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*Currents in Pharmacy Teaching and Learning* 7 (2015) 70–77

Research

*Currents  
in Pharmacy  
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# Medication and health problems and recommendations from MTM services provided by third-year pharmacy students in community pharmacies

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## Abstract

**Objective:** To determine the number and type of medication and health-related problems (MHRPs) identified and medication and health-related recommendations (MHRRs) provided by third-year pharmacy students in medication therapy management (MTM) course for patients in community pharmacies.

**Methods:** This was a retrospective review of provision of MTM services delivered by third-year pharmacy students enrolled in a required MTM course. MTM services were provided in community pharmacies for adult patients. A data collection form was created to document MHRPs, acceptance rates, number and type of MTM interventions, MHRRs, and patient demographic and clinical characteristics. Descriptive and inferential statistics were used.

**Results:** A total of 274 patients received MTM services. Overall, students identified 1370 MHRPs (five per patient) and made 1004 recommendations (3.7/patient). Out of these recommendations, 16.8% were accepted by either patients or their health care providers.

**Conclusions:** Pharmacy students enrolled in a mandatory MTM course identified a substantial number of MHRPs and made recommendations to address the majority of them. Although acceptance rates were low, additional focus and efforts on follow-up could lead to improved patient outcomes.

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**Keywords:** Medication therapy management (MTM); Required MTM course; Introductory pharmacy practice experience (IPPE); Community pharmacy; Medication- and health-related problems

## Introduction

In 2003, the Medicare Modernization Act (MMA) enacted by the US Congress, approved the Medicare Part D prescription drug program and mandated that plans offer

Medication Therapy Management (MTM) to eligible beneficiaries.<sup>1</sup> MTM is “a distinct service or group of services that optimize therapeutic outcomes for individual patients. MTM is independent of, but can occur in conjunction with, the provision of a medication product.”<sup>2</sup> MTM services delivery is not limited to specific providers; however, pharmacists were the only health care professionals named as providers by the Center of Medicare and Medicaid Services (CMS). In 2011, CMS reported that 99.5% of Medicare Part D MTM programs use pharmacists to provide MTM services.<sup>3</sup>

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Pharmacist-provided MTM services have improved clinical outcomes for patients<sup>4–17</sup> and economic<sup>5,15–17</sup> outcomes for both patients and the health care system. However, pharmacists face barriers when providing MTM services.<sup>18–22</sup> Some of these difficulties were due to lack of pharmacists' understanding of MTM service components and the lack of MTM educational resources.<sup>23</sup> Several strategies are now available to address these barriers.<sup>4,24–26</sup> One of these strategies is to provide MTM education and practice experiences early in the pharmacy curriculum.<sup>27,28</sup>

In 2006, the Accreditation Council for Pharmacy Education (ACPE) identified the need to prepare student pharmacists to meet the professional pharmacist competencies after graduation, including the ability to provide MTM services. Thus, it is required that all colleges/schools of pharmacy (CSoPs) provide MTM instruction and experiences.<sup>29</sup> As a result, several CSoP have developed MTM courses with varying content and curricula placement. For example, some courses offer MTM as an entire course,<sup>30–32</sup> part of a course,<sup>33–41</sup> as a mandatory course,<sup>34–36,38–40</sup> or an elective course.<sup>30,31,37,41,42</sup> In addition, some CSoPs offer the course for third-year students,<sup>31,32,35,36,38,39,42</sup> while others offer it in the fourth year.<sup>37,41</sup> Various strategies have been used to teach MTM, such as didactic lectures,<sup>31,36,38,39</sup> case studies,<sup>31,36,38,39</sup> and MTM service provision to real or proxy patients.<sup>30–32,36–38,41,43</sup> Patients who participate in MTM services have been general community pharmacy patients<sup>37</sup> or specific populations (e.g., elderly, women, low-income, or uninsured patients).<sup>30–34,42</sup> MTM course outcomes have focused on increasing students' MTM knowledge and their abilities to provide MTM services, including identifying and resolving patients' Medication-Related Problems (MRPs) and educating patients regarding their medication and overall health.<sup>32,35–39,41</sup> MTM courses can teach students how to provide MTM services to patients and increase their self-confidence in providing MTM.<sup>31,36</sup> Students enrolled in the course can also improve patients' understanding of their disease state(s) and the medication(s) used to treat them.<sup>34,36,37</sup> A review of the literature revealed that student-provided MTM studies reported on MTM course structure, students' perceptions of the course, and patient outcomes.<sup>30–43</sup> However, none of the studies examined the impact of a required MTM course on identifying and making recommendations regarding patient medication and health-related problems in community pharmacy settings.

A college of pharmacy developed a required MTM course for all third-year pharmacy students. In this course, students completed a national MTM certificate program, received lectures about MTM, and provided MTM services to five patients in community pharmacies under the supervision of pharmacy preceptors who held an MTM certificate.

## Objectives

This study's main objective was to describe the number and type of Medication- and Health-Related Problems

(MHRPs), MTM interventions, Medication- and Health-Related Recommendations (MHRRs), and medical provider/patient acceptance rates. The secondary objective was to determine what factors (MHRPs, MTM interventions, actions, MHRRs, medical conditions, medications, and number of medical prescribers) are related to the number of MHRRs accepted.

## Methods

This is a retrospective review of student documentation of patient care provided for the purpose of the course. The course is mandatory for all third-year pharmacy students across four campuses. Due to the large number of third-year pharmacy students enrolled ( $n = 121$ ), the course was offered over two semesters (Fall 2011,  $n = 67$ ; Spring 2012,  $n = 54$ ). The present study focuses on the Fall 2011 semester. The University Institutional Review Board identified the study as "exempt" because patients' and students' names were de-identified.

### Course design and data source

Students were assigned to work in community pharmacies ( $n = 47$ ) for 56 hours over the course of the semester (four to five hours per week) under the direct supervision of a pharmacy preceptor ( $n = 47$ ). At each pharmacy, students provided MTM services to patients who were referred either from Mirixa®, OutcomesMTM™, assisted living facility centers, or who were patients interested in receiving MTM services. To guide the students through the process of providing MTM services, the course instructor used documentation forms that were adapted from those originally developed by the American Pharmacists Association and the National Association of Chain Drug Stores.<sup>44</sup> These forms were divided into five sections: (A) Medication Therapy Review (MTR), (B) Pharmacist Action Plan (PAP), (C) Pharmacist Action Plan Progress Notes (PAPPN), (D) Patient Medication Record (PMR), and (E) Patient Medication Action Plan (PMAP). In addition to the course forms, MTM encounters were documented and billed by the student under the supervision and responsibility of the preceptor through Mirixa® and OutcomesMTM™ platforms.

Students contacted eligible patients to schedule an MTM appointment. In the provision of MTM services, students were encouraged to meet patients face-to-face; however, due to conflicts, some students provided MTM via telephone. During the first session performed under the direct supervision of the pharmacy preceptors, students used the MTR form to document demographics, social history (e.g., smoking cigarettes and drinking alcohol and caffeinated beverages), and medical information (e.g., conditions and medication). This information was used to help students identify and resolve MHRPs. After obtaining patients' information, students created a plan to resolve their MHRPs, and after obtaining the preceptor's approval, it was documented in the PAP. The students' plan included the patient's MHRPs, the priority level

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