Facilitating Interprofessional Collaboration Through ePortfolio: A Pilot Study

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Each member of the healthcare team has been trained with specific knowledge and skills. Quality patient care is dependent on the collaboration of the various healthcare professionals and their ability to work as a team. In order to be effective, interprofessional collaboration should be included in the academic preparation of each of the various disciplines. If healthcare professionals are trained to perform as interprofessional teams, taking advantage of the skills and knowledge of their teammates, this change can be implemented when these students graduate and enter their chosen profession. In order to promote interprofessional collaboration, the faculty of the health sciences department of an urban university system developed an interprofessional electronic portfolio (ePortfolio) that was used by students in registered nursing, physical therapy assistant, occupational therapy assistant, food and nutrition, and human services programs to serve as an electronic medical record. The goal of this pilot was to create an ePortfolio with tabs for each of the above healthcare disciplines. A case study on a patient with a cerebrovascular accident was created and assignments were developed by the program directors of each discipline. In order for a particular discipline to complete their assignment, the students reviewed the information and findings contained within the tabs of the other four disciplines. The ePortfolio served as an electronic medical record.

Preparing students for the ever-changing healthcare environment is challenging. It has been noted that collaboration among healthcare professionals is the key to positive patient outcomes. Each member of the healthcare team has been trained with specific knowledge and skills. As noted by the Institute of Medicine (IOM, 2003), the best place to initiate interprofessional collaboration is in the academic setting. Healthcare institutions are now being reimbursed based on patient outcomes (James, 2012). Patient outcomes may improve when healthcare professionals are trained to perform as interprofessional teams, taking advantage of the skills and knowledge of their teammates. This approach to clinical practice can be implemented when these students graduate and enter their chosen professions. To accomplish this, faculty members must demonstrate that interdisciplinary approaches to healthcare are the most advantageous for patients and their families. This is demonstrated by working with and treating colleagues in other disciplines with respect for their respective knowledge bases and scopes of practice. Students in each healthcare area should be exposed to all other disciplines during their education and training to help them optimize patient outcomes as a healthcare team.

Literature Review

Interprofessional collaboration, often referred to as interdisciplinary collaboration, has been linked to better communication between the healthcare disciplines, improved patient safety, improved patient satisfaction and most importantly, better patient outcomes (Bahnsen, Braad, Lisby, & Sorensen, 2013; Lamiapi & Jacobs, 2010; Lepzig et al., 2002). The healthcare system is changing, and the effort to decrease length of stay is demanding effective and timely interventions from all healthcare disciplines to ensure optimal patient care (Bahnsen et al., 2013). As clinical practice is becoming increasingly more complex, team based education has become more prevalent. Interprofessional education (IPE) has been used as a strategy to enhance collaboration and communication in the preprofessional academic setting and the post-licensure professional healthcare setting (Neocleous, 2014).

IPE occurs when students learn with and from other students in different healthcare disciplines. Until recently, many pre-professional allied health education programs have been conducted in silos. Nursing, medicine, occupational therapy, physical therapy, social work, and food and nutrition programs generally focus on their discipline specific educational outcomes with a mention of teamwork. A single-discipline approach to patient care may not uncover all the patient care issues that could be revealed through an interprofessional care approach (Moyers, Finch Guthrie, Swan, & Sathe, 2014). Interprofessional education between healthcare disciplines can result in a higher quality of patient care as health professionals learn more about each other’s roles and use teamwork to promote positive patient outcomes (Neocleous, 2014). In a study by Bagatell and Broggi (2014), looking at an interprofessional education module between occupational therapy and physical therapy, it was revealed that students developed an “appreciation of the importance of roles, responsibilities, teamwork, and communication, confronting professional stereotypes and increasing confidence by participating in carefully constructed IPE activities” (p. 3).

IPE encompasses more than simply having students attend the same lectures. Interprofessional
education is successful when carefully planned learning activities promote the development of skills needed for interprofessional practice (Bagatell & Broggi, 2014). These activities can take place in a variety of settings and incorporate a variety of pedagogical strategies. Students need to have experience using multidisciplinary approaches to problems and to practice prioritizing, asking questions, and finding evidenced-based solutions to patient issues (Moyers et al., 2014).

Methods

The students selected for the pilot study were a sample of convenience based on their relationships with their respective program faculty. This pilot study of an innovative classroom assignment used ePortfolio technology to approximate an EMR as well as accommodate student reflections as part of their learning experience. The ePortfolio system used at LaGuardia Community College and for this project is Digication. The Digication platform is a user-friendly, online ePortfolio that allowed students and faculty from other disciplines to share and archive their academic work and reflections (see Figure 1).

The use of ePortfolios in health science programs has become an efficient method for documenting and evaluating student learning and program outcomes (Cangelosi, 2008; Chan 2012). The ePortfolio provides the student with a vehicle that can present a compilation of their work, provide an opportunity for reflection and demonstrate clinical competence (Chan, 2012; Karsten, 2012). The advantages of an ePortfolio include the freedom of network and mobile access, increased security, data storage and backup, the ability to add digital data and multimedia artifacts, and the ability to hyperlink items to link conceptually theory and practice elements (Garrett, McPhee, & Jackson, 2013). The ePortfolio has been used in medicine, dentistry, nursing, and other health professions (Bashook, Gelula, Joshi, & Sandlow, 2008; Sandars & Murray, 2009). However, there is a paucity of information in the literature demonstrating how the ePortfolio can be used to promote interprofessional collaboration among health science programs. (Peacock, Murray, Scott, & Kelly, 2011; Peacock, Scott, Murray, 2012) As a result, the members of the health science department in a large urban community college developed an ePortfolio to facilitate interprofessional collaboration.

In order to promote interprofessional collaboration, the faculty of the health sciences department of an urban university system developed an interprofessional ePortfolio that was used by students in the registered nursing (RN), physical therapy assistant, occupational therapy assistant, food and nutrition, and human services programs to serve as an electronic medical record (EMR). This pilot included two students from each discipline. The goal of this pilot was to create an ePortfolio with tabs for each of the above healthcare disciplines. A scenario of a simulated patient named Anna with a cerebrovascular accident (CVA) was created and assignments were developed by the program directors of each discipline. In order for a particular discipline to complete an assignment, students would have to review the information and findings that would be contained within the tabs of the other four disciplines (see Appendix). In this way, the ePortfolio served as an EMR.

The students and faculty from each program (registered nursing, physical therapy assistant, occupational therapy assistant, food and nutrition, human services) met at an orientation meeting to review the patient scenario. The patient scenario was introduced and each discipline had the opportunity to ask questions, clarify, and discuss the data, as it related to the care of “Anna” and her family. Information about the relationship between interprofessional collaboration and improved patient outcomes in the healthcare setting was presented. The students were introduced to the customized ePortfolio that was going to serve as the EMR. This ePortfolio provided students with access to the other disciplines’ information as it pertained to Anna and her family. Faculty mentors supplied appropriate documents, history and physical forms, assessment documents, teaching plans, and discharge summaries, which were uploaded into the ePortfolio using Google Docs so that the students could view each other’s work in real time. Google Docs is a word processor, a free web-based software offered by Google within its Google Drive service. Google Docs offered the students the opportunity to create and edit documents online while collaborating simultaneously with other users.

For the next two meetings, the students worked with their partners and with students from the other disciplines to complete their assignments. Faculty members were present to provide guidance and answer questions.

Results

The nursing students completed a comprehensive history and physical, along with a teaching plan and discharge summary. The RN students accessed the other disciplines’ tabs to gather information about activity restrictions, ability of the patient to complete activities of daily living (ADL), specific diet restrictions, and services needed upon discharge.

Students in the occupational therapy assistant (OTA) program had a unique opportunity to explore not only their own roles as part of an interprofessional healthcare team, but also the experience of
collaborating with the occupational therapist (OT) in the process of the evaluation and treatment of clients in the clinical setting. The scope or practice of an OTA is directed by a treatment plan developed by a licensed occupational therapist (New York State Department of Education, 2015a). The OT faculty member provided the evaluation, long and short-term goals, and the plan of care for occupational therapy services. Once the evaluation was entered into the ePortfolio, the faculty and students met to formalize the treatment objectives and plan.

Similar to OTAs, physical therapy assistants’ (PTAs) scope of practice does not allow for evaluation, testing, interpretation, planning, or modification of patient programs. Physical therapists (PT) and PTAs work together collaboratively to provide care to the patients in clinical settings, as well as outpatient facilities (New York State Department of Education, 2015b). Following a comprehensive physical therapy evaluation with a plan of care, including goals and interventions established by the physical therapist, the PTAs contributed to the plan of care and completed PTA notes in the ePortfolio chart that would inform other disciplines of Anna’s plan of care. The OTA students worked closely with PTA students to devise strategies for transfers and functional mobility.

Interprofessional collaboration between the dietetic technicians, registered (DTR), and other members of the healthcare team is woven throughout the four steps of the Nutrition Care Process (NCP). To obtain this information in an acute-care setting, the DTR reads assessments and notes written by the other disciplines in the EMR and consults with them individually and/or during interdisciplinary meetings. Utilizing the ePortfolio as an EMR simulates this experience in the academic setting. The dietetic technician program (DTP) students approached this case as a DTR would begin a comprehensive nutrition assessment—by reviewing the patient’s medical record, which in this project was presented in the case study page within the ePortfolio—and documenting pertinent information on the nutrition assessment form.

The human services students were familiar with using the ePortfolio for self-reflection and as a self-
evaluation tool. While their course simulations acknowledged the collaboration with other members of the healthcare team, there was no interaction among team members. Therefore, the human services students did not know the specific interventions of nursing, physical therapy, occupational therapy, and nutrition for a patient post-stroke. Initially, the human services students felt their lack of specific medical training made it difficult for them to contribute to the care of the patient. The chart notes of their fellow students uploaded into our ePortfolio based electronic medical chart exposed the students to technical terms and data they had never seen before. The human services students understood their role as helping Anna’s voice be heard within a highly complex and unfamiliar situation. Within these discussions, the other allied health students educated the human services/social work students about the technical chart information and their plan of care and, in turn, the human services student educated the patient care disciplines about the challenges of discharge planning involving a patient who is part of a language minority and has few financial resources. The result was a comprehensive discharge plan that addressed Anna’s medication, dietary, and rehabilitation needs.

Discussion

The ePortfolio computer lab became a simulated nurses’ station, in which each professional group charted their activities but also engaged in numerous informal discussions regarding the patient’s care. Informal communication between the members of the healthcare team was essential for connecting the various professional interventions that resulted in comprehensive care for Anna and her family. While the ePortfolio acted as the EMR, the various discussions in the simulated nurses’ station enabled joint planning. Upper and lower extremity range of motion and muscle strength were verified between OTA and PTA students to ensure consistency for selection of treatment methods to support bed to chair and wheelchair to toilet/tub transfers. The OTA students provided education about the patient's visual field deficit and what compensatory strategies to employ during ambulatory tasks to ensure safety. Co-treatment sessions were devised so that the OTA and PTA could work together to reinforce the rehabilitation process.

In most hospitals, communication between dietetics and nursing begins with a patient’s initial screening, which is completed by the nursing staff upon the patient’s admission. The latter screening includes a section for food and nutrition triggers that, if present, place a patient at high risk for malnutrition, requiring a dietetic consult and initiation of a comprehensive nutrition assessment and the NCP. The comprehensive nutrition assessment involves far more than calculating a patient’s nutrient requirements to support their physiological needs. It requires gathering data about the patient’s status in a variety of areas, including but not limited to his/her physical mobility, cognitive status, ability to self-feed, chewing and swallowing function, social support and living conditions—anything that affects his/her ability to be educated, and to access, prepare, store, and consume food adequately and safely. Therefore, communication between the DTRs, nurses, occupational therapy assistants, physical therapy assistants, and the human service worker is essential.

Interprofessional communication can positively affect family education. For example, in Anna’s situation the social workers coordinated meetings between the various disciplines and Anna’s social support network. In this way, the social work note in the ePortfolio entry became a touchstone guiding the healthcare team to focus on Anna’s social support resources (her husband, son, friends, and faith community), as well as focusing on ways to address her lack of medical insurance and financial resources through her faith community and community based social services.

Summary

As this was a pilot study of an innovative classroom activity, more study is required as it is implemented on a larger scale. Because the participating students were a sample of convenience, it is difficult to generalize from their experience to the general student population. In addition, in order to engage in successful IPE, institutional barriers in higher education must be addressed. Institutional barriers include faculty workload, classrooms that can accommodate large numbers of students, and discipline specific curricula that must be covered (Neocleous, 2014). By collaborating, interprofessional faculty develop working partnerships with other professionals, to the benefit of the students. Workload, scheduling, and the location of activities can be managed if faculty support IPE. In addition, accrediting agencies are now requiring evidence of interprofessional education within allied health programs as a criterion for accreditation (American Credentialing for the Education of Nurses, 2013).

The ePortfolio demonstrates the unification of healthcare planning for Anna and her family and highlights the students’ sophistication within their area of expertise. This pilot study suggests that the use of the ePortfolio as an EMR with health sciences students in the academic setting facilitates interprofessional collaboration. Students engaged with one another with the common goal of providing Anna and her family with the best care possible. This pilot provided a creative mechanism to teach and demonstrate the
importance of interprofessional communication. The next stage of this study focuses on the impact of using the ePortfolio as an EMR in a larger classroom setting. The nursing, OTA, PTA, food and nutrition, and human services programs will be implementing interprofessional assignments using ePortfolio as part of their capstone projects for students in their last semester before graduation.

References


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Author’s Note

This pilot study did not require IRB approval, as the pilot was a study of the process of using the ePortfolio as an electronic medical record within a classroom setting. The aggregate student responses to participation in this pilot study were obtained and presented. Individual student responses were not documented in any presentation or publication.
Appendix

Case Study: Simulated Patient “Anna”

**Cardio Vascular Accident (CVA) Case Study**

“Facilitating Interdisciplinary Collaboration through ePortfolio”

**Client:** Mrs. Anna Lopez

**Height:** 63”

**Weight:** 175 lbs

**Gender:** Female

**Age:** 65

**Setting:** The Community Hospital of Queens

**Ethnicity:** Hispanic

**Religion:** Catholic

**Legal:** No advance directives

**Past Medical History:**

Hypertension x 10 years

Diabetes Type II x 4 years

**Reason for hospitalization:** r/o CVA

**Coexisting Conditions:**

Hemiplegia

Aphasia

Aphagia

Right side visual field cut (Hemianopsia)

Short term memory loss

**Medications:**

Lasix 40 mg by mouth per day

Toprol XL 25 mg by mouth one time a day

Metformin 500 mg by mouth two times a day

Lantus insulin 10 units sub cutaneous every night

Heparin 5,000 units intravenously two times a day

**Communication:**

Primary language: Spanish

Speaks and understands some English.

**Socioeconomic:**

Mrs. Anna Lopez is a 65-year-old woman. She has been married to Paulo Lopez for the past 40 years. Anna left her native country of Honduras 20 years ago with her husband Paulo and son Raul. They are undocumented. Anna and Paulo live in a small one bedroom second floor walk-up apartment in Woodside New York.

Anna recently lost her job as a cashier in the local grocery store due to the store closing. Paulo has worked as a short order cook in a restaurant in Manhattan for the past 19 years. He makes a decent living but does not receive medical benefits and is ineligible for Medicaid. Financially, they are experiencing some difficulties since Anna lost her job.
as a cashier three months ago. Their son Raul is 30 years old. He is married with a two year old daughter. He and his family live in Miami Florida.

Mr. Lopez reports the following diet history: “low-salt diet” and “no sugar”; typical daily intake of:
- Breakfast—“bowl” of Cheerios with 1 banana & whole milk; coffee with milk & Equal
- Snack—“lite” Greek yogurt with fruit
- Lunch—tortillas with meat or chicken and salad; water
- Dinner—meat, rice & beans, some kind of vegetable; water
- Snack—sugar-free ice cream or cookies; coffee with milk & Equal

Due to financial limitations, they often use canned and pre-packaged foods.

He reports that she doesn’t check blood sugar regularly—“occasionally” in the morning, but she doesn’t write it down. As far as he knows, she has had limited prior nutrition education; only when discharged from the hospital when first diagnosed with DM. He thinks she had a follow-up appointment with the Dietitian at the outpatient clinic, but didn’t go.

Client Profile
One week ago, Anna Lopez woke up feeling dizzy. Thinking it was because she had not had her breakfast yet or a side effect of her heart medication. Anna prepared herself a bowl of cereal and fruit and sat on the couch to eat her breakfast and watch the local news. Suddenly she developed a pain in her head that made her scream out for help. Frightened, she called her husband telling him what happened. Concerned, Paulo asked his boss if he could leave early so he could go home and take his wife to the doctor. He arrived home one hour later to discover his wife sitting on the floor looking dazed and confused. She vomited and was wet with urine. Rushing to her side, he asked her if she was all right. She asked him what happened and where she was – she appeared not to recognize him. Paulo immediately called 911.

Concerned Mrs. Lopez was having a CVA, the paramedics transported her to the Community Hospital of Queens. Mrs. Lopez arrived in the ED at 11:00 a.m. She is alert but confused. She is able to state her name but does not know where she is, the date or the time. Her speech is slurred and the right side of her face and right arm and leg are flaccid. She presents with right side neglect with impaired sensation on the right side. According to the husband, Mrs. Lopez is right hand dominant. Vital signs are measured B/P 190/102, HR 100, RR 26, Temp 99, O2 SAT 95% on room air.

The healthcare team initiates a stroke protocol. A computerized tomography (CT) scan shows a large ischemic infarction. Mrs. Lopez is not a candidate for tPA therapy. She is treated with intravenous (IV) heparin. A carotid venous study is negative for carotid stenosis.

It has been one week since her admission to the hospital. Mrs. Lopez continues to have right-sided hemiplegia and is unable to walk. She reports no pain at this time but requires assistance for all bed mobility and transfers. She is having difficulty maintaining her sitting balance. She is unable to stand at this time. Her swallowing and speech are impaired and needs assistance in feeding and toileting. Current diet order “Low sodium, diabetic diet—Mechanical Soft with nectar thick liquids” S/P SLP consult—beside swallow evaluation completed; Barium swallow test scheduled. Active ROM in her right UE is impaired throughout with minimal movement in the shoulder in all planes. Elbow movement and grasp are absent. She requires assistance in dressing, grooming, and bathing. She is able to follow one step commands consistently with physical cues.

Delegation/Collaboration With:
Registered Nursing (RN)
Physical Therapy Assistant (PTA)
Occupational Therapy Assistant (OTA)
Food and Nutrition
Human Services