Sepsis can result in a doubling of cancer care costs

Health economics research led by the Peter MacCallum Cancer Centre and the University of Melbourne has found sepsis can double the costs of cancer care. The study, published in *PLoS One*, used Canadian data to track the impact of the overall use of public health services by more than 75 000 cancer patients with sepsis over 5 years. The researchers estimated the short and long term costs of their care. For example, the additional cost of caring for a patient with a solid tumour who developed sepsis was more than CA$60 000 over 5 years, and over CA$75 000 for a patient with blood cancer. "By quantifying the economic burden of sepsis in cancer patients we have an indication of the extent of the costs associated with sepsis, and this can be used to better align resources for more efficient care of our patients," said lead author and health economist Dr Michelle Tew. "While it was using Canadian data, the similarities between our health care systems, occurrence of cancer and treatment strategies, means we believe these results are also valuable to the Australian context," said senior co-author Professor Andrew Morris, an infectious disease physician at Mount Sinai Hospital in Toronto, Canada.

https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0255107

Breathe easy: improving inhaler effectiveness

Patients using dry powder inhalers to deliver medicine to their lungs need to breathe in at a "goldilocks" rate that is not too fast or too slow, and the drug particles need to be very fine (around 1 µm) to be most effective, Australian research published in *Physics of Fluids* shows. A dry powder inhaler is a handheld device where the patient breathes in through the inhaler to deliver medicine directly to the lungs, unlike a "metred dose inhaler" or "puffer", which delivers aerosolised medicine from a pressurised canister. Researchers from the University of Technology Sydney and the Motilal Nehru National Institute of Technology Allahabad, India,

used computational fluid dynamics to model how drugs are delivered to the human respiratory tract via a dry powder inhaler. They examined three different drug particle sizes (1, 5 and 10 µm), and three different inhalation rates (low, moderate and high), to determine how inhalers can be improved. The study found that finer drug particles of around 1 µm are better able to travel further into the lungs than larger particle sizes. They also found that the optimal inhalation rate that delivers the maximum amount of drug particles into the deeper airways of the lungs is one that is not too high or too low. "At higher flow rates, more of the drug particles are deposited in the upper airways as they are more likely to impact with the walls of the airway," said the researchers. "However, at lower flow rates there is not enough momentum to carry the drug particles to the deeper regions of the lungs." This information will be important for designers of new dry powder inhalers, as well as for pharmacists wanting to improve drug formulations for delivery through these devices, the authors concluded.

https://aip.scitation.org/doi/10.1063/5.0053980

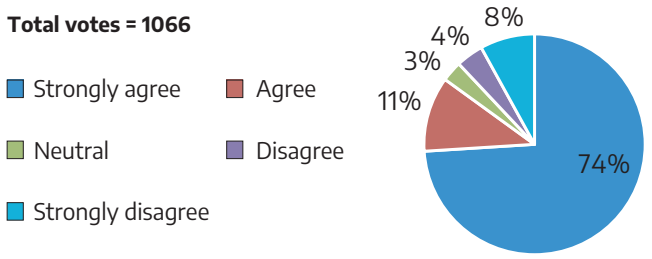
doi: 10.5694/mja2.51234

InSight+ Poll

Empowered by AMPCo

Sydney's lockdown needs to be tightened further

Total votes = 1066



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Professor George Patton is an NHMRC Senior Principal Research Fellow at the Centre for Adolescent Health and the Murdoch Children's Research Institute.

Dr Kunwardeep Bhatia is a cardiology advanced trainee at Royal North Shore Hospital.

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SEPTEMBER

6 *Research letter*: Incidence of cardiac complications in patients hospitalised with COVID-19 in Australia: the AUS-COVID study
Bhatia et al; https://doi.org/10.5694/mja2.51225

6 *Podcast*: Dr Kunwardeep Bhatia is a cardiology Advanced Trainee at Royal North Shore Hospital.

6 *Narrative review*: Interventional bronchoscopy for emphysema: more than a pipe dream
Carew et al; https://doi.org/10.5694/mja2.51218

6 *Research letter*: Telehealth sexual and reproductive health care during the COVID-19 pandemic
Cheng et al; https://doi.org/10.5694/mja2.51219

AUGUST

30 *Podcast:* Dr Mike Catton is Director of the Victorian Infectious Diseases Reference Laboratory (VIDRL) at the Peter Doherty Institute for Infection and Immunity. Dr Julian Druce is the Senior Medical Scientist in the Virus Identification Laboratory of the VIDRL. Dr Leon Caly is a Senior Medical Scientist within the VIDRL.

30 *Podcast*: Professor George Patton is an NHMRC Senior Principal Research Fellow at the Centre for Adolescent Health and the Murdoch Children's Research Institute.

30 *Research letter*: Public support for phasing out the sale of cigarettes in Australia
Brennan et al; https://doi.org/10.5694/mja2.51224

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30 *Research letter*: Estimating the Australian abortion rate from National Hospital Morbidity and Pharmaceutical Benefits Scheme data
Keogh et al; https://doi.org/10.5694/mja2.51217

23 *Podcast*: Dr Karen Price is the President of the Royal Australian College of General Practitioners.

23 *Research*: Screening outcomes by risk factor and age: evidence from BreastScreen WA for discussions of risk-stratified population screening
Noguchi et al; https://doi.org/10.5694/mja2.51216

23: *Research letter:* Prescribing of direct-acting antiviral therapy by general practitioners for people with hepatitis C in an unrestricted treatment program
Stafford et al; https://doi.org/10.5694/mja2.51204

16: *Podcast:* Dr Laila Ibrahim is a post-doctoral researcher and clinician at the Murdoch Children's Research Institute and The Royal Children's Hospital Melbourne. Dr Nigel Crawford is Group Leader of Surveillance of Adverse Events Following Vaccination in the Community at the Murdoch Children's Research Institute.

9: *Research:* The effects on mortality and the associated financial costs of wood heater pollution in a regional Australian city
Robinson et al; https://doi.org/10.5694/mja2.51199