

Pediatric Discharge Content: A Multisite Assessment of Physician Preferences and Experiences

AUTHORS

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KEY WORDS

care coordination, collaborative, discharge communication, discharge content, handoffs, pediatric hospitalist, primary care provider, transitions of care

ABBREVIATIONS

PCP: primary care provider

TOCC: Transitions of Care Collaborative

VIP: Value in Inpatient Pediatrics

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abstract



BACKGROUND AND OBJECTIVES: Professional medical societies endorse prompt, consistent discharge communication to primary care providers (PCPs) on discharge. However, evidence is limited about what clinical elements to communicate. Our main goal was to identify and compare the clinical elements considered by PCPs and pediatric hospitalists to be essential to communicate to PCPs within 2 days of pediatric hospital discharge. A secondary goal was to describe experiences of the PCPs and pediatric hospitalists regarding sending and receiving discharge information.

METHODS: A survey of physician preferences and experiences regarding discharge communication was sent to 320 PCPs who refer patients to 16 hospitals, with an analogous survey sent to 147 hospitalists. Descriptive statistics were calculated, and χ^2 analyses were performed.

RESULTS: A total of 201 PCPs (63%) and 71 hospitalists (48%) responded to the survey. Seven clinical elements were reported as essential by >75% of both PCPs and hospitalists: dates of admission and discharge; discharge diagnoses; brief hospital course; discharge medications; immunizations given during hospitalization; pending laboratory or test results; and follow-up appointments. PCPs reported reliably receiving discharge communication significantly less often than hospitalists reported sending it (71.8% vs 85.1%; $P < .01$), and PCPs considered this communication to be complete significantly less often than hospitalists did (64.9% vs 79.1%; $P < .01$).

CONCLUSIONS: We identified 7 core clinical elements that PCPs and hospitalists consider essential in discharge communication. Consistently and promptly communicating at least these core elements after discharge may enhance PCP satisfaction and patient-level outcomes. Reported rates of transmission and receipt of this information were suboptimal and should be targeted for improvement.

During hospitalization, a child's care often shifts from primary care providers (PCPs) to emergency physicians to hospitalists and subspecialists, then back to PCPs.¹ Lack of adequate communication during these transitions of care can endanger patients²⁻⁹ and unnecessarily increase costs.^{10,11} Of particular concern is the transition of care between hospitalists and PCPs on discharge.¹²⁻¹⁴ Studies have identified common problems with discharge communication, including inconsistent content and timeliness,² low rates of direct communication,⁵ and differing expectations between hospitalists and PCPs regarding follow-up care.¹⁵ In response to these concerns, national physician societies¹⁶ and regulatory agencies^{17,18} have

endorsed prompt, consistent discharge communication for all discharges from the hospital. Although these initiatives to standardize communication on discharge are laudable, their recommendations regarding the content of information to include are based mainly on expert opinion from academic practice settings^{16,19} and single-site studies with a small sample size¹³ or low response rate.¹⁵

In the current multicenter study, our main goal was to identify and compare the clinical elements considered by PCPs and pediatric hospitalists to be essential to communicate to PCPs within 2 days of pediatric hospital discharge. Our secondary aims were to describe experiences of PCPs and pediatric hospitalists regarding sending and receiving patient discharge information.

METHODS

Study Population

This investigation was completed by the Value in Inpatient Pediatrics Network's Transitions of Care Collaborative (VIP TOCC), a consortium of 16 pediatric hospital medicine programs working to assess and improve the quality of discharge communication between pediatric hospitalists and PCPs. Two separate cohorts were recruited: a sample of PCPs who refer patients to pediatric hospitalists and a sample of pediatric hospitalists. To assemble the PCP cohort, each of the 16 participating pediatric hospitalist centers identified 20 referring PCPs for inclusion in this study. Nine sites selected the 20 most frequently referring providers, and 7 sites contacted 5 PCPs of patients discharged from the hospital medicine service on 4 consecutive weeks. In this fashion, 320 PCPs were requested to participate in this study.

To assemble the pediatric hospitalist cohort, an analogous survey was sent to all 147 pediatric hospitalist program directors identified by the American Academy of Pediatrics' Section on Hospital Medicine's listing of Pediatric Hospitalist Medicine Programs of North America in September 2011. Differing approaches to assemble the cohorts of PCPs and hospitalists were used to minimize reporting bias because hospitalists at participating sites were engaged with discharge communication quality improvement projects at the time this study was conducted.

Study Design

This cross-sectional study was designed to assess PCP and hospitalist preferences and current experiences regarding communication within 2 days of patients' discharge from the hospital. The time frame of communication within 2 days of patients' discharge from the hospital was carried over from previous benchmarking quality improvement efforts within the VIP TOCC.²⁰ Demographic information was collected about the providers' years in practice, practice location and setting, and educational training. Drawing from a single-site pilot study regarding types of information considered important for discharge communication, as well as VIP TOCC members' consensus opinion, the survey asked PCPs and hospitalists to assess the importance of including each of 20 specific clinical elements in hospitalist-PCP communication. PCPs and hospitalists were asked to categorize each element as either "essential information," "would be nice to know," or "too much information." The surveys also asked providers to rate, by using a 5-point Likert scale from "always"

to "never," how often these individual elements were communicated within 2 days of discharge. Selections of either of the 2 choices closest to "always" were classified as "consistently communicated." Using a 5-point Likert scale from "completely agree" to "completely disagree," the surveys also asked providers to rate how strongly they agreed to the following 2 general statements: (1) that discharge information was reliably communicated within 2 days of hospital discharge; and (2) that the discharge information had all the information the PCP needed. Selections of either of the 2 choices closest to "completely agree" were classified as agreement with the statement. From September 2011 to January 2012, surveys were distributed to and received from subjects via either a Web-based survey tool or by fax (determined according to the PCPs' contact information available to the principal investigator at each site).

Statistical Analysis

Demographic characteristics of PCPs were analyzed with respect to provider specialty and training, practice type and years in practice, referent hospital type (teaching versus nonteaching), and US Census geographic region by using descriptive statistics. Descriptive statistics were also used to characterize hospitalist respondents' demographic characteristics. χ^2 tests were calculated to compare the proportion of PCPs and hospitalists who reported each clinical element as essential for receipt within 2 days of discharge from the hospital. In addition, the proportion of PCPs who reported consistently receiving discharge communication within 2 days of discharge was compared with the proportion of hospitalists who reported consistently

sending discharge communication within 2 days of discharge; χ^2 tests were used for analysis. For questions assessing differences in PCP and hospitalist communication experiences and preferences across the 20 clinical elements, the Benjamini-Hochberg procedure,²¹ using a false discovery rate of 0.10, was applied to adjust the significance threshold for *P* values, given multiple testing. Potential differences in responses from PCPs recruited by using the “top 20” provider approach versus those sampled over a 4-week period were compared by using χ^2 tests. All hypothesis testing was 2-sided. Statistical analysis was performed by using RCommander 1.8-3, R Foundation for Statistical Computing, Vienna, Austria.²²

Institutional Review Board

Institutional review board approval or exemption was obtained from each site participating in the collaborative project before survey implementation.

RESULTS

Surveys were returned by 201 PCPs and 71 pediatric hospitalists, representing response rates of 63% and 48%, respectively. Some respondents did not answer every question. As shown in Table 1, PCPs were predominantly pediatricians in private practice, referring to teaching hospitals. Hospitalist respondents represented all 4 US Census regions, with most respondents in practice >5 years. Given the different recruitment strategies for the PCP and hospitalist cohorts, PCPs were more likely than hospitalists to be affiliated with a teaching hospital.

Table 2 illustrates the proportions of PCPs and hospitalists reporting clinical elements as essential for receipt within 2 days of hospital discharge. Seven clinical elements were reported as essential by >75% of both PCP and hospitalist respondents: (1) discharge diagnoses; (2) discharge medications; (3) dates of admission and discharge; (4) immunizations given during hospitalization; (5) follow-up appointments;

(6) brief hospital course; and (7) pending laboratory and test results. A number of differences between PCPs and hospitalists were also observed. Compared with pediatric hospitalists, PCPs reported the chief complaint, admission diagnosis, consultants’ names, and laboratory or test results as essential significantly more often, but pending laboratory or test results, discharge destination, and the attending’s name as essential significantly less often. The frequencies with which the various 20 clinical elements were considered by PCPs as “too much information” ranged from 0% to 12.5%.

The majority (85.1% [*n* = 57]) of hospitalist respondents reported that they reliably send discharge communication within 2 days of discharging a patient, with 79.1% (53) reporting that the communication contained all of the information needed by the PCP. In contrast, only 71.8% (*n* = 125) of PCPs reported that they reliably receive initial communication from the hospitalist service within 2 days of discharge, with 64.9% (109) reporting that this communication contained all of the necessary information. The differences between hospitalist and PCP reports of communication reliability were statistically significant, with *P* values of <.01. There were no differences in PCP responses to these questions when analyzed according to the PCP recruitment strategies drawing from either frequently referring providers or consecutive discharges. Individual data elements with statistically significant differences in transmission rates between PCPs and hospitalists include pending laboratory or test results, follow-up appointments, discharge medications, admission diagnosis, discharge diagnosis, dates of admission and discharge, and suggested management plan (Table 3).

TABLE 1 Characteristics of PCP and Hospitalist Survey Respondents

Characteristic	PCPs	Hospitalists
Years in practice		
0-5	26 (14.1)	15 (22.3)
6-10	33 (17.8)	28 (41.8)
11-15	45 (24.3)	17 (25.3)
>15	81 (43.8)	7 (10.4)
Hospital US Census region		
West	47 (25.4)	10 (15.4)
Midwest	41 (22.2)	19 (29.2)
South	29 (15.7)	27 (41.5)
Northeast	68 (36.8)	9 (13.8)
Patients’ inpatient setting		
Teaching hospital	173 (93.5)	38 (56.7)
Nonteaching hospital	12 (6.5)	29 (43.3)
PCP specialty		
Pediatrician	169 (91.3)	
Family practice physician	10 (5.4)	
Physician’s assistant or nurse practitioner	6 (3.2)	
PCP practice type		
Private practice	116 (62.7)	
Government clinic	9 (4.9)	
Hospital-based group	60 (32.4)	

Data are presented as *n* (%).

TABLE 2 Clinical elements reported as essential for receipt within two days of hospital discharge by physician group

Clinical Element	Primary Care Providers (PCPs) (n=201) n (%) reported essential	Hospitalists (n= 71) n (%) reported essential	PCPs compared with Hospitalists p-value
Discharge diagnoses	197 (98.0)	71 (100.0)	0.23
Discharge medications	194 (96.5)	70 (98.6)	0.37
Admission diagnosis*	180 (90.9)	43 (61.4)	<0.001
Dates of admission and discharge	180 (90.0)	63 (90.0)	1.00
Immunizations given this admission	166 (82.6)	54 (76.1)	0.23
Follow-up appointments	163 (81.9)	61 (87.1)	0.31
Brief hospital course	157 (79.3)	57 (80.3)	0.86
Pending lab or test results*	157 (78.9)	67 (94.4)	0.003
Chief complaint*	145 (73.2)	25 (35.7)	<0.001
Lab and test results*	146 (73.0)	34 (49.3)	<0.001
Suggested management plan	145 (72.9)	49 (69.0)	0.54
Procedures	142 (71.7)	46 (65.7)	0.35
Condition at discharge, including functional or cognitive status if relevant	132 (66.7)	53 (74.6)	0.21
Attending physician's name and phone number*	118 (59.0)	53 (74.6)	0.02
Restrictions on activity	115 (58.1)	44 (62.0)	0.57
Discharge destination*	108 (57.8)	50 (72.5)	0.03
Diet, if other than age-appropriate	105 (53.0)	45 (63.4)	0.13
Consultants' names and phone number*	105 (52.8)	27 (38.0)	0.03
Physical exam findings upon discharge	90 (45.9)	31 (43.7)	0.74
Explanation of changes to preadmission medications	87 (45.3)	26 (37.1)	0.24

* Indicates statistically significant differences between the groups, having applied the Benjamini-Hochberg procedure with a false discovery rate of 0.10 to adjust for multiple testing.

DISCUSSION

We identified 7 core clinical elements that PCPs and hospitalists consider essential for discharge communication. In doing so, our study provides an evidence base to support and broaden the recommendations from expert panels^{16,19} and studies with small sample sizes¹³ or low response rates.¹⁵ The Transitions of Care Consensus Policy Statement,¹⁶ developed and endorsed by the American College of Physicians, the Society of General Internal Medicine, and the Society of Hospital Medicine, identifies 5 data elements that should be included in all discharge records. Our core clinical elements overlap with 3 of those 5 core elements: the principal diagnosis, current medications, and pending laboratory or test results. Other data elements considered essential in the Transitions of Care Consensus Policy Statement seem less relevant to pediatric providers, including the patient's cognitive status and attending physicians'

names and contact numbers. The core clinical elements from our study also include all 3 core elements identified in a single-site study of 12 primary care pediatricians: the principal diagnosis, current medications, and follow-up plans.¹³ Broadening these previous recommendations, we have also identified the following core elements: dates of admission, dates of discharge, and immunizations provided during the hospitalization.

The importance of immunization information has not been previously documented in discharge communication literature but may become increasingly important. The Joint Commission's initiative to report inpatient pneumococcal and influenza immunization rates¹⁸ may lead to an increase in the number of immunizations provided in the inpatient setting, further emphasizing the importance of effective documentation and information exchange. In addition, avoidance of duplicate immunizations

has been shown to decrease costs²³ and prevents unnecessary patient discomfort.

The significant difference between hospitalists' perceptions of reliably sending discharge information versus PCPs' perceptions of reliably receiving discharge communication may be related to a number of factors. These include recall bias and errors in the information transmission cascade, such as incorrect specification of the medical home, incorrect contact numbers, technology failures, and ineffective filing systems. In addition, we cannot exclude the possibility that the separate recruitment strategies for the PCPs and hospitalists may have contributed to this difference. Regardless of the reasons for differences between hospitalists' and PCPs' perceptions of transmission rates, both rates are suboptimal. These suboptimal transmission rates align with previous investigations of adult discharges,

TABLE 3 Perception of Consistent Transmission of Discharge Communication Within 2 Days of Discharge by Physician Group (Arranged in Ascending Order of *P*value)

Clinical Element	Sent By Hospitalists	Received By PCPs	<i>P</i>
Pending laboratory or test results ^a	55 (83.3)	90 (47.1)	<.001
Follow-up appointments ^a	62 (92.5)	124 (65.6)	<.001
Discharge medications ^a	61 (91)	144 (75.8)	.008
Admission diagnosis ^a	47 (70.1)	158 (83.2)	.02
Dates of admission and discharge ^a	62 (92.5)	154 (81.1)	.03
Discharge diagnoses ^a	63 (94)	159 (83.2)	.03
Suggested management plan ^a	46 (68.7)	101 (53.4)	.03
Restrictions on activity	38 (57.6)	83 (44.1)	.06
Chief complaint	42 (62.7)	138 (74.6)	.07
Brief hospital course	53 (79.1)	127 (67.6)	.08
Diet, if other than age-appropriate	37 (56.1)	80 (43.5)	.08
Procedures	47 (70.1)	109 (58)	.08
Immunizations given during this admission	34 (50.7)	73 (39.5)	.11
Consultants' names and telephone number	28 (41.8)	64 (33.7)	.23
Discharge destination	41 (61.2)	101 (55.2)	.40
Attending physician's name and telephone number	44 (66.7)	116 (61.7)	.47
Laboratory or test results	40 (59.7)	104 (54.7)	.48
Condition at discharge, including functional or cognitive status if relevant	43 (64.2)	115 (60.5)	.60
Explanation of changes to preadmission medications	21 (31.8)	55 (29.6)	.73
Physical examination findings on discharge	32 (47.8)	91 (48.4)	.93

Data are presented as *n* (%).

^a Indicates statistically significant differences between the groups, having applied the Benjamini-Hochberg procedure with a false discovery rate of 0.10 to adjust for multiple testing.

in which PCPs did not consistently receive current medications,^{5,22} pending laboratory or test results,³ and follow-up plans.^{4,5,10,23} Individual data elements in our study with statistically significant differences between the hospitalists' perceived transmission rate and PCPs' perceived receipt rate stand out in particular need for improvement.

In examining the discharge content considered essential by PCPs relative to hospitalists, a number of significant differences were found. Compared with hospitalists, PCPs were more likely to report clinical elements related to the hospital admission (including chief complaint and admission diagnosis) and hospital course (including consultants' names and general laboratory results) as essential. These results suggest that PCPs wanted to learn more about the hospitalization than just the

practical information to assume post-hospitalization care. They also wanted to understand the progression of the patient's clinical course throughout the hospitalization. Meanwhile, hospitalists considered pending laboratory or test results to be essential significantly more often than PCPs did (94% vs 78%). The difference in PCPs' and hospitalists' perspectives regarding these pending results is consistent with other studies^{3,15} and suggests it is time to establish a reliable and systematic approach to include clear and unambiguous delineation of responsibility for pending investigations.

The current study defined a core clinical element as any element that at least 75% of both PCPs and hospitalists considered essential. This definition was decided by the consensus of the members of the VIP TOCC, recognizing that both the sender and the

receiver of discharge communication have valid perspectives about what information is essential to transmit. We consider the core clinical elements to be a minimum, but not necessarily sufficient, standard for discharge communication. In general, very few of these 20 data elements were considered "too much information" by either PCPs or hospitalists, suggesting that most providers appreciate more detailed discharge summaries.

Moving this research into practice, discharging physicians should consider displaying discharge information frequently reported as essential prominently and early in the discharge record; clinical data considered less important could be displayed toward the end of the discharge record. If a tiered communication system is used (eg, a brief discharge communication document followed by a discharge summary), the clinical information considered essential less often could be reserved for the second, more comprehensive communication document (ie, the discharge summary).

There are several limitations to the current study. First, the survey response rates of 63% and 48% raise the possibility of nonresponse bias. However, the direct correlation of response rates to nonresponse bias has been increasingly called into question.^{24,25} Second, due to institution-specific differences in access to PCP contact information, 2 methods of sampling were used to request PCP participation in this study (drawing from frequently referring providers or from consecutive discharges). We are reassured that there were no significant differences in responses to key questions between PCPs sampled by using the 2 approaches. Generalizability of

findings from our hospitalist cohort may also be limited by the fact that only hospital medicine program directors were sampled for this study. The different recruitment strategies used for PCPs and hospitalists also lead to potential biases. All PCPs were recruited by sites affiliated with the VIP TOCC, and the vast majority of VIP TOCC members are affiliated with teaching hospitals, with relatively few sites located in the South. In contrast, the hospitalists were recruited by a public list of program directors, leading to greater hospitalist representation from community hospitals and those from the South. PCPs' greater years of experience than hospitalists' (likely attributable to the relative youth of the field of hospital medicine) present another possible bias. In addition, our sample size may have limited the power to detect more subtle, significant differences between groups. Finally, the self-report nature of this study is prone to recall bias and limits our ability to determine how often discharge communication is actually sent or received, both of which are important in determining actionable gaps in discharge communication systems.

Documented communication from inpatient to outpatient providers regarding a hospitalization has not been shown, by itself, to reduce 30-day readmission rates in adult medicine,^{7,26,27} but it has been shown to increase the likelihood that recommended investigations were completed.⁶ Building on these trials and the results of our study, future investigations are needed to explore the impact of timely and complete discharge communication on patient-level outcomes and patient satisfaction. This goal is especially relevant in pediatrics as almost all outcomes data to date

involve adults. Given the relatively low rates of readmission and mortality among pediatric patients,^{28,29} pediatric-specific quality indicators should be identified and assessed, and may include adherence with follow-up appointments, compliance with postdischarge medications, and avoidance of redundant investigations, immunizations, and procedures. Furthermore, auditing the actual transmission and receipt of discharge documents from the hospital to the office may create opportunities for site-specific quality improvement initiatives.

CONCLUSIONS

Although there are differences in the perceptions of what is essential discharge information between PCPs and pediatric hospitalists, there are key elements that should be included in all discharge communication from the pediatric inpatient setting. These include, at a minimum, the elements that at least 75% of both PCPs and hospitalists considered essential: dates of admission and discharge, discharge diagnoses, brief hospital course, discharge medications, immunizations given during hospitalization, pending laboratory or test results, and follow-up appointments. Furthermore, the rates of timely and consistent communication of this information (ranging from 72% to 85% in this study) require improvement. Future studies should examine the impact of improved discharge communication to PCPs on patient-centered outcomes and PCP satisfaction.

ACKNOWLEDGMENTS

We acknowledge the contributions of the additional members of the VIP TOCC: Brian Aguilar, MD, Monica Griffin, MD, Abraham Jacobs, MD, Ann Kao, MD, Vivian Lee, MD, Jordan Marmet, MD, Elizabeth Robbins,

MD, Jennifer Vredevel, MD, Donald Williams, MD, and David Zipes, MD. We also acknowledge Laura Lewandowski and Pat Wajda for their administrative support via the American Academy of Pediatrics' Quality Improvement Innovation Network.

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Dr Coghlin served as co-leader in designing the study (including survey design and distribution), coordinated the study, participated in data collection, drafted the initial manuscript, and reviewed and revised the manuscript; Dr Leyenaar administered the survey at 1 site, performed statistical analyses, and drafted the initial manuscript (including co-drafting of the methods, results, and discussion sections); Drs Shen, Bergert, Engel, Hershey, Mallory, and Rassbach conceptualized and designed the study, participated in data collection, drafted the initial manuscript, and reviewed and revised the manuscript; Ms Woehrlen conceptualized and designed the study, drafted the initial manuscript, and reviewed and revised the manuscript; and Dr Cooperberg served as co-leader in designing the study (including survey design and distribution), assisted in data analysis and interpretation, drafted the initial manuscript, and provided critical revisions of the article. All authors approved the final manuscript as submitted.

www.hospitalpediatrics.org
doi:10.1542/hpeds.2013-0022

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HOSPITAL PEDIATRICS (ISSN Numbers: Print, 2154 - 1663; Online, 2154 - 1671).

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FINANCIAL DISCLOSURE: Dr. Leyenaar's work on the project was supported by the National Center for Research Resources grant UL1 RR025752, now the National Center for Advancing Translational Sciences, National Institutes of Health grant UL1 TR000073; and the National Cancer Institute, grant KM1 CA156726. Statistical support for the project described was supported by the National Center for Advancing Translational Sciences, National Institutes of Health, grant UL1 TR000073. The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH. Dr Cooperberg is co-recipient of a Pfizer Medical Education grant (003690), "Designing and Evaluating a Quality Improvement Curriculum for Pediatric Resident," which funded his participation in the Cincinnati Children's Hospital and Medical Center's Advanced Improvement Methods course. The other authors have indicated they have no financial relationships relevant to this article to disclose.

FUNDING: The Value in Inpatient Pediatrics Network is now part of the American Academy of Pediatrics' Quality Improvement Innovation Networks (QuIIN) and receives administrative support through QuIIN. Funded by the National Institutes of Health (NIH).

POTENTIAL CONFLICT OF INTEREST: The authors have indicated they have no potential conflicts of interest to disclose.

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Hospital Pediatrics 2014;4;9
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