Organization of Outpatient Care After COVID-19 Hospitalization

To the Editor:

Survivors of COVID-19 face challenges that persist after hospitalization,[1] and a growing number of health care systems are developing multidisciplinary clinics to care for patients with postacute sequelae of COVID-19 (PASC).[2] Yet, little is known about how care is delivered to patients with COVID-19 after hospital discharge. We sought to characterize postdischarge care delivery for PASC across a large network of US academic and community hospitals.

Methods

We surveyed hospitals participating in the National Heart, Lung, and Blood Institute Clinical Trials Network for the Prevention and Early Treatment of Acute Lung Injury (PETAL Network). The survey focused on the structure of outpatient follow-up for patients discharged after hospitalization for COVID-19 (e-Appendix 1). The survey included 13 questions, mostly closed-ended, with the potential for additional follow-up questions. Electronic survey invitations were sent in July 2021 and were completed over 8 weeks. Data from the 2019 American Hospital Association annual survey database were used to characterize hospitals. The Vanderbilt University Medical Center Institutional Review Board determined this study was exempt from full review.

Results

Of 51 eligible PETAL Network sites, 47 hospitals responded to this survey (92% response rate). Surveys were completed by physicians (n = 29), hospital administration (n = 11), social workers or discharge coordinators (n = 7), research staff (n = 7), or other clinicians (n = 5). PETAL hospitals were urban (100%), mostly public or not-for-profit (87%), teaching hospitals (81%) that were distributed nationally: Midwest (21%), Northeast (26%), South (23%), West (30%). Ten hospitals (21%) had ≥ 20% of their patients insured by Medicaid.

Of the 47 responding hospitals, 37 (79%) provided discharge information to hospitalized patients with COVID-19 that was specific to COVID—70% counseled patients on reasons to return to the hospital, 66% on isolation precautions, and 64% on reasons to call primary care. Only 26% of hospitals provided discharge information that included potential symptoms or impairments of postacute sequelae of COVID-19. Postdischarge contact occurred in some capacity at 30 hospitals (63%). The most common methods of contact were through clinic visits (either in-person or virtual) (43%) or telephone (38%).

Thirty-three hospitals (70%) had a postdischarge outpatient clinic designed specifically for patients with COVID-19 (ie, PASC clinic), with 20 started before August 2020. Compared with hospitals with PASC clinics, hospitals without PASC clinics were more likely to be smaller, for-profit hospitals (Table 1). Hospitals without PASC clinics were also more likely to be in a ZIP code with a median annual income less than $40,000 and have a higher proportion of their patients insured by Medicaid than hospitals with PASC clinics.

Nearly all hospitals with PASC clinics required a referral for a patient to be seen (n = 32; 97%). Most referrals (70%) relied on physician discretion or patient/family requests; 39% of hospitals used specific criteria for referral; and only 21% of hospitals referred all hospitalized COVID patients. First-time patients in PASC clinics often received a range of testing, such as pulmonary function testing, quality of life assessment, 6-min walk testing, chest radiography, cognitive assessment, mental health assessment, and physical function assessment (Fig 1). Most PASC clinics (73%) were distinct from their hospital's post-ICU clinic. Of the 14 hospitals that did not have a PASC clinic, only two (14%) had plans to create one.

TABLE 1] Characteristics of Hospitals With and Without PASC Clinics[a]

Characteristic	PASC Clinic (n = 33)	No PASC Clinic (n = 14)
Maintains clinical registry of patients with COVID	26 (78.8%)	13 (92.9%)
Has a post-ICU clinic	13 (39.4%)	4 (28.6%)
Hospital ownership type		
Public	9 (30.0%)	5 (35.7%)
Not for profit	21 (70.0%)	6 (42.9%)
For profit	0 (0.0%)	3 (21.4%)
Hospital size by No. of beds		
< 300	0 (0.0%)	2 (14.3%)
300-399	1 (3.3%)	2 (14.3%)
400+	29 (96.7%)	10 (71.4%)
ICU size as proportion of total hospital beds		
< 10%	4 (13.3%)	1 (7.1%)
10%+	26 (86.7%)	13 (92.9%)
Teaching hospital[b]	27 (90.0%)	11 (78.6%)
Proportion of Medicaid patients served		
< 10%	13 (43.3%)	3 (21.4%)
10%-20%	13 (43.3%)	5 (35.7%)
20%+	4 (13.3%)	6 (42.9%)
Median income by ZIP code		
< $40,000	13 (43.3%)	8 (57.1%)
$40,000-$100,000	8 (26.7%)	2 (14.3%)
$100,000+	9 (30.0%)	4 (28.6%)
Nonrural	30 (100.0%)	14 (100.0%)
Geographic regions		
Midwest	4 (13.3%)	5 (35.7%)
Northeast	8 (26.7%)	1 (7.1%)
South	6 (20.0%)	5 (35.7%)
West	12 (40.0%)	3 (21.4%)
No. of PASC clinics within hospital		
One	19 (61.3%)	...
More than one[c]	12 (36.4%)	...
PASC clinic distinct from post-ICU clinic	24 (72.7%)	...
Sources of PASC clinic referrals[d]		
Patient/family request	20 (60.6%)	...
Physician discretion	16 (48.5%)	...
Specific referral criteria	13 (39.4%)	...
Automatic	7 (21.2%)	...
PASC clinic format[d]		
In-clinic	31 (93.9%)	...
Virtual	26 (78.8%)	...
Telephone	17 (51.5%)	...
At patient's home	4 (12.1%)	...

PASC = postacute sequelae of COVID-19.
[a]Data for three hospitals were not available in the American Hospital Association (AHA) database.
[b]As defined by the AHA database and the Association of American Medical Colleges.
[c]Two sites did not provide responses.
[d]Respondents could select all that apply, so numbers/percentages may not add to 100.

Figure 1 – Routine testing, available staff, and multidisciplinary presence across PASC clinics. *In panel 3 (specialties available to see patients), darker shaded boxes indicate specialties that led the hospital's PASC clinic. CXR = chest radiography; H = hospital; PASC = postacute sequelae of COVID-19; PFT = pulmonary function testing.

Tests/assessments conducted routinely

	PFT	Quality of Life Assessment	6-Minute Walk Test	CXR/CT	Cognitive Assessment	Mental Health Assessment	Physical Function Assessment	Financial Assessment	Home Safety Assessment	None
# Hospitals performing tests	18 (55%)	15 (46%)	14 (42%)	14 (42%)	13 (39%)	13 (39%)	12 (36%)	5 (15%)	2 (6%)	9 (27%)

Health care staff available to see patients

	Physician	Nurse	Advanced Practice Professional	Physical Therapist	Respiratory Therapist	Social Worker	Psychologist	Occupational Therapist	Pharmacist	Nutritionist
Staff available	32 (97%)	23 (70%)	17 (52%)	13 (39%)	13 (39%)	11 (33%)	8 (24%)	8 (24%)	7 (21%)	1 (3%)

Specialty present in clinic

	Pulmonary/Critical Care Medicine	General Medicine/Primary Care	Cardiology	Physical Medicine & Rehabilitation	Neurology	Psychiatry
Specialty available	32 (97%)	19 (58%)	17 (52%)	14 (42%)	12 (36%)	10 (30%)

Discussion

Using a diverse network of hospitals across the United States, this study is the first large-scale, multicenter evaluation of care delivery after hospitalization for COVID-19. Our data demonstrate substantial variation in dissemination of PASC symptoms or impairments, posthospital follow-up, and access to PASC clinics nationally. Hospitals without PASC clinics were more likely than hospitals with PASC clinics to be smaller, for profit, and to serve higher proportions of patients insured by Medicaid, which could reflect a paucity of resources at these hospitals. However, it is important to note that although this study provides one of the broadest assessments of PASC care to date and includes a diverse mix of academic tertiary and community hospitals, the survey was administered to hospitals within the PETAL Network, which is composed primarily of higher resourced, urban hospitals.

We identified several key areas for potential improvement in PASC care. First, despite the growing movement toward multidisciplinary PASC care, the effectiveness of these clinics remains unknown. Although multidisciplinary PASC clinics could reduce care fragmentation, they could also promote low-value care through unnecessary testing or divert resources away from care with established benefit. It also remains unclear what testing or assessments might be of high value for patients with PASC. It will be essential to examine the impact of these clinics on patient outcomes and to identify which, if any, aspects of PASC clinics might be beneficial. Second, there is a need to evaluate the extent to which PASC pathophysiology and management differ from sequelae of other infections or critical illnesses (eg, post-intensive care syndrome). Third, if multidisciplinary post-COVID care is found to be beneficial, about one of three hospitals did not have a

PASC clinic, which may limit access to patients.[3] Finally, most hospitals lacked systematic strategies to identify patients for multidisciplinary PASC care, relying on clinician referrals. This may result in some patients who might benefit from coordinated PASC care being unable to receive it. For example, COVID disproportionately affected Black and Hispanic individuals in the United States,[4] who may be less integrated within health care systems and less likely to receive PASC care when referrals are not performed systematically and are instead tied to existing health care relationships.

Many health care systems in the United States urgently developed PASC clinics to face an impending crisis of COVID-19 survivorship. Multidisciplinary PASC clinics may offer opportunities to coordinate care, conduct systematic PASC evaluation, and create an environment for iterative gains in PASC knowledge. Opportunities exist to leverage large networks of PASC clinics to establish (1) longitudinal observational studies to understand the epidemiology of PASC; (2) clinical trials to study therapeutic interventions for patients with PASC; (3) the effectiveness of multidisciplinary models of PASC care; (4) scalable care delivery models; and (5) collaborative quality improvement initiatives across PASC clinics. Future studies should aim to understand the effectiveness and equity of dedicated, multidisciplinary care on improving longer-term, patient-centered outcomes for COVID survivors.

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Acknowledgments

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