Frailty status in older adults associated with more adverse events after surgery

November 6 2023

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A new study from researchers at Wake Forest University School of Medicine shows that frailty is associated with higher rates of death and major morbidity after surgery.

The findings appear online today in JAMA Network Open.

"Frailty refers to a lack of functional or physiological reserve that determines whether patients bounce back from a health event such as surgery or illness," said Ashish K. Khanna, M.D., associate professor of anesthesiology and vice-chair of research with the department of anesthesiology, section on critical care medicine at Wake Forest University School of Medicine and corresponding author of the study.

According to Khanna, most rating scales to assess frailty require considerable time and resources. In-clinic assessments also often include patient self-reported questionnaires and physical examinations by clinicians with varying, sometimes subjective results.

In 2019, Atrium Health Wake Forest Baptist Medical Center integrated an electronic frailty index (eFI) into electronic health records (EHR). The eFI is a passive digital marker, which leverages routine clinical care to yield an assessment of an older adult's frailty.

The Wake Forest eFI was adapted by Kate Callahan, M.D., associate professor of gerontology and geriatric medicine, and Nicholas Pajewski, Ph.D., associate professor for biostatistics and data science, from previous work conducted in Canada and England.

The tool provides an automated score (reported as a proportion on a scale between 0-1) derived from two years of EHR data that uses over 50 health deficits including medical diagnoses, medications, lab tests, vital signs, physical function and more. It categorizes patients as fit (eFI 0.21).

For this retrospective study, conducted at Atrium Health Wake Forest Baptist, researchers examined the association of frailty with adverse events after elective noncardiac surgery that lasted more than one hour.

A group of 33,449 patients was identified with a median age of 67—34.6% were classified as fit, 47.6% were prefrail, and 17.8% as frail.

During the acute period following surgery, the research team measured hospital-acquired conditions, in-hospital and 30-day mortality, 30-day emergency department visits, 30-day hospital readmissions, unexpected ICU admissions and other patient safety indicators. They also extracted data on delayed complications such as transfer to a skilled nursing facility after surgery.

"We found that the prefrail and frail patients had significantly higher odds of postoperative adverse events than patients with a fit status," Khanna said. "Similarly, an increase of eFI by as small an increment as 1 additional health deficit significantly increased the odds of these events. These findings are important because the eFI tool can be used to screen and optimize patients in the pre-operative period. Ideally, these patients should also receive increased monitoring and postoperative attention."

Khanna also said that many important components of the eFI score include modifiable risk factors such as anemia, diabetes or hypertension.

"Pre-operative interventions could prove beneficial," Khanna said. "Using eFI to guide pre-operative therapy can potentially improve care and help frail older adults successfully tolerate and recover better from surgery, but more interventional trials are needed."

More information: Ashish K. Khanna et al, Automated Electronic Frailty Index–Identified Frailty Status and Associated Postsurgical Adverse Events, *JAMA Network Open* (2023). DOI: 10.1001/jamanetworkopen.2023.41915

Provided by Atrium Health Wake Forest Baptist