Trends & Differences in Post-Acute Care Services in the United States from 2000-2022: A Systematic Review

Bridget Morse-Karzen, MPH,[1] Patricia Stone, PhD, RN, FAAN, CIC,[1] Jingjing Shang, PhD, RN, FAAN,[1] Ashley Chastain, DrPH, MPH,[1] Denise Quigley, PhD, MA[2]
[1]Columbia University School of Nursing, New York, NY; [2] The Rand Corporation, Santa Monica, CA

BACKGROUND & RESEARCH OBJECTIVE

- In the United States (U.S.), lengths of hospital stays have decreased over the past 30 years.[1]
- Adult patients are being discharged to post-acute care (i.e., SNF/NH, HHC, IRF, and home) sooner and with more complex health needs.[2]
- Prior to the COVID-19 pandemic, adult patients were commonly hospitalized for the following reasons: Major Joint Replacement, Sepsis and Stroke (from inpatient diagnosis-related codes).[3,4]
- During the COVID-19 pandemic, care transitions from hospitals to post-acute care settings were disrupted, which likely led to the widening of existing health disparities.[5]
- However, there is a lack of combined understanding regarding how discharges to post-acute care settings have changed over time and if health disparities exist.

Objective

Following PRISMA guidelines,[6] we conducted a systematic review of time trends and differences (by race/ethnicity and urban vs. rural location) in discharge destination from acute care hospitals to HHC, SNF/NH, IRF, or home for the top three DRGs (i.e., MJR for knee/hip, Stroke, and Sepsis) over the past two decades among U.S. adults.

STUDY METHODS

PRISMA Diagram

793 studies imported for screening ⇨ **109** duplicates removed

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684 studies screened ⇨ **563** studies irrelevant

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121 full-text studies assessed for eligibility ⇨ **89** studies excluded

↓

32 studies included

Sources: PubMed (MEDLINE), CINAHL (EBSCO), Embase (Embase.com), Web of Science (Core Collection), and Scopus (Scopus.com)

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Abbreviations: *MJR = major joint replacement; SNF/NH = skilled nursing facility/nursing home, IRF = inpatient rehabilitation facility, HHC = home health care*

PRINCIPAL FINDINGS

Table 1. Study Characteristics by Condition Type, N=32

Condition	# of studies	Study type	Time frame	Time trends and/or disparities	Database most frequently used	Type of post-acute care
MJR	17	CS: 16 C: 1	2000-2008: 2 2009-2018: 15	-time trends: 2 -disparities: 11 -both: 4	-NIS data: 2 -ACS-NSQIP data: 2 -Pennsylvania Health Care Cost Containment Council Database: 2 -EMR: 2	SNF/NH: 15 Home: 10 HHC: 11 IRF: 15
Stroke	15	CS: 11 C: 4	2000-2004: 5 2005-2010:4 2011-2016: 5 2020 (prior and during COVID): 1	-time trends: 1 -disparities: 12 -both: 2	-NIS data: 5	SNF/NH: 13 Home: 10 HHC: 8 IRF: 10
Sepsis	3	CS: 3 C: 0	2000-2007: 1 2009-2012: 2	-time trends: 2 -disparities: 1 -both: 0	-NIS data: 3	SNF/NH: 3 Home: 3 HHC: 3 IRF: 0

Notes: CS=cross-sectional; C=cohort; NIS= National Inpatient Sample, ACS-NSQIP= American College of Surgeons National Surgical Quality Improvement Program, EMR=Electronic Medical Record. Additionally, 1 article discussed all 3 DRGs and is present in each DRG count ; 1 other article discussed both MJR and Stroke and is counted in both of these DRG counts.

Time Trend Study Characteristics

- **10** articles discuss time trends.
- Of these 10 articles, **4** discuss time trends only and **6** discuss both time trends and differences by race/ethnicity or urban vs. rural.

Race/Ethnicity & Urban vs. Rural Study Characteristics

- **28** articles discuss differences by race/ethnicity or urban vs. rural.
- Of the 28 articles, **26** discuss race/ethnicity differences.
- Of the 28 articles, **9** discuss urban vs. rural differences; of these 9, **2** discuss urban vs. rural differences only, and **7** discuss both urban vs. rural differences and race/ethnicity differences.

Table 2: Trends in Overall Post-Acute Care Discharge Disposition between 2000 and 2022, N=10

	SNF/NH		IRF		HHC		Home		
	+	-	+	-	+	-	+	-	No Change
MJR	1	4	1	1	1	2	2	1	
Stroke		2	2	1		2	1		
Sepsis	1	1			2				1
Overall Total	**2**	**7**	**3**	**2**	**3**	**4**	**3**	**1**	**1**

Notes: "+" = study found increase in discharge over time "-" = study found decrease in discharge over time. Additionally, numbers may not sum as articles are counted twice in some cases as they discussed multiple conditions.

Time Trend Findings

- Between the years of 2000 and 2022 there was a decrease in discharge to SNF/NH for MJR and Stroke, though 1 article found an increase in discharge to SNF/NH; there was also an increase in discharge to HHC for Sepsis.

Table 3. Number of Articles Finding a Higher Likelihood of Discharge to SNF/NH, IRF, HHC, and Home by Race/Ethnicity or Urban vs. Rural Location, N=20

	Black	White	*Urban*	*Rural*
MJR, N=10				
SNF/NH	10	1	1	
IRF	9			
HHC	3	4	1	
Home		3		
Stroke, N=12				
SNF/NH	4	2	3	1
IRF	2		3	
HHC	4	1	3	
Home		1		1
Sepsis, N=1				
SNF/NH		1		
HHC		1	1	

Notes: Includes 18 of the 26 articles that examined differences in black and white patients. The remaining 2 articles discuss urban vs. rural difference only. Numbers may not sum as articles are counted twice in some cases as they discussed multiple conditions.

Overall Findings

- The majority of articles discussed either MJR or Stroke; only 3 discussed Sepsis.
  - Time trends related to Sepsis were only discussed in 2 articles.
  - Any disparities among Sepsis patients were only discussed in 1 article.

Race/Ethnicity Findings

- The majority (over 50%) of articles found that black individuals were discharged **more often** to SNF/NH and IRF than white individuals after MJR or Stroke.
- Of the 1 article that discussed race/ethnicity differences among Sepsis patients, white individuals were discharged **more often** to SNF/NH and HHC.
- While not shown, several articles also found that Asian and Hispanic individuals were **more often** discharged to SNF/NH, IRF, and HHC after MJR.
- Across the 8 articles that did not use white as the referent group, several found that when compared to other racial/ethnic groups, black patients were **more often** discharged to SNF/NH and IRF after MJR.

Urban/Rural Findings

- Urban-dwelling individuals were discharged **more often** to SNF/NH, IRF, and HHC than rural-dwelling individuals.

CONCLUSIONS

- Discharges to SNF/NH for MJR and Stroke have decreased since 2000.
- Discharges to HHC for Sepsis has increased since 2000.
- Black individuals were more often discharged to SNF/NH and IRF for MJR or Stroke than white individuals.
- Our race/ethnicity findings have important limitations:
  - We only reported the articles that used white as a referent group and compared with black individuals (N=18), as in the remaining 8 articles, the statistical methods used did not allow for accurate comparison across groups.
  - While most articles found that black individuals were discharged to post-acute care settings more often, it was unclear as to whether these findings are in part due to the large datasets that were used.
- Discharges to SNF/NH, IRF, and HHC were higher among urban-dwelling individuals than rural-dwelling individuals.
- Use of different racial/ethnic categorizations and urban/rural classifications across articles likely contributed to the mixed results found in this review.

IMPLICATIONS FOR POLICY AND PRACTICE

- Additional resources are needed to improve post-acute care services for persons of color and rural patients.
- Researchers should examine patients' decision-making processes around choosing post-acute care, paying special attention to any racial/ethnic or urban/rural differences that may arise.
  - These results can be used to inform programming and interventions aimed at either increasing or decreasing utilization of certain types of post-acute care.
- Further research is needed to examine how the pandemic has affected existing disparities related to discharge to post-acute care settings.

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Bridget Morse-Karzen, MPH: bam2233@cumc.columbia.edu
Patricia Stone, PhD, FAAN, FAPIC: ps2024@cumc.columbia.edu
Study Website: https://www.nursing.columbia.edu/across-care