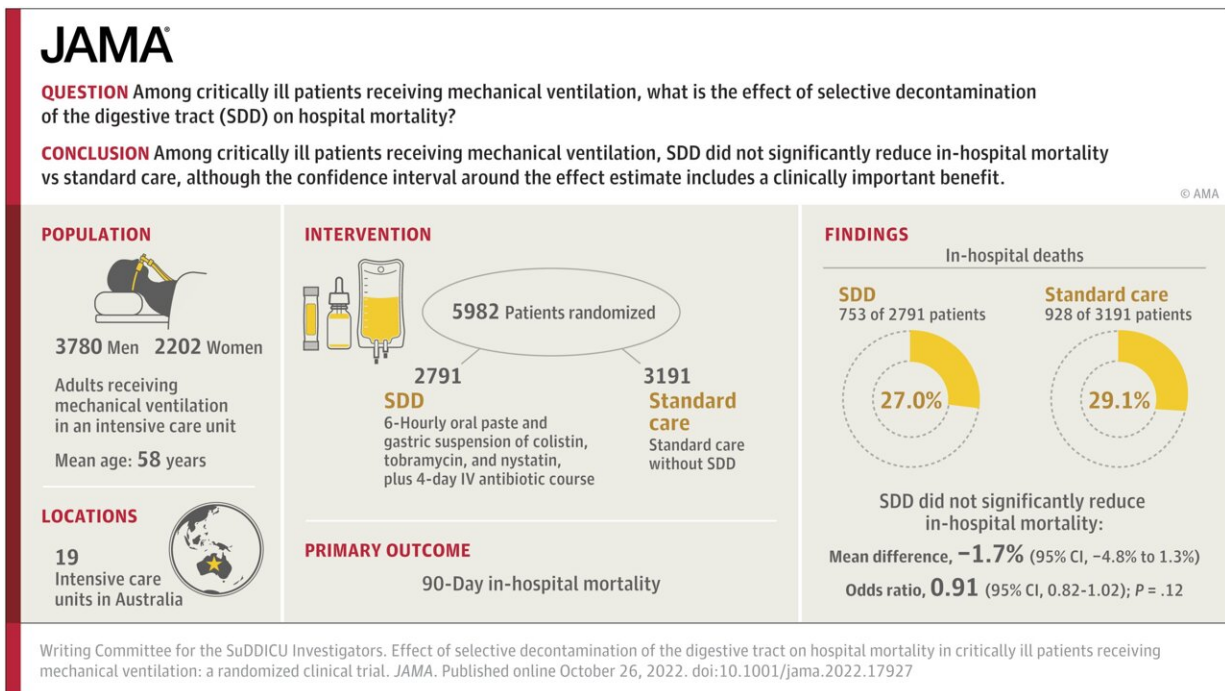


Controlling gut flora can reduce mortality in critically ill patients on life support

October 26 2022



Visual Abstract. Selective decontamination of the digestive tract and hospital mortality in mechanically ventilated critically ill patients. Credit: *JAMA* (2022). DOI: 10.1001/jama.2022.17927

Preventing severe lung infections in mechanically ventilated intensive care patients by applying topical antibiotics to the upper digestive tract results in a clinically meaningful improvement in survival, new research shows.

The results are being presented during the 'Hot Topics' session of the European Society of Intensive Care Medicine annual congress in Paris and simultaneously published in the *Journal of the American Medical Association (JAMA)*.

Professor John Myburgh AO, lead author and Director of the Critical Care Division at The George Institute for Global Health, said that ventilator-associated pneumonia is a major cause of death and disability in [critically ill patients](#) being mechanically ventilated in intensive care units.

"While the concept of 'selective decontamination' of the [digestive tract](#), or 'SDD', has been around for decades, this is the first large-scale randomized clinical trial that used a high-quality commercially prepared product specifically designed to prevent ventilator-associated pneumonia in these patients," he said.

"In nearly 3,000 patients treated with SDD, we saw a reduction in death of around two percent, equivalent to one death prevented for every 50 patients treated."

SDD is an infection-control measure where non-absorbed antibiotics and antifungal agents are applied to the mouth and stomach, combined with a short course of intravenous antibiotics.

This inhibits the development of ventilator-associated pneumonia caused by harmful bacteria and overgrowth of fungi that normally live in the upper part of the gut but enter and infect the lungs once patients are placed on a ventilator.

While SDD may reduce infections and prevent deaths, it has not been widely adopted as the evidence was not considered strong enough and there are widely held concerns about the potential risk of causing

antibiotic resistance.

To address this uncertainty, the Selective Decontamination of the Digestive tract in the Intensive Care Unit (SuDDICU) trial was designed to determine whether adding SDD to the usual care of ICU patients would reduce all-cause hospital mortality compared to usual care alone.

The SuDDICU trial recruited 5,982 mechanically ventilated adults from 19 ICUs in Australia between April 2018 and May 2021. Each ICU delivered either SDD with usual care or usual care alone for 12 months and then crossed over to the other option for a second 12-month period.

The study found that while SDD with standard care compared to standard care alone did not result in a statistically significant reduction in in-hospital mortality (27.0% vs 29.1% respectively), the range of values included a clinically important benefit.

"Moreover, we saw that SDD was also associated with a significant reduction in new hospital-acquired infections and there were no adverse events related to the administration of SDD itself," said Professor Myburgh.

George Institute investigators combined the results with those of other major randomized clinical trials of SDD conducted over the last 20 years in a [systematic review](#) and meta-analysis, also being published in *JAMA* and presented at the conference by senior author, Associate Professor Anthony Delaney.

"This review provides a high degree of certainty for clinicians to administer SDD to critically ill, mechanically ventilated patients in their ICUs to reduce the incidence of ventilator-associated pneumonia and the potential increased risk of death," A/Prof Delaney said.

Professor Myburgh added that SDD alongside other important strategies reinforces the importance of effective and safe preventive medicine in this vulnerable patient population.

"We now plan to extend our trial to low and [middle-income countries](#) where [mortality rates](#) and the incidence of infections with antimicrobial resistant organisms are higher," he said.

More information: John Myburgh et al, Effect of Selective Decontamination of the Digestive Tract on Hospital Mortality in Critically Ill Patients Receiving Mechanical Ventilation, *JAMA* (2022). [DOI: 10.1001/jama.2022.17927](https://doi.org/10.1001/jama.2022.17927)

Provided by George Institute for Global Health

Citation: Controlling gut flora can reduce mortality in critically ill patients on life support (2022, October 26) retrieved 24 April 2024 from <https://medicalxpress.com/news/2022-10-gut-flora-mortality-critically-ill.html>

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