

Media Release

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Patients should receive COVID-19 vaccine before surgery to reduce risk of postoperative death – study

Governments should prioritise surgical patients for COVID-19 vaccination

Patients waiting for elective surgery should get COVID-19 vaccines ahead of the general population – potentially helping to avoid thousands of post-operative deaths linked to the virus, according to a new study.

Between 0.6 per cent and 1.6 per cent of patients develop COVID-19 infection after elective surgery. Patients who develop COVID-19 infection are at between 4- and 8-fold increased risk of death in the 30 days following surgery. For example, whereas patients aged 70 years and over undergoing cancer surgery would usually have a 2.8 per cent mortality rate, this increases to 18.6 per cent if they develop COVID-19 infection.

Based on the high risks that surgical patients face, scientists calculate that vaccination of surgical patients is more likely to prevent COVID-19 related deaths than vaccines given to the population at large – particularly among the over-70s and those undergoing surgery for cancer. For example, whereas 1,840 people aged 70 years and over in the general population need to be vaccinated to save one life over one year, this figure is only 351 in patients aged 70 years and over having cancer surgery.

Overall, the scientists who include Royal Australasian College of Surgeons (RACS) Fellows and Trainees estimate that global prioritisation of pre-operative vaccination for elective patients could prevent an additional 58,687 COVID-19-related deaths in one year.

This could be particularly important for low- and middle-income countries (LMICs) where mitigation measures such as nasal swab screening and COVID-free surgical pathways, which can reduce the risk of complications related to the virus, are unlikely to be universally implemented.

The COVIDSurg Collaborative international team of researchers, led by experts at the University of Birmingham, has published its findings in *BJS (incorporating the British Journal of Surgery and the European Journal of Surgery)*, after studying data for 141,582 patients from across 1,667 hospitals in 116 countries - including Australia, Brazil, China, India, UAE, UK and USA, creating the world's largest ever international study on surgery.

“Preoperative vaccination could support a safe continuation of elective surgery by significantly reducing the risk of COVID-19 complications in patients if a significant outbreak occurred in Australia while they are being prepared for surgery,” said Australian Project lead, Associate Professor Amanda Dawson, a RACS Fellow and general surgeon from the University of Newcastle, NSW.

“Many countries, particularly low- and middle-income countries, will not have widespread access to COVID vaccines for several years. While vaccine supplies are limited, governments are prioritising vaccination for groups at highest risk of COVID-19 mortality. Our work can help to inform these decisions.”

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About the Royal Australasian College of Surgeons (RACS)

RACS is the leading advocate for surgical standards, professionalism and surgical education in Australia and New Zealand. The College is a not-for-profit organisation that represents more than 7000 surgeons and 1300 surgical trainees and International Medical Graduates. RACS also supports healthcare and surgical education in the Asia-Pacific region and is a substantial funder of surgical research. There are nine surgical specialties in Australasia being: Cardiothoracic surgery, General surgery, Neurosurgery, Orthopaedic surgery, Otolaryngology Head-and-Neck surgery, Paediatric surgery, Plastic and Reconstructive surgery, Urology and Vascular surgery. www.surgeons.org

Australian co-lead author Dr Jess Vo, from the University of Western Australia said that restarting elective surgery is a global priority.

“Over 15,000 surgeons and anaesthetists from across 116 countries came together to contribute to this study, making it the largest ever scientific collaboration. It’s crucial that policy makers use the data we have collected to support a safe continuation of elective surgery; COVID vaccination should be prioritised for elective surgery patients ahead of the general population.”

During the first wave of the pandemic, up to 70 per cent of elective surgeries were postponed, resulting in an estimated 28 million procedures being delayed or cancelled. While surgery volumes have started to recover in many countries, ongoing disruption is likely to continue throughout 2021, particularly in the event of countries experiencing further waves of COVID-19. Vaccination is also likely to decrease post-operative pulmonary complications, reducing intensive care use and overall healthcare costs.

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Notes to editors

- This project was supported by Clinical Trials Network Australia and New Zealand, a Royal Australasian College of Surgeons project to involve medical students and trainee surgeons in research. Over 600 surgeons, trainees and students collected data on over 5,000 patients in ANZ from more than 50 hospitals as part of this project.
- ‘SARS-CoV-2 vaccination modelling for safe surgery to save lives: data from an international prospective cohort study’ - COVIDSurg Collaborative is published by the *British Journal of Surgery*.
- The National Institute of Research (NIHR) was established in 2006 to improve the health and wealth of the nation through research and is funded by the UK Department of Health and Social Care. In addition to its national role, the NIHR supports applied health research for the direct and primary benefit of people in low- and middle-income countries, using UK aid from the UK government.

Summary of key data from the study

Data presented for elective inpatient surgery (patients admitted in hospital overnight).

	30-day postoperative SARS-CoV-2 rate in surgical patients	Adjusted 30-day postoperative mortality		Number needed to vaccinate (NNV) to prevent one COVID-19-related death in surgical patients over 1 year†
		Patients without SARS-CoV-2 infection	Patients with SARS-CoV-2 infection	
Age 18-49 years				
Elective non-cancer surgery	0.68%	0.26%	1.03%	18,421
Elective cancer surgery	1.00%	1.00%	3.63%	3,922
Age 50-69 years				
Elective non-cancer surgery	0.79%	1.13%	8.39%	1,621
Elective cancer surgery	1.56%	2.16%	13.71%	559
Age ≥70 years				
Elective non-cancer surgery	0.87%	1.57%	12.03%	733
Elective cancer surgery	1.56%	2.79%	18.64%	351

†Number needed to vaccinate (NNV) based on median global SARS-CoV-2 incidence in 2020 (26.48 cases per million population per day). For comparison, NNV to prevent one COVID-19-related death in the general population, by age group (best- and worst-case scenarios in parentheses):

- 18-49 years: 196,131
- 50-69 years: 12,889
- ≥70 years: 1,840

List of participating countries

Country	Participating hospitals	Country	Participating hospitals	Country	Participating hospitals
Albania	3	Hong Kong	4	Qatar	3
Algeria	3	Hungary	6	Rep. North Macedonia	4
Argentina	9	India	56	Romania	18
Aruba	1	Indonesia	10	Russian Federation	23
Australia	44	Iran	16	Rwanda	6
Austria	27	Iraq	7	Saudi Arabia	26
Azerbaijan	2	Ireland	17	Senegal	1
Bahrain	4	Israel	3	Serbia	15

Bangladesh	3	Italy	115	Singapore	4
Barbados	1	Japan	47	Slovakia	2
Belarus	2	Jordan	17	Slovenia	2
Belgium	8	Kazakhstan	5	Somalia	1
Benin	5	Kenya	4	South Africa	9
Bosnia & Herzegovina	2	Korea (Republic)	1	South Sudan	1
Brazil	38	Kuwait	7	Spain	97
Bulgaria	5	Latvia	3	Sri Lanka	11
Cameroon	1	Lebanon	9	Sudan	17
Canada	17	Libya	35	Sweden	9
Chile	9	Lithuania	5	Switzerland	9
China	5	Luxembourg	1	Syrian Arab Republic	14
Colombia	22	Madagascar	6	Taiwan	1
Congo	2	Malaysia	10	Thailand	2
Croatia	8	Malta	1	Trinidad and Tobago	1
Cuba	1	Mexico	26	Tunisia	3
Cyprus	3	Moldova	2	Turkey	47
Czechia	6	Mongolia	1	Uganda	11
Denmark	3	Morocco	7	Ukraine	4
Dominican Rep.	2	Namibia	5	UAE	13
Ecuador	1	Nepal	1	UK	205
Egypt	33	Netherlands	17	USA	69
El Salvador	1	New Zealand	11	Uruguay	2
Estonia	1	Nigeria	31	Yemen	5
Ethiopia	24	Oman	2	Zambia	1
Finland	2	Pakistan	30	Zimbabwe	5
France	44	Palestine	6		
Gabon	2	Panama	1		
Georgia	1	Paraguay	11		
Germany	54	Peru	15		
Ghana	8	Philippines	10		
Greece	30	Poland	4		
Guatemala	9	Portugal	23		