

University of Birmingham and College of Surgeons, Academy of Medicine of Malaysia news release

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COVID-19 patients who undergo surgery are at increased risk of postoperative death – global study

- ***Patients are at increased risk of dying after surgery if they contract COVID-19***
- ***Non-critical surgery should be postponed during COVID-19 outbreaks***
- ***Investment is urgently needed to increase safety of surgery during COVID-19 outbreaks***

Patients undergoing surgery after contracting coronavirus are at greatly increased risk of postoperative death, a new global study published in *The Lancet* reveals. Researchers found that amongst SARS-CoV-2 infected patients who underwent surgery, mortality rates approach those of the sickest patients admitted to intensive care after contracting the virus in the community.

Researchers examined data for 1,128 patients from 235 hospitals. A total of 24 countries participated, predominantly in Europe, although hospitals in Africa, Asia, and North America also contributed.

Experts at the University of Birmingham-led NIHR Global Research Health Unit on Global Surgery have now published their findings that SARS-CoV-2 infected patients who undergo surgery experience substantially worse postoperative outcomes than would be expected for similar patients who do not have SARS-CoV-2 infection.

Overall 30-day mortality in the study was 23.8%. Mortality was disproportionately high across all subgroups, including elective surgery (18.9%), emergency surgery (25.6%), minor surgery such as appendicectomy or hernia repair (16.3%), and major surgery such as hip surgery or colon cancer surgery (26.9%).

The study identified that mortality rates were higher in men (28.4%) versus women (18.2%), and in patients aged 70 years or over (33.7%) versus those aged under 70 years (13.9%). In addition to age and sex, risk factors for postoperative death included having severe pre-existing medical problems, undergoing cancer surgery, undergoing major procedures, and undergoing emergency surgery.

Report co-author Aneel Bhangu, Senior Lecturer in Surgery at the University of Birmingham, commented: *“We would normally expect mortality for patients having minor or elective surgery to be under 1%, but our study suggests that in SARS-CoV-2 patients these mortality rates are much higher in both minor surgery (16.3%) and elective surgery (18.9%). In fact, these mortality rates are greater than those reported for even the highest-risk patients before the pandemic; for example, the 2019 UK National Emergency Laparotomy Audit reported 30-day mortality of 16.9% in the highest-risk patients, and a previous study across*

58 countries reported a 30-day mortality of 14.9% in patients undergoing high-risk emergency surgery."

"We recommend that thresholds for surgery during the SARS-CoV-2 pandemic should be raised compared to normal practice. For example, men aged 70 years and over undergoing emergency surgery are at particularly high risk of mortality, so these patients may benefit from their procedures being postponed."

Patients undergoing surgery are a vulnerable group at risk of SARS-CoV-2 exposure in hospital. They may be particularly susceptible to subsequent pulmonary complications, due to inflammatory and immunosuppressive responses to surgery and mechanical ventilation. The study found that overall in the 30 days following surgery 51% of patients developed a pneumonia, acute respiratory distress syndrome, or required unexpected ventilation. This may explain the high mortality, as most (81.7%) patients who died had experienced pulmonary complications.

Report co-author Dmitri Nepogodiev, Research Fellow at the University of Birmingham commented, *"Worldwide an estimated 28.4 million elective operations were cancelled due to disruption caused by COVID-19. Our data suggests that it was the right decision to postpone operations at a time when patients were at risk of being infected with SARS-CoV-2 in hospital."*

College of Surgeons, Academy of Medicine of Malaysia (CSAMM) President, Professor Dr. April Camilla Roslani, said that although these results were based on a predominantly European cohort, they were consistent with a Chinese study in demonstrating poorer surgical outcomes for patients with the SARS-CoV-2 infection. *"This validates the Malaysian policy decisions at national and institutional levels to postpone non-urgent surgeries in SARS-CoV-2 patients. It also supports the role of risk assessment and pre-operative COVID-19 testing in those undergoing elective surgery, which we are already practising. Nevertheless, this practice has cost implications. As Malaysia ramps up its elective surgical services, there is now an urgent need for investment by the government and health providers to ensure that patient and healthcare worker safety is prioritised. This includes provision of adequate personal protective equipment (PPE), establishment of pathways for rapid preoperative SARS-CoV-2 testing, and maintenance of dedicated 'cold' surgical centres."*

[https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)31182-X/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)31182-X/fulltext).

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Notes to Editors

- *The University of Birmingham is ranked amongst the world's top 100 institutions, its work brings people from across the world to Birmingham, including researchers and teachers and more than 6,500 international students from over 150 countries.*
- *'Mortality and pulmonary complications in patients undergoing surgery with perioperative SARS-CoV-2 infection: an international cohort study' - Aneel Bhangu and others is published in The Lancet.*
- *Countries participating in the study were: Algeria, Azerbaijan, Belgium, Croatia, Denmark, Egypt, France, Germany, Greece, Ireland, Israel, Italy, Jordan, Libya, Mexico, Netherlands, Pakistan, Portugal, Spain, Sudan, Switzerland, Turkey, United Kingdom and United States.*
- *The National Institute for Health Research (NIHR) awarded £7 million to the University of Birmingham to establish the NIHR Global Health Research Unit on Global Surgery. This unit is engaged in conducting multi-country randomised controlled trials testing interventions to reduce SSI across a range of low- and middle-income countries. It has established sustainable partnerships with the aim of leveraging global policy change:*
 - *Benin - University of Abomey-Calavi, Cotonou*
 - *Ghana - University of Development Studies, Tamale*
 - *India - CMC Ludhiana, Punjab*
 - *Mexico - Hospital Espanol, Veracruz*
 - *Nigeria - Lagos University Teaching Hospital, Lagos & Obafemi Awolowo University Teaching Hospitals, Ile-Ife*
 - *Rwanda - University of Rwanda; University Teaching Hospital, Kigali*
 - *South Africa - Chris Hani Baragwanath Academic Hospital, Johannesburg*

The NIHR is the UK's largest funder of health and care research. The NIHR:

- *Funds, supports and delivers high quality research that benefits the NHS, public health and social care*
- *Engages and involves patients, carers and the public in order to improve the reach, quality and impact of research*
- *Attracts, trains and supports the best researchers to tackle the complex health and care challenges of the future*
- *Invests in world-class infrastructure and a skilled delivery workforce to translate discoveries into improved treatments and services*
- *Partners with other public funders, charities and industry to maximise the value of research to patients and the economy*

The NIHR was established in 2006 to improve the health and wealth of the nation through research, and is funded by the Department of Health and Social Care. In addition to its national role, the NIHR commissions applied health research to benefit the poorest people in low and middle-income countries, using Official Development Assistance funding.