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# The Rockcastle Project: A Case Study of Interprofessional Clinical Education and Practice in a Rural Medical Center

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### ABSTRACT

**Purpose:** The purpose of this pilot project was to provide an interprofessional, evidence-based learning experience for students in three disciplines during a four-week period in a rural hospital. **Methods:** This project is described as a case study and included students and faculty from two universities, personnel from an Area Health Education Center, and hospital practitioners in three health care disciplines. Project planners designed and carried out an interprofessional clinical course, which included one student in each of three disciplines: occupational therapy, physical therapy and communication sciences and disorders. Planning included establishing a course description, objectives, course requirements, and outcome measures. **Results:** During a four week period, the students met regularly, performed a patient examination together, and presented results of the examination in the form of a plan of care, mentored by supervisors in corresponding disciplines. The Interdisciplinary Education Perception Scale (IEPS) was completed by students prior to and at the conclusion of the four weeks to assess attitudes toward interprofessional education. Scores on the IEPS increased for all three students and an overall increase of positive perceptions of the other disciplines was noted. **Conclusion:** Opportunities such as the Rockcastle Project foster university, clinical, and organizational partnerships within rural communities and promote interprofessional teamwork.

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### INTRODUCTION

Graduates of allied health educational programs are expected to enter the workforce prepared to work as part of an interprofessional team. In rural health care settings, working as a team is vital due to additional challenges related to geographic isolation, limited access to medical care, and decreased socioeconomic status.<sup>1-3</sup> However, formal training to adequately prepare students for interprofessional clinical collaboration is limited in some educational programs, and new allied health professionals may begin their careers without interacting clinically with another discipline.<sup>4</sup> Students may have limited knowledge about the roles, scopes of practice, philosophies, or even professional language used by the other disciplines, which consequently may lead to significant barriers to successful interprofessional collaboration. To address these concerns, some academic programs are partnering with rural medical centers to construct clinical educational experiences specifically designed to familiarize students with other disciplines and to teach the teamwork skills necessary for practice in a rural setting. A pilot clinical training experience, dubbed the Rockcastle Project, was created to provide an interprofessional, evidence-based learning practicum for students from three disciplines (occupational therapy, physical therapy, and communication disorders) during a four week period in a rural medical center. This clinical experience involved collaboration among clinical administrators from three health care disciplines,

students and faculty from two universities, and representatives of an Area Health Education Center (AHEC) who planned one of the educational experiences.

### **INTERPROFESSIONAL EDUCATION**

Interprofessional education, believed to be a catalyst for successful interprofessional clinical practice, is promoted by agencies worldwide.<sup>5-7</sup> In response, some allied health academic programs are expanding their curricula to include knowledge and skills related to interprofessional teamwork and practice environments that foster clinicians who value and practice interprofessional care.<sup>8-10</sup> For example, Ponzer et al described developing a two-week interprofessional clinical course on an orthopedic ward, with students reporting an increased understanding of their own roles as well as the roles of the other disciplines at the end of the course.<sup>11</sup> Opportunities for students to engage in interprofessional teamwork during coursework ideally result in improved interprofessional clinical practice.

Although interprofessional education is typically a valued educational strategy, much of the evidence supporting its efficacy is anecdotal and descriptive in nature.<sup>4,12-15</sup> Creating and sustaining these interprofessional experiences is challenging because of barriers such as scheduling students at similar times from different academic programs. Research regarding interprofessional education, or more specifically, the relationship between interprofessional education and practice, is needed to guide academic curricula and improve practice.<sup>5</sup> Previous studies imply, however, that this relationship must be made explicit to students while they are still in training. For example, Arndt et al describes socializing allied health students toward other disciplines to help build professional identity and to aid students in understanding the role and function of the other disciplines on the team.<sup>16</sup> Based on their research, they advocate specifically including interprofessional educational experiences during student training. Others, including allied health graduates themselves, agree that a clear connection between interprofessional education and practice is essential. A survey of practicing physical and occupational therapists in Ontario found that 50% felt they did not receive enough interprofessional education while in school.<sup>17</sup> When asked where interprofessional education should occur, 65% of these respondents suggested clinical placements over the classroom. Teaching interprofessional collaboration within clinical training experiences may allow students real-life opportunities to identify barriers, problem solve solutions, and practice the necessary skills to work as part of an interprofessional team.

### **RURAL INTERPROFESSIONAL EDUCATION**

Authentic interprofessional collaborative experiences are essential for allied health students training in rural health care settings. Medical centers in rural communities face challenges unique from those in urban areas. Patients may have to travel large distances to access quality medical care, mandating their time at a medical center be used as efficiently and resourcefully as possible.<sup>1-3</sup> The health care team must have excellent communication to facilitate comprehensive client care, maximizing time with the patient. Students at rural sites benefit from witnessing the effects of the collaborative process; however, there are few examples of interprofessional clinical educational experiences in rural medical settings. The Interprofessional Rural Program of British Columbia provides interprofessional student teams with clinical practice experiences in rural communities.<sup>18</sup> Medves et al describes an interprofessional course preparing allied health students from six disciplines to work in rural communities.<sup>19</sup> The eight week didactic course included a two day field experience in the rural community. Mu et al report a multi-disciplinary training grant that allowed students to provide interprofessional health care services on a rural Native American Indian reservation.<sup>20</sup> Student perceptions of the experiences were captured using the Interdisciplinary Education Perception Scale (IEPS), and findings showed an increase in positive perceptions of interprofessional practice after the experience. Finally, an example of rural interprofessional education came from West Virginia when the state instituted a state-wide community-based program to address a shortage of health care professionals, particularly in rural areas. The program requires allied health students from ten disciplines to participate in a three month rural clinical experience and to engage in interdisciplinary seminars.<sup>21</sup> Students receive support from AHEC. Data from the project shows participating in rural practice increases interest, but outcomes on interprofessional practice were not collected. Based on this research, it may be that students engaging in interprofessional training at a rural medical setting are more likely to return to the rural community upon graduation, and may already have a jump start on the needed skills for successful interprofessional teamwork.

Clinical experiences linking interprofessional coursework with practice are valuable in preparing allied health students to work as part of a team. However, these types of experiences are limited, particularly in rural medical settings where the need for interprofessional teamwork is critical. This paper describes the Rockcastle Project, a pilot of an innovative clinical experience in a rural medical center emphasizing interprofessional collaboration between students from three disciplines (occupational therapy, physical therapy, and communication disorders). The project was generated through a collaborative, interprofessional, and inter-institutional process.

## **DESCRIPTION OF THE PROJECT**

### **Project Setting**

The setting for this pilot interprofessional clinical experience was Rockcastle Regional Hospital and Respiratory Care Center [Rockcastle], a medical center located in rural central Kentucky. The medical center offers a full spectrum of services across the lifespan including inpatient and outpatient rehabilitation, home health, and specialized services including long term care for clients who are ventilator dependent, work rehabilitation, cardiac care, and oncology. In an effort to deliver an advanced level of care, the medical center has an ongoing partnership with the University of Kentucky HealthCare, which in turn fosters allied health student placements in clinical rotations at the facility.

### **Project Planners**

The Rockcastle Project was conceptualized by a core group of stakeholders. From Rockcastle, the key participants were the directors of the Occupational Therapy, Physical Therapy, and Speech Pathology Departments. All three individuals held dual roles in the hospital as administrators and student clinical supervisors. All three were actively involved in designing the interprofessional clinical experience, as well as serving as direct clinical supervisors to the students who participated. Additionally, the culture at Rockcastle was extremely supportive of interprofessional practice, and as a result, they were more than capable of modeling excellent interprofessional collaboration for the students.

Faculty participants came from two universities, both within an hour drive of the medical center. Academic and clinical faculty from the University of Kentucky's Doctor of Physical Therapy program and the Master's of Communication Sciences and Disorders program, and from Eastern Kentucky University's Master's of Occupational Therapy program, were involved in designing the experience as well as scheduling and supervising the students' clinical training. The two universities have an established partnership, based on long term participation in a collaborative, interprofessional Doctorate of Rehabilitation Science program. Additionally, both had long standing relationships with Rockcastle based on routine student placement at the hospital for fieldwork experiences in all three disciplines.

Finally, representatives from AHEC were instrumental in planning the experience and providing support to the students. The overarching goal of AHEC is to improve the recruitment, distribution, and retention of health care professionals in medically underserved areas, through the connection of academic health education programs with these underserved communities. AHEC representatives viewed this unique university/community partnership as an opportunity to bring together educators, community practitioners, health institutions, and agencies along with health professions students in a program designed to improve health care services. In this project, AHEC representatives were involved in all phases of planning and specifically designed an educational experience for the students to visit local elementary schools to provide education about their disciplines.

### **Student Participation**

Three students (one from each of the three disciplines) were recruited by their respective clinical educators to participate in the Rockcastle Project. Students were selected based on their interest in working at this clinical site as well as participating in an interprofessional fieldwork. These students were each at different points in their education, but all were prepared to begin a clinical experience in the spring of 2009. The physical therapy student began participating during his fifth semester of nine, and this was his first full time clinical course. The occupational therapy student was in the second and final year of her program, and she participated in the project during the first four weeks of her first Level 2 fieldwork. The communication disorders student was in her final clinical experience, nearing graduation.

Given the differences between the length and format of each discipline's required clinical experiences, determining a block of time to accommodate all of the students was challenging. The students began the four week clinical experience together, but ended at different times in order to meet the academic requirements of their discipline. The physical therapy student's experience was only four weeks, while the occupational therapy and communication disorders students stayed at Rockcastle for three months. These differences were the main impetus for designing a four week interprofessional clinical experience.

### **Project Design**

Project planners began to design the interprofessional clinical experience in the spring of 2008. The core work group met every few months to identify dates during which students from all three disciplines would be present; establish a course description, objectives and requirements; discuss teaching strategies; and plan evaluation and grading. Meeting locations alternated between Eastern Kentucky University, which was the most central location for all participants, and Rockcastle. In the fall of 2008, the planning group worked to refine the objectives, plan a weekly schedule of interprofessional activities, prepare syllabi, and choose an outcome measure.

### Project Outcome Measures

All three students completed the Interdisciplinary Education Perception Scale (IEPS), an 18 item scale assessing student attitudes toward other professions.<sup>22</sup> Using a six point Likert Scale (6=strongly agree; 1=strongly disagree), students indicate responses to statements such as "Individuals in my profession are well trained," and "Individuals in my profession are able to work closely with individuals in other professions." The IEPS was selected based on its relevance and convenience as a pre/post measure of change in student attitudes, and evidence of reliability (Cronbach's alpha = 0.87) and construct validity (as verified by the four orthogonal component factors underlying each of the 18 items).<sup>22</sup> Multiple other authors have reported on IEPS reliability, validity, and normative data.<sup>23-26</sup> The IEPS was the only outcome measure given to all three students. Individually, each student was assessed by their disciplinary supervisor using an outcome measure specified by their respective profession. For example, the occupational therapy student was assessed using the Fieldwork Performance Evaluation form, which is mandated by the Accreditation Council for Occupational Therapy Education.

### Project Objectives and Student Learning Outcomes

The project objectives and student learning outcomes were based in large part on the interprofessional outcomes described by Oandasan and Reeves, as amended from Barr.<sup>7,27</sup> The objectives were further modified by project planners to include evidence-based health care and to focus specifically on issues related to this interprofessional experience (see Table 1).

**Table 1. Rockcastle Project Objectives and Student Learning Outcomes**

Project Objectives	Student Learning Outcomes
<p>The goals of this project were to:</p> <ul style="list-style-type: none"> <li>• Provide an interprofessional, evidence-based learning experience for students for up to three disciplines.</li> <li>• Develop a clinical learning environment that enhances and enables interprofessional education and practice.</li> <li>• Develop learning resources at Rockcastle to help students learn how to work together on an interprofessional team.</li> <li>• Highlight the unique contributions of each profession and the areas of shared decision-making in the provision of evidence-based health care.</li> <li>• Increase respect and knowledge of roles, contributions and expertise of various health care professionals in the delivery of health care services to clients.</li> <li>• Increase knowledge and understanding of the importance of interprofessional collaboration and communication.</li> <li>• Improve skills in building interprofessional relationships to maximize team function.</li> <li>• Share students' experiences with other health care and educational professionals, including benefits and challenges.</li> </ul>	<p>At the end of this learning experience, students should be able to:</p> <ul style="list-style-type: none"> <li>• Describe their roles and responsibilities clearly to other professions.</li> <li>• Recognize and respect the roles, responsibilities and competence of other professions in relation to their own.</li> <li>• Work with other professions to effect change and resolve conflict in the provision of care and treatment.</li> <li>• Work with others to assess, plan, provide and review care for individual patients.</li> <li>• Tolerate differences, misunderstandings and shortcomings in other professions.</li> <li>• Participate appropriately in and facilitate interprofessional case conferences, team meetings, etc.</li> <li>• Enter into interdependent relationships with other professions.</li> </ul>

*Based on Oandasan and Reeves, as amended from Barr (1998)<sup>7,27</sup>*

### Required Student Activities

The project began with an orientation session, which took place at Rockcastle on the students' first day of the clinical experience. The orientation was facilitated by an Eastern Kentucky University faculty member with expertise in interprofessional education and was attended by all three students as well as their Rockcastle clinical supervisors. The students were asked to read two articles prior to starting the fieldwork that were selected to give the students a basic understanding of the terms and issues related to interprofessional education and practice.<sup>5,12</sup> The orientation began with an overview of the people and organizations involved in planning the project, in order to help the students better understand their role and position within the larger goals of

the project. The students then reviewed the syllabus and the checklist of activities they would be required to complete. The IEPS was administered as a pre-test. Next, students engaged in activities designed to generate discussion about their preconceived conceptions of the other disciplines. The students were asked to define each discipline, including their own, and then share their definition with the other students and supervisors. This led to discussion about roles and scope of practice, and allowed the clinical supervisors to express their ideas about interprofessional practice. Other activities and discussions focused on the barriers and facilitators to interprofessional practice, and the climate of interprofessional practice at Rockcastle.

The four week program included weekly interprofessional learning activities. Week one focused on orientation activities and students were also required to observe an interprofessional examination of a patient. During week two, the students participated as a team in an interprofessional examination of a person on the long term care unit and worked together to evaluate the findings and to develop an interprofessional plan of care. They went on to present the plan of care at a rehabilitation team meeting. In week three, the students participated in a community education activity, facilitated by AHEC, which required them to work as a team and educate others about their role on the health care team. Throughout the entire experience, the students practiced evidence-based patient care by locating professional literature and having weekly discussions as a team and with experienced clinicians. Students were also given a checklist of activities to complete individually during the four week period. These activities were designed to ensure that students observed or participated in aspects of care provided by all three of the disciplines at Rockcastle (see Table 2 for examples of activities). The project planners selected these activities based on current interprofessional practice at Rockcastle. The clinical supervisors were responsible for adapting the activities as necessary based on student performance, as well as analyzing their performance to determine if objectives were met.

**Table 2. Examples of Required Individual Student Activities**

The student will observe the following:	<ul style="list-style-type: none"> <li>a. Modified barium swallow study</li> <li>b. Client using an alternative communication system</li> <li>c. Client using a speaking valve</li> <li>d. A work screen of one client</li> <li>e. Discipline specific evaluations</li> </ul>
The student will actively participate in the following meetings:	<ul style="list-style-type: none"> <li>a. Care plan</li> <li>b. Rehabilitation staff</li> <li>c. Discharge Planning</li> </ul>
The student will observe the following therapy sessions:	<ul style="list-style-type: none"> <li>a. Occupational Therapy</li> <li>b. Physical Therapy</li> <li>c. Speech Pathology</li> <li>d. Co-treatment between PT and OT</li> <li>e. Co-treatment between OT and Speech</li> </ul>
The student will interact and communicate effectively with the following disciplines regarding a client on his/her caseload:	<ul style="list-style-type: none"> <li>a. Physician</li> <li>b. Nurse</li> <li>c. Pharmacist</li> <li>d. Radiologist</li> <li>e. Social Worker</li> <li>f. Discharge Planner</li> <li>g. Respiratory Therapist</li> </ul>

### PROJECT OUTCOMES

Use of the IEPS was intended purely as an outcome measure of individual change in student attitudes relative to this education experience. Each student completed the IEPS at the start and conclusion of the four weeks. Total mean scores on the 18-item IEPS increased from pre-test ( $M=4.72$ ;  $SD_{\pm}.34$ ) to post-test ( $M= 5.3$ ;  $SD_{\pm}.45$ ) for all three students by the end of the experience; however, the sample size of three prevents statistical comparisons by discipline. Despite the short term of this project relative to the students' overall educational program, it appears the time was sufficient to modify students' perceptions of interprofessional education. In examining individual items of the IEPS, it was noted that while each of the three students began the interprofessional experience with positive perceptions of their own discipline, there was an overall increase of positive perceptions of the other disciplines by the end of the experience.

In addition to the IEPS, qualitative feedback was solicited from the Rockcastle clinical supervisors and the students. The clinical supervisors stated that the students seemed initially overwhelmed by perceptions of the added interprofessional assignments,

such as the community education activity in week three, but ultimately successfully managed the workload. However, it was recommended the checklist of mandatory interprofessional requirements be pared down, with some activities deemed optional in order to successfully accomplish all during a four-week course. All three students reported to their clinical faculty that they enjoyed the experience and felt they had increased their knowledge of interprofessional practice, including their understanding of the roles of the other disciplines. The project planners met as a group after the students had completed their clinical experiences and determined that all project objectives and student learning outcomes had been met, and that overall the pilot project was successful.

## **DISCUSSION**

In this month long pilot project, three students from three allied health disciplines participated in an interprofessional clinical training experience. Through the use of pre-selected activities, the educational objectives were met. Allied health educational programs rely on clinical partners to assist with student integration of classroom knowledge and clinical application, and this collaborative relationship may be equally beneficial to the other stakeholders. For example, the Rockcastle project increased the students' awareness of community resources essential to rural health care which may have increased the potential for the students to return to the area for employment after graduation -- an outcome which was constructive for both Rockcastle and AHEC. In rural health care facilities, interprofessional clinical training is one method to increase student comfort with rural health care practice and to encourage students return to rural areas after graduation.<sup>21</sup> For the students, this project enabled them to view consistent examples of interprofessional teamwork, with close mentoring from their clinical supervisors and opportunities to openly and consciously discuss interprofessional issues. The students practiced interprofessional team skills, articulated their own scope of practice, learned the roles of other professions, and communicated with other health care professionals. This exposure to excellence in clinical teamwork may lead the students toward greater interprofessional collaboration themselves.<sup>5</sup>

The existence of a fully functioning interprofessional rehabilitation team committed both to excellence in care and clinical teaching at Rockcastle was a driving force for the success of this project. In particular, the long-standing relationships between the multiple partners made the conceptualization, planning, and implementation of the project manageable within the available academic, agency, and clinical resources. Additionally, the core work group who planned the experience was key to organizing and maintaining momentum during the nine-month planning process. This collaborative partnership enabled the innovative project to evolve successfully. However, interprofessional, multi-agency projects are not without challenges. Having several university programs' faculty involved led to ongoing, collegial discussions of authorship, decisions on presentation venues, and publication submission throughout the planning process. The involvement of multiple programs made student scheduling more challenging and resulted in inclusion of students who were at different stages in their educational and clinical preparation.

## **LIMITATIONS**

This pilot project had only three participants. Although an outcome measure was used, the small number of participants significantly limited statistical analysis, and consequently also limited the conclusions that can be drawn from the findings.

## **FUTURE PLANS**

The time invested in planning and implementing the project was substantial, but resulted in an interprofessional framework that can be continued at Rockcastle and replicated elsewhere. Accordingly, a second interprofessional clinical experience was begun at Rockcastle in the spring of 2010, although only two students were available to participate during this four week session. However, there are plans to expand the number of participating disciplines to include medical and physician assistant students, as scheduling allows. To increase the quality time spent with the other disciplines, AHEC is exploring shared housing options for participating students. In order to expose more students to the interprofessional experience, use of a technology system that allows linking of university classrooms is being considered, where students in the clinic could demonstrate interprofessional examination to those in the classroom. In addition, a second hospital in the state is currently working with members of the original core work group to replicate the project. Finally, the learning outcomes may be revised to be more measurable.

## **CONCLUSION**

Interprofessional clinical education and practice may provide a vehicle for students to grow professionally, while at the same time appreciate the valuable roles of their colleagues. Opportunities such as the Rockcastle Project foster university, clinical, and organizational partnerships within rural communities and promote interprofessional teamwork. Given the unique needs of health care in rural settings, advanced interprofessional clinical training is useful in adequately preparing allied health graduates for clinical practice. Students may be more likely to enter practice with a working knowledge of the roles, scopes of practice, philosophies, and professional language used by the other disciplines, which may improve interprofessional collaboration and client care.

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