



Factors besides frailty index affect length of stay in older patients with hip fractures

Tanchanok Chattaris^{1,2,3} · Karen Chahal³ · Sarah D. Berry^{2,3}

Received: 28 April 2023 / Accepted: 12 May 2023 / Published online: 29 May 2023
© International Osteoporosis Foundation and Bone Health and Osteoporosis Foundation 2023

Letter to the Editor

We read with great interest the recent study by Wong et al.[1], which demonstrated that Hospital Frailty Risk Score (HFRS) is associated with length of stay (LOS) in older adults with hip fractures. HFRS[2] uses administrative data to generate a validated frailty risk score [3, 4]. The study (conducted from January 2016 to June 2020) found that higher HFRS scores were associated with significantly longer LOS.

During the pandemic era (August 2021), we established an Orthopedic-Geriatric Co-Management service in Boston, MA. This service provides care for hospitalized adults aged ≥ 65 years with a lower extremity fracture. Using data from the electronic health record and comprehensive geriatric assessment, an automated frailty index (CGA-FI) was calculated, including four subcomponents: medical history, function, cognition, and nutritional status. The tool ranges between 0–1; higher values indicate greater frailty. We defined frailty and severe frailty as a CGA-FI score ≥ 0.25 and ≥ 0.45 , respectively.

In the first 8 months, there were 124 hospitalized fracture patients (mean age 82.2 ± 8.2 years, 66.1% female). 76 patients (61.3%) were frail, and 51.3% had severe frailty. Most patients received treatment for a hip fracture (64.5%), whereas 16.9% suffered a periprosthetic fracture.

Overall, mean LOS was 5.5 ± 3.2 days. We found no significant differences between LOS in patients with and without frailty (6.0 ± 3.4 days in patients with frailty versus 4.9 ± 2.7 days in patients without frailty; correlation coefficient = 0.14, p -value = 0.11). We were surprised we did not find a stronger correlation between frailty and LOS, so we explored the reasons for long LOS in our patients.

First, we discovered that *patient-related factors* besides frailty influenced LOS. For example, one patient without frailty had an abnormal chest-x-ray and was discovered to have a new cancer diagnosis, extending LOS. More commonly, COVID-19 contributed to LOS as several patients without frailty preferred to avoid short-term rehabilitation due to the perceived negative public image of these facilities during the pandemic. In these circumstances, the physical therapists encouraged starting physical therapy in the hospital before transitioning home with outpatient therapy.

Additionally, there were *system-related factors* that influenced LOS. For example, some insurance plans require peer-to-peer review to authorize rehabilitation services for hospitalized patients with fractures. Moreover, the procedures and guidelines for transferring patients to a rehabilitation center changed frequently throughout the COVID-19 pandemic, sometimes slowing discharge. Non-vaccinated COVID-19 patients faced limited choices for placement in rehabilitation centers or nursing homes, and those diagnosed with COVID-19 during the hospital stay needed a quarantine period or negative test before discharge.

Figure 1 summarizes the patient-related and system-related factors influencing LOS in older patients with hip fractures. While many of the factors are modifiable, many factors are non-modifiable. COVID-19-related factors contributed to LOS often, which may explain the difference in results between Wong et al.[1] and our findings. It is important that clinicians, hospital administrators, and policymakers consider these factors when developing new models to improve care for vulnerable older adults with fractures.

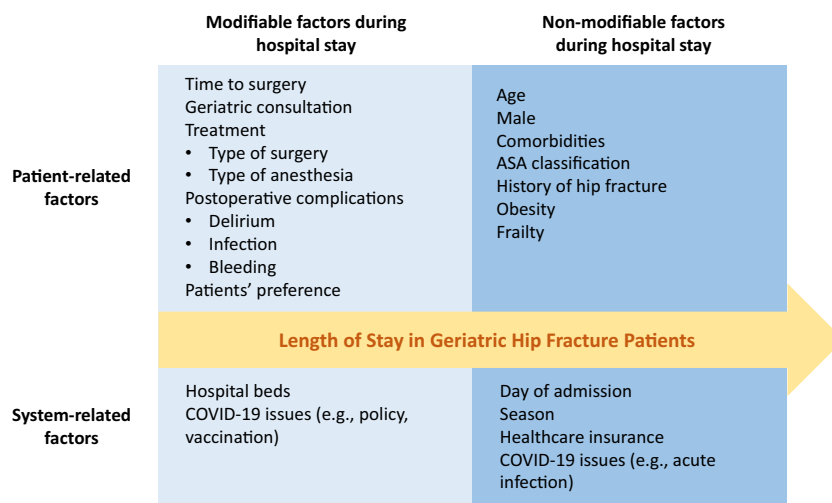
✉ Sarah D. Berry
sarahberry@hsl.harvard.edu

¹ Department of Medicine, Faculty of Medicine Ramathibodi Hospital, Mahidol University, Bangkok, Thailand

² Hebrew SeniorLife, Hinda and Arthur Marcus Institute for Aging Research and Department of Medicine, Boston, MA, USA

³ Department of Medicine, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, USA

Fig. 1 Factors affecting LOS in older adults with hip fractures; thinking beyond medical issues



Acknowledgements This work was supported in part by a grant from the National Institute on Aging (K24 AG070106).

Data Availability Data are protected under HIPAA. No informed consent was collected, and the data cannot be shared with outside persons.

Declarations

Conflict of interests TC and KC had no conflict of interest. SDB received royalties from Wolters Kluwer.

References

1. Wong BLL, Chan YH, O'Neill GK, Murphy D, Merchant RA (2023) Frailty, length of stay and cost in hip fracture patients. *Osteoporos Int* 34(1):59–68
2. Gilbert T, Neuburger J, Kraindler J, Keeble E, Smith P, Ariti C et al (2018) Development and validation of a Hospital Frailty

Risk Score focusing on older people in acute care settings using electronic hospital records: an observational study. *Lancet* 391(10132):1775–1782

3. Eckart A, Hauser SI, Haubitz S, Struja T, Kutz A, Koch D et al (2019) Validation of the hospital frailty risk score in a tertiary care hospital in Switzerland: results of a prospective, observational study. *BMJ Open* 9(1):e026923
4. Subramaniam A, Ueno R, Tiruvoipati R, Srikanth V, Bailey M, Pilcher D (2022) Comparison of the predictive ability of clinical frailty scale and hospital frailty risk score to determine long-term survival in critically ill patients: a multicentre retrospective cohort study. *Crit Care* 26(1):121

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

This report is part of the quality improvement project with the waiver of institutional review board approval (#2021D000631).