

HHS Public Access

Author manuscript *Clin Pediatr (Phila)*. Author manuscript; available in PMC 2024 July 01.

Published in final edited form as:

Clin Pediatr (Phila). 2023 September ; 62(8): 926–934. doi:10.1177/00099228221149279.

Provider Perspectives of Transitions of Care at a Tertiary Care Children's Hospital with a Hospitalist-Run Discharge Clinic

Abigail Nelson, MD^a, Heather Stuckey, DEd^b, Bethany Snyder, MPH^b, Lauren J Van Scoy, MD^b, Carrie Daymont, MD, MSCE^{a,c}, Christine Irvin, MD^a, Emily Wasserman, MAS^c, Michael Beck, MD^a

^aPenn State Children's Hospital, Department of Pediatrics

^bPenn State Hershey College of Medicine; Department of Medicine

^cPenn State Hershey College of Medicine, Department of Public Health Sciences

Abstract

Children's hospitals are discharging patients to home with increasingly complex outpatient needs, making safe transitions of care (ToCs) of vital importance. Our study involved a survey of both outpatient providers and pediatric hospitalists associated with our medical center to better describe providers' views on the ToC process. The survey included questions assessing views on patient care responsibilities, resource availability, our hospitalistrun postdischarge clinic (PDC), and comfort with telemedicine. Our hospitalists generally believed that primary care providers (PCPs) did not have adequate access to important ToC elements, whereas PCPs felt their access was adequate. Both provider types felt it was the inpatient team's responsibility to manage patient events between discharge and PCP follow-up and that a hospitalist-run PDC may reduce interim emergency room visits. This study challenges perceptions about the ToC process in children and describes a generalizable approach to assessing provider perceptions surrounding the ToC within individual health systems.

Keywords

care transitions; hospital medicine; discharge; telemedicine; hospital follow-up; patient safety

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Conflict of Interest Disclosures: The authors have no conflicts of interest relevant to this article to disclose.

Supplemental Material

Address correspondence to: Abigail Nelson, MD, Department of Pediatrics, Penn State Hershey Children's Hospital, 500 University Drive, Hershey, PA, 17033, anelson6@pennstatehealth.psu.edu.

Author Contributions

AN: Contributed to interpretation; drafted the manuscript; critically revised the m. HS: Contributed to conception and design; contributed to acquisition and interpretation; critically revised the manuscript. BS: Contributed to conception or design; contributed to acquisition and interpretation; critically revised the manuscript. LJVS: Contributed to conception or design; contributed to acquisition and interpretation; critically revised the manuscript. CD: Contributed to conception or design; contributed to acquisition and interpretation; critically revised the manuscript. CD: Contributed to conception or design; contributed to acquisition and interpretation; critically revised the manuscript. CD: Contributed to acquisition; critically revised the manuscript. EW: Contributed to conception or design; contributed to acquisition, analysis, and interpretation; critically revised the manuscript. MB: Contributed to conception or design; contributed to acquisition, analysis, and interpretation; drafted the manuscript; critically revised the manuscript.

Supplemental material for this article is available online.

Introduction

Families of children who were recently discharged from the hospital are expected to learn how to manage new diagnoses, medications, and occasionally learn how to manage new technologies without the immediate availability of providers. Transitioning convalescing children back to their community can expose families and providers to financial and clinical complications.¹ Improvements in the hospital to home transition represent an opportunity to improve patient outcomes.¹⁻³ Coordinating care for children across the care continuum poses challenges to pediatric hospitalists and primary care providers (PCPs).^{4,5} Both face different external pressures to improve quality and reduce costs. For example, hospitalists often try to improve quality and value by reducing resource use and length of stay. This approach, while value adding for the hospital, often requires PCP's to assume care of recovering patients who may have had a complicated clinical course with studies and other management decisions still pending at time of discharge. These responsibilities can fall to task-saturated PCPs who may or may not have the necessary time or access to specialty services to reliably assume care upon discharge.^{6,7} Finally, there is often lack of clarity about who is responsible for following pending studies and laboratories or who will monitor for adverse events that occur after patient discharge; although this, too, typically falls to the PCP.^{,2,6,8–12}

Few studies have evaluated provider-level barriers to safe care transitions for patients, and most available literature regarding barriers to safe transitions focuses on adult populations.^{2,8,13–15} Burke et al³ outlined that an ideal transition of care (ToC) process should include patient education, thorough communication among providers, prompt coordination of care, promotion of self-management, enlistment of social and community support, monitoring of adverse events, and outpatient follow-up. In 2015, the Division of Pediatric Hospital Medicine established a hospitalist-run postdischarge clinic (PDC) to improve ToCs for complex pediatric patients in light of adult data demonstrating PDCs could reduce readmissions by decreasing the time to first posthospitalization visits.¹⁶ While, there are a few studies that assessed both PCPs' and hospitalists' perspectives regarding postdischarge care clinics for adult patients,^{14,17–20} there are none assessing if such a clinic is perceived to promote safe care transitions in children.

The goal of our study was to explore the perspectives of pediatric hospitalists and pediatric PCPs within our health system. Questions fell into 1 of 3 domains: (1) perceptions of available outpatient resources, (2) perceptions of PDC responsibilities and communication, and (3) and perceptions of telehealth and care management.

Methods

Clinical Setting and Discharge Follow-Up Process

The PDC is on the campus of a 142-bed tertiary care children's hospital that has a 15-county catchment area of approximately 500 000 children. The hospital performs approximately 5000 pediatric discharges per year and the Hospitalist service performs approximately 1400 (28%–30%) of them.

The clinic is staffed by 2 pediatric hospitalists and 1 nurse coordinator and sees patients 2 half days per weeks. The clinic was designed to provide short-term follow-up for patients discharged with new, but anticipated temporary technology, most commonly nasogastric tubes (NGTs) and supplemental oxygen. It also assumes responsibility to follow-up on pending laboratory and diagnostic tests and establish management plans for patients who have a work-up in progress at time of hospital discharge. To establish care with the clinic, the discharging hospitalist team notifies the clinic's nurse coordinator of a potential followup need during one of our daily discharge preparedness multidisciplinary huddles. The clinic's nurse coordinator meets with the family to introduce our team's purpose and identify any barriers to follow-up to help to ensure the patient can make a scheduled appointment. Patients are scheduled for an appointment upon discharge, and 90% are seen within 14 days discharge. All patients are called within 2 business days of the discharge by our registered nurse (RN) case manager to provide ongoing support and address any issues that might occur after discharge. The clinic offers in-person visits, telemedicine, and remote patient monitoring. The postdischarge team communicates medical-decision-making with the patient's PCP to further ensure smooth ToCs. Signed discharge summaries are generally available to PCPs within 72 hours. The PDC has been successfully operating and grown in size and scope over the last 7 years, and currently sees about 8% to 10% of discharges from the hospitalist service per year.

Study Design and Population

This study was approved through the Institutional Review Board at our institution. The survey was created and distributed through REDCap version 10.0.33. Implied consent was obtained through a summary explanation of research and a built-in selection acknowledgment feature at the beginning of the survey prior to advancing through the survey questions. The survey was sent via email to individuals listed on departmental listservs that were relevant to the scope of this study as well as to a list of outpatient providers external to the hospital system practicing within the catchment area. The list was provided to the investigators by the health system's physician liaison. The list included pediatric credentialed providers in our academic pediatrics and family/community medicine departments, along with pediatric and family/community medicine providers within our community practice division and clinically integrated network. Pediatric subspecialists were excluded.

Survey Development and Design

The survey was constructed using questions adapted from a study that assessed attitudes and perspectives of adult hospitalists regarding PDCs.⁶ It is a nonvalidated survey, but was piloted by 3 outpatient doctors and 2 hospitalists for clarity and length and was designed to take approximately 10 minutes to complete. We surveyed nonspecialty inpatient and outpatient providers who provide care to pediatric patients to compare perspectives regarding various elements of pediatric postdischarge care. The survey contained 35 to 36 quantitative items for primary-care practice providers and 28 to 30 quantitative items for hospital-based providers (dependent on question branching). In addition, both groups were asked 5 to 7 basic demographic questions and whether they consented to being contacted for a brief follow-up telephone interview, after which 4 items of contact information were

gathered for further qualitative interviewing. Participants in both settings were asked 3 open-ended qualitative questions within the survey eliciting free-text responses.

Quantitative data items assessed respondents' attitudes of communication and access, along with attitudes toward patient care responsibilities. Most quantitative responses were collected on 4-point scales ranging from "*Strongly Disagree*," "*Disagree*," "*Agree*," to "*Strongly Agree*," with some questions offering an "Unsure" response option (e.g., PCPs have the capacity to see patients within 7 days of discharge), or from "*Always*," "*Sometimes*," "*Rarely*," to "*Never*" (e.g. frequency of telehealth use prepandemic). Some survey questions were specific to a responders' type of practice (e.g., hospitalist versus PCP). A copy of the full survey is available in Appendix A.

Surveys were distributed 3 times, separated by 1 week, during August and September of 2020. For nonacademic practices, surveys were emailed to practice site leads who were identified using our hospital's physician liaison, who were asked to forward the survey to others in their practice.

Statistical Methods

Quantitative data were summarized using descriptive statistics. Response options of 4-level agreement were dichotomized to reflect simple agreement between hospitalist and PCPs (with "unsure" response options treated as missing values). Pearson chi-square tests with exact *P* values were used to evaluate general associations between the provider type with each perception/attitude outcome of interest. All hypothesis tests were 2-sided with a significance level of 0.05. SAS version 9.4 was used for all statistical analyses (SAS Institute, Inc., Cary, NC).

Results

Demographics

The survey was e-mailed via REDCap to 343 providers within our health system and outpatient providers in the surrounding area and included 195 providers certified in either family community medicine or medicine/pediatrics and 148 providers in pediatrics. Overall, 78 respondents consented to participate in the research (23% response rate), consisting of 56 PCPs and 23 inpatient providers. Most PCP respondents were in family and community medicine (57%), involved with learners (78.6%), and were of white race (88%). Our sample of inpatient providers and PCPs were predominantly MDs and DOs, 68.4% and 76.4%, respectively. Inpatient and outpatient advanced practice providers made up 5.3% and 16.4% of participation, respectively (Table 1).

Perceptions of Resources

There were statistically significant differences in PCP and hospitalist perceptions of resource availability. As compared to hospitalists, PCPs were more likely to agree or strongly agree that they have adequate time (83%), access to hospital records (84.9%), access to subspecialty services (83%), and access social work/care coordinators (79%) to provide safe postdischarge care compared with the number of hospitalists who agree or strongly agree

that PCPs have access to these resources (p < 0.01 for all 4 categories; Table 2). About 86% of hospitalists and 96% of PCPs believed that PCPs have the capacity to see pediatric patients within 7 days of discharge. In addition, about 94% of PCPs reported having access to most of hospital/ED discharge summaries within 1 week of patient discharge from the hospital. Of the 12 hospital providers who believed PCPs have the capacity to see pediatric patients within 7 days of hospital/ED discharge, about 67% of them believed that this affected their decision to discharge patients from the hospital.

Perceptions of Postdischarge Responsibilities and a Hospitalist-Run PDC

When asked about who should be responsible for managing adverse events and following up on pending laboratories/studies following discharge, both PCPs and hospitalists agreed that these should be the responsibility of the discharging hospitalist team (Table 3). Since the Division of Pediatric Hospital Medicine had adopted PDC to improve To C, we asked several questions to both PCPs and hospitalists about their perceptions of PDC follow-up. Both believe PDCs have the potential to reduce ED visits. Interestingly, despite PCPs belief that they have the capability to see these patients and had timely access to records and pediatric specialists, almost 60% of responding PCPs would still refer their patients to a hospitalist-run PDC for postdischarge care. Finally, approximately one-third of PCPs compared to one half of hospitalists believed a PDC might interfere with established PCP-patient relationships.

Use and Perceptions of Telehealth and Temporary Technologies

This survey was conducted in the midst of the COVID-19 pandemic during which time, telehealth use was gaining favor. When asked to assess their pre-COVID telehealth use, only 7% of responding PCPs reported any use of telehealth for hospital follow-up care, all of which did so "rarely." However, during the pandemic, the estimated use of telehealth increased significantly, with 83% of responding PCPs reporting using telehealth for this purpose. When PCPs were asked if they planned to continue use of telehealth for hospital follow-up, all but one of the PCPs (98%;) plan to continue its use. The survey also assessed PCPs' and hospitalists' perceived comfort using telehealth to follow patients discharged with peripherally inserted central catheters (PICC), nasogastric (NGT) or nasojejunal (NJT) tubes, and supplemental oxygen (Table 4). Compared to PCPs, hospitalists expressed more comfort in managing these interventions using telehealth. Compared to PCPs, hospitalists reported significantly greater comfort managing patients with PICC lines and NGT/NJT using a telehealth platform, but not managing patients with supplemental oxygen.

Discussion

The key finding from our study is that PCPs and hospitalists had differing perceptions of the resources PCPs had to meet the needs of recently discharged patients. There were statistically significant differences in how hospitalists and PCPs perceive the following: adequate time to see a patient following hospital discharge, access to specialists, access to care coordination and social work, and access to medical records; with PCPs reporting better access to these resources than the hospitalists perceived to be available. This differs from adult patient data suggesting that hospitalists and PCPs both agree that lack of time,

poor communication, delays in receiving discharge summaries, poor access to PCPs or subspecialists, and ambiguous responsibilities regarding events that occur after discharge are barriers to safe transitions.^{1,3,4,6,7,11,14,21} Our data suggest that pediatric hospitalists and PCPs in our network have different perspectives regarding resources available to care for children in surrounding communities. These differing perceptions could be affecting medical-decision-making by pediatric hospitalists and could be opportunities for improving ToCs.

One important area of agreement was that over 75% of our hospitalists and 80% of PCPs agree that the hospitalist should be responsible for monitoring pending laboratories and for adverse events after hospital discharge, which is much higher than adult studies.⁶ However, we did not ask hospitalists or PCPs details about what form this responsibility does or should take. In practice, many children with pending laboratory studies or who are at higher risk for adverse events will be following up with subspecialists who manage some of these issues.

Both pediatric hospitalists and PCPs agreed that a PDC could potentially reduce ED visits. This finding was consistent with results from a single-center study conducted on adult hospitalists.⁶ Our study found our hospitalists to be more likely to refer to patients to our PDC compared to PCP. Reasons for this could be hospitalists' perceived lack of PCP resources for safe discharge follow-up, or that they find it difficult to follow some of these more complex patients after discharge in addition to performing their inpatient clinical responsibilities. It is interesting that despite PCPs perceptions of having adequate time, access to subspecialists, and access to medical records, most (60%) would still refer patients to a PDC, suggesting there may be other perceived benefits to a PDC that we did not capture in our survey.

The PDC manages patients with technology that is anticipated to be temporary. Hospitalists' self-assessments indicate that they feel more comfortable than PCPs managing feeding tubes and PICC lines via telehealth; but there was no difference found between PCP and hospitalist comfort in telehealth management of oxygen weans. Based on the anticipated continuation of telehealth for PDC care by PCPs in our survey, our study suggests there are unique opportunities to acquire new competencies that align resources and expectations that could improve ToCs within our health system. This is especially relevant, given recent evidence that telemedicine can reduce the rate of serious illness and total health system costs in children with medical complexity.²²

Because telehealth may be a long-term component to our health care delivery model, unique opportunities exist for pediatric hospitalists to differentiate clinical offerings beyond the hospital medicine's current model. Nearly all pediatric subspecialties, surgical and nonsurgical, have both inpatient and outpatient clinical practices. The results of our survey suggest that hospitalists may have unique skills to assist in the outpatient management of children discharged with short-term technologies (feeding tubes, PICC lines, oxygen). However, since over a third of PCPs and over half of hospitalists believed PDCs could encroach on established patient relationships, hospitalists should be respectful and clearly communicate the purpose, scope and responsibilities of a PDC to PCPs and patient families.

This study offers a reproducible, organization-specific approach that could be used by other organizations to understand pediatric hospitalist's and PCP competencies, and the resources needed to make hospital to home care transitions safer within their health care system. There are several limitations to our study. First, a low response rate from physicians at a single-center, led to a small sample size. In addition, there was missing response data from those who did engage in the survey which further reduces the data collected. Some of the providers in the study (i.e. family medicine) also take care of patients over age 21. Therefore, given that some survey questions did not specifically inquire about pediatric patients, it is possible some providers may have answered with both adult and pediatric patients in mind. Because most of the responding hospitalists and some of the PCPs had experience with our PDC model, our results may be biased, particularly in regard to the likelihood of referring patients to PDCs. As this study only analyzed descriptive survey results, evaluating the impact of our hospitalistrun PDC on the quality of ToC or on child health outcomes was also outside the scope of the exploratory nature of this work. This study included perspectives from multiple providers of the inpatient and outpatient care teams, all of which are important to consider when researching care gaps in ToCs. However, this study did not address patient or caregiver perspectives. Assessment of family perspectives represents a critical dimension to consider when trying to assess improvement of care opportunities, especially to identify pediatric-specific social determinants, and necessary elements of a successful pediatric discharge that extend beyond discharge summary content or access.²³

Future studies should explore PCP perspectives regarding postdischarge follow-up to optimize utility of this type of clinic. It would also be helpful to better understand if there are differences or disagreements in attitudes and perceptions regarding communications and patient care responsibilities between physicians and advanced practice providers, family practitioners and pediatricians, or medical versus nonmedical homes. Further analysis of these subgroups could allow health systems to glean insight into practice-specific barriers in providing safe ToC and which practices prefer PDC support. Knowledge of practice-specific barriers could permit targeted resource deployment strategies and competency training to improve ToC. Finally, future research on pediatric care transitions and how PDCs could contribute to improved outcomes and experiences should include patient and caregiver perspectives.

Conclusions

Our study describes a generalizable and adaptable approach for assessing both hospitalist and PCP's perceptions of resource availability to provide safe ToCs within a single health care system. Understanding this is important so that value-adding improvements in patient care transitions from hospital to home can occur. In our community, it was found that PCPs feel they have adequate time and resources to take over elements of care following hospital discharge, but hospitalists believe differently. Our study sample demonstrates that hospitalists and PCPs agree that the discharging hospitalist team should follow pending studies and monitor for adverse events following discharge. Hospitalists were more likely to report feeling comfortable managing patients with certain temporary technology needs using

postdischarge telehealth than PCPs, suggesting an additional role for pediatric hospitalists in postdischarge care outside of the hospital setting.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments:

We would like to thank the Penn State Clinical & Translational Research Institute, Pennsylvania State University CTSA, NIH/NCATS Grant Number UL1 TR002014 as well as the Penn State College of Medicine Qualitative and Mixed Methods Core. We would also like to thank Patty Shipton for her assistance with the work.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Abbreviations:

ED	Emergency Department
RN	Registered Nurse
NGT	Nasogastric Tube
NJT	Nasojejunal Tube
РСР	Primary Care Providers
PDC	Post-Discharge Clinic
PICC	Peripherally Inserted Central Catheter
ТоС	Transitions of Care

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Table 1.

Demographic Data From Survey Respondents, 78/334, 23%.

Demographic	Hospitalist, No $(\%)$ (N = 22)	Primary care, No $(\%)$ (N = 56)	Overall, No $(\%)$ (N = 78)
Gender			
Male	3 (13.6)	26 (47.3)	29 (37.7)
Female	19 (86.4)	28 (50.9)	47 (61.0)
Other	0	1 (1.8)	1 (1.3)
Missing	0	1	1
Race			
Black/African American	2 (9.1)	1 (1.8)	3 (3.9)
Asian/Pacific Islander	1 (4.6)	1 (1.8)	2 (2.6)
White	19 (86.4)	49 (89.1)	68 (88.3)
Other	0	2 (3.6)	2 (2.6)
Hispanic/Latino + White	0	1 (1.8)	1 (1.3)
Asian/Pacific Islander + White	0	1 (1.8)	1 (1.3)
Missing	0	1	1
Type of training			
MD/DO	13 (68.4)	42 (76.4)	55 (74.3)
CRNP/PA	1 (5.3)	9 (16.4)	10 (13.5)
Case manager/Social worker/ care coordinator	5 (26.3)	4 (7.3)	9 (12.2)
Missing	Э	1	4
Practice size (# Providers; full- and part-time)			
1–5	5 (26.3)	13 (23.2)	18 (24.0)
6-10	2 (10.5)	14 (25.0)	16 (21.3)
11–15	5 (26.3)	8 (14.3)	13 (17.3)
16–20	3 (15.8)	3 (5.4)	6 (8.0)
20+/>20	4 (21.1)	18 (32.1)	22 (29.3)
Missing	3	0	3

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Table 2.

Perceptions Toward Postdischarge Care.

Response to Statement	Hospital (N = 22)	Primary care practice $(N = 56)$	P value
	Primary care practices have the capability to see pediatric patients within 7 days of hospital/ED discharge	My clinic has the capability to see pediatric patients within 7 days of hospital/ED discharge	
Strongly Disagree + Disagree	2 (14.3)	2 (3.7)	.19
Strongly Agree + Agree	12 (85.7)	52 (96.3)	
Missing	×	2	
	Primary care providers have the time needed to manage recently discharged patients	I believe my clinic template gives me adequate time to manage recently discharged patients	
Strongly Disagree + Disagree	9 (64.3)	9 (17.0)	<.01
Strongly Agree + Agree	5 (35.7)	44 (83.0)	
Missing	×	3	
	Primary care practices have access to the necessary hospital records to manage a patient recently discharged from the hospital	I have reliable access to hospital records, studies, necessary for me to make medical decisions to manage a patient recently discharged from the hospital	
Strongly Disagree + Disagree	9 (64.3)	8 (15.1)	<.01
Strongly Agree + Agree	5 (35.7)	45 (84.9)	
Missing	×	Э	
	Primary care practices have timely access to pediatric subspecialty services to assist them in managing patients recently discharged from the hospital	I have the access to pediatric subspecialty services I need to provide safe postdischarge care	
Strongly Disagree + Disagree	11 (78.6)	9 (17.0)	<.01
Strongly Agree + Agree	3 (21.4)	44 (83.0)	
Missing	×	3	
	Primary care practices have adequate social work and care coordination resources necessary to bridge hospital care	Our practice has adequate social work and care coordination resources necessary to help patients bridge their hospital care	
Strongly Disagree + Disagree	11 (84.6)	11 (20.8)	<.01
Strongly Agree + Agree	2 (15.4)	42 (79.3)	
Missing	6	3	
			1

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Table 3.

Perceived Responsibilities of Hospitalists and PCPs Following Patient Discharge.

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Strongly Agree + Agree 13 (100.0) Missing 9	(0.0)	10 (19.2)	.19
Missing 9	100.0)	42 (80.8)	
	6	4	
I would refer patients to the postdischar, patients recently dischar,	discharge clinic to help me manage discharged patients.	I would refer to a postdischarge clinic to help me manage patients who were recently discharged from the hospital.	
Strongly Disagree + Disagree 1 (7.7)	(7.7)	21 (41.2)	
Strongly Agree + Agree 12 (92.3)	(92.3)	30 (58.8)	.05
Missing 9	6	5	
A postdischarge clinic might interfere w relationship between PCP an	rfere with an established therapeutic PCP and family/patient.	PDC might interfere with an established therapeutic relationship between PCP and family/patient.	
Strongly Disagree + Disagree 6 (46.2)	46.2)	32 (62.8)	.35
Strongly Agree + Agree 7 (53.9)	53.9)	19 (37.3)	
Missing 9	6	5	

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Response to Statement	Hospital (N = 22)	Primary care practice $(N = 56)$	P value
	I would feel comfortable managing patients with PICC lines using a Telehealth platform	I would feel comfortable managing patients with PICC lines using a Telebealth platform	
Strongly Disagree + Disagree	4 (33.3)	39 (81.3)	<.01
Strongly Agree + Agree	8 (66.7)	9 (18.8)	
Missing	10	8	
	I would feel comfortable managing patients with NGT/NJT using a Telehealth platform	I would feel comfortable managing patients with NGT/NJT using a Telehealth platform	
Strongly Disagree + Disagree	3 (27.3)	35 (72.9)	<.01
Strongly Agree + Agree	8 (72.7)	13 (27.1)	
Missing	11	8	
	I would feel comfortable managing patients with supplemental O2 using a Telehealth platform	I would feel comfortable managing patients with supplemental O2 using a Telebealth platform	
Strongly Disagree + Disagree	4 (44.4)	30 (60.0)	.47
Strongly Agree + Agree	5 (55.6)	20 (40.0)	
Missing	13	9	
Abbreviations: PICC, peripherally	y inserted central catheter; NGT, nasogastric tube; NJT, nasojejunal tube.		