

New frailty test predicts risk of poor outcomes in elderly patients

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A simplified frailty index created by surgeons at Wayne State University School of Medicine in Detroit, Mich., is a reliable tool for assessing risk of mortality and serious complications in older patients considering total hip and knee replacement procedures, according to new study findings presented today at the 2014 Clinical Congress of the American College of Surgeons.

As more seniors stay healthier longer, elective operations such as hip and knee replacements are becoming more common. Traditionally, a person's eligibility for surgery has been based largely upon biological age. In recent years, however, a person's level of frailty (understood as a general decline in functional status) has come to be recognized as an independent risk factor for adverse health outcomes.

"We felt that age and general impression of the patient wasn't adequate for predicting outcomes, so we created a simplified frailty index to stratify risk of mortality and morbidity in surgical patients," said study coauthor Peter Adams, MD, a resident in general surgery at Henry Ford Hospital, Detroit, Mich. "We started our analysis in elderly emergent patients, and then moved on to vascular patients, and with this research, we have narrowed it down to two specific procedures."

While a number of different indices exist for measuring age-related frailty, the index used in this study is the only one directly mapped to the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) database.

"The advantage is that NSQIP provides a very large sample size and better quality data than our typical retrospective chart reviews," Dr. Adams said. "And the fact that we can get a large sample size for specific types of surgeries allows us to narrow down our data and be more precise in our understanding of individual patient populations and procedures in terms of risk."

The simplified frailty index takes into account 11 data points collected by the ACS NSQIP database. Since most of these variables are considered co-morbidities, such as history of heart attack, stent and hypertension, health care providers can easily calculate a patient's frailty score by taking a simple medical history. No laboratory values are included.

For the study, Dr. Adams and his colleagues used the ACS NSQIP database to identify total joint replacements between 2006 and 2012. Overall, frailty scores were calculated for 40,469 patients. Frailty scores ranged from 0 (no positive frailty values) to 0.64 (four positive frailty values) with a mean score of .10. Mean age was 66, and 61 percent of the patients underwent total knee replacement surgery and 39 percent had [hip replacement surgery](#).

Since the majority of patients in this study had four or less positive frailty values, the maximum assigned score was 4/11, rather than 11/11.

Using the index, study authors found a significant mortality rate for the 462 patients with high frailty scores. Patients with no frailty associated values (a frailty score of 0) had a mortality rate of 0.08 percent, but those with four values (a frailty score of 0.36), had a mortality rate of 2 percent.

The research also found that risk of serious postoperative complications increased from .67 percent (with no frailty associated values) to 6.24

percent (with four frailty values). Furthermore, this frailty test was shown to be a more reliable predictor of death and serious complications than patient age.

"I think using our frailty index can kind of enlighten surgeons into recognizing that even if they are doing an elective case, such as total knee or hip replacement, sicker patients who have significant medical histories may have a high risk of wound infections and even mortality," Dr. Adams said. "This frailty score will allow surgeons to have accurate and meaningful conversations with patients about their risk."

Importantly, Dr. Adams points out that this frailty score could also be used to show that elderly [patients](#) should not be denied an option for surgical treatment. Patients who have low [frailty](#) scores will probably do well and should be considered on the merits of their health, and not solely on age.

Provided by American College of Surgeons

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