

# Rehabilitation of the Geriatric Surgical Patient

## Predicting Needs and Optimizing Outcomes



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### KEYWORDS

- Geriatric • Rehabilitation • Surgery • Geriatric rehabilitation • Functional outcome
- Functional assessment • Frailty

### KEY POINTS

- Geriatric surgical and trauma patients have a high likelihood of requiring institutionalization after discharge from acute care hospitalization, and this can be predicted by frailty.
- Standard assessment tools for functional status are important for communication and documentation of outcomes.
- The rehabilitation team has many members and offers many services with an overarching goal of optimizing functional status.
- Rehabilitation can be offered in multiple venues and the rehabilitation team is expert at identifying the most appropriate venue for each patient.
- More studies are needed to determine the optimal therapeutic interventions to improve functional outcomes in geriatric surgical patients.

### INTRODUCTION: SCOPE OF THE PROBLEM

Geriatric patients, defined as those age 65 years or older, comprise approximately 13% of the population of the United States, but account for one-third of inpatient and outpatient surgical procedures.<sup>1</sup> Elderly patients undergoing major surgery or sustaining trauma often cannot be discharged home from the hospital. In a prospective study of 223 geriatric patients undergoing major surgery requiring postoperative intensive care unit (ICU) care, 30% required institutional care, such as nursing home

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(NH), skilled nursing facility (SNF), or rehabilitation unit (RU).<sup>2</sup> Joseph and colleagues<sup>3</sup> found that of 200 consecutive geriatric trauma patients, just 92 (46%) were discharged home; 5 (3%) died, 49 (25%) were transferred to a RU, and 54 (27%) to a SNF. Thus, rehabilitation is a major issue facing geriatric surgical patients. This article explores issues surrounding rehabilitation of the geriatric surgical patient.

## PREDICTING THE NEED FOR REHABILITATION

Many large database studies have concluded that advanced age independently predicts adverse surgical outcomes in procedures ranging from major gastrointestinal resections to thyroid surgery.<sup>4,5</sup> However, that numerous centers report excellent outcomes for surgery in even the very elderly (eg, pancreatic resection in octogenarians<sup>6</sup>) suggests it is not simply age that affects outcomes.

A growing body of literature has addressed the issue of physiologic, rather than chronologic, age as a predictor of outcomes. Several clinical assessment tools have been used to assess physiologic status. In recent years a large body of surgical literature has focused on quantifying the degree of physiologic impairment, summarized as a frailty index (FI).

### Frailty

Frailty has in the past been considered synonymous with disability (often a result of frailty), comorbidity (often a cause of frailty), or advanced old age (often a coincidence with frailty). Fried and colleagues<sup>7,8</sup> promulgated a standardized definition for frailty in 2001 (Table 1). Conceptually, the definition is based on five characteristics: (1) shrinking (unintentional weight loss), (2) weakness, (3) poor endurance/exhaustion, (4) slowness, and (5) low activity level. FIs have been developed to quantify frailty. The FI is calculated by counting an individual's deficits in health (eg, symptoms, signs, disabilities, comorbidities, laboratory data, electrocardiographic abnormalities) and dividing by the total number of deficits assessed.<sup>9</sup> Several FIs have been published, and some

**Table 1**

**Characteristics of frailty and their definitions, based on data collected in the Cardiovascular Health Study**

Characteristic	Definition
Shrinking	Unintentional weight loss $\geq 10$ lb or $\geq 5\%$ body weight in prior year
Weakness	Grip strength (kg) in lowest quintile of Cardiovascular Health Study data <sup>a</sup>
Poor endurance	"Exhaustion" (self-reported) <sup>b</sup>
Slowness	15 ft walking time in lowest quintile <sup>c</sup>
Low activity	Kcal expended/week (self-reported) <sup>d</sup>

Frailty is defined as the presence of three or more criteria; "prefrailty" is defined by the presence of one or two criteria.

<sup>a</sup> Stratified by gender and BMI. Men: BMI  $\leq 24$ , grip strength  $\leq 29$  kg; BMI 24.1–28, grip strength  $\leq 30$  kg; BMI  $> 28$ , grip strength  $\leq 32$ . Women: BMI  $\leq 23$ , grip strength  $\leq 17$  kg; BMI 23.1–26, grip strength  $\leq 17.3$  kg; BMI 26.1–29, grip strength  $\leq 18$  kg; BMI  $> 29$ , grip strength  $\leq 21$ .

<sup>b</sup> Asked "How often in the last week did you feel either: (a) I felt that everything I did was an effort; or (b) I could not get going?" Subjects answering "a moderate amount of the time (3–4 days)" or "most of the time" categorized as frail.

<sup>c</sup> Stratified by gender and height. Men:  $\leq 173$  cm,  $\geq 7$  seconds;  $> 173$  cm,  $\leq 6$  seconds. Women:  $\leq 159$  cm,  $\geq 7$  seconds;  $> 159$  cm,  $\leq 6$  seconds.

<sup>d</sup> Stratified by gender, based on short version of Minnesota Leisure Time Activity Questionnaire activity scale: men,  $< 383$  kcal/wk; women,  $< 270$  kcal/wk.

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