



# Handoffs: Transitions of Care for Children in the Emergency Department

AMERICAN ACADEMY OF PEDIATRICS Committee on Pediatric Emergency Medicine, AMERICAN COLLEGE OF EMERGENCY PHYSICIANS Pediatric Emergency Medicine Committee, EMERGENCY NURSES ASSOCIATION Pediatric Committee

Transitions of care (ToCs), also referred to as handoffs or sign-outs, occur when the responsibility for a patient's care transfers from 1 health care provider to another. Transitions are common in the acute care setting and have been noted to be vulnerable events with opportunities for error. Health care is taking ideas from other high-risk industries, such as aerospace and nuclear power, to create models of structured transition processes. Although little literature currently exists to establish 1 model as superior, multiorganizational consensus groups agree that standardization is warranted and that additional work is needed to establish characteristics of ToCs that are associated with clinical or practice outcomes. The rationale for structuring ToCs, specifically those related to the care of children in the emergency setting, and a description of identified strategies are presented, along with resources for educating health care providers on ToCs. Recommendations for development, education, and implementation of transition models are included.

## INTRODUCTION

Patients who require emergency care for illness or injury may move among several areas of care, including the prehospital setting, the emergency department (ED), inpatient units, and operating rooms or procedure suites, before being transitioned back to the medical home. During transitions between care areas or even during care in a single area, a patient may be cared for by multiple health care personnel. It is likely that transitions of care (ToCs) occur more often in the ED than in any other hospital setting.<sup>1</sup> To provide the highest quality and safety, a patient's care is supposed to be seamless, despite multiple care providers and potentially multiple care areas.

At each patient care transition point, responsibility for the patient's care passes from 1 care provider to another, requiring accurate and timely transmission of important information. Referred to as a "handoff,"

## abstract



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“handover,” “report,” or “sign-out,” a ToC occurs when  $\geq 2$  health care providers exchange information that is a summary of the patient’s situation, specific to the mission of shaping subsequent treatment and decision-making; and the control over, or responsibility for, the patient is transferred from 1 care provider to another.<sup>2,3</sup> ToC entails the exchange of the following:

1. mission-specific information;
2. responsibility for patient care; and
3. authority for treatment and procedures.

ToC can occur between prehospital and ED providers, between ED providers at shift change, between ED and hospital providers when patients are transferred out of the ED or to another facility, and between ED providers and the patient’s medical home when patients are discharged from the ED. All types of health care providers, including but not limited to physicians, nurses, advanced-practice nurses, physician assistants, respiratory therapists, paramedics, emergency medical technicians, social workers, and transporters, can be expected to participate in the transition of a patient’s care. In an environment characterized by high patient volume, variable acuity, shift changes, and inopportune interruptions, maintaining focus on communication is especially challenging; however, intradepartmental, interdepartmental, prehospital, and interfacility processes can be designed to address these challenges systematically. These processes can include creating a structured and consistent ToC procedure that acknowledges human factors, operational procedures, team coordination, and care delivery systems.<sup>4</sup>

Published evidence is insufficient to define which system is the best approach to transitioning the care

of patients in emergency and acute care settings. Current ToC practices have been criticized as being highly variable and unreliable. Results of a questionnaire and follow-up observation study revealed that ToC processes were unstructured, informal, and error prone, consistent with findings from other studies.<sup>5</sup> In another analysis of ToC processes, nonstandardized approaches led to adverse clinical consequences, near misses, and inefficient or duplicative care.<sup>6</sup>

In other high-risk industries, sign-outs have received considerable research attention, but only recently has the transfer of patient care been studied systematically and findings published in the health care literature. A systematic review of 18 studies that (1) had patient handoffs in hospitals as their explicit research focus and (2) reported at least 1 statistical test of an association between a handoff characteristic and outcome noted that research is highly diverse and quality is preliminary, so drawing general conclusions about ToC strategies is difficult.<sup>7</sup> Similarly, a clinical evidence review of nursing literature noted that ToC practices are in need of rigorous evaluation to determine which features lead to the best outcomes for patients in varied settings.<sup>8</sup> In addition to the need for more evidence gathering, surveys of graduate medical education program directors have concluded that there is a perceived need for emergency medicine and pediatric emergency medicine training programs to provide specific guidance to trainees regarding ToC processes.<sup>9</sup> A new clinical report from the Committee on Hospital Care of the American Academy of Pediatrics, “Standardization of Inpatient Handoff Communication,” is published simultaneously in this issue of the Journal (<http://www.pediatrics.org/cgi/doi/10.1542/peds.2016-2681>).

## IMPACT OF ToCs

Communication failures have been implicated as the root cause of more than 60% of sentinel events reported to The Joint Commission (formerly Joint Commission on Accreditation of Health Care Organizations).<sup>10</sup> The Institute of Medicine report “To Err Is Human” noted that 84% of treatment delays were later judged to be attributable to miscommunication, and 62% of these were continuum-of-care issues associated with shift changes.<sup>11</sup>

When care is transitioned, the patient is vulnerable to the cognitive biases of multiple providers.<sup>12</sup> Examples of cognitive biases include the following.<sup>13-16</sup>

- Framing effect: A decision is influenced by the way the scenario is presented.
- Diagnosis momentum: A particular diagnosis is established despite other evidence.
- Confirmation bias/ascertainment effect: Thinking is preshaped by expectations, and providers seek confirmatory data while ignoring data that may lead to the correct diagnosis.
- Triage cueing: Judgments made early in the patient care process predispose subsequent providers toward a particular decision.

## BARRIERS TO EFFECTIVE ToCs

Numerous factors predictably lead to errors when humans work in complex systems, including memory, vigilance, and attention to detail. These factors can be exacerbated when people are fatigued or stressed,<sup>17</sup> as happens often when providing emergency care to children. The emergency setting is especially prone to errors because of human as well as environmental factors,<sup>4,18-21</sup> such as the following:

- simultaneous management of multiple ill patients;

- frequent workflow interruptions;
- wide fluctuations in patient volume;
- shift work, staff changes;
- authority gradients;
- experience gradients within the health care environment;
- limited knowledge of patients' history and preexisting conditions;
- high levels of diagnostic uncertainty; and
- high decision density.

When performed suitably, ToC practice promotes quality of care and protects patient safety by providing "audit points" for the detection and mitigation of failure.<sup>22</sup> For example, when the receiving health care provider may notice something overlooked by current providers.<sup>23</sup> Adequate ToC procedures offer the opportunity for rescue and recovery when situations are unclear or a practitioner's thinking is incomplete.<sup>1</sup> Allowing patients to be a part of the ToC process by using "bedside" handoffs has been shown to have positive outcomes for patients and the health care team, including increased patient satisfaction and patient involvement in their own care, with the potential for improved patient safety.<sup>24-26</sup> A physician exchange of information at bedside was shown to be a patient-preferred methodology that encourages patients to participate in their care.<sup>27</sup>

### WHY STRUCTURE ToCs?

Consistently structuring 2-way, open, and concise communication provides a means for ensuring consistent, high-quality ToCs.<sup>4</sup> By using information from other high-risk industries, such as aerospace, nuclear power, and aviation, health care providers may learn the value of scripted, precise, unambiguous, impersonal, and efficient language embedded within a framework that allows opportunity for reassessing

clinical reasoning and providing read-back of information. Benefits include the following:

- Memory trigger: Omitted information and faulty communication processes were identified as the root cause of most errors linked to ToCs.<sup>10</sup> Structured and consistent processes and the use of checklists serve as a memory trigger during ToCs.
- Opportunity to ask and respond to questions: As part of the 2008 National Patient Safety Goals, The Joint Commission published specific recommendations on physician ToCs, including the need for a standardized ToC process involving certain elements and the opportunity to ask and respond to questions.<sup>28</sup>
- Mitigation of authority gradients: Authority gradients in the workplace can stand in the way of communication.<sup>29</sup> Adopting structured and consistent communication strategies helps put all team members on a level playing field while they work together to keep patients safe.<sup>1</sup> One study found that role variability (information provider versus receiver) created conflicts that made quality-improvement efforts challenging, and the research team hypothesized that these challenges would transfer to different contexts and health care professions.<sup>14</sup>
- Mitigation of experience gradients: Experience gradients can also pose challenges because of varying opinions regarding the best method for ToCs. The results of a multimethod study of ToCs during nursing shift changes by Carroll et al<sup>20</sup> showed "considerable variability" in ToC practices originating from novice versus more experienced nurses.
- Limiting diagnosis momentum: ToCs very frequently transmit judgments about severity of illness, diagnostic considerations, or

patient prospects.<sup>2</sup> A structured and consistent ToC that explicitly states the severity of illness and cardinal features with diagnostic considerations will prevent transmitting certainty in diagnosis when uncertainty remains.<sup>21</sup> The opportunity to question or discuss these judgments in a structured, nonthreatening ToC setting can prevent bias in the continuation of care.<sup>30</sup>

- Promotion of family-centered care: Because pediatric patients may lack the communication skills, knowledge, and/or intelligence to participate meaningfully in their own care, it is especially important to consider family presence as a standard means to involving patients in their own care. Honoring the context of the patient's family, culture, values, and goals will result in better health care, safety, and patient satisfaction.<sup>31</sup> Structuring ToC processes to be clear, concise, and nonjudgmental will facilitate patient- and family-centered care in the ED.

### IDENTIFIED STRATEGIES FOR ToCs

ToCs in the ED ought to adhere to Grice's maxims of quality, quantity, relevance, and clarity.<sup>32</sup> Little evidence supports the superiority of any 1 model of ToC. In general, strategies will define the following components in each setting:

- who (participants [single, multidisciplinary]),
- where (location [central, bedside]),
- what (method of information exchange [written, oral]), and
- how (use of adjuncts [templates, mnemonics, computers]).

Recognizing barriers to effective communication at the time of a ToC, such as environmental distractions or interruptions, is crucial to enhancing the process. Mitigating these

barriers may include transitioning care in a separate or protected area, performing the ToC in the presence of patients and families, or assigning shift overlap periods to be devoted to ToCs.<sup>18</sup> Allowing multiple concurrent conversations between individuals also is a barrier to effective ToC communication.<sup>33</sup> Other recommendations to improve the ToC process include training sessions, senior supervision, and the use of electronic aids.<sup>34</sup> The following 5 principles reflect effective ToCs<sup>23</sup>:

- assigned accountability for tasks and outcomes;
- clear and direct communication of treatment plans, follow-up expectations, and contingency plans;
- timely feedback and feed-forward with read-back of information;
- involvement of the patient and family members, unless inappropriate; and
- respect of the hub of coordination of care, which is patient centered and could be the medical home or admitting service, specifically when transitioning care out of the emergency setting.

Assigning accountability is important to avoid duplication or omission of care. A structured ToC process will define the point at which 1 provider stops providing care and the next provider begins providing care. One example of a shift-to-shift ToC strategy that has been tested in the pediatric setting is the I-PASS (Illness severity, Patient summary, Action list, Situation awareness and contingency plans, Synthesis by receiver) handoff model. A prospective intervention study on inpatient units at 9 pediatric residency training programs in the United States showed reductions in medical errors, reductions in preventable adverse events, and improvements in communication.<sup>35</sup>

Increasing the adoption of electronic health records (EHRs) has led to

further innovation in ToC procedures, and increased ToC accuracy has been shown.<sup>36</sup> Pediatric trainees who were introduced to a ToC bundle, including training, a mnemonic, and a new team structure, were noted to decrease medication errors and preventable adverse events in pediatric patients admitted to the hospital, whereas a computerized ToC tool linked to the EHR was noted to further reduce omissions of key ToC information.<sup>37</sup> Consensus groups suggest that the short-term target of efforts to establish electronic transfers of information will focus on defining some universally, nationally defined set of core transfer information.<sup>23</sup>

One area in which the EHR may be expected to be used effectively is during the transition from the ED to an inpatient unit. An examination of ToC practices at 1 institution revealed the emerging practice of “chart biopsy.”<sup>38</sup> This phenomenon, which occurs after receiving notification of an admission, entails reviewing information by the receiving provider about the patient from the EHR before the live ToC process begins. Chart biopsy was noted to serve 3 functions:

1. provide an overview of the patient;
2. prepare for ToC process and subsequent care; and
3. defend against potential cognitive biases by allowing independent perspectives to emerge; for instance, reviewing the chart allows the admitting provider to develop his or her own understanding of the patient and may reveal laboratory test data that just became available, which may change the appropriateness of admitting the patient or placing the patient on a particular service.

It is postulated that “chart biopsy” may enrich the quality of the ToC by allowing receiving providers to enter the ToC as active participants

rather than as passive recipients of information.

An alternate view is to decrease the number of ToCs altogether, which could be accomplished by allowing a buffer of time between shift changes, either by scheduling overlapping shifts or by protecting the departing provider from acquiring new patients at the end of the shift.<sup>3</sup> Methods to encourage quality ToCs, such as compensation for the time spent signing out or development of incentivized performance-based quality metrics, can be considered.

Although standardizing ToC practices is important for quality transitioning of care, individual institutions may need to tailor the recommended techniques to fit their unique settings. Institutions are encouraged to choose a structured and consistent ToC model that can be adopted across the entire enterprise, with location-specific modifications, to further emphasize the benefits of standardization. ED provider groups are encouraged to establish a consensus on near-end-of-shift practices, and outgoing providers would pattern their patient involvement during the pretransition period in a like manner.<sup>39</sup>

The Supplemental Information contains lists of standardized ToC models. Models that have been developed or studied in the emergency or acute care setting include Safer Sign Out (from the Emergency Medicine Patient Safety Foundation),<sup>40</sup> ASHICE, CUBAN, DeMIST, MIST, ISBARQ, SHARED, and SOAP.

## MANAGING SPECIFIC ToC SITUATIONS

### Prehospital to ED

Emergency medical services (EMS) providers usually have only 1 opportunity to convey information about a patient to ED personnel. If this ToC detailing initial vital signs and the events leading up to the ED

visit is not received in real time, ED clinicians track down run sheets or wait for patient care records to be printed or downloaded.<sup>41</sup> ED staff receiving patients from ambulance crews will naturally be focused on their own initial assessment of the patient, which often distracts them from listening carefully to the ambulance crew's ToC. Any information that was not handed over verbally, not recorded on the patient report form, or not retained by ED staff may be lost forever after the ambulance crew leaves.<sup>33</sup> A review of a quality-improvement database in which ToC from EMS to ED was observed revealed that a significant amount of basic and key clinical information was not passed from EMS to ED staff.<sup>42</sup>

Information that is strongly encouraged to be included in a ToC from EMS to ED includes the following:

- vital signs;
- attempts at procedures;
- medications administered;
- clinical status and examination findings, including changes in patient condition during transport;
- health history and preexisting conditions;
- allergies; and
- estimated weight (by length-based tape or parental report).

Focus groups of EMS providers have identified 4 potential ways to improve the structure and process of ToCs<sup>43</sup>:

- communicate directly with the ED provider responsible for the patient's care;
- increase interdisciplinary feedback, transparency, and shared understanding of scope of practice;
- standardize some (but not all) aspects of the handoff; and
- harness technology to close gaps in information exchange.

When transporting a patient from a nonhome setting, such as a school, child care, or medical office, EMS providers may bring consent or health history documents maintained at that location. In the setting of trauma, the mechanism of injury reported to EMS personnel is an important data point. Especially important are pieces of information or visual clues to potential nonaccidental trauma or neglect that may be noted at the scene by prehospital providers. To aid in family reunification, it is important for the ToC from EMS providers to include information about the condition and destination of family members. EMS providers also can serve a valuable role in triage and disaster resource utilization during mass casualty incidents by relaying information regarding scene information and number of potential victims.

#### **Provider to Provider Within the ED**

Health care providers working in EDs can be expected to transition the care of all patients under their care frequently, during or at the end of shifts. Maintaining low rates of error and harm in this high-risk environment necessitates that any ToC be accomplished in an effective, orderly, and predictable manner. It is important for a ToC to reflect the multidisciplinary needs of ED patients, and the most favorable environment may include the presence of physician and nursing providers as well as other relevant ancillary staff to discuss ToC information as a team.<sup>44</sup> Recognized models for effective team communication include SHARED (Situation, History, Assessment, Requirements, Evaluation, Documentation), TeamSTEPPS (Team Strategies and Tools to Enhance Performance and Patient Safety), iSoBAR (Identify, Situation, Observations, Background, Agreed Plan & Accountability, Read Back),

and SBAR (Situation, Background, Assessment, Recommendation) models.<sup>45,46</sup> An important consideration is that systematic studies have noted that, until further evidence is gathered, no model can be recommended over another, and ToC processes at shift change or change-of-duty will follow the overarching principles discussed throughout this statement.

Bedside handoffs respond directly to several of The Joint Commission's National Patient Safety Goals, which address patient identification, communication among health care providers, and patients' involvement in their own care.<sup>47,48</sup> Embedding bedside handoffs into institutional culture and into individual practice has been challenging.<sup>49</sup> A 2007 survey reported that bedside rounds during shift changes took place in only 24% of EDs participating in the Pediatric Emergency Care Applied Research Network.<sup>50</sup>

An algorithm presented by the Council of Emergency Medicine Residency Directors' Transitions of Care Task Force describes the execution of the ToC process, based on survey responses from emergency medicine faculty and residents and ED nurses.<sup>51</sup> Steps include the following:

- setting an uninterrupted time and space with access to medical records;
- presence of as many health care team members as possible;
- prioritizing discussion of high-risk patients first;
- structured sign-out to identified receiving provider for each patient; and
- closing the loop (invitation for questions, documentation of ToC).

The Australasian College of Emergency Medicine Guideline also notes that scheduling should allow protected time for ToC rounds to occur during working hours.<sup>45</sup>

## ED to Consultant

The lack of proper and timely communication between the ED and consultants also can place patients at risk. Although there is transfer of information between 2 services regarding patient information as well as shared responsibility for a patient, consultations are distinctly different from patient ToC, in which the responsibility of care is completely transferred. Furthermore, there is no accepted standard of ED provider to consultant communication. This situation has prompted researchers to consider a “taxonomy” of ED consultations and conceptual flow for engaging outside expertise.<sup>52</sup> Because of the implied sharing of responsibility for the patient, structured and consistent ToC processes will delineate the responsibility of each provider for patient care, whether that includes collaborative care, comanagement, or solely recommendations to the ED provider. If patients are transported out of the ED for specialist consultation, evaluation, or testing, another ToC will occur at the time that the patient returns to the ED setting. Communication between ED providers and consultants is an area for future investigation.

## Transfer From ED to Receiving Facility

Transferring patients from the ED to outside facilities will nearly always preclude face-to-face communication; however, it need not preclude 2-way communication and the opportunity to answer questions. There are aspects of interfacility transfer of patients that are governed by the Emergency Medical Treatment and Labor Act,<sup>53</sup> and hospitals are encouraged to be familiar with these obligations.<sup>54</sup> Safe interfacility transfer of patients out of the ED will be aided by having interfacility transfer guidelines in place. Sample transfer checklists, which could be used to script a transfer ToC that is

inclusive of information necessary for the EMS transport service, as well as the accepting facility’s service, are available from the EMS for Children National Resource Center.<sup>55</sup>

## ED to Inpatient Setting

There is a paucity of pediatric specific literature regarding ED to inpatient transitions; however, many of the same challenges existing in general emergency care apply to pediatric patients. In addition, the inability of young pediatric patients to verbalize their condition invites further opportunity for adverse events. The general concepts of transfer of information, responsibility, and authority<sup>56</sup> apply to ToCs from ED to inpatient units as well as intradepartmental ToCs or transfers to outside facilities.

An ineffective ToC from the ED is a well-identified source of adverse events and near misses for inpatients<sup>57</sup> and is implicated in nearly one-quarter of ED malpractice claims.<sup>58</sup> Communication defects between the ED and inpatient team are the primary source of faulty ToCs, with up to 50% to 60% of handoffs omitting vital information,<sup>59,60</sup> regardless of provider experience. Poor communication may occur because of lack of communication and ToC training,<sup>59-61</sup> uncertain diagnoses, lack of complete results of testing, discrepancies of expectations, and potentially contradictory goals of the ED and inpatient providers<sup>44,62,63</sup> as well as cognitive errors caused by inheriting the thoughts of others about the patient’s condition.<sup>64</sup> Workplace and human factors engineering within the ED and pediatric ED, such as frequency of interruptions,<sup>65</sup> background noise,<sup>66,67</sup> and the wide variety of patient conditions and unique patient needs, further complicate the ToC from ED to inpatient units.

When admitting a patient from the ED to the inpatient setting, information may be shared between

clinicians, but the patient’s physical location may make it difficult for the clinician who has assumed responsibility for patient care to assume control at the same time. For instance, when admitted patients are boarded in the ED or when the inpatient provider is not free to attend to the patient promptly, confusion may exist as to the actual transfer of responsibility for care. Furthermore, a ToC may occur separately for each provider type (physician, nurse, etc). The lack of a coordinated transition between health care providers may result in communication of different depth and content of information, which could cause delays in care. Laboratory and imaging results may not be available until after the ToC, and patients may have a continued need for “as needed” medications.<sup>2</sup> Structured and consistent ToC processes that include an unambiguous transfer of authority and responsibility for pending and future care would delineate how to proceed in such cases, thereby avoiding confusion.

The American College of Emergency Physicians offers several suggestions to improve ToCs from EDs to inpatient units. These include reducing interruptions and distractions during ToCs, incorporating 2-way communication with read-back to confirm understanding, promoting formal education for trainees and attending physicians, practicing and evaluating department-specific ToCs, and considering standardized ToC procedures specific to the needs of each facility,<sup>12</sup> recognizing that no single ToC method will meet the needs of all departments.<sup>7,68</sup> A subsequent 2014 survey of 8 teaching hospitals revealed the use of standardized tools in 18% of ToCs from EDs to inpatient units and formal education of less than one-third of physicians.<sup>69</sup>

Specific to pediatric patients, Bigham et al<sup>70</sup> used several of these processes when studying pediatric transfers from EDs to inpatient units within a broader handoff project involving 23 children's hospitals. The study focused on interventions addressing defined ToC intent, content, and process, the latter including the use of standard format, tools, and clear and timely transition of responsibility. Results revealed a significant decrease in ToC-related care failures, from 37.2% to 13.4%, with an accompanying increase in staff satisfaction.

### **ED to Medical Home**

Although literature exists on ToCs from the inpatient to the outpatient setting, effective means of transferring care back to the medical home after an acute care visit has not been well studied. Examples of communication from the ED to the medical home include phone calls and automated faxes or e-mails with details of the patient visit.

Two-way ToC processes may not be feasible for every patient seen in the ED; however, patients discharged with pending studies or consults may warrant such communication, and this ToC is especially important for medically complex patients. Direct provider-to-provider communications may be the expectation based on the complexity or severity of the patient's condition. If the patient's status is critical (ie, requiring admission to an ICU or a grave new diagnosis made) or if the patient dies, a phone call between the ED and primary care provider may enable the primary care provider to support the patient or family.

It is important for the acute care setting to perform medication reconciliation at the time of discharge and to communicate newly prescribed medications to the medical home. EDs may consider adding the resources necessary to accomplish this. EHRs may be able

to generate ED visit summaries that provide adequate 1-way ToC information, including date of service, treatments received, study results, diagnosis, and follow-up plan. Institutions are encouraged to inquire about how the use of the EHR for communication with the medical home may qualify as "meaningful use" in the Medicare and Medicaid EHR Incentive Programs.

Transferring care back to the medical home is a shared responsibility between the acute care setting and outpatient setting. The American Medical Association published a consensus report on the responsibilities of ambulatory practices in ToCs.<sup>71</sup> This report focused mainly on inpatient teams to ambulatory teams but emphasized the importance of both teams being responsible and accountable for communication that would ensure a safe care transition. The report states that, in most instances, the ambulatory practice is best situated to take lead responsibility for these tasks, because the ambulatory practice will be responsible for providing ongoing care to the patient.

### **TEACHING ToCs**

A standardized procedure needs to be developed for trainees within emergency medicine residency and fellowship programs<sup>72</sup> as well as nursing and allied health training programs. With the initiation of resident duty hour limits, more frequent ToCs in academic medicine raise the potential for more safety concerns.<sup>73</sup> A survey of emergency residency programs revealed that 75% had no formal didactic training and 90% had no written policy about ToCs.<sup>9</sup>

Numerous organizations, including The Joint Commission<sup>74</sup> and the Institute of Medicine,<sup>75</sup> call for formal attention to ToCs involving trainees. The Emergency Medicine Milestones Project, supported by

the Society for Academic Emergency Medicine and the American Board of Emergency Medicine, along with the Accreditation Council for Graduate Medical Education (ACGME), identifies effective ToCs as a competency of all graduating emergency medicine residents.<sup>76</sup> The ACGME, a professional organization responsible for the accreditation of numerous residency education programs, requires specific attention to ToC procedures in both residency and fellowship training programs, creating common standards for all training programs.<sup>77</sup> The American Association of Colleges of Nursing also includes knowledge of and ability to perform appropriate ToC practices as a competency for graduate nursing.<sup>78</sup> Despite the recognized need for standardized tools and procedures at each site, the ACGME recognizes that each site may have different needs and will not use the same templates or tools.<sup>68</sup>

ToC concepts apply to practitioners beyond the training period. With the use of learner-identified ToC milestones, a longitudinal education and evaluation curriculum that uses tool- and simulation-based education modules has been developed for all levels of learners, from medical student through faculty.<sup>79</sup> The American Board of Pediatrics offers a handoff improvement project for pediatric emergency physicians within its Maintenance of Certification category 4 program.<sup>80</sup> Future professional development programs may offer further opportunity to train providers.

### **ADDRESSING AUTHORITY GRADIENTS WITHIN SIMULATIONS**

The concept of authority gradients was introduced to the health care community in "To Err Is Human: Building a Safer Health System,"<sup>11</sup> yet the role of authority gradients in communication breakdowns and in resulting medical error has

only recently received attention in the health care literature.<sup>21</sup> In acknowledgment of this concept, research has been conducted that incorporates the authority gradient into simulation exercises. Two such studies showed that when a health care team was presented with an acute situation in which patient safety was at risk, neither nurses nor resident physicians usually were successful in challenging erroneous orders given by the attending physician, even when they recognized the orders as potentially harmful.<sup>81,82</sup> The results of these studies were consistent with the current literature on the effects of authority gradients and suggest that incorporating the concept into multidisciplinary simulations may be beneficial to building team communication skills and strengthening handoff processes.

## RECOMMENDATIONS

- All EDs that care for children are strongly encouraged to implement a structured and consistent approach to ToC communications, spanning the entire continuum of patient acute care, including prehospital care, ED shift changes, consultations with specialists, admitting patients to the hospital, and transferring care back to the medical home.
- ToC communication should attempt to be patient- and family-centered, involving patients and/or caregivers at every transition along the continuum of acute care.
- ED staff members who provide care for children should receive training and education on structured ToC processes as part of the institution's implementation process.
- Trainees in programs including pediatrics, pediatric emergency medicine, emergency medicine, family medicine, physician assistant, advanced practice nursing, paramedicine, respiratory therapy, and nursing should receive formal training and education on structured and consistent ToC practices. ToC training in pediatric emergency medicine education programs should be structured; the use of simulation training should be considered. Nontrainees should be offered training in ToC advancements via maintenance of certification or other continuing education activities.
- EDs that provide care for children are encouraged to work with local EMS agencies to develop a structured and consistent ToC process or script that encompasses vital signs, clinical status, patient care, pertinent history and examination findings, mechanism of injury, and scene safety information.
- EDs that provide care for children should have interfacility transfer guidelines in place.
- Studies comparing ToC models in the ED setting are encouraged. Standardized, validated process and outcome metrics are recommended to evaluate the effectiveness of ToC processes of care.
- Institutions should keep their information technology department included in the planning and implementation of structured and consistent ToC processes and abreast of developments in EHR technologies.

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#### ABBREVIATIONS

ACGME: Accreditation Council  
for Graduate Medical  
Education

ED: emergency department

EHR: electronic health record

EMS: emergency medical services

ToC: transition of care

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