Transitions of Care in Medical Education: A Compilation of Effective Teaching Methods

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BACKGROUND AND OBJECTIVES: Transitioning patients safely from the inpatient environment back to an outpatient environment is an important component of health care, and multidisciplinary cooperation and formal processes are necessary to accomplish this task. The Transitions of Care (TOC) process is constantly being shaped in health care systems to improve patient safety, outcomes, and satisfaction. While there are many models that have been published on methods to improve the TOC process systematically, there is no clear roadmap for educators to teach TOC concepts to providers in training. This article reviews published data to highlight specific methods shown to effectively instill these concepts and values into medical students and residents. Formal, evidence-based, TOC curriculum should be developed within medical schools and residency programs. TOC education should ideally begin early in the education process, and its importance should be reiterated throughout the curriculum longitudinally. Curriculum should have a specific focus on recognition of common causes of hospital readmissions, such as medication errors, lack of adequate follow-up visits, and social/economic barriers. Use of didactic lectures, case-based workshops, role-playing activities, home visits, interprofessional activities, and resident-led quality improvement projects have all been shown to be effective ways to teach TOC concepts.

Methods
Articles to support this manuscript were found by searching PubMed with the search terms “care transitions,” “transitions of care,” “transitions education,” and “transitions curriculum.” Citing articles identified by PubMed were reviewed as were the references of the articles retrieved. Studies that did not incorporate learning into the transitions of care process were excluded. The final reference list was agreed upon by the three authors, with preference given to publications that included the greatest detail about educational outcomes. The terminology used in different manuscripts around care transitions is variable and for this is a disconnect between the expectations that the medical community has regarding the vital role of TOC and the emphasis TOC receives in medical training. We have identified and compiled the published successful, evidence-based strategies focused on teaching TOC with the hopes that this compilation will serve as a resource for educational programs dedicated to improving provider in training education about TOC.

T he medical community recognizes the importance of a smooth transition from the inpatient to outpatient setting and the role it plays in determining patient outcomes, readmission rates, and overall hospital costs. Many evidence-based interventions have been published that improve patient safety and outcomes during the transitions process (Table 1).2-7 However, these transition programs were not specifically designed to enhance knowledge of transitions of care (TOC) for providers in training. Further, these programs are generally broadscale and require extensive resources within large health care systems, which may not be feasible within smaller teaching institutions. A 2009 multidisciplinary TOC policy statement nicely outlines ideal practices regarding TOC, but it does not highlight how these practices should best be taught to providers in training.8 It is apparent there

From the Swedish Family Medicine Residency Program, Littleton, CO (all); and University of Wyoming School of Pharmacy (Drs Vandiver and Onysko).
Table 1: Evidence-Based Transitions of Care Models and Resources for Providers

<table>
<thead>
<tr>
<th>Model, Founders, and Funders</th>
<th>Highlights</th>
<th>Outcomes</th>
<th>For Additional Information</th>
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</table>
| • Care Transitions Intervention (CTI)² | • Self-management model involving a care transitions coach  
• Four Pillars: 1. Medication self-management, 2. Dynamic patient-centered health record, 3. Primary care and specialist follow-up, 4. Knowledge of red flags | • Reduced 30-day hospital readmissions by 30%²  
• Reduced 180-day hospital readmissions by 17%²  
• Cut average costs per patient by 19%³ | www.caretransitions.org |
| • Transitional Care Model³  
• Dr Mary Naylor and the University of Pennsylvania | • Transitional care nurse (TCN) driven model focusing on high-risk elderly  
• Holistic and multidisciplinary approach with 10 essential elements including home visits, active engagement of patients and family members, and collaboration and communication across settings | • Reduction in hospital readmissions for both primary and co-existing health conditions³  
• Improved patient quality of life scores at 3 months³  
• Reduction in total health care costs³ | www.transitionalcare.info |
| • Bridge Program⁴  
• Illinois Transitional Care Consortium (ITCC) | • Social worker-led model focused high-risk elderly populations  
• Pre-discharge assessment and post-discharge follow-up at days 2 and 30  
• Community-specific focus with hospital-community collaboration/communication. Ensure patients receive brief counseling, are set up with relevant community resources and appointments, and have personnel to assist with problems that may arise | • Increased attendance of post-discharge physician appointments⁴  
• Increased rate of patients communicating with outpatient providers⁴ | www.transitionalcare.org |
| • BOOST (Better Outcomes for Older Adults through Safe Transitions)⁵  
• Developed through the John A. Hartford Foundation, funded by the Society of Hospital Medicine | • Multidisciplinary, hospital-based process  
• Five key components including a comprehensive intervention, implementation guide, longitudinal technical assistance, the BOOST collaboration through online resources, and evaluation through the BOOST data center; BOOST Implementation toolkit available, highlights teach-back methods | • Reduction in 30 day all-cause readmission rates by 14%⁵ | www.hospitalmedicine.org |

(continued on next page)
Table 1: Continued

| • GRACE (Geriatric Resources for Assessment and Care of Elders) & | • Patients assigned a support team of social workers and nurse practitioners who work with interdisciplinary team (including a geriatrician, pharmacist, physical therapist, mental health social worker, and community-based services liaison), focused on low-income elderly, perform in-home assessments | http://graceteamcare.indiana.edu/home.html |
|             • The Indiana University School of Medicine’s Center for Aging Research designed and tested the GRACE Team Care model | • In high risk populations at 2 years: Emergency department visits decreased by 24% & | www.bu.edu/fammed/projectred |
| • Project RED (Re-Engineered Discharge) & | • Multidisciplinary, hospital-based process |     • Patients reported better understanding of medical conditions & |
| • Boston University Medical Center | • 12 components including ascertaining need for language assistance, making follow-up appointments, educating patient and ensuring understanding about diagnoses and medications, and post-discharge phone call follow-up | • Patients reported feeling better prepared for discharge |
|             • Utilizes Virtual Patient Advocate “Louise,” who assists in teaching patients about components of their care | • Reduced hospital utilizations by 30% | • Higher rates of follow-up with PCP |

review we use the term transitions of care or “TOC.” P values are included whenever statistically significant results were available.

Results
Learner Competencies and Perceptions of TOC: Where Are We Now?
Competency in the TOC process is a desired attribute in providers in training, yet historically it is not necessarily highly prioritized in medical education. The 2013 Family Medicine Milestone Project instituted by the Accreditation Council for Graduate Medical Education and the American Board of Family Medicine includes many core competencies that resident physicians must obtain during training, many of which involve components of TOC. In a 2001 survey, 91% of housestaff, residency program directors, and subintern directors expect a medical student completing an internal medicine subinternship to be competent in coordinating care with other health care workers. In another survey from 2010, one-quarter (9 of 36) of the competencies that internal medicine residency program directors most valued in subinterns pertained directly to transitions of care. Despite the desire for these competencies, course directors representing 16 US medical schools reported that the “ability to request consultations from providers of home and community services” was only assessed in 26% of courses, and the “ability to describe basic principles in coordinating care among multiple consultants, including timely communication of relevant clinical data, setting common goals of care, and avoiding redundancy or gaps in care” was only assessed in 19% of courses.

Published literature indicates that faculty, residents, and medical students perceive significant gaps in how TOC concepts are taught and implemented in clinical practice. As part of the curriculum at the Medical College of Wisconsin, medical students were asked to describe a care transition they had witnessed that had evoked a strong emotional response within them. Among the students who participated in the reflective component, 64% described unsuccessful transitions of care, and 92% of the emotional responses described were negative. Students reported “frustration,” “anger,” and “annoyance” most commonly, and recurrent themes included poor communication and feeling “rushed” and “helpless to intervene.”

A 2012 survey of residents affiliated with two internal medicine programs assessed how residents learn to provide high-quality discharge care. Residents agreed there was no formal training or structure, even from attending providers, but rather a necessary “learning by doing” process that had considerable variation among residents. A lack of structured training was also identified in a survey revealing that only 16% of internal medicine residency programs have a formal discharge planning curriculum. Understandably,
studies have also highlighted the value that home visits can have in the education process for medical students.18,20

Another curriculum implemented at the Icahn School of Medicine at Mount Sinai highlights patient safety, health literacy, discharge planning, and TOC during a 12-week clerkship for third-year medical students.20 The didactic portion includes a total of three 60-minute interactive didactic sessions given early during the clerkship.20 Concepts are based on the World Health Organization Patient Safety Curriculum Guide, the American Medical Association Foundation Health Literacy kit, and content from the Better Outcomes for Older adults through Safe Transitions (BOOST) program.20 The students also participate in a post-discharge visit to a patient at their home or nursing home.20 Students who participated in the curriculum reported that they were more confident in their ability to perform an accurate medication reconciliation, provide the patient and/or caregiver education, identify important barriers patients face in the transitions process, and in reporting errors.20 Only 39.3% of students felt confident in “identifying barriers patients face when transitioning from the inpatient setting” prior to their clerkship, while 89.8% felt confident in this area afterward (P<.0001).20 In addition, students also improved their scores on a multiple-choice test related to TOC administered at the beginning and end of their clerkship.20

A program called Fast Forward Rounds was implemented at Weill Cornell Medical College for third-year medical students during a mandatory 12-week IM clerkship.21 During the clerkship, students participated in two 90-minute lectures led by a multidisciplinary group including a geriatrician, geriatric nurse practitioner, social worker, and physical therapist.22 These sessions incorporated team-based learning and focused on basics of TOC, community resources, housing options, functional assessment, Medicare/Medicaid reimbursement, home care, and rehabilitation.22 Following participation in this program, a majority of students (66.3%) reported being confident in their ability to manage the discharge process of complex patients, an increase from 9.8% prior to participation (P<.001).21 Students commented that the content contained “vital info not taught elsewhere,” which “heightened awareness of the larger health care system.”21 When asked how the program could be improved, many students recommended holding the sessions earlier in the clerkship so they could use the skills more immediately.21

Interprofessional Education (IPE) to Enhance TOC Teaching

Programs that incorporate IPE have provided opportunities for medical students and residents to interact with other health professionals who provide key elements in patient care, thus enabling them to gain a better appreciation of delegation and collaboration. One such program focused on these interactions developed at the University of California San Francisco, which partnered third-year medical students with fourth-year pharmacy students on clerkship rotations at a university-based hospital.22 At the beginning of the rotation, all students participated in a 1-hour interactive workshop that discussed the roles that social work and pharmacy play in the discharge process, challenges that patients may face at discharge, and important elements of a post-discharge visit.22 Later in the rotation, pharmacy students and medical students partnered together to arrange post-discharge home visits with high-risk patients.22 At that visit, students assessed medication discrepancies, safety of the home environment, and patient clinical status.22 This information was then documented and relayed to the patient’s primary care provider.22 Students reflected on their visit with faculty preceptors during a 1-hour group debriefing at the end of the rotation.22 After completion of
this program, students reported feeling more confident in a wide range of abilities related to discharge planning as well as having improved recognition of the roles of other healthcare team members. In addition, 91% of students stated that they felt the program was a valuable learning process regarding TOC beyond the other experiences of the clerkship. Students highlighted the interdisciplinary collaboration and the post-discharge home visit as the two components of the program that were most valuable to their learning.

Another IPE program developed at the University of Virginia combined third-year medical students and fourth-year nursing students to collaborate in a 90-minute interactive workshop focusing on optimum care of the elderly. The workshop included a clinical case, a standardized patient, and student role-playing to facilitate this task. After being involved in the workshop, the vast majority of students (85%-90%) reported that they were better able to communicate across professions, engage in family meetings, and develop a patient-centered care plan when transitioning patients across clinical sites.

TOC Teaching in Postgraduate Medical Education

Primary care residency programs have the challenge of ensuring residents graduate with a multitude of skills surrounding the TOC process. Several studies have supported the benefit of having a formal curriculum surrounding discharge planning. Resident-led quality improvement (QI) projects have been shown to be a valuable tool in improving TOC processes and enhancing resident education. Considering that direct communication between inpatient and outpatient providers is exceedingly low, occurring in only 3%-20% of admissions, and discharge summaries are available to providers less than one-third of the time for the first post-discharge appointment, many QI projects have focused on improving communication across settings.

Some QI projects focus specifically on the post-discharge follow-up since having no follow-up with a PCP within 4 weeks of discharge has been associated with a 10-fold increased risk for hospital readmission. Lee et al designed a QI program utilizing “bridge visits” for post-discharge follow-up in which internal medicine residents had dedicated 40-minute clinic visits for patients within 96 hours of discharge from an academic medical center. Residents reported that the program created a greater appreciation of the importance of patient education, accurate discharge summaries, and medication reconciliation. Beyond the gains reported by residents, a survey of patients who participated in the post-discharge clinic revealed that 87% of patients believed that attending the visit prevented them from returning to the hospital.

A program developed at the University of Chicago had IM residents participate in a resident discharge clinic (RDC). The RDC occurred one-half day every week and was staffed by a second- or third-year resident, an attending preceptor, and a clinical pharmacist. Main components of the RDC focused on improved communication among the inpatient team and outpatient providers, patient access to 1-hour follow-up appointments, and medication reconciliation/counseling. The implementation of this program improved follow-up rate at clinic 7, 14, and 30 days (<.001), although there was still a relatively high no-show rate (39%). Prior to implementation of this program, a survey of residents revealed that a vast majority (79%) worried that their patients were not getting adequate care because of difficulty with follow-up after discharge. Following the implementation of this program, only 30% of residents reported the same worry (<.001).

Some residency programs advocate peer-led educational didactics in which resident champions teach fellow residents about best practices in TOC. As aforementioned, residents prefer a combined modality approach that includes lectures/didactics, clinical experience, and case-based discussions in a continuous TOC curriculum throughout residency. The Housestaff Incentive Program at University of California San Francisco Medical Center is taking resident involvement in QI projects a step further by providing recognition and financial incentive payments to residents that work on unique QI projects that accomplish predetermined goals. Through this incentive, IM residents created a discharge summary improvement bundle utilizing their electronic medical record to improve the timeliness and quality of their discharge summaries. The QI project included a mandatory half-day session about discharge summary best practices for all first-year residents, as well as monthly didactic conferences about other TOC processes. Along with these interventions, a discharge summary template was created and widely adopted by providers. With the combinations of these interventions, the average time to completion of a hospital discharge summary decreased from 3.5 to 0.6 days (<.001), and the percentage of discharge summaries completed on the day of discharge rose from 38% to 83% (<.001). In addition to being more timely, there was a large increase in the number of discharge summaries deemed to contain all recommended content (88% up from 5% at baseline, <.001). A survey of resident perceptions on the interventions also found that 88% of residents were “motivated by a belief that timely discharge summaries can improve continuity of care for their patients,” and 73% felt that the extra effort to craft high-quality discharge summaries was worth the gain in quality of patient care.

Discussion

In order to assist in improved systemic changes in the TOC process within healthcare, structured...
education should exist in medical school and residency curricula that focuses on important concepts related to TOC. This should ideally be multifaceted, including programs to improve communication skills across settings and disciplines and to enhance knowledge of the important roles that all health care providers (including social workers, pharmacists, nurses, physical therapists, home health aides, etc) have in the TOC process. Learners want this taught earlier in the curriculum, so that they can practice their skills as they progress throughout their education. Incorporating teaching methods that focus on foundational TOC themes into medical education throughout medical school, residency, and into practice are likely to help physicians establish practice patterns that optimize the TOC process. As educators, it is our duty to ensure that providers in training are equipped with the knowledge and confidence to navigate and improve these systems. Thus, it is important to understand and implement the modalities that learners find most effective.

A variety of methods have been shown to be effective, including didactic lectures, case-based workshops, role-playing activities, home visits, and involvement in quality improvement projects (Table 2). While learners report wanting a combined modality approach, home visits and IPE training are two areas that have been reported to be most valuable in student learning and are not necessarily being regularly emphasized. Home visits provide a unique opportunity for learners to witness first-hand the necessity of a comprehensive TOC process and how it impacts patients once they return to the outpatient setting. Team-based care is of paramount importance in the TOC process and continues to be a major emphasis within patient-centered medical home models. Medically complex patients oftentimes require careful coordination of care, particularly in navigating our complex health care system. Utilizing IPE opportunities allows for students to learn from one another in addition to learning about TOC, and effort should be made to expose them to the professions they will most likely collaborate with in the future. Introduction to these interactions should occur early and often throughout medical education.

In addition, there should be a specific focus on recognition of common causes of hospital readmissions, such as medication errors, lack of adequate follow-up visits, and social/economic barriers. Encouraging medical residents to pick TOC topics as QI projects is an effective method of teaching TOC. Themes that have been previously identified as quality-limiting factors of the discharge process that are potential topics for QI projects, including inadequate coordination within multidisciplinary teams, lack of standardization, poor patient and family communication, and lack of post-discharge feedback.

The importance of adequate communication (both verbal and electronic) between providers should certainly be emphasized throughout the curriculum.

Feedback to medical students and residents is important to solidify and entrench key TOC concepts. Students and residents should be given appropriate opportunities to practice writing complete discharge summaries, which can be reviewed by faculty or preceptors in order to provide constructive feedback to facilitate future development. Further, feedback and evaluation of curricula is an important component to its implementation. A review of TOC curriculum found that only 42% provided evidence-based support for their content. Evaluation of curricular changes should continue to be assessed to provide further guidance to educators on how to best teach TOC concepts to ensure the curriculum are as evidence-based as feasible. To our knowledge, guidelines on how to best evaluate a TOC curriculum have yet to be published and are an area that should be explored.

Medical educators have an important role in ensuring that improvements continue to be made with regards to patient safety as patients move across health care settings. There is no single way to effectively teach providers in training about best practices surrounding care transitions and there are multiple strategies that medical schools and residency programs could readily adopt to improve the skills of their graduates. Ideally, TOC concepts taught early and often throughout medical curriculum will instill key TOC values into providers in training, which they can carry forward into their careers and their individual institutions. In turn, we can be training practitioners to act proactively rather than reactively to improve TOC processes and ultimately the care and safety of patients.

References

Table 2: Published TOC Teaching Methods

<table>
<thead>
<tr>
<th>Reference</th>
<th>Learner Type</th>
<th>Place in Curriculum</th>
<th>Activities</th>
<th>Core Concepts Taught</th>
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</thead>
<tbody>
<tr>
<td>Bray-Hall 2009</td>
<td>Third-year medical students</td>
<td>Clerkship</td>
<td>• Small and large group sessions, role-playing exercises, online learning modules, discharge planning and home visit</td>
<td>• Medication self-management and reconciliation&lt;br&gt;• Patient activation/self-care&lt;br&gt;• Timely follow-up&lt;br&gt;• Identification of “red flags” and how to address them&lt;br&gt;• Geriatrics</td>
</tr>
<tr>
<td>Bradley 2015</td>
<td>Third-year medical students</td>
<td>Clerkship</td>
<td>• Three 60-minute didactic sessions&lt;br&gt;• Home visit</td>
<td>• Patient safety (WHO patient safety curriculum)&lt;br&gt;• Health literacy (AMA Foundation toolkit)&lt;br&gt;• Discharge planning (BOOST)&lt;br&gt;• Geriatrics</td>
</tr>
<tr>
<td>Ouchida 2009</td>
<td>Third-year medical students</td>
<td>Clerkship</td>
<td>• Two 90-minute interdisciplinary didactic sessions</td>
<td>• “Side effects” of poor transitional care&lt;br&gt;• Home care&lt;br&gt;• Community resources&lt;br&gt;• Medicare/Medicaid&lt;br&gt;• Functional assessment&lt;br&gt;• Rehabilitation&lt;br&gt;• Housing options&lt;br&gt;• Discharge summaries</td>
</tr>
<tr>
<td>Lai 2008</td>
<td>Third-year medical students + fourth year pharmacy students</td>
<td>Clerkship</td>
<td>• 60 minute didactic workshop&lt;br&gt;• Discharge planning and home visit</td>
<td>• Roles of various disciplines in discharge care&lt;br&gt;• Patient challenges&lt;br&gt;• Elements of a post-discharge visit</td>
</tr>
<tr>
<td>Balogun 2014</td>
<td>Third-year medical students + fourth-year pharmacy students</td>
<td>Clerkship</td>
<td>• 90-minute didactic workshop</td>
<td>• Roles of various disciplines in discharge care&lt;br&gt;• Interprofessional communication&lt;br&gt;• Best practices for the care of cognitively impaired elderly and their families</td>
</tr>
<tr>
<td>Lee 2013</td>
<td>Internal medicine residency program</td>
<td>Quality improvement project</td>
<td>• Created 40-minute office visits for post-discharge follow up</td>
<td>• Discharge summary/handoff tool&lt;br&gt;• Outpatient visit EHR template&lt;br&gt;• Medication safety&lt;br&gt;• Clinical management during follow up visit (assessment, medication reconciliation, patient education)</td>
</tr>
<tr>
<td>Bischoff 2012</td>
<td>Internal medicine residency program</td>
<td>Quality improvement project with financial incentive</td>
<td>• Half-day best practices seminar&lt;br&gt;• Created discharge summary improvement bundle utilizing EHR/TOC template&lt;br&gt;• Multiple didactic sessions lead by chief residents</td>
<td>• Timeliness of discharge summary completion&lt;br&gt;• Percentage of discharge summaries completed&lt;br&gt;• Quality of discharge summaries</td>
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