Academic Year End Transfer of Care - A Pilot Sign-Out Program in an Ambulatory Residency Continuity Practice

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SETTING AND PARTICIPANTS: The program was piloted in two ambulatory care practices at an academic medical center in New York City at the end of the 2009-2010 academic year. Outgoing residents were eligible for participation if they had an established continuity panel of patients that would be transferred to an incoming intern and if they practiced at one of the two study continuity sites. They were excluded if they were ending the academic year on an away rotation (e.g. international elective) or vacation. All eligible residents were consented to participation. 32 resident-intern pairs participated in the study and were randomized to the pilot transfer of care program ("TOC" group) or the usual no-transfer of care ("NTOC" group).

DESCRIPTION: There were no statistically significant differences in gender, patient panel size or educational track (i.e. categorical, research, primary care) between groups. Two standardized hand-off forms were developed by investigators based on literature review. The "Ten Tasks List" (TTL) was a list of the ten most critical patient care tasks (e.g. medication changes, pending laboratory tests) to be followed up by the intern within the first three months of the year. These tasks were also referenced in patients' medical records. The "Sign-Out Document" (SOD) was a more detailed form addressing the ongoing care of the full patient panel and highlighting medically complex patients. TOC residents were asked to create a TTL, a SOD and to verbally sign out both to their successive interns. NTOC residents were asked to create just a TTL and return it to the investigators only. In addition, residents and interns were surveyed about their respective year-end transition experiences.

NEEDS AND OBJECTIVES: In an effort to prevent medical errors, the Joint Commission on Accreditation of Healthcare Organizations recommended that all healthcare groups implement a standardized approach to communicating patient information during hand-off, or transfer of care (TOC), between providers. Much of the research on TOC has been conducted in the inpatient setting, but few if any studies have been in the ambulatory care setting, particularly in residency continuity practices when new interns inherit the patient panels of graduating residents at the end of the academic year. The objectives of this study were: 1) To develop a standardized TOC program among residents and interns in an ambulatory care continuity practice, 2) To evaluate the impact of this program on patient safety as documented by the completion of specific patient care tasks signed out by the residents to the interns and 3) To evaluate resident perceptions of and feedback on aspects of the program that could be improved.

EVALUATION: There was no difference in the mean number of tasks completed by the two groups (TOC 4.08 +/-1.75, NTOC 5.17 +/-1.40, p=.10). However, TOC interns were less likely to miss follow-up on tasks compared with NTOC interns (17% vs 44%) when seeing continuity panel patients (p=0.04; 95% CI 0.45e”1.84). Over 90% of residents and interns agreed that sign-outs are important to patient safety. 70% of residents and 64% of interns agreed that a standardized ambulatory sign-out process would be useful. Participants identified the following barriers to outpatient TOC: 1) Lack of protected time to create the TTL and SOD, 2) Difficulty succinctly summarizing issues for such large patient panels, and 3) Difficulty coordinating schedules for verbal sign-out. Participants also identified many advantages: 1) Relief of anxiety about complex patients, 2) Identification of patient previously lost to follow-up, and 3) Exchange of contact information for future resident-intern communication.

DISCUSSION/REFLECTION/LESSONS LEARNED: Our study demonstrated that interns participating in a standardized ambulatory sign-out program were less likely to miss following up on important clinical tasks when seeing their patients. This suggests that relying solely on office visit notes for the delineation of patient care is not adequate for inexperienced providers. As one intern commented, "Many patients have complex medical issues, it isn't easy to learn about them in a few minutes before you meet them for a 30 minute visit." The program could be improved by providing residents with protected time to review patient panels, identify medically complex patients, create hand-off documents, meet with interns for verbal sign-out and schedule appointments for those complex patients to meet the new intern early on in the new year. Our results have implications for the importance of standardizing the ambulatory TOC process both for the safety of patients and the satisfaction of medical trainees.
A Novel Approach to Teaching The Management of Diabetic Ketoacidosis Using Virtual Patient Technology

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SETTING AND PARTICIPANTS:
University of Pittsburgh School of Medicine third year medical students are currently completing the diabetic ketoacidosis virtual patient teaching program, including the post-test and survey, during their Adult Internal Medicine Clerkship rotation at University of Pittsburgh Medical Center Presbyterian-Shadyside, Shadyside campus, during the 2010-2011 academic year. Six students per month complete their internal medicine clerkship at this 540-bed teaching hospital under the direction of the Division of General Internal Medicine Teaching Faculty. Using a personal computer with an internet connection, students access the virtual patient teaching program through the University of Pittsburgh Navigator Learning Management System.

DESCRIPTION:
This DKA virtual patient was constructed using authoring software that facilitates the creation of multiple pathways through a simulated case. Students diagnose DKA, manage fluids, electrolytes, and insulin, and transition the patient from IV insulin to SQ insulin. The student acts as a health care professional making diagnostic and therapeutic decisions based on the patient's history and physical examination and ordering and interpreting diagnostic tests. Students immediately see the outcomes of their decisions and make new choices based on those outcomes. During this process, students learn and practice clinical decision making skills and receive learner-specific feedback based on their choices. The VP tracks individual students' pathways through the case and time taken to complete the case, and assigns scores for pathways chosen (path score). All students complete a 10-question case-based single best answer multiple choice post test and a Likert survey.

NEEDS AND OBJECTIVES:
Diabetic ketoacidosis (DKA) is associated with significant morbidity and mortality and its management involves complex decision making. Only a minority of students will encounter a patient with DKA during ward rotations creating an important educational gap. Although students receive lectures on DKA, management and decision making during direct patient care are often suboptimal. The LCME and the Carnegie Foundation report on Reforming Medical Education have both noted the increasing role of simulation in student training. The use of web-based virtual patient (VP) simulation would allow students to learn and practice DKA management skills in a safe environment.

The objectives of the project are: (1) implement a newly created web-based virtual patient simulation to teach the management of DKA; (2) test its effectiveness in teaching DKA-specific clinical decision making (3) assess students' perceptions of the effectiveness of the DKA VP compared to other instructional methods.

EVALUATION:
Project evaluation includes (1) individual scores for paths chosen (path score); (2) time to complete the case; (3) a pretest in a randomly selected subset of the participants and a post test for all participants that assesses DKA-specific decision making skills; (4) a survey assessing students' perceptions of learning experiences. To date, 35 students have completed the VP, post test and survey. The mean pretest score for a subset of students was 34%. The mean post test score for all students was 67%. The mean path score among students was 84 out of a possible score of 100 when all optimal paths were chosen. Mean time spent completing the case was 29.6 minutes (range 12 to 59 minutes). The survey indicated that students perceived increased confidence in managing DKA and felt that the ability to see consequences of their decisions resulted in more effective in learning than with lecture or small group. Students felt that the program was of high educational value.

DISCUSSION/REFLECTION/LESSONS LEARNED:
Using authoring software that facilitates the creation of multiple pathways through a simulated case, it is feasible to construct an interactive web-based virtual patient to teach clinical decision making in a simulated patient with DKA. The case-based single best answer multiple choice quiz was constructed to test clinical decision making and the pre- to post test score changes among students suggests a significant improvement in DKA-specific decision making skills. On the survey, none of the students indicated having managed a patient with DKA. The DKA VP simulation represents one way to help fill this educational gap. Using the methods demonstrated in this project, educators will be able to develop and study future VP's that teach decision making in other complex medical illnesses.