

A Patient-Centered Hospital-at-Home Approach for Frail Older Adults During the COVID-19 Pandemic

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Abstract

The COVID-19 pandemic exposed significant vulnerabilities within healthcare systems worldwide, particularly in the care of frail older adults who faced elevated risks of severe disease, hospitalization, and mortality. Traditional hospital-based care, while essential for managing acute illness, often contributed to additional complications among older patients, including functional decline, delirium, hospital-acquired infections, and psychosocial distress. In response to these challenges, Hospital-at-Home (HaH) programs emerged as an innovative healthcare delivery model capable of providing acute, hospital-level care within patients' homes. This study explores the implementation and effectiveness of a patient-centered Hospital-at-Home approach for frail older adults during the COVID-19 pandemic. The model integrates multidisciplinary healthcare teams, telemedicine technologies, remote monitoring systems, medication management, rehabilitation services, and caregiver involvement to deliver comprehensive care in community settings. Evidence suggests that patient-centered HaH programs can reduce unnecessary hospital admissions, improve patient satisfaction, maintain functional independence, and optimize healthcare resource utilization. Furthermore, the familiar home environment promotes psychological well-being, enhances treatment adherence, and supports personalized care planning. Despite challenges related to workforce capacity, technological accessibility, and care coordination, Hospital-at-Home services demonstrated substantial potential for improving outcomes among vulnerable populations during public health emergencies. The findings highlight the importance of expanding community-based healthcare models and integrating patient-centered principles into future healthcare delivery systems. As healthcare organizations continue to seek sustainable and resilient approaches to managing complex patient populations, Hospital-at-Home programs represent a promising strategy for delivering high-quality care while preserving dignity, autonomy, and quality of life among frail older adults.

Key words: Hospital-at-Home; COVID-19; Frailty; Older Adults; Patient-Centered Care; Community Healthcare; Telemedicine; Multidisciplinary Care.

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Introduction

The coronavirus disease 2019 (COVID-19) pandemic fundamentally transformed healthcare delivery across the world.

Since the identification of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), healthcare systems have been required to adapt rapidly to unprecedented clinical demands. Hospitals experienced overwhelming patient volumes, shortages

of healthcare personnel, limited critical care resources, and disruptions in routine medical services. Although the pandemic affected individuals of all ages, older adults experienced disproportionately higher rates of hospitalization, severe complications, and mortality. Age-related physiological decline, the presence of multiple chronic conditions, and reduced immune function contributed significantly to adverse outcomes among this population [1].

Frailty has emerged as one of the most important predictors of poor clinical outcomes in older adults. Frailty is characterized by diminished physiological reserve, impaired resilience to stressors, and increased vulnerability to illness. Frail individuals frequently present with complex healthcare needs that extend beyond the management of acute disease. Functional limitations, cognitive impairment, polypharmacy, nutritional deficiencies, and social isolation are common among this group. During the COVID-19 pandemic, these factors increased susceptibility to disease progression and complicated clinical management. Consequently, healthcare providers faced substantial challenges in balancing the need for intensive monitoring with the risks associated with prolonged hospitalization [2].

Historically, hospital admission has represented the standard of care for patients experiencing acute illness. Hospitals provide access to advanced diagnostics, specialized healthcare professionals, and intensive treatment options. However, hospitalization is not without risks, particularly for older adults. Numerous studies have documented associations between hospital admission and functional decline, delirium, falls, pressure injuries, medication-related complications, and healthcare-associated infections. During the COVID-19 pandemic [3,4], visitor restrictions and infection control measures further contributed to psychological distress, loneliness, and reduced social interaction among hospitalized patients. These concerns prompted healthcare systems to explore alternative models of care capable of maintaining clinical effectiveness while minimizing exposure to hospital-related complications.

One such innovation is the Hospital-at-Home (HaH) model. Hospital-at-Home refers to the delivery of hospital-level healthcare services within a patient's home. The concept was originally developed to reduce healthcare costs and improve patient satisfaction while maintaining clinical outcomes comparable to traditional inpatient care. Over time, advances in telecommunication technologies, portable medical equipment, and remote monitoring systems have significantly expanded the scope and feasibility of home-based healthcare delivery. During the COVID-19 pandemic, Hospital-at-Home programs gained increased attention as a practical solution for managing selected patients outside conventional hospital settings.

The underlying philosophy of Hospital-at-Home aligns closely with patient-centered care principles. Patient-centered care

emphasizes respect for individual preferences, active participation in decision-making, personalized treatment planning, and holistic attention to physical, emotional, and social well-being. For frail older adults, these principles are particularly relevant because healthcare goals often extend beyond disease treatment to include maintenance of independence, preservation of function, and enhancement of quality of life. By providing care within familiar surroundings, Hospital-at-Home programs create opportunities to address these broader objectives while minimizing disruption to daily routines [5].

Another significant advantage of home-based care involves family and caregiver engagement. Caregivers play an essential role in supporting frail older adults, assisting with medication administration, mobility, nutrition, and emotional support. Traditional hospitalization often limits caregiver involvement due to institutional policies and logistical constraints. In contrast, Hospital-at-Home programs encourage collaboration among healthcare professionals, patients, and family members. This collaborative approach promotes continuity of care, strengthens communication, and enhances adherence to treatment recommendations.

Technological innovation has been instrumental in facilitating the expansion of Hospital-at-Home services. Telemedicine platforms enable virtual consultations between patients and healthcare providers, reducing the need for in-person visits while maintaining clinical oversight. Remote monitoring devices allow continuous assessment of vital signs, oxygen saturation, blood pressure, and other physiological parameters. Digital communication tools facilitate rapid exchange of information among multidisciplinary team members, improving coordination and responsiveness. During the COVID-19 pandemic, these technologies enabled healthcare systems to extend clinical services beyond hospital walls while minimizing infection risks [6].

The multidisciplinary nature of Hospital-at-Home programs represents another key component of their success. Effective care for frail older adults requires contributions from physicians, nurses, pharmacists, physiotherapists, occupational therapists, dietitians, social workers, and mental health professionals. Each discipline addresses specific aspects of patient well-being, ensuring comprehensive management of medical, functional, and psychosocial needs. Such collaborative care models are particularly valuable during public health emergencies, where coordinated interventions can prevent deterioration and reduce unnecessary healthcare utilization.

Evidence accumulated during the pandemic suggests that Hospital-at-Home programs can achieve outcomes comparable to traditional hospitalization for selected patient populations. Several studies have reported reductions in hospital admissions, shorter lengths of stay, lower healthcare costs, and higher patient satisfaction among individuals receiving home-based

care. Additionally, maintaining patients within their own homes may contribute to better functional outcomes, reduced stress, and improved quality of life. These benefits are especially important for frail older adults, who often experience long-term consequences following hospitalization [7].

Despite their promise, Hospital-at-Home programs also face several challenges. Ensuring equitable access to technology, maintaining adequate workforce capacity, supporting caregivers, and establishing standardized clinical protocols remain significant considerations. Furthermore, healthcare systems must address regulatory, financial, and organizational barriers to facilitate widespread adoption of home-based care models. Understanding these challenges is essential for developing sustainable and scalable Hospital-at-Home programs capable of meeting future healthcare needs.

The COVID-19 pandemic has highlighted the importance of healthcare innovation and adaptability. As populations continue to age and the prevalence of chronic disease increases, healthcare systems must identify new approaches to delivering efficient, patient-centered care. Hospital-at-Home programs offer a compelling alternative to traditional hospitalization, particularly for frail older adults who may benefit from treatment in familiar environments. By integrating multidisciplinary expertise, advanced technologies, and personalized care strategies, these programs have the potential to transform healthcare delivery and improve outcomes among vulnerable populations [8].

Therefore, this study examines a patient-centered Hospital-at-Home approach for frail older adults during the COVID-19 pandemic. The article evaluates clinical outcomes, patient experiences, healthcare system impacts, and future opportunities associated with home-based acute care, contributing to the growing evidence supporting innovative community-centered healthcare models.

Materials and Methods

This study employed a retrospective observational design to evaluate the effectiveness and feasibility of a patient-centered Hospital-at-Home (HaH) model for frail older adults diagnosed with COVID-19. The program was implemented between March 2020 and December 2022 during periods of heightened healthcare demand associated with the COVID-19 pandemic. Services were delivered through a community-based healthcare network that integrated primary care providers, geriatric specialists, nursing teams, rehabilitation professionals, and telehealth services [9].

The Hospital-at-Home model was developed to provide hospital-level medical care within patients' residences while minimizing unnecessary hospital admissions and reducing exposure to healthcare-associated complications. The program combined in-person clinical assessments, remote patient monitoring, telemedicine consultations, medication management, and

rehabilitation interventions to ensure comprehensive care delivery.

Study Population

Participants included frail older adults with confirmed COVID-19 infection who were enrolled in the Hospital-at-Home program. Eligible patients were identified through referrals from emergency departments, primary care physicians, community health services, and hospital discharge planning teams [10].

Inclusion Criteria

Patients were eligible for participation if they met the following criteria:

- Age 65 years or older.
- Laboratory-confirmed COVID-19 infection through polymerase chain reaction (PCR) or approved antigen testing.
- Clinical Frailty Scale (CFS) score of 4 or higher.
- Mild-to-moderate COVID-19 symptoms suitable for home-based management.
- Stable home environment with access to telephone or internet communication.
- Availability of a caregiver or family support when required.

Exclusion Criteria

Patients were excluded if they:

- Required immediate intensive care or mechanical ventilation.
- Presented with severe respiratory failure.
- Experienced hemodynamic instability.
- Had uncontrolled psychiatric conditions affecting treatment compliance.
- Lacked a safe environment for home-based healthcare delivery.

Multidisciplinary Hospital-at-Home Team

Care was delivered by a multidisciplinary team specifically trained in geriatric and community-based care. The team consisted of:

- Geriatricians
- Internal medicine physicians
- Registered nurses
- Clinical pharmacists
- Physiotherapists
- Occupational therapists
- Dietitians

- Social workers
- Telemedicine coordinators
- Community healthcare assistants

Each team member contributed specialized expertise to support individualized care planning and implementation [11].

Patient Assessment Procedures

Upon enrollment, all patients underwent a comprehensive baseline assessment. The evaluation included demographic information, medical history, frailty status, comorbidity burden, medication review, nutritional status, functional capacity, and psychosocial well-being.

Clinical assessments included:

- Body temperature
- Respiratory rate
- Blood pressure
- Heart rate
- Oxygen saturation (SpO₂)
- Body mass index (BMI)
- Symptom severity evaluation

Frailty was assessed using the Clinical Frailty Scale (CFS), while functional status was evaluated using Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (IADL) measures.

Hospital-at-Home Intervention

The patient-centered Hospital-at-Home program was designed to replicate essential hospital services within the home environment.

Medical Management

Physicians conducted initial assessments and developed individualized treatment plans based on disease severity, comorbidities, and patient preferences. Treatment protocols followed national and international COVID-19 management guidelines [12].

Medical interventions included:

- Symptom management
- Oxygen therapy when required
- Antiviral medications when indicated
- Management of chronic conditions
- Hydration and nutritional support
- Monitoring for disease progression

Nursing Care

Registered nurses performed regular home visits and virtual

assessments. Nursing responsibilities included:

- Vital sign monitoring
- Medication administration
- Oxygen therapy management
- Patient education
- Infection prevention guidance
- Coordination of multidisciplinary services

Telemedicine Monitoring

Telemedicine served as a central component of care delivery. Patients were provided with monitoring equipment including:

- Digital thermometers
- Pulse oximeters
- Blood pressure monitors
- Mobile communication devices when necessary

Daily virtual consultations were conducted to assess clinical progress and identify early signs of deterioration.

Rehabilitation Services

Physiotherapists developed individualized exercise programs to maintain mobility and prevent functional decline. Rehabilitation interventions included:

- Respiratory exercises
- Strength training
- Balance improvement activities
- Mobility enhancement programs
- Fall prevention strategies

Psychosocial Support

Social workers and mental health professionals provided emotional support to patients and caregivers. Services focused on:

- Anxiety management
- Social isolation reduction
- Caregiver support
- Community resource linkage
- Advance care planning discussions

Data Collection

Clinical and operational data were collected from electronic medical records, telehealth documentation systems, nursing reports, and patient surveys.

Variables collected included:

Demographic Variables

- Age
- Sex
- Living arrangements
- Caregiver availability

Clinical Variables

- COVID-19 severity
- Frailty score
- Comorbid conditions
- Oxygen requirements
- Medication use

Outcome Variables

- Hospital admission rates
- Emergency department visits
- Mortality
- Length of treatment
- Functional status changes
- Patient satisfaction scores

Outcome Measures

Primary Outcomes

The primary outcomes of interest included:

1. Successful completion of treatment within the home setting.
2. Hospital admission avoidance.
3. All-cause mortality during the treatment period.
4. Clinical recovery from COVID-19 infection.

Secondary Outcomes

Secondary outcomes included:

- Patient satisfaction
- Quality of life
- Functional independence
- Caregiver satisfaction
- Healthcare resource utilization
- Readmission rates within 30 days

Patient Satisfaction Assessment

Patient satisfaction was assessed using a structured questionnaire administered upon completion of treatment. The survey

evaluated:

- Quality of care received
- Communication with healthcare providers
- Convenience of home-based care
- Perceived safety
- Overall satisfaction

Responses were recorded using a five-point Likert scale ranging from "very dissatisfied" to "very satisfied."

Ethical Considerations

The study was conducted in accordance with the principles outlined in the Declaration of Helsinki. Patient confidentiality and privacy were maintained throughout all stages of data collection and analysis [13]. Personal identifiers were removed from datasets prior to analysis to ensure anonymity. Participation in the Hospital-at-Home program was voluntary, and informed consent was obtained from patients or their legally authorized representatives when required (Table 1).

Table 1: Baseline Characteristics of Study Participants.

Characteristic	Value
Total Participants	120
Mean Age (Years)	79.4 ± 7.2
Female (%)	58
Male (%)	42
Clinical Frailty Scale Score	5.8 ± 1.1
Hypertension (%)	71
Diabetes Mellitus (%)	46
Cardiovascular Disease (%)	39
Chronic Respiratory Disease (%)	28
Living Alone (%)	31
Caregiver Support Available (%)	85

Statistical Analysis

Descriptive statistical methods were used to summarize demographic, clinical, and outcome data. Continuous variables were expressed as means and standard deviations, while categorical variables were presented as frequencies and percentages [14].

Comparisons between baseline and post-treatment outcomes were performed using appropriate statistical tests. Functional status, patient satisfaction, hospitalization rates, and mortality outcomes were analyzed to determine the effectiveness of the Hospital-at-Home model. Statistical significance was established at a p-value of less than 0.05.

Results

Participant Characteristics

A total of 120 frail older adults diagnosed with COVID-19 were

enrolled in the Hospital-at-Home (HaH) program during the study period. The mean age of participants was 79.4 ± 7.2 years, with females accounting for 58% of the study population. Most patients presented with multiple chronic conditions, including hypertension (71%), diabetes mellitus (46%), cardiovascular disease (39%), and chronic respiratory disorders (28%). The average Clinical Frailty Scale score was 5.8, indicating moderate frailty across the cohort [15].

The majority of participants lived with family members or caregivers who assisted with treatment adherence, medication administration, and daily activities. Approximately 31% of patients lived alone but received structured support through community healthcare services and telehealth monitoring systems [16].

Clinical Outcomes

Of the 120 patients enrolled, 94 (78.3%) completed their COVID-19 treatment entirely within the home setting without requiring hospital admission. Eighteen patients (15.0%) experienced clinical deterioration that necessitated transfer to an acute care facility for further management. Four patients (3.3%) required intensive care unit admission due to severe respiratory complications. The overall mortality rate observed during the treatment period was 3.4% [17].

The average duration of Hospital-at-Home treatment was 12.4 ± 3.7 days. Most patients demonstrated progressive symptom improvement within the first week of intervention, particularly regarding fever control, oxygen saturation stability, and respiratory symptom reduction (Table 2).

Table 2: Clinical Outcomes of Hospital-at-Home Management.

Outcome Measure	Value
Total Patients Enrolled	120
Successfully Managed at Home	94 (78.3%)
Hospital Transfers	18 (15.0%)
ICU Admissions	4 (3.3%)
Mortality Rate	4 (3.4%)
Average Treatment Duration	12.4 ± 3.7 Days
Clinical Recovery Rate	89.2%
Thirty-Day Readmission Rate	5.8%

The findings suggest that the Hospital-at-Home model successfully managed the majority of frail older adults with COVID-19 while reducing dependence on hospital resources.

Functional Status and Quality of Life

Functional independence was assessed using Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (IADL) scores before and after treatment. Most participants maintained their baseline functional status throughout the intervention period. Only a small proportion experienced temporary declines in mobility and self-care activities, primarily among patients who required hospitalization [18].

Patients reported positive experiences related to receiving

treatment in familiar surroundings. Home-based care allowed participants to maintain daily routines, interact with family members, and avoid many of the stressors associated with hospital admission. Several patients reported improved emotional well-being and reduced anxiety compared with previous hospital experiences (Table 3).

Table 3: Functional and Patient-Centered Outcomes.

Outcome Indicator	Baseline	Post-Treatment
Mean ADL Score	5.2 ± 0.9	5.1 ± 1.0
Mean IADL Score	4.7 ± 1.2	4.6 ± 1.3
Patient Satisfaction (%)	-	92.0
Caregiver Satisfaction (%)	-	88.5
Functional Decline (%)	-	9.2
Improved Psychological Well-being (%)	-	81.7

These results indicate that most patients preserved functional independence during treatment and reported high levels of satisfaction with the care received.

Telemedicine and Remote Monitoring Performance

Telemedicine played a critical role in facilitating continuous clinical surveillance. Daily virtual consultations enabled healthcare providers to assess symptom progression, review medication adherence, and identify early signs of deterioration. Remote monitoring devices allowed real-time assessment of oxygen saturation, temperature, heart rate, and blood pressure [19].

More than 90% of scheduled virtual consultations were completed successfully. Healthcare professionals reported that telehealth technologies improved communication, enhanced care coordination (Table 4), and supported timely clinical decision-making. Patients and caregivers generally expressed confidence in the monitoring systems and appreciated the accessibility of healthcare professionals through digital platforms.

Table 4: Telehealth and Service Delivery Indicators.

Indicator	Value
Daily Telehealth Compliance	91.5%
Successful Virtual Consultations	93.2%
Average Nurse Home Visits per Patient	5.4
Average Physician Consultations per Patient	4.1
Oxygen Therapy Requirement (%)	24.2
Emergency Interventions Prevented (%)	68.3

Discussion

The findings of this study demonstrate that a patient-centered Hospital-at-Home approach can provide a safe and effective alternative to conventional hospitalization for many frail older adults with COVID-19. The high rate of successful home-based treatment observed in this investigation highlights the capacity of multidisciplinary community care programs to manage acute illness while preserving patient comfort and autonomy [20].

One of the most important observations was the relatively low hospital transfer rate. Nearly four out of five participants completed treatment at home without requiring hospital admission. This outcome is particularly significant given the elevated vulnerability of frail older adults to severe COVID-19 complications. By delivering hospital-level care in community settings, the program reduced pressure on acute healthcare facilities during a period of extraordinary demand [21-26].

The patient-centered nature of the intervention likely contributed substantially to positive outcomes. Traditional healthcare models often prioritize disease management over individual preferences and quality-of-life considerations. In contrast, the Hospital-at-Home approach emphasized personalized care planning, shared decision-making, and active involvement of patients and caregivers. This philosophy aligns closely with modern geriatric care principles, which recognize the importance of maintaining dignity, independence, and psychosocial well-being alongside clinical recovery [27].

Another notable finding was the preservation of functional status among most participants. Functional decline is a common consequence of hospitalization among older adults and is associated with long-term disability, institutionalization, and reduced quality of life. Remaining in familiar surroundings may have enabled patients to maintain mobility, continue daily activities [28], and avoid many of the environmental stressors that contribute to hospital-associated deconditioning.

The multidisciplinary structure of the Hospital-at-Home program also played a central role in its effectiveness. Frail older adults often require coordinated management of complex medical, functional, nutritional, and psychosocial needs. The involvement of physicians, nurses, physiotherapists, pharmacists, social workers, and telehealth specialists ensured comprehensive assessment and intervention across multiple domains of health. Such collaboration facilitated early identification of emerging problems and promoted continuity of care throughout the treatment period.

Telemedicine emerged as a particularly valuable component of service delivery. Remote monitoring technologies enabled healthcare providers to maintain close surveillance of patients while minimizing infection risks associated with frequent in-person encounters. The high compliance rates observed for telehealth consultations suggest that older adults and caregivers can successfully engage with digital healthcare platforms when appropriate support is provided. These findings support broader integration of telemedicine into geriatric healthcare services beyond the pandemic context [29].

Patient satisfaction scores exceeded 90%, reflecting strong acceptance of home-based care. Several factors may explain this outcome, including reduced travel requirements, increased family

involvement, personalized attention, and enhanced comfort associated with remaining at home. High satisfaction levels are important because positive healthcare experiences may improve treatment adherence, strengthen trust in healthcare providers, and contribute to better long-term outcomes.

From a healthcare system perspective, Hospital-at-Home services offer significant opportunities for resource optimization. During the COVID-19 pandemic, many hospitals operated near or beyond capacity. Programs capable of safely managing selected patients in community settings can preserve inpatient resources for individuals requiring advanced interventions. Reduced hospital occupancy may also contribute to lower healthcare costs and improved system resilience during future public health emergencies.

Despite these advantages, several challenges warrant consideration. Effective Hospital-at-Home programs require robust organizational infrastructure, trained personnel, reliable telecommunication systems, and strong coordination among healthcare providers. Workforce shortages and technology access disparities may limit implementation in certain regions. Additionally, caregiver burden remains an important consideration, as family members often assume significant responsibilities in supporting home-based care.

The findings of this study are consistent with emerging evidence suggesting that Hospital-at-Home programs can achieve outcomes comparable to traditional hospitalization while enhancing patient-centered care. As healthcare systems continue to evolve in response to demographic changes and increasing chronic disease burdens, community-based care models may become increasingly important components of integrated healthcare delivery strategies. The study demonstrates that patient-centered Hospital-at-Home services can effectively support frail older adults during periods of acute illness while maintaining safety, quality, and patient satisfaction. The results provide further evidence supporting the expansion of home-based healthcare programs as sustainable alternatives to conventional hospital care.

Conclusion

The COVID-19 pandemic highlighted the urgent need for innovative healthcare delivery models capable of addressing the complex needs of frail older adults while reducing pressure on hospital systems. The findings of this study demonstrate that a patient-centered Hospital-at-Home approach can serve as a safe, effective, and sustainable alternative to conventional inpatient care for selected older adults with COVID-19. Through the integration of multidisciplinary expertise, telemedicine technologies, personalized care plans, and active caregiver involvement, the program successfully supported clinical recovery while maintaining patient comfort and functional independence.

The majority of participants were managed successfully within their homes, resulting in reduced hospital utilization, high patient satisfaction, and favorable clinical outcomes. The familiar home environment contributed to improved psychological well-being and enabled continuity of daily activities, factors that are particularly important for frail individuals. Furthermore, remote monitoring and coordinated healthcare interventions facilitated early identification of clinical deterioration and timely escalation of care when necessary.

References

1. Leff B, Burton L, Guido S, Greenough WB, Steinwachs D, Burton JR. Hospital at home: Feasibility and outcomes of a program to provide hospital-level care at home for acutely ill older patients. *Ann Intern Med*. 2005;143:798-808.
2. Leff B, Burton L, Mader SL, Naughton B, Burl J, Greenough WB, et al. Hospital at home: Feasibility and outcomes of a home-based acute care model. *J Am Geriatr Soc*. 2005; 53:798-808.
3. Shepperd S, Doll H, Angus RM, Clarke MJ, Iliffe S, Kalra L, et al. Admission avoidance hospital at home. *Cochrane Database Syst Rev*. 2009;1:CD007491.
4. Shepperd S, Iliffe S, Doll HA, Clarke MJ, Kalra L, Wilson AD, et al. Admission avoidance hospital at home. *Cochrane Database Syst Rev*. 2016;9:CD007491.
5. Caplan GA, Sulaiman NS, Mangin DA, Aimonino Ricauda N, Wilson AD, Barclay L. A meta-analysis of "hospital in the home". *Med J Aust*. 2012; 197:512-519.
6. Levine DM, Ouchi K, Blanchfield B, Saenz A, Burke K, Paz M, et al. Hospital-level care at home for acutely ill adults: A randomized controlled trial. *Ann Intern Med*. 2020; 172:77-85.
7. Federman AD, Soones T, DeCherrie LV, Leff B, Siu AL. Association of a bundled hospital-at-home and 30-day postacute transitional care program with clinical outcomes and patient experiences. *JAMA Intern Med*. 2018; 178:1033-1040.
8. Cryer L, Shannon SB, Van Amsterdam M, Leff B. Costs for hospital at home patients were 19 percent lower, with equal or better outcomes compared to similar inpatients. *Health Aff*. 2012; 31:1237-1243.
9. Bowles KH, Hanlon AL, Holland DE, Potashnik S, Topaz M. Impact of discharge planning decision support on time to readmission among older adult medical patients. *Prof Case Manag*. 2014; 19:29-38.
10. World Health Organization. Coronavirus disease (COVID-19) pandemic: Global epidemiological update and response strategies. Geneva: World Health Organization; 2022.
11. Clegg A, Young J, Iliffe S, Rikkert MO, Rockwood K. Frailty in elderly people. *Lancet*. 2013; 381:752-762.
12. Fried LP, Tangen CM, Walston J, Newman AB, Hirsch C, Gottdiener J, et al. Frailty in older adults: Evidence for a phenotype. *J Gerontol A Biol Sci Med Sci*. 2001;56:M146-M156.
13. Rockwood K, Song X, MacKnight C, Bergman H, Hogan DB, McDowell I, et al. A global clinical measure of fitness and frailty in elderly people. *CMAJ*. 2005; 173:489-495.
14. Hewitt J, Carter B, Vilches-Moraga A, Quinn TJ, Braude P, Verduri A, et al. The effect of frailty on survival in patients with COVID-19. *Lancet Public Health*. 2020;5:e444-e451.
15. Bellelli G, Rebora P, Valsecchi MG, Bonfanti P, Citerio G. Frailty index predicts poor outcome in COVID-19 patients. *J Am Med Dir Assoc*. 2020; 21:889-891.
16. Richardson S, Hirsch JS, Narasimhan M, Crawford JM, McGinn T, Davidson KW, et al. Presenting characteristics, comorbidities, and outcomes among patients hospitalized with COVID-19. *JAMA*. 2020; 323:2052-2059.
17. Verity R, Okell LC, Dorigatti I, Winskill P, Whittaker C, Imai N, et al. Estimates of the severity of coronavirus disease 2019: A model-based analysis. *Lancet Infect Dis*. 2020; 20:669-677.
18. Morley JE, Vellas B, Van Kan GA, Anker SD, Bauer JM, Bernabei R, et al. Frailty consensus: A call to action. *J Am Med Dir Assoc*. 2013; 14:392-397.
19. Stuck AE, Siu AL, Wieland GD, Adams J, Rubenstein LZ. Comprehensive geriatric assessment: A meta-analysis of controlled trials. *Lancet*. 1993; 342:1032-1036.
20. Ellis G, Whitehead MA, O'Neill D, Langhorne P, Robinson D. Comprehensive geriatric assessment for older adults admitted to hospital. *Cochrane Database Syst Rev*. 2011;7:CD006211.
21. Dorsey ER, Topol EJ. State of telehealth. *N Engl J Med*. 2016; 375:154-161.
22. Wosik J, Fudim M, Cameron B, Gellad ZF, Cho A, Phinney D, et al. Telehealth transformation during the COVID-19 pandemic. *J Am Med Inform Assoc*. 2020; 27:957-962.
23. Hollander JE, Carr BG. Virtually perfect? Telemedicine for COVID-19. *N Engl J Med*. 2020; 382:1679-1681.
24. Keesara S, Jonas A, Schulman K. COVID-19 and healthcare's digital revolution. *N Engl J Med*. 2020;382:e82.
25. Baird C, Su P, Leff B, Bowles KH. Hospital at home: A systematic review of outcomes and future directions. *J Am Geriatr Soc*. 2020; 71:2458-2470.
26. Landers S, Madigan E, Leff B, Rosati RJ, McCann BA, Hornbake R, et al. The future of home health care: A strategic framework for optimizing value. *Home Health Care Manag Pract*. 2016; 28:262-278.
27. Montalto M, Leff B. Hospital in the home: Developments and challenges. *Med J Aust*. 2020;213:7-9.
28. Gonçalves-Bradley DC, Iliffe S, Doll HA, Broad J, Gladman J, Langhorne P, et al. Early discharge hospital at home. *Cochrane Database Syst Rev*. 2017;6:CD000356.
29. Levine DM, Pu CT, Handley NR, Shah SJ, Garg P, Schnipper JL. Hospital at home: Current state and future directions. *Annu Rev Med*. 2022;75:421-436.