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Early Post-Intensive Care Syndrome (PICS) Among Older Adult Sepsis Survivors Receiving Home Care

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Abstract

Background/Objectives: New or worsened disabilities in functional, cognitive, or mental health following an intensive care unit (ICU) stay are referred to as post-intensive care syndrome (PICS). PICS has not been described in older adults receiving home care. Our aim was to examine the relationship between length of ICU stay and PICS among older adults receiving home care. We expected that patients in the ICU for ≥3 days would demonstrate significantly more disability in all three domains on follow-up than those not in the ICU. A secondary aim was to identify patient characteristics increasing the odds of disability.

Design: Retrospective cohort study

Setting: Hospitalization for sepsis in the US

Participants: 21,520 Medicare patients receiving home care and reassessed a median of 1 day (interquartile range 1-2 days) after hospital discharge.

Measurements: PICS was defined as a decline or worsening in one or more of 16 indicators tested before and after hospitalization using OASIS (Home Health Outcome and Assessment Information Set) and Medicare claims data.

Author Contributions:

- Riegel: study concept and design, analysis, interpretation, preparation of manuscript
- Huang: data analysis, preparation of manuscript
- Mikkelsen: study design, analysis, interpretation, preparation of manuscript
- Kutney-Lee: study concept and design, analysis, interpretation, preparation of manuscript
- Hanlon: analysis
- Murtaugh: acquisition of data, analysis, interpretation, preparation of manuscript
- Bowles: acquisition of data, analysis, interpretation, preparation of manuscript

Conflict of Interest: The authors have no conflicts to report.

Results: The sample was predominately female and white. All had sepsis and most (81.8%) had severe sepsis. In adjusted models, an ICU stay of ≥3 days, compared to no ICU stay, increased the odds of physical disability. Overall, the declines were modest and found in specific activities of daily living (16% for feeding and lower body dressing to 26% for oral medicine management). No changes were identified in cognition or mental health. Significant determinants of new or worsened physical disabilities were sepsis severity, older age, depression, frailty, and dementia.

Conclusion: Older adults receiving home care who develop sepsis and are in an ICU for ≥3 days are likely to develop new or worsened physical disabilities. Whether these disabilities remain after the early post-discharge phase requires further study.

Keywords

Critical care; activities of daily living; cognitive dysfunction; mental health; sepsis; home care services

INTRODUCTION

Approximately one in five individuals are cared for in an intensive care unit (ICU) at some point during hospitalization.(1) While the care received in an ICU is often life-saving, many survivors are left with new or worsened disabilities in functional, cognitive, and mental health status that persist over time.(2,3) This cluster of symptoms has been labeled ‘post-intensive care syndrome’ or PICS.(4,5) Although some PICS symptoms may not develop for several months, most acute effects are seen in the immediate period after discharge, the focus of the current study.(6–8)

Older adults comprise nearly 50% of the 4.5 million Americans admitted to the ICU each year.(9,10) Those with comorbidities,(11,12) functional disabilities,(13) and pre-existing cognitive impairment(14) may be particularly susceptible to developing PICS. However, PICS has not been studied in this population.

In 2014, home care services were delivered to approximately 3.4 million Medicare patients.(15) Medicare requires home care recipients to be certified as needing intermittent skilled nursing care, physical therapy, speech-language pathology services, or occupational therapy. All recipients must be homebound, implying the presence of functional disability.(16) Hospitalization during a home care episode is common; nearly one in four patients are admitted while receiving home care.(15) Sepsis is a common reason for hospitalization. Cognitive and physical impairment are common after sepsis,(17–19) yet it remains unclear whether impairment is more common among those cared for in an ICU because existing studies are limited by the lack of comparative data. That is, critical illness is rarely anticipated, so few studies to date have been able to compare outcomes after an ICU admission with status prior to hospitalization.

Sepsis is frequently cared for both inside and outside of the ICU during a hospitalization, which allowed us to examine the relationship between length of ICU stay and indicators of PICS in home care patients. In a retrospective cohort study, we assessed the contribution of ICU length of stay on individual indicators of physical, cognitive, and mental health status

changes after controlling for patient-related clinical and sociodemographic factors in a cohort of older adults receiving home care before and after a hospital stay for sepsis. We expected that home care patients hospitalized for sepsis with an ICU stay of ≥3 days would have significantly more disability in physical, cognitive, and mental health domains than those not admitted to the ICU. Some ICU stays are observational only and ICU use varies across hospitals.(20) So a period of 3 days was chosen to assure that we were assessing the effect of critical illness.(8,21) If confirmed, future studies examining the effect of targeted interventions delivered in the home care setting would be warranted.

METHODS

After approval by the Institutional Review Board of the University of Pennsylvania, a secondary analysis of national Medicare data was conducted including Home Health Outcome and Assessment Information Set (OASIS) data. OASIS is a detailed, mandated assessment that is routinely collected on all Medicare patients receiving home care services from a Medicare-certified agency. OASIS data were linked to Standard Analytic Files of the Centers for Medicare and Medicaid Services (CMS) to identify home care patients who experienced a sepsis hospitalization during the course of a home care episode between July 1, 2013 and June 30, 2014. The Inpatient Standard Analytic File provides information about the hospitalization, such as ICD-9 diagnosis and procedure codes (to identify primary diagnosis and comorbid conditions) and ICU utilization (e.g. days in the ICU).

All home care agencies certified by Medicare are required to collect OASIS data at the start of care, at 60-days follow-up, and at discharge. If an inpatient stay occurs during a home care episode, these data are collected again when the patient resumes home care after hospital discharge. OASIS data were combined to create patient-level episodes of home care (i.e. all OASIS assessments from admission to discharge). The episode dataset included data structured to provide information on the 6 months before hospitalization, the home care visits, the hospitalization event, and the home care visits following hospital discharge. To examine whether a dose-response relationship exists in relation to an ICU admission during hospitalization, hospital stay was categorized as: acute care hospitalization without ICU admission (0 ICU days), 1-2 ICU days, or ≥3 ICU days.

Study Population

The population was drawn from a national census of Medicare beneficiaries receiving home care between July 1, 2013 and June 30, 2014 (N = 3,464,601) (Figure 1). Those included had survived a sepsis hospitalization that occurred up to 60 days after home care admission and had an OASIS assessment completed when home care resumed after hospital discharge. Anyone with another sepsis hospital stay during the prior 6 months was excluded to obtain a sample representing new sepsis hospital admissions (N=21,520).

Measurement

The OASIS survey is a standardized assessment of physical, cognitive, and mental health status developed for use in clinical practice. Items measuring physical status are similar to items that have been in wide use since their development roughly 50 years ago.(22,23) The

psychometric properties of these items treated as a scale has been extensively evaluated.(24) Others have concluded that OASIS is a valid measure of cognition but not sufficiently sensitive for depression,(25) an issue addressed with the addition of the PHQ-2 (M1730). The PHQ-2 is a valid measure of the frequency of depressed mood over the past 2 weeks scored on a 3-point Likert scale of 0 (never) to 3 (nearly every day).(26,27) A 2012 systematic review of articles examining validity and reliability of the OASIS measures indicate low to moderate evidence, with variability due to nonrepresentative samples; inconsistencies in research methods, items tested, and statistical procedures; and changes to OASIS over time.(25,28–30)

Physical status was assessed with 12 OASIS items (M1800-1890 and M2020); 9 measured activities of daily living (ADL): ambulation (M1860), bathing (M1830), dressing lower body (M1820), dressing upper body (M1810), transferring (M1850), toilet hygiene (M1845), toilet transferring (M1840), feeding (M1870), grooming (M1800) and three measured instrumental ADL (IADL): preparing light meals (M1880), phone use (M1890), and oral medication management (M2020).(31) These items are categorical with raw scores that range from 0 to 6, depending on the item; 0 indicates no need for assistance and the highest numeric value indicates entire dependence. These items have been used by others to examine functional disability following critical illness.(17–19)

Cognitive status was assessed with 2 OASIS items measuring cognitive function (M1700) and confusion (M1710). Cognition was measured on a scale of 0 (alert/oriented, able to focus and shift attention, comprehends and recalls task directions independently) to 4 (totally dependent due to disturbance, such as constant disorientation).(30) Confusion was measured on a scale of 0 (never) to 4 (constantly). Higher scores indicate worse cognitive status.

The mental health component of PICS has been understudied and limited primarily to depression, so changes in both anxiety (M1720) and depression (M1730) were explored. The frequency of anxiety symptoms was assessed over the last 14 days, with responses ranging from 0 (none of the time) to 3 (all of the time). Higher scores indicate worse mental health.

To determine if a new disability developed or an existing disability became more severe after ICU exposure, patients were classified as having worsened, remained the same, or improved on each individual OASIS item measured at the resumption of home care. Each variable was coded on a −2 to +2 scale to measure the change in status from before to after hospitalization: −2 indicates decline, −1 indicates that a disability exists and it is so severe that no further decline can be detected, 0 indicates no change, +1 indicates that the patient is doing so well that improvement cannot be detected, and +2 indicates a significant improvement. Any negative change on at least one outcome (i.e., a value of −2 indicating either no disability at start of care but mild-moderate disability at resumption of care, or mild-moderate disability that changed to moderate-severe disability) was considered clinically significant and an indicator of PICS. Based on this coding, we included only those in whom a decline could potentially be detected. So, anyone coded −1 (no further decline can be detected) was excluded from the final analysis.

Failure to control for pre-existing issues can lead to spurious inferences of a clinically and statistically meaningful association with critical illness.(32) Patient-related clinical and sociodemographic factors were tested as potential covariates. Clinical factors were dementia,(33) sensory impairment,(13) depression,(34) hospitalization for a reason other than sepsis in the prior 6 months,(35) acute weight loss as an indicator of frailty,(36) and sepsis severity.(17) Sepsis severity was classified as sepsis (ICD-9 Code 995.91), severe sepsis (ICD-9 Code 995.92), or septic shock (ICD-9 Codes 785.52 or the Angus implicit coding strategy used to identify septic shock).(37) Sociodemographic factors included age at start of the episode, gender, race, living situation (e.g. living alone),(38) residence in an urban area, and median household income in the county of residence.

Analysis

We first examined the distribution of key variables for the full sample and by length of ICU stay using chi-square for categorical measures and analysis of variance (ANOVA) for continuous measures. Frequencies and percentages of patients who experienced a decline in each physical, cognitive, and/or mental health OASIS measure following hospitalization were calculated and then compared based on the number of days in the ICU using chi-square tests. To examine the associations between ICU length of stay, and other clinical and sociodemographic factors on the development of decline on each functional measure, we used logistic generalized estimating equation (GEE) models that accounted for patient clustering in individual hospitals. Analyses were adjusted for multiple comparisons using the Bonferroni method. Since there are 16 models, alpha was prespecified at 0.05 for the set of tests and adjusted alpha of 0.0031 was used for individual tests.

RESULTS

The cohort was predominately older, female, white, and living with someone else (Table 1). Most had severe sepsis but fewer than half had an ICU stay. The median duration between hospital discharge and the follow-up OASIS assessment was 1 day with an interquartile range of 1 to 2 days. Supplementary Table S1 shows people who were excluded from the final analysis because they already were in the worst disability category prior to hospitalization and, therefore, could not be assessed as declining further following the hospital stay. The indicators where the greatest number of people were in the worst category before hospitalization were meal preparation and oral medication management.

Dose-response relationship between length of ICU stay and PICS

Figure 2 presents the percentages of patients who experienced declines in the individual PICS indicators after hospital discharge. In unadjusted analyses, patients who stayed in the ICU ≥3 days were significantly more likely to experience declines in every measure of physical status but no significant decline in cognitive or mental health status was found by ICU length of stay.

Table 2 presents the GEE estimates of the effects of ICU length of stay on each indicator. When analyses were adjusted for clinical and sociodemographic covariates, compared to patients without an ICU stay, the increase in the odds of a decline in the physical domain

ranged from 16% (for feeding and lower body dressing) to 26% (for oral medicine management) for those with ≥3 days in the ICU. None of the physical outcomes differed significantly for patients who were in the ICU only 1-2 days compared to those without an ICU stay. No effect of ICU length of stay was found in cognition or mental health measures.

Patient Factors Predicting New or Worsening Disability in Home Care Patients

Older patients were more likely to experience a decline in every indicator (8% - 31% increase in odds with for every 10 additional years of age) except anxiety. Depression was 9% less likely to worsen with every additional 10 years of age (See Supplementary Table S2).

Compared to sepsis, septic shock increased the odds of experiencing a decline in ambulation, transferring, toilet hygiene, toilet transferring, and grooming, with the highest increase in odds for decline in ambulation (odds ratio [OR], 1.66, 95% confidence interval [CI] 1.38-2.00, p <0.0001). After follow-up, patients with severe sepsis or septic shock were not significantly different in the cognitive and mental health domains from patients with sepsis only.

Patients with acute weight loss during hospitalization were 25 to 55% more likely to experience a decline in every indicator, all domains. Both a history of depression and evidence of frailty significantly increased the odds of experiencing worsened depression by ≥30% on follow-up. A history of dementia increased the odds of decline in most physical and cognitive indicators (ranging from16% for bathing to 85% for phone use). Compared to living with someone, living alone decreased the odds of decline in every physical indicator, with the largest decrease in odds for preparing light meals (OR 0.65, 95%CI 0.59-0.72, p<0.01). Living alone also was associated with lower odds for confusion frequency (OR 0.87, 95%CI 0.79-0.96, p<0.05).

DISCUSSION

This study provides insights into a vulnerable patient population that is commonly hospitalized – home care recipients. In these individuals, those with sepsis who stayed in the ICU ≥3 days were significantly more likely to experience declines in physical functioning but not in cognitive or mental health, partially supporting our expectation of a dose response relationship between days in the ICU and early PICS. Although modest, the increase in the odds of physical disability was both statistically significant and clinically meaningful. We know from the literature that most people experience a decline in function immediately after hospitalization,(39) but these data demonstrate specific areas where home care recipients can be expected to require assistance. Further, it was notable that, even in this early period, no changes in cognition and mental health indicators were identified.

Although physical indicators of PICS were most likely to develop following an ICU stay of ≥3 days, a striking proportion of patients declined regardless of whether they were hospitalized in an ICU. These findings support the observation by Krumholz(40) who noted that recently hospitalized patients experience a period of generalized risk for adverse events. He named this “post-hospital syndrome”, which he described as an acquired, transient

period of vulnerability.(40) He noted that hospitalized patients experience a variety of stressors during hospitalization including sleep deprivation, circadian rhythm disruption, poor nourishment, pain and discomfort, mentally challenging situations, medications that can alter cognition and physical function, and physical deconditioning. These insults may be more pronounced in the ICU environment, but our results suggest that hospitalization alone has an important influence on the early recovery trajectory of home care patients. Our results suggest that physical and occupational therapy in the home care setting, while potentially targeted to severe sepsis cases, could benefit the broader sepsis population discharged to the home care setting with new or worsened physical disability.

Neither cognitive nor mental health declines were associated with length of stay in the ICU, although mental health status changes may occur later in the trajectory following an ICU event. Davydow et al(19) found that the proportion of patients with depression remained unchanged after hospitalization for severe sepsis compared to before hospitalization. Other investigators have found that depression is common in ICU survivors and both physical(41) and cognitive(42) disabilities commonly drive depression. Here we add that, not only did the proportion not change in our sample, but the severity also did not change immediately after hospital discharge. Importantly however, those with a history of depression and frailty were at higher odds of reporting symptoms of depression while in home care.

To further guide targeted interventions in the home care setting, patient-related variables were tested to identify a phenotype of individuals at risk for new or worsening disabilities. Besides length of ICU stay, significant independent contributors included sepsis severity, older age, frailty, and dementia, as others have found.(13) Some of these were unsurprising such as older age and severity of sepsis.(33,43) However, acute weight loss is not widely discussed as a risk factor for PICS, although catabolism is discussed as an indicator of PICS.(44) Only one prior study found a decline in weight among older sepsis survivors.(32) Notably, living alone was not a predictor of decline. Perhaps patients living alone prior to hospitalization tend to have higher physical and cognitive functioning at baseline that allowed them to be able to live alone.

Limitations include a short study interval; the post-assessment was conducted soon after hospital discharge. Others have found that some patients with cognitive dysfunction at 3 months had improved when retested at 12 months.(2) Thus, we are unable to determine if the disabilities identified early are true indicators of PICS. That is, while we were able to assess change after an ICU hospitalization, conclusions on functional trajectory beyond the resumption of care OASIS assessment are premature. Future work is needed to determine whether changes in post-hospitalization functioning are persistent (or emerge) at the next OASIS follow-up assessment at 60 days or at discharge from home care. Another major limitation was the cognition measure, which is a relatively crude measure that cannot distinguish between the cognitive domains, nor between cognitive impairment and delirium. Given the short follow-up time after hospital discharge, participants with in-hospital delirium may still have been delirious at home, which would have affected the cognitive function and confusion measurements. Also, depression and anxiety were measured with just one question each and the skill of nurses in administering and scoring these items could

vary. Finally, these findings do not reflect sepsis survivors discharged without home care services.

Further research is needed to examine whether the early functional disabilities we identified evolve or remain after the early follow-up period. Separate studies are warranted to examine other vulnerable groups, such as those requiring skilled care facility placement. These findings in sepsis also should be compared to other disease states.

In conclusion, our findings alert us to an increased risk of physical disability in home care recipients after a sepsis hospitalization that includes ≥3 ICU days as well as patient factors associated with new or worsening disability. Clinicians are advised to inform families of older adult sepsis patients discharged with home care that these patients are at significant risk for physical disability after discharge. Intensive home care interventions, including physical and occupational therapy, may mitigate physical disability after sepsis, and require further study.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Impact Statement:

1. We certify that this work is novel. PICS has not been studied in the home care population. Further, use of the OASIS data from a home health population gives us the unique ability to compare and test whether outcomes are worse after an ICU stay of varying lengths.
2. The potential impact of this research on clinical care includes identification of an at-risk population (home care recipients in an ICU for sepsis for 3 or more days). Families should be informed that these patients are at significant risk for physical disability after discharge. Home care providers should be alert for changes in physical status. More intensive interventions should target nutrition, physical function, and oral medication management as we saw the largest proportion of decline in these specific activities.

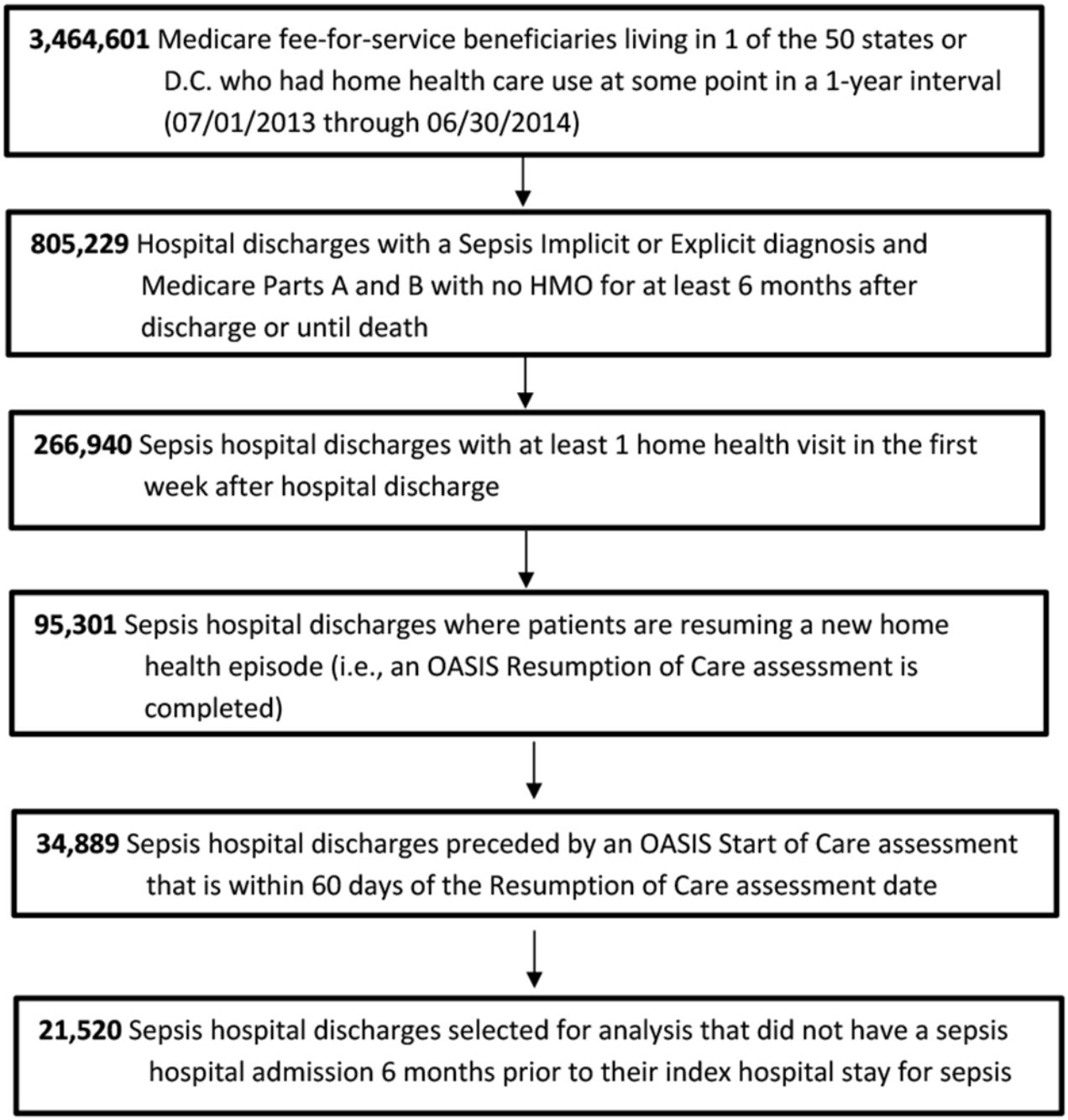

Figure 1.

The study population was drawn from a national census of Medicare beneficiaries receiving home care at some point between July 1, 2013 and June 30, 2014 (N = 3,464,601). We first identified anyone with a sepsis diagnosis. Then we identified those with a home health visit in the first week after hospital discharge and an OASIS start of care assessment within the prior 60 days. After excluding anyone with a sepsis diagnosis in the prior 6 months, the final sample for analysis was 21,520.

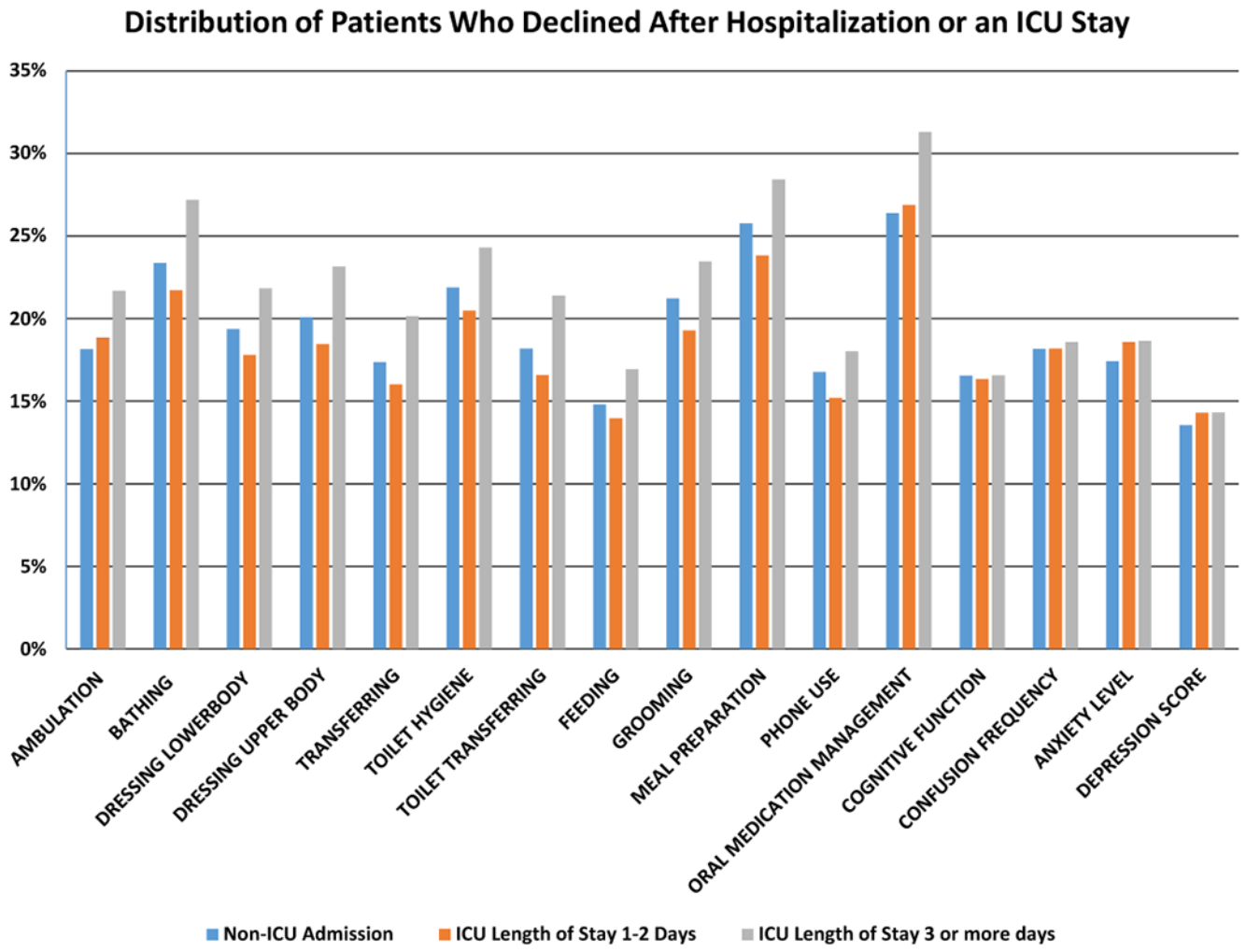

Figure 2.

Distribution of Patients who Declined After Hospitalization or an ICU Stay. Note the significant increase in the frequency of physical decline among those in the ICU for 3 or more days. Note also that cognitive and mental health indicators did not decline differentially among the three comparison groups.

Table 1

Clinical and Sociodemographic Characteristics of the Sample (N= 21,520)

Variable	Full Sample (N = 21520)	0 Days in ICU (N =12224)	1-2 Days in ICU (N =2818)	3 or more Days in ICU (N =6478)	P value
Clinical Characteristics					
Hospitalized in the prior 6 months for something other than sepsis	1078 (5.0%)	609 (4.98%)	138 (4.9%)	331 (5.1%)	0.89
Recent weight loss	2275 (10.6%)	1164 (9.5%)	275 (9.8%)	836 (12.9%)	<.0001
Elixhauser number of comorbid conditions measured at hospital admission					<.0001
Mean (SD)	4.34 (1.9)	4.16 (1.9)	4.30 (1.9)	4.72 (1.9)	
Median (IQR)	4 (3-6)	4 (3-5)	4 (3-6)	5 (3-6)	
Severity of sepsis					<.0001
Sepsis	3095 (14.4%)	2011 (16.4%)	358 (12.7%)	726 (11.2%)	
Severe sepsis	17601 (81.8%)	10137 (82.9%)	2232 (79.4%)	5232 (80.9%)	
Septic shock	808 (3.8%)	74 (0.6%)	222 (7.9%)	512 (7.9%)	
ICU stay (yes/no)	9296 (43.2%)		2818 (100%)	6478 (100%)	<.0001
Length of hospital stay (days)					<.0001
Mean (SD)	7.1 (4.5)	6.3 (3.7)	6.0 (3.97)	9.06 (5.4)	
Median (IQR)	6 (4-8)	5 (4-8)	5 (3-7)	8.00 (6-11)	
Frailty	8539 (39.7%)	4764 (38.97%)	1156 (41.0%)	2619 (40.4%)	0.04
History of depression	9119 (42.4%)	5246 (42.9%)	1220 (43.3%)	2653 (40.9%)	0.02
Vision problems					0.27
Normal	15352 (71.3%)	8745 (71.5%)	2042 (72.5%)	4565 (70.5%)	
Partially impaired	5735 (26.6%)	3229 (26.4%)	719 (25.5%)	1787 (27.6%)	
Severely impaired	433 (2.0%)	250 (2.0%)	57 (2.0%)	126 (1.9%)	
Hearing problems					0.008
Adequate	12533 (58.5%)	7018 (57.7%)	1673 (59.6%)	3842 (59.6%)	
Mildly to moderately impaired	8579 (40.0%)	4968 (40.8%)	1108 (39.5%)	2503 (38.8%)	
Severely impaired	308 (1.4%)	184 (1.5%)	26 (0.9%)	98 (1.5%)	
Dementia (i.e. Alzheimer's disease and related disorders or senility)	8344 (38.8%)	4988 (40.8%)	1035 (36.73%)	2321 (35.8%)	<.0001
Sociodemographic Characteristics					

Variable	Full Sample (N = 21520)	0 Days in ICU (N =12224)	1-2 Days in ICU (N =2818)	3 or more Days in ICU (N =6478)	P value
Age, years					<.0001
Mean (SD)	76.1 (12.3)	76.7 (12.3)	74.9 (12.5)	75.2 (11.96)	
Median (IQR)	78.0 (69-85)	78.5 (70-86)	76.0 (68-84)	76.0 (68-84)	
Female	12288 (57.1%)	7108 (58.1%)	1575 (55.9%)	3605 (55.6%)	0.002
Race					<.0001
Asian	347 (1.6%)	129 (1.1%)	58 (2.1%)	160 (2.5%)	
Black	2661 (12.4%)	1502 (12.3%)	321 (11.4%)	838 (12.9%)	
Hispanic	1253 (5.8%)	626 (5.1%)	154 (5.5%)	473 (7.3%)	
Other	162 (0.75%)	81 (0.7%)	31 (1.1%)	50 (0.8%)	
White	17097 (79.4%)	9886 (80.9%)	2254 (79.99%)	4957 (76.5%)	
Living situation					<.0001
Alone	3789 (17.6%)	2321 (18.99%)	518 (18.4%)	950 (14.7%)	
With someone	15499 (72.0%)	8482 (69.4%)	2034 (72.2%)	4983 (76.9%)	
In congregate (e.g. long term care)	2232 (10.4%)	1421 (11.6%)	266 (9.4%)	545 (8.4%)	
Urban residence	17567 (81.7%)	9850 (80.6%)	2284 (81.1%)	5433 (83.9%)	<.0001
County median household income					0.28
Mean (SD)	53180.2 (14463.31)	53042.8 (14621.8)	53358.1 (14556.5	53361.98 (14117.18)	
Median (IQR)	50304.0 (43099-58995)	50082.0 (43063-59218)	50799.0 (42981-59620)	50867.0 (43281-58221)	

Notes:

1. Categorical data presented as counts and percentages; continuous data presented as mean and standard deviation.

2. P values are for Chi-square tests for categorical measures and for analysis of variance (ANOVA) for continuous measures.

Table 2.

Generalized Estimating Equations Estimates of the Effects of ICU Length of Stay on each PICS Indicator

	Odds Ratio (95% Confidence Interval)	
	1-2 days	**3 or more days**
Ambulation	1.02 (0.92,1.14)	1.19*** (1.10,1.28)
Bathing	0.90 (0.81,1.01)	1.18*** (1.09,1.27)
Dress lower body	0.91 (0.80,1.02)	1.16*** (1.06,1.26)
Dress upper body	0.91 (0.82,1.02)	1.19*** (1.10,1.29)
Transferring	0.90 (0.80,1.01)	1.18*** (1.08,1.28)
Toilet Hygiene	0.92 (0.82,1.02)	1.12 (1.03,1.21)
Toilet Transferring	0.89 (0.79,1.01)	1.18** (1.09,1.29)
Feeding	0.94 (0.83, 1.06)	1.16** (1.06, 1.26)
Grooming	0.89 (0.79, 0.99)	1.11 (1.02, 1.20)
Preparing light meals	0.91 (0.80, 1.03)	1.12 (1.03, 1.23)
Phone use	0.94 (0.83, 1.06)	1.14 (1.04, 1.24)
Oral medication management	1.04 (0.94, 1.16)	1.27*** (1.17, 1.37)
Cognitive function	1.02 (0.91, 1.14)	1.02 (0.93, 1.11)
Confusion frequency	1.03 (0.93, 1.15)	1.05 (0.97, 1.14)
Anxiety	1.09 (0.97, 1.21)	1.08 (1.00, 1.18)
Depression score	1.04 (0.92, 1.18)	1.05 (0.95, 1.16)

Note: Odds ratios calculated with 0 days in the ICU as the reference group

PICS – post intensive care syndrome