

## Using Data to Minimise Pneumonia Risk After Cardiac Surgery



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An article published in the *Annals of Thoracic Surgery* identifies a list of 17 patient characteristics that include age, race, smoking habits, and white blood cell count among others, that are associated with developing pneumonia after cardiac surgery. Pneumonia is the most prevalent infection after such a surgery and often leads to longer hospital stays and lower odds of survival.

Data from thousands of patients who had coronary artery bypass graft (CABG) surgery at Michigan hospitals was analysed. The analysis revealed ways in which people can prepare their bodies and reduce the risk of postoperative pneumonia.

The 17 patient characteristics were identified based on the experiences of 16,084 patients who underwent cardiac surgery at 33 hospitals. Senior study author Donald Likosky, PhD and associate professor of cardiac surgery at the University of Michigan Medical School believes the findings have significant potential.

“This work reflects an evolution of our understanding of postoperative infections,” Likosky says, “and can go a long way to preserve resources and help patients recover from one of the country’s most common cardiac procedures.”

Lead study author Raymond Strobel points out that preventive strategies could reduce a patient's risk for postoperative pneumonia. A person's health and habits can be good predictors of recovery and can be used to develop a preoperative risk model that could facilitate clinical decision making and physician-patient conversations with respect to regimens and measures that can be taken before an operation to avoid pneumonia later.

In order to predict such risk, it is important to identify predictors that signal trouble. In the case of CABG, the main culprits include admission for heart surgery via the emergency room; a history of lung problems; a long hospital stay before surgery; and low ejection fraction, a measurement of how much blood is pumped out by the heart with each beat. In addition, smoking is a risk factor for postoperative pneumonia and quitting smoking even if its a month before surgery can make a difference. Another predictor is leukocytosis.

“Patients presenting with an elevated white blood cell count before their operation may be mounting an immune response against a pathogen or other challenge, and CABG significantly increases their odds of postoperative pneumonia,” says study co-author Gaetano Paone, MD, MHSA, a cardiac surgeon at the Henry Ford Health System.

Source: *Annals of Thoracic Surgery*

Image Credit: University of Michigan Health System

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