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Improvement in interprofessional student learning and patient outcomes

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ABSTRACT

Background: Traditional health professions training programs are seeking ways to provide experiential clinical interprofessional teamwork needed for providing population care management consistent with the Patient-Centered Medical Home (PCMH) model.
Purpose: Interprofessional faculty developed a longitudinal care management program for patients with uncontrolled diabetes, designed to provide interprofessional teamwork learning opportunities and improved patient care delivery.
Methods: Health professional learners participated in a longitudinal ambulatory outpatient diabetes care management program. In a quasi-experimental design, control and participating learners completed pre and post self-assessments of both teamwork skills and attitude. Control and participating patients completed a patient perception survey.
Discussion: Teamwork skills, as self-assessed by participating learners, significantly improved. Patient satisfaction scores significantly improved for participating patients; select patients demonstrated better diabetes control, smoking cessation, and lifestyle changes.
Conclusions: Linking learning and care delivery in an interprofessional longitudinal ambulatory care management program positively impacted patient satisfaction and learner teamwork skills.

1. Introduction

Louisiana ranks 50th in America's health rankings and has the highest diabetes related death rate in the nation; enhanced care management could reduce that percentage.[1,2] Primary care is an essential component to delivering appropriately coordinated health care. New health care delivery models, including care management as part of the Patient-Centered Medical Home (PCMH), are evolving to meet the "triple aim of improved patient experience, improved health care, and lower costs."[3] Despite the recognition of the PCMH as a valuable model of care, educators are challenged with preparing health professional learners with skills needed to practice as interprofessional teams in a PCMH.[4,1]

Longitudinal care management is a helpful strategy for improving care and reducing cost for high risk patients; payment methodology has recently begun to reward care management services.[5] Health professions schools have been slow to provide clinical experiences that facilitate longitudinal patient or interprofessional learner relationships. Health professions schools typically provide educational rotational "block" experiences not coordinated with learners from other disciplines.

A number of educational programs have been initiated for *medical residents* to learn about care management and medical home principles.[6,7] However, fewer learning experiences exist that are aimed at *student* learning of medical home principles.[8,9] Saultz and others discovered that family medicine clerkship training sites had incorporated different degrees of the PCMH into practice, but their survey did not address whether or how students were being

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E-mail address: mcolem@lsuhsc.edu (M.T. Coleman).
[1] Abbreviations include PCMH: Patient-Centered Medical Home, DIME: Diabetes Medical Education, HgA1c: Hemoglobin A1c, LDL: low density lipoprotein; CITE, Collaborative Interprofessional Team Education.

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specifically trained for PCMH practice.[10] Recent training models incorporate medical students into earlier direct patient care roles with the goal of preparing them for team-based and patient-centered care.[11] The National Center for Interprofessional Practice and Education highlights several teaching programs in which students from different professions work together to deliver care.[12] Examples of student programs specifically focused in *ambulatory* care include the Interprofessional Teaching Clinic at the University of Kansas Medical Center[13] which blends practice experience with an interprofessional (including pharmacy, nursing, medicine, and mental health) education curriculum. Vanderbilt's curriculum includes a student-run clinic where medical students and other professions provide high quality diabetes care.[14] Advanced practice nursing students supported primary care practices in their transition to a PCMH.[15] Patient response to these programs and/or team skills and attitudes related to these interprofessional clinical experiences however, are rarely reported.

The purpose of this article is to describe the Diabetes Medical Education (DIME) program and illustrate how interprofessional students can experientially learn and practice care management using medical home principles, provide value, and improve both patient satisfaction and student teamwork skills in two primary care *ambulatory* care settings for patients with uncontrolled diabetes.

2. Methods

2.1. Setting and ethical considerations

The DIME program was offered in two study settings: an urban hospital-based ambulatory clinic for internal medicine residents and an urban faculty practice that consisted of faculty in the disciplines of family medicine and internal medicine. The study was approved by the Institutional Review Board at Louisiana State University Health Sciences Center – New Orleans.

2.2. Interprofessional learners

The interprofessional learners included 15 medical students, 3 physician assistant students, 2 social work students, 8 nursing students, 12 pharmacy students, and 4 internal medicine residents to provide patient care. Each student was assigned to one of the two sites (a minimum of four disciplines represented per site) for continuity of participation. Students were trained in discipline-specific roles, health care coaching, quality improvement, and development of coordinated care management plans, portions of both live and online training done strictly within their disciplines and portions completed together after discipline-specific training was completed. At most half-day sessions, three and often more professions were represented. Students who participated had a longitudinal experience with both patients and interprofessional team members spanning up to two academic semesters in an ambulatory setting. During summers, patients continued to have access to their primary care providers. The experience was a component of required clinical practicum for nursing, pharmacy and social work students, while for medical students and physician assistant students, the experience was a volunteer program for which students were eligible for elective community service credits.

2.3. Patient population

The patient population included 36 adult patients ages 18–70 with uncontrolled diabetes. Exclusion criteria included gestational diabetes and Type I diabetes. A patient registry was obtained using the database from the Louisiana Health Care Services Division on patients who were seen in the LSU New Orleans Internal Medicine Ambulatory Clinic during the previous year and had a glycosylated hemoglobin (HgA1c) of 75 mmol/mol (9% or greater). Patients arrived for scheduled appointments and were seen by an interprofessional group of learners. They were offered face-to-face visits, group visits, and phone calls with the team as an adjunct to visits with primary care physicians.

2.4. Enrollment and team care

Staff and students contacted patients in the registry via phone and invited them to participate in the DIME program. Outreach calls to approximately 200 patients were completed in order to enroll 40 patients. Callers experienced a variety of challenges, including unanswered calls, incorrect and changing phone numbers, transportation difficulties, scheduling conflicts, and lack of interest. Visits were scheduled to occur on consistent half days at each clinic as part of the ongoing ambulatory continuity of care clinic schedules. Upon arrival to the clinic, patients were given a brochure with contact information, services provided and follow up instructions. Forty patients agreed to participate.

Learners from each discipline had designated roles which were not exclusive and could be assumed by other professions/members when circumstances necessitated. Nursing students obtained vital signs and point of care HgA1c if needed, provided diabetic goals education, health literacy screenings, preventive services, and directed group visits. Pharmacy students screened for alcohol and tobacco use, performed cardiovascular risk calculations and medicine reconciliation, and reviewed and assessed medication adherence. Medical students performed oral exams, foot exams, eye exams and negotiated lifestyle action plans based on patient preferences. Physician assistant students performed similar duties to both nursing and medical students. Social work students performed depression screenings, identified insurance status and provided community resources and counseling referrals as needed. Medical residents or faculty primary care physicians were responsible for the overall management of the patient; the team collaborated together with the patient in the development of a care plan. Students from all disciplines were co-located in a conference room within the clinic and spent time together both in the conference room and in the exam room. Students reviewed the patient's chart prior to the visit either alone or with other members of the team and discussed specific patient needs. Patient interviews were conducted, depending on patient flow and numbers, as a partial team, individually, or as a complete team. Time with the team varied depending on availability of exam rooms and students frequently had the freedom to spend more than an hour with patients. The team debriefed with both residents who were primary care providers and with attending faculty. In addition, students also made follow-up calls to patients.

The overall clinical learning experience was designed using the exemplary care and learning model whose framework integrates health care delivery and professional education with the goal of improving both.[16] The interprofessional team documented a care plan geared toward improving blood pressure and blood sugar control, smoking status if applicable, and lipid management, as well as addressing mental health needs; students focused on coaching patient-driven action plans, usually related to healthy lifestyle changes. The program sought to develop positive attitude toward teamwork and teamwork skills as well as to provide an experiential knowledge of medical home and interprofessional roles in care management, through a longitudinal relationship-based experience.