

# Impact of Pediatric Intensive Care Unit Preadmission Huddle on Perceptions of Interprofessional Communication About Patient Safety

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**BACKGROUND** Preadmission discussions in the study institution's pediatric intensive care unit are not standardized and admission plans were thought to be disjointed, leading to a perceived lack of organization and preparation for the arrival of a critically ill child.

**OBJECTIVE** To evaluate the impact of a new, formalized preadmission pediatric intensive care unit interdisciplinary huddle on clinician perceptions of interprofessional communication. The hypothesis was that preadmission huddles would improve unit clinicians' perceptions of interprofessional communication.

**METHODS** Interprofessional pediatric intensive care unit clinicians (physicians, advanced practice providers, nurses, and respiratory therapists) completed surveys before and 7 months after preadmission interdisciplinary huddle implementation. Huddle compliance and perceptions of interprofessional communication in the unit were evaluated.

**RESULTS** Of 265 eligible pediatric intensive care unit admissions, 69 huddles (26.0%) occurred. The postintervention survey revealed increased odds (odds ratio [95% CI]) of responding "strongly agree" or "agree" to questions about the opportunity to "communicate effectively with health care team members" (2.42 [1.10-5.34]), "respond to feedback from health care team members" (2.54 [1.23-5.24]), and "convey knowledge to other health care team members" (2.71 [1.31-5.61]) before an admission.

**DISCUSSION** This study introduced a formalized huddle that improved pediatric intensive care unit clinicians' perceived communication with other health care team members in the preadmission period.

**CONCLUSIONS** Future studies are needed to determine if this perceived improvement in communication significantly affects health care outcomes of critically ill children or if these results are generalizable to other pediatric intensive care unit settings. (*Critical Care Nurse*. 2022;42[4]:55-67)

**E**ffective communication is a key component in providing quality health care and optimizing outcomes.<sup>1-3</sup> Poor communication has been associated with adverse outcomes such as longer stays, increased resource use, and patient harm<sup>4</sup> and also negatively impacts clinician satisfaction and causes burnout.<sup>5,6</sup> Effective communication among health care providers is especially vital in the pediatric intensive care unit (PICU) environment, where the potential for adverse outcomes in the form of morbidity and mortality is greater given the high acuity and vulnerability of critically ill pediatric patients.<sup>3</sup> Caring for these patients requires coordination

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of multidisciplinary, multiprofessional teams of physicians, advanced care providers, nurses, and respiratory therapists specializing in pediatric critical care.<sup>2,3</sup> Advanced care providers and physicians in training assist with procedures and provide direct bedside care under the supervision of a physician.<sup>3</sup> Nurses in the PICU spend a significant amount of time at the bedside coordinating care and implementing various protocols such as providing sedatives to avoid unplanned extubations and ensuring that the goals of care established during daily rounds are implemented.<sup>2,7,8</sup> Respiratory therapists oversee ventilator changes and help the critical care team decide when to initiate a spontaneous breathing trial or wean a patient from nebulized respiratory therapies.<sup>9,10</sup> A PICU that fosters a culture of mutual respect, trust, and teamwork can ensure optimal outcomes for children who are critically ill.<sup>3,11</sup>

Communication becomes crucial in times of transition of care, including the preadmission time period, as patients can be vulnerable during this time. Patients who require mechanical ventilation or are hemodynamically unstable have an increased frequency of hypotension, tachycardia, or bradycardia during transport.<sup>12</sup> Critically ill children treated at nonpediatric hospitals may have a higher risk of mortality.<sup>13</sup> Because incoming patients may be in medically unstable condition, efficient communication is essential for team members to plan and coordinate care for these patients.

## Local Problem

The use of standardized tools during handoff periods may improve handover metrics and patient outcomes.<sup>14,15</sup> In particular, standardized tool use may decrease medical errors and preventable adverse events while also improving interprofessional communication.<sup>16-18</sup> Although studies of interdisciplinary communication in the PICU environment have been published, none have evaluated the preadmission time period. A concern that interprofessional communication was not optimal during the preadmission time period was identified in our PICU. Specifically, discussions regarding the plan of care and anticipated patient issues were thought to occur in a disjointed manner at times, leading to some perception of disorganization in preparation for the arrival of a critically ill child. Because of the potential relationship between interprofessional communication and medical errors, we created a quality improvement project to try to optimize the

perception of interprofessional communication and collaboration in our PICU during the preadmission time period.

The primary aims of this quality improvement project were to (1) standardize a method of interprofessional communication through a huddle before a PICU admission and (2) evaluate preintervention and postintervention perceptions among PICU health care providers regarding the frequency and quality of interprofessional communication opportunities during the preadmission period. We sought to determine if the standardization of a formal preadmission huddle would help improve the perception of interprofessional communication and collaboration among members of the PICU team.

## Methods

### Design, Setting, and Sample

We administered a survey evaluating perceptions regarding interprofessional communication (among physicians, advanced practice providers, nurses, and respiratory therapists) in the PICU during the preadmission period at the start of a quality improvement intervention and 7 months after the rollout. The intervention was formalization of a preadmission huddle using a worksheet (Figure 1) designed to provide a framework for discussion regarding admission plans among members of the health care team accepting the admitted patient.

The study setting was the 18-bed PICU at Penn State Health Children's Hospital, an academic tertiary care facility providing medical, surgical, and cardiothoracic care. The PICU population is composed of patients transferred from in-house locations (intermediate/step-down unit, general pediatric ward, neonatal ICU, operating room, postanesthesia care unit, and emergency department) and patients transferred from referring emergency departments and pediatric hospital wards. Approximately 50% of patients admitted to our PICU originate from an emergency department. Given the wide variety of patient origins, we decided to focus the scope of our quality improvement project on patients admitted from our in-house emergency department and from outside hospitals because this patient population tends to present more acutely, requiring greater preadmission coordination and preparation. Before this study was conducted, informal communication occurred between the physician who accepted the transfer and most commonly the PICU charge nurse. Communication between the accepting PICU physician

and the PICU bedside nurse, respiratory therapist, and advanced care providers was often fragmented and did not routinely or consistently occur (Figure 2).

### Interprofessional Communication Survey

We developed an interprofessional communication questionnaire. The questions were adapted from previous publications evaluating interprofessional communication in other settings.<sup>19-22</sup> We selected questions that focused on perceptions of interprofessional communication and collaboration during the preadmission time period (for example, "I have the opportunity to communicate effectively with health care team members prior to an admission"). Responses were graded on a Likert scale. We also

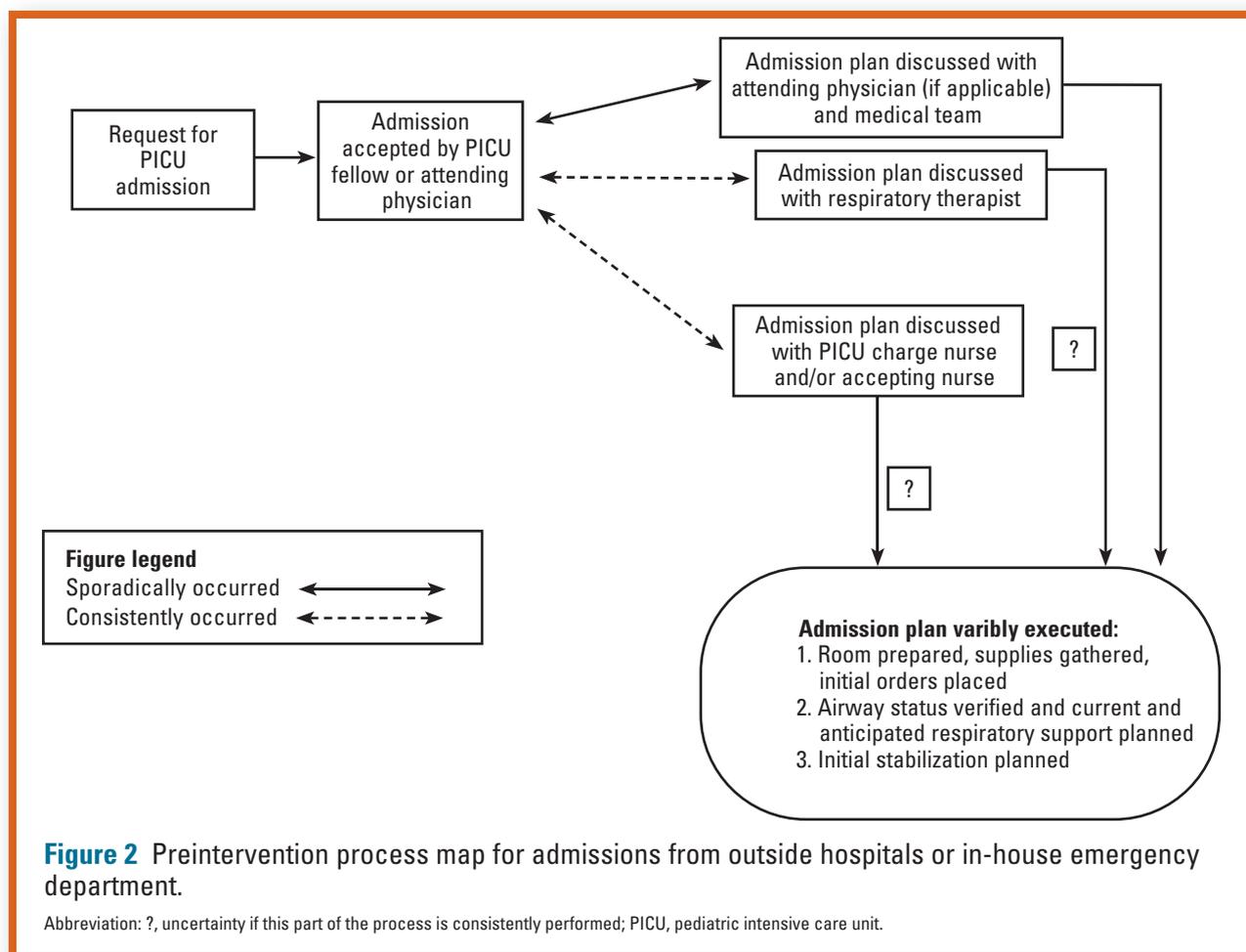
included survey questions that focused on survey respondents' perceptions of preadmission workflow to determine if these perceptions were affected by the preadmission huddle intervention (for example, we asked, "When it is known a patient is going to be admitted to the pediatric intensive care unit, do you participate in an interdisciplinary discussion with your fellow team members [physician, charge nurse, registered nurse, respiratory therapist, etc] to prepare for the arrival of the patient?"). This anonymous questionnaire was distributed via Research Electronic Data Capture (REDCap) tools hosted at Penn State Health Milton S. Hershey Medical Center and Penn State College of Medicine. REDCap was also used for study data collection and management of the preintervention and postintervention questionnaires. REDCap is a secure, web-based application designed to support data capture for research studies.<sup>23</sup> The questionnaire was made available to members of the PICU health care team, including physicians (attending physicians, fellows, and residents), advanced practice providers, nurses, and respiratory therapists before and after the intervention. Potential respondents were identified by PICU physician, nursing, and respiratory therapy leaders (n = 237 before intervention, n = 236 after intervention). The preintervention survey was distributed on September 10, 2020 (approximately 1 month before intervention rollout). The postintervention survey was distributed on May 25, 2021 (approximately 7 months after rollout).

The intervention was formalization of a preadmission huddle using a worksheet designed to provide a framework for discussion regarding admission plans.

PREARRIVAL PICU ADMISSION WORKSHEET [DO NOT PLACE IN PATIENT RECORD]			
Today's date:	ETA:	Method of transport: <input type="checkbox"/> Ground <input type="checkbox"/> Air <input type="checkbox"/> In-house	
Patient name:	MRN:	Age:	Weight:
BEFORE HUDDLE			
<b>PATIENT ORIGIN:</b> <input type="checkbox"/> In-house transfer (PIMCU, floor, etc) <input type="checkbox"/> In-house operating room <input type="checkbox"/> In-house emergency department <input type="checkbox"/> Outside hospital transfer (ER, OR, floor)		<b>INTERPROFESSIONAL PICU TEAM PRESENT:</b> <input type="checkbox"/> PICU charge registered nurse <input type="checkbox"/> Attending/fellow/APP <input type="checkbox"/> Admission registered nurse <input type="checkbox"/> Respiratory therapist <input type="checkbox"/> Resident physician <input type="checkbox"/> Other: _____	
HUDDLE DECISION			
COVID STATUS			
IV ACCESS	<input type="checkbox"/> No <input type="checkbox"/> Yes		
AIRWAY	<input type="checkbox"/> No <input type="checkbox"/> Yes		
PRIMARY REASON FOR ADMISSION			
HAS HMC TEAM RECEIVED REPORT OR UPDATE FROM REFERRING HOSPITAL	<input type="checkbox"/> RN has received report <input type="checkbox"/> Provider team has received LifeLion update		
SAFETY CONCERNS AND/OR ANTICIPATED COMPLICATIONS (airway issues, cardiac arrest, behavior, etc)			
STRATEGY UNDERTAKEN TO PREPARE FOR PATIENT ARRIVAL			
<input type="checkbox"/> Airway cart <input type="checkbox"/> C-Mac <input type="checkbox"/> Mechanical ventilator <input type="checkbox"/> Noninvasive respiratory support <input type="checkbox"/> Arterial line setup <input type="checkbox"/> Central line/CVP setup <input type="checkbox"/> Medication preparation <input type="checkbox"/> Required at bedside <input type="checkbox"/> Sedation doses		<input type="checkbox"/> Intraosseous kit <input type="checkbox"/> Procedure cart <input type="checkbox"/> Resuscitation fluid <input type="checkbox"/> Code cart <input type="checkbox"/> Other: _____	
POSTADMISSION FOLLOW-UP			
If no huddle performed, please describe why: <input type="checkbox"/> Unable to find necessary team members <input type="checkbox"/> High acuity in rest of unit interfered <input type="checkbox"/> Not enough time before patient arrived <input type="checkbox"/> Other [please describe]: _____			
Do you think the huddle helped prepare the team to care for this patient		<input type="checkbox"/> Yes <input type="checkbox"/> No (please describe why below, if known) <input type="checkbox"/> Unsure	
If "No," please describe why:			
Do you think the huddle helped improve interprofessional communication and collaboration?		<input type="checkbox"/> Yes <input type="checkbox"/> No (please describe why below, if known) <input type="checkbox"/> Unsure	
If "No," please describe why:			

**Figure 1** Prearrival PICU admission worksheet.

Abbreviations: APP, advanced practice provider; CVP, central venous pressure; ER, emergency room; ETA, estimated time of arrival; HMC, Hershey Medical Center; IV, intravenous; MRN, medical record number; OR, operating room; PICU, pediatric intensive care unit; PIMCU, pediatric intermediate care unit; RN, registered nurse.

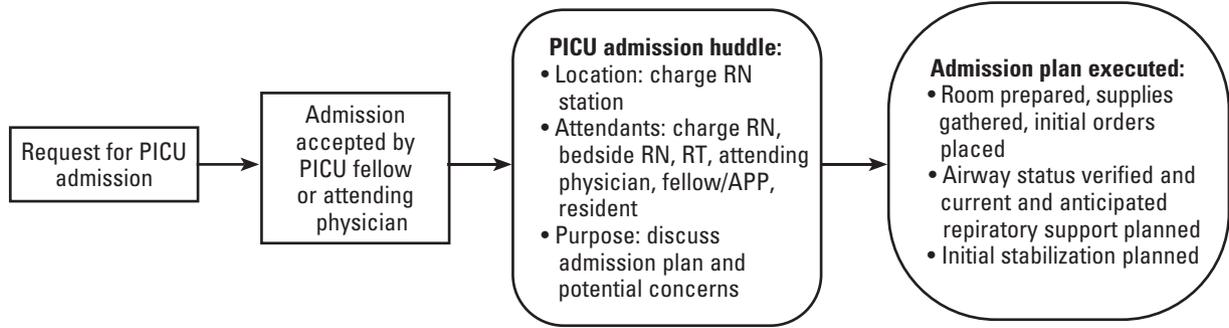


### Preadmission Huddle Development

The structure of the preadmission huddle was developed in close collaboration with physician leaders (2 division leaders and 1 medical director of quality and safety), nursing leaders (5 senior nurses and 3 members of nursing leadership), and respiratory leaders (2 members of respiratory therapy leadership). They analyzed the challenges faced in preadmission communication, possible changes in procedures, and potential solutions, and they helped design an interdisciplinary huddle intervention (including type of patients, timing of gathering, and gathering site). To facilitate the interdisciplinary huddle, a worksheet was developed with the intentions of capturing the important information regarding a new admission (such as demographics, patient presentation, and medical status) and also simplifying interprofessional communication. It was designed to specifically (1) prompt discussions about safety concerns; (2) increase awareness regarding the type of clinical condition team members would be treating, plan of care, and anticipated issues;

and (3) allow for interdisciplinary input to determine which supplies, equipment, and medications would be needed at the bedside to prepare for the patient's arrival. Sample prompts included presence of intravenous access, presence of airway access, primary reason for admission, and safety concerns and/or anticipated complications (airway issues, cardiac arrest, behavior, etc). Face validity for the huddle worksheet was obtained by seeking input from a multiprofessional group of experienced PICU health care team members and revising the data on the basis of their feedback.

After development, the preadmission huddle and worksheet completion were required for every PICU admission from the in-house emergency department or an outside hospital starting on October 1, 2020. During the months before implementation of the preadmission huddle, study authors C. P. and B. E. (1) attended physician, nursing, and respiratory therapy staff meetings and provided education on the huddle, its objectives, and expectations of the clinical staff during the preadmission process and



**Figure 3** Postintervention process map for admissions from outside hospitals or in-house emergency department.

Abbreviations: APP, advanced practice provider; PICU, pediatric intensive care unit; RN, registered nurse; RT, respiratory therapist.

**Table 1** Failure mode analysis for PICU admission process

Current process	Potential failure	Interventions
Admission accepted	Inappropriate admission acceptance as per fellow Absent or incorrect information obtained before admission	Review admission criteria, discuss, and educate fellow regarding case. Preadmission huddle sheet can identify crucial missing information. Fellow can call back requesting physician/service to clarify missing information.
Admission plan discussed with care team members	In a busy unit, some care team members possibly omitted from admission discussions, having to rely on word of mouth Lack of attendance from certain team members at preadmission huddle	Preadmission huddle meeting allows for all members of care team to be present at once for discussion of admission preparation. Attendance records can be shared with departments for motivation. Identify barriers to attendance for certain team members.
Execution of preadmission huddle	Lack of knowledge/awareness/habit of conducting huddle during admissions Equal opportunity for members to provide honest feedback on worksheet in timely manner	Establish clear roles. Charge RN fills out worksheet (with team input) and calls bedside RN and RT. Fellow/attending clinician assembles medical team. Reinforce education and reminders about preadmission huddle tool launch; involve other members of care team in creation of tool.

Abbreviations: PICU, pediatric intensive care unit; RN, registered nurse; RT, respiratory therapist.

(2) solicited input from physicians, nurses, and respiratory therapists (including any communication needs). Mock huddles were not performed as part of this training. Huddles were conducted in the PICU clinical work area and participants were encouraged to conduct a huddle as soon as an incoming admission was confirmed to allow time for discussions. Typically, the PICU charge nurse would convene and facilitate the preadmission huddle, complete the worksheet, and place the completed worksheet in a designated research folder in the PICU. After implementation of the huddle, reeducation and reminders to execute the huddle were continued on a

monthly basis. Champions (clinicians whose time is spent primarily in clinical duty) from physician, nursing, and respiratory therapy staff assisted with providing reminders, emphasizing the importance of the preadmission huddle, and collecting the huddle worksheets (Figure 3, Table 1).

### Measures

Our main outcome measure was whether the preadmission interdisciplinary huddle improved perception of interprofessional communication, as measured by the survey tool. A process measure was interdisciplinary

huddle compliance, assessed by collecting and tracking worksheet completion. As a balancing measure, we included a question within the worksheet (“Do you think the huddle helped prepare the team to care for this patient?”) to provide huddle members an opportunity to report any times the huddle impeded preparation.

### Data Collection

For the interprofessional communication survey, we collected survey respondent demographic data and preintervention and postintervention interprofessional communication questionnaire results. After survey distribution through REDCap, survey respondents received weekly reminders for 3 weeks after implementation (closing after 4 weeks).

For the interdisciplinary preadmission huddles, we collected preadmission preparation data from in-house emergency department and outside-hospital transfers recorded on the huddle worksheet and entered the data into the REDCap database. To track preadmission huddle compliance, we compared entries in the PICU admission logbook entered by our unit secretary with the presence of a preadmission huddle worksheet. The PICU admission logbook records the date of admission, chief concern, patient’s medical record number, and transfer origin. Each preadmission huddle worksheet had spaces to include a patient’s medical record number and date of admission. After using the logbook to identify patients who were transferred from in-house emergency departments and outside hospitals, we determined compliance by matching the preadmission huddle worksheet that included the patient’s medical record number and date of admission to the data recorded in the logbook. Preadmission huddle worksheet collection and compliance tracking lasted from October 1, 2020, until May 25, 2021.

### Statistical Analysis

Summary statistics using medians and interquartile ranges or proportions were calculated for clinical and demographic characteristics and for process measures reported in the huddle worksheets. Participants in the pre- and postimplementation surveys with the same health care professions and years of experience were considered within the same matched cohorts. Fisher exact tests and Cochran-Armitage trend tests were applied to health care professions and years of experience to assess the significance of these factors’ associations with

pre- and postimplementation periods. On the basis of prespecified interested answer options, multiselect questions were simplified into single or multiple  $2 \times 2$  contingency tables. We performed  $\chi^2$  tests and Fisher exact tests to study how the proportions of interested answer options changed before and after the intervention. Fisher exact tests were applied to achieve more precise results when at least 20% of the expected cell counts were less than 5. In the comparisons of multiple  $2 \times 2$  tables, the Benjamini-Hochberg procedure was applied to control the false discovery rate.

For the question regarding the frequency of participation in the interdisciplinary discussion, responses were dichotomized into 2 groups: “often/always/sometimes” and “rarely/never.” For questions with responses on a 5-point Likert scale, responses were classified into 2 sets of binary outcomes: “strongly agree/agree” was compared with “neutral/disagree/strongly disagree,” and “strongly agree” was compared with “agree/neutral/disagree/strongly disagree.” After stratifying responses by health care profession

and years of experience, we applied exact conditional logistic regression to evaluate the effect of the implementation of the interprofessional huddle. We estimated odds ratios (ORs) with 95% CIs. To perform the data analysis we used statistical software R, version 4.0.5 (R Foundation for Statistical Computing), with the packages survival, version 3.2-10; readxl, version 1.3.1; and stats, version 4.0.5.

**Postintervention respondents reported improvement in multiple aspects of intrateam communication.**

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### Ethical Considerations

The Penn State College of Medicine institutional review board reviewed the study and determined that it was not human research.

## Results

### Survey Respondent Characteristics

Before implementation of the preadmission huddle, 115 of 237 potential participants (48.5%) responded to the survey. Preimplementation survey respondents primarily consisted of registered nurses and respiratory therapists (Table 2).

After implementation, 68 of 236 potential participants (28.8%) responded to the survey. Respondents included

**Table 2** Demographic characteristics of survey participants before and after the intervention

Characteristic	No. (%) of participants		P
	Before intervention (n=115)	After intervention (n=68)	
Health care profession			.83
Advanced practice provider	5 (4.3)	3 (4)	
Attending physician <sup>a</sup>	9 (7.8)	7 (10)	
Pediatric critical care fellow <sup>a</sup>	4 (3.5)	3 (4)	
Registered nurse	54 (47.0)	25 (37)	
Resident physician	11 (9.6)	8 (12)	
Respiratory therapist	32 (27.8)	22 (32)	
Years of experience			.91
<1	10 (8.7)	5 (7)	
1 to 4	55 (47.8)	25 (37)	
5 to 8	16 (13.9)	17 (25)	
9 to 12	9 (7.8)	3 (4)	
13 to 15	10 (8.7)	6 (9)	
16 to 20	3 (2.6)	2 (3)	
>20	12 (10.4)	10 (15)	
Routine participants in interprofessional discussions before the arrival of a new PICU patient			
Physician	81 (70.4)	52 (76)	.67
Advanced practice provider	79 (68.7)	52 (76)	.57
Registered nurse	92 (80.0)	60 (88)	.42
Respiratory therapist	55 (47.8)	40 (59)	.42
Other	12 (10.4)	3 (4)	.42
Participation in interprofessional discussions to prepare for the arrival of a new patient			.21
Often	40 (34.8)	21 (30)	
Always	29 (25.2)	19 (28)	
Sometimes	29 (25.2)	21 (30)	
Rarely	13 (11.3)	3 (4)	
Never	4 (3.5)	4 (6)	
Reasons clinicians do not routinely participate in interprofessional discussions with team members before the arrival of a new PICU patient			> .99
Discussions do not always happen	9 (7.8)	3 (4)	
Not always invited	15 (13.0)	7 (10)	
No time to attend	4 (3.5)	1 (1)	
Not helpful	0 (0.0)	0 (0)	
Other	1 (0.9)	0 (0)	

Abbreviation: PICU, pediatric intensive care unit.

<sup>a</sup> The total number of attending physicians was 11; the total number of pediatric critical care fellows was 4.

individuals who participated as well as those who did not participate in a preadmission huddle. Postimplementation survey respondents primarily consisted of registered nurses and respiratory therapists. No significant differences in respondent characteristics were observed between the pre- and postimplementation surveys (Table 2).

### Perceptions of Interprofessional Communication After Implementation

Compared with respondents in the preintervention period, those in the postintervention period reported

improvement in multiple aspects of intrateam communication, including the opportunity to “communicate effectively with health care team members prior to an admission,” “respond to feedback from health care team members in a professional manner prior to an admission,” “effectively overcome communication barriers that hinder optimal health care team collaboration prior to an admission,” “convey my knowledge to other health care team members prior to an admission,” “give feedback to other health care team members in a respectful manner prior to an admission,” and “encourage health care team members to openly communicate their opinions to each

**Table 3** Odds of participants responding “strongly agree” or “agree” to items related to interprofessional communication after implementation of the interprofessional huddle

Survey question	Odds ratio (95% CI)
I have the opportunity to communicate effectively with health care team members prior to an admission.	2.42 (1.10-5.34)
I have the opportunity to contribute as a member of the health care team prior to an admission.	1.62 (0.76-3.44)
I have a good understanding of my role when participating as a member of a health care team prior to an admission.	2.64 (0.86-8.17)
I have a good understanding of the roles of other health care team members prior to an admission.	3.04 (1.07-8.64)
I have the opportunity to respond to feedback from health care team members in a professional manner prior to an admission.	2.54 (1.23-5.24)
I have the opportunity to convey my knowledge to other health care team members prior to an admission.	2.71 (1.31-5.61)
I have the opportunity to effectively overcome communication barriers that hinder optimal health care team collaboration prior to an admission.	3.10 (1.47-6.53)
I have the opportunity to give feedback to other health care team members in a respectful manner prior to an admission.	2.53 (1.25-5.12)
I have the opportunity to encourage health care team members to openly communicate their opinions to each other prior to an admission.	3.10 (1.49-6.46)
I have the opportunity to respond to interprofessional conflicts in a professional manner prior to an admission.	1.31 (0.70-2.46)
I have the opportunity to develop positive and respectful interdependent relationships with other health care team members prior to an admission.	1.69 (0.81-3.52)
I have the opportunity to actively listen to health care team members prior to an admission.	2.26 (1.01-5.04)
I have the opportunity to convey respect for the expertise of other health care team members prior to an admission.	1.79 (0.76-4.19)

other prior to an admission” (Table 3). We found no associations between the response selections “strongly agree/agree” and items about opportunities to “contribute as a member of the health care team prior to an admission,” “respond to interprofessional conflicts in a professional manner prior to an admission,” “develop positive and respectful interdependent relationships with other health care team members prior to an admission,” and “convey respect for the expertise of other health care team members prior to an admission” (Table 3).

### Impact of Preadmission Huddle Implementation on Perceptions of Preadmission Workflow

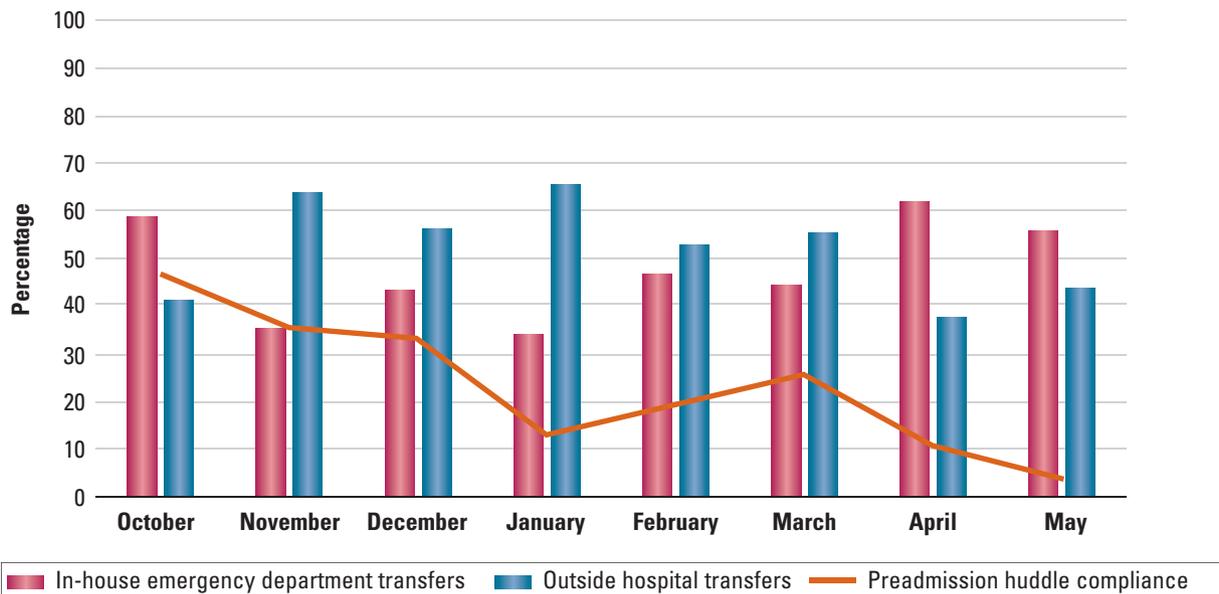
After implementation of the interprofessional huddle, the OR (95% CI) was 1.88 (0.70-5.04) for selecting “often/always/sometimes” to indicate participation in an interdisciplinary discussion with fellow team members (physician, charge nurse, registered nurse, respiratory therapist, etc) to prepare for the arrival of a patient. The types of clinicians who reported participating did not significantly change after implementation of the interprofessional huddle. Among respondents who

indicated that they rarely or never participated in an interprofessional discussion before arrival of a newly admitted PICU patient, the most common reason was that they were “not always invited,” a result that did not significantly change after implementation of the interprofessional huddle (Table 2).

### Interprofessional Huddle Compliance

During the study period, 265 of 473 PICU admissions (56.0%) were transfers from the in-house emergency department or outside hospitals. Of the 265 PICU admissions eligible for this study, preadmission huddles occurred for 69 (26.0%). After implementation, no modifications to the huddle sheet or process were made (Figure 4).

Patient characteristics and reasons for admission are summarized in Table 4. The most frequent huddle participants were PICU attending physicians, fellows, advanced practice providers, and admission registered nurses. Resident physicians were the least frequent participants. Medication preparation, mechanical ventilator set-up, and resuscitation fluid preparation were the strategies most frequently undertaken to prepare for a



**Figure 4** Preadmission huddle compliance rate and transfer sources, October 2020 through May 2021.

patient's arrival. Most preadmission huddle participants reported that the huddle prepared the team to care for the patient and helped improve interprofessional communication and collaboration. Review of the worksheets revealed no reports of the huddle impeding preadmission preparation or patient care (Table 4).

## Discussion

We hypothesized that a formalized huddle during the preadmission period would help improve the perception of interprofessional communication and collaboration

**If interprofessional communication is not encouraged, a lack of respect may occur, teamwork can be compromised, and the quality of patient care may suffer.**

across members of the PICU health care team. In our single-site quality

improvement project, a formalized huddle during the preadmission period helped improve the perception of interprofessional communication.

Because of advances in technology, enhancements in critical care transport, and improvements in the stabilization of children in nonpediatric settings, the delivery of PICU care has become increasingly complex.<sup>24-26</sup> Children previously unable to be transported because of hemodynamic instability are now arriving in PICUs in need of critical care support, at times of higher intensity

(eg, catecholamine use).<sup>26,27</sup> Although mortality may not be impacted, especially with good pretransport care, adverse events can occur during transport.<sup>26,27</sup> When faced with this type of situation, the PICU health care team must be prepared to address not only the underlying condition but also the associated complications. Without proper communication and preparation, however, this vulnerable patient population may be at increased risk.

Time taken to communicate in an interprofessional manner and to prepare for a patient's arrival may ensure optimal outcomes. In some settings, however, little interprofessional communication occurs.<sup>28</sup> Douglas et al,<sup>28</sup> for example, conducted a behavioral task analysis and reported that only 3% of a nurse's time was spent communicating with an ICU physician. When communication is lacking, especially between physicians and nurses, adverse events are known to occur.<sup>29</sup> If interprofessional communication is not encouraged, fostered, and prioritized, a lack of respect may occur, interactions between multiple disciplines may not be prioritized, teamwork can be compromised, and the quality of patient care may suffer.<sup>30</sup> Because of this risk in our unit, a quality improvement intervention was necessary, particularly during the preadmission period, a critical period when interprofessional communication is of utmost importance.

In our study, we implemented a preadmission huddle. Huddles in other settings allow team members an opportunity to communicate in a respectful manner and allow for problem-solving.<sup>17,31</sup> In addition, it can positively impact team processes, efficiency, situational awareness, staff satisfaction and engagement, and clinical care outcomes.<sup>32</sup> When a preadmission huddle is supplemented with a checklist, safety checks can be performed to ensure that deliberate and safe care is delivered.<sup>33</sup> Safety risks can be identified early, allowing the opportunity to anticipate and intervene before a patient issue occurs.<sup>34</sup> This type of discussion was an ideal intervention for our unit because it built upon the informal communication that was already occurring. However, instead of having the admitting physician discuss a preadmission patient's condition only with the charge nurse, the discussion could now include the bedside nurse to increase the likelihood that all the medications and equipment needed would be readily available at the bedside and to share information received from the referring nurse. This change would potentially improve the entire medical team's understanding of the patient's current status. The presence of a respiratory therapist in the huddle ensured that if a respiratory intervention (eg, invasive mechanical ventilation) was needed, appropriate respiratory support would be easily accessible. Including pediatric critical care advanced practice providers in the discussion allowed them an opportunity to provide their input to increase the likelihood that all of the potential medical complications would be addressed before the patient's arrival.

We found that survey respondents reported improved preadmission communication after implementation of the huddle. There are several possible reasons for these results. The presence of the huddle may have fostered a culture of safety and encouraged communication. The intentional inclusion of health care professionals, such as respiratory therapists, who may not have previously felt empowered to participate in the preadmission process created a more collaborative environment for them to participate and voice their opinions. Because a large proportion of survey respondents reported having 1 to 4 years of experience, the perceived value of interprofessional communication may have been increased in those with less clinical experience. Finally, the huddle may have facilitated shared accountability among the different team members. Thus, all health care professionals (regardless of their discipline) may have felt

**Table 4** Data from preadmission PICU huddle worksheet (N=69)<sup>a</sup>

No. of admissions eligible for preadmission huddle	265
Preadmission huddles performed	69 (26)
Age, median (IQR), mo	72 (17-156)
Weight, median (IQR), kg	22.8 (10.6-51.2)
Method of transport	
Air	21 (30)
Ground	26 (38)
In-house transfer	18 (26)
Team members present	
PICU charge RN	53 (77)
Attending physician/fellow/APP	66 (96)
Admission RN	61 (88)
Respiratory therapist	47 (68)
Resident physician	34 (49)
Other	1 (1)
Intravenous access presence	64 (93)
Airway access presence	34 (49)
Primary reason for admission	
Cardiac disease	2 (3)
Respiratory disease	27 (39)
Sepsis	3 (4)
Trauma	3 (4)
Other	32 (46)
RN has received report	38 (55)
Health care provider team has received update from transfer crew	23 (33)
Strategy to prepare for patient arrival	
Airway cart	10 (14)
Arterial catheter setup	9 (13)
Video laryngoscope	0 (0)
Central catheter setup	14 (20)
Mechanical ventilator	30 (43)
Medication preparation	46 (67)
Noninvasive respiratory support	13 (19)
Intraosseous kit	0 (0)
Procedure cart	5 (7)
Resuscitation fluid	30 (44)
Code cart	1 (1)
Other	7 (10)
Do you think the huddle helped prepare the team to care for this patient?	
Yes	57 (83)
No	1 (1)
Unsure	1 (1)
Do you think the huddle helped improve interprofessional communication and collaboration?	
Yes	55 (80)
No	2 (3)
Unsure	1 (1)

Abbreviations: APP, advanced practice provider; IQR, interquartile range; PICU, pediatric intensive care unit; RN, registered nurse.

<sup>a</sup> Values are No. (%) unless otherwise indicated.

increased responsibility and desire to contribute to ensure the best possible care for the patient.

Despite an improved perception of communication, we found large fluctuations in the compliance rate for completion of the huddle forms. Low compliance could be attributed to the perceived severity of illness. Depending on the patient's location and acuity (eg, patients transferred from our in-house emergency department), time to prepare for the patient's arrival may have been limited. Alternatively, for patients with low-acuity conditions, the clinicians may not have felt compelled to prepare for the arrival. During periods with an increased number of patients, team members often have other patient responsibilities and might not have facilitated a huddle because of lack of clinician availability. Interprofessional communication (especially formalized) may have contributed to some clinician discomfort and may have been a priority for some clinicians and not others. Future studies will focus on integrating the huddle more seamlessly into the PICU workflow (especially during times of high patient numbers) and on using our preadmission huddle champions to provide more routine communication on the importance of the preadmission huddle to enhance compliance.

## Limitations

This study had several limitations. Because this study was performed at a single center study and because of the lack of multicenter cohorts, the generalizability of our results is unknown. Whether the preadmission huddle improved patient outcomes is unknown. Surveys are often completed by individuals interested in the survey. With a 26% preadmission huddle compliance, reporting bias may have occurred by clinicians who support preadmission huddles. The type of clinician who responded to the balancing measure ("Do you think the huddle helped prepare the team to care for this patient?") is unknown. Although the worksheet was meant to be completed by the group, the PICU nurse was responsible for acquiring the worksheet. Thus, it is possible that only 1 type of clinician (likely a nurse) completed this section on behalf of the group. It is unknown why some clinicians reported that they were not invited to a preadmission huddle. Future studies may be needed to understand how to include all members of an interprofessional team in the preadmission discussion for an incoming patient. Finally, the survey was not validated, so question wording could potentially bias the respondents' answers.

## Conclusion

The implementation of an interdisciplinary huddle among health care team members in the preadmission period improved the perceived quality of interdisciplinary communication in the PICU. This intervention has the potential to improve clinical outcomes. **CCN**

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## See also

To learn more about communication in the critical care setting, read "Development and Evaluation of Best Practice Alerts: Methods to Optimize Care Quality and Clinician Communication" by Fry in *AACN Advanced Critical Care*, 2021;32(4):468-472. Available at [www.aacnconline.org](http://www.aacnconline.org).

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