Characterization of actions taken during the delivery of medication therapy management: A time-and-motion approach

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**Abstract**

**Objectives:** To characterize actions performed by pharmacists and support staff during provision of medication therapy management (MTM) and to compare actions performed according to practice characteristics.

**Methods:** A purposeful sample of 7 MTM practices (2 call centers and 5 community practices) was identified and visited by investigators. Pharmacists and support staff were observed during their routine provision of MTM. Investigators characterized “major” (e.g., preparation for a comprehensive medication review) and “minor” (i.e., specific steps in overarching major action) actions with the use of a time-and-motion approach.

**Results:** A total of 32 major and 469 minor actions were observed. Practices were characterized as Later Maturity Level or Early Maturity Level on the basis of their self-reported MTM appointment volume, self-assessment of the extent of integration of chronic care model principles, and payer mix. Later Maturity Level practices were more likely to deliver follow-up medication therapy reviews and comprehensive medication reviews (CMRs) as opposed to targeted medication reviews (TMRs) and to receive physician referrals for MTM. Later Maturity Level practices were also more likely to use paid interns than pharmacy rotation students. CMR activities observed at Later Maturity Level practices lasted a median of 30.8 minutes versus 20.3 minutes for CMR activities at Early Maturity Level practices. Similarly, TMR activities observed at Later Maturity Level practices were longer: a median of 31.0 minutes versus 12.3 minutes. At Later Maturity Level practices, pharmacists spent a greater proportion of time providing patient education, while support staff spent a greater proportion of time on tasks such as capturing demographics and introducing or explaining MTM.

**Conclusion:** MTM activities were longer at Later Maturity Level practices, and these practices were more likely to use paid pharmacy interns and to receive physician referrals for MTM. This work provides a foundation for future research.

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outcomes might be due to MTM implementation challenges pertaining to staffing and time constraints, insufficient compensation models, and limited patient engagement.12–14 Some MTM models appear to be more effective and efficient than others, and support staff have been encouraged to take on more active roles in MTM. However, insufficient information currently exists on how this has been operationalized across various practice settings and how time is actually spent during MTM.15,16 Time-and-motion methods have been widely used in health services research.17–20 Applying time-and-motion methods to study MTM can provide insight into how pharmacists and support staff are used and may identify potential inefficiencies and areas for future research.

**Objective**

The aim of this work was to characterize actions performed by pharmacists and support staff during the provision of MTM and to compare actions performed according to practice characteristics.

**Methods**

**Conceptual framework**

As noted above, CMS targeting criteria for MTM focuses on beneficiaries with multiple chronic conditions; more than 80% of Part D plans target those with at least 3 chronic conditions.21 Given this focus, the chronic care model (CCM) provides a useful framework for examining different approaches by which MTM has been implemented; others have also recently suggested the integration of MTM and CCM concepts to guide research.22 The CCM elements include 1) organization of the health care system, 2) delivery of services, 3) decision support, 4) clinical information systems, 5) patient self-management support, and 6) community linkages.23,24 Previous research has demonstrated that interventions incorporating at least 1 CCM element result in improvements in clinical outcomes for common chronic diseases.25

**Enrollment**

To identify a heterogeneous cross-section of MTM practices varying in type (call center vs. community pharmacy), ownership (independent vs. chain), payer mix (solely Medicare Part D MTM vs. a more diverse payer mix), and experience providing MTM, a purposeful sampling approach was applied. Study sites were recruited with the assistance of the Medication Safety Research Network of Indiana (Rx-Safenet) and leadership from the Minnesota Pharmacists Practice-based Research Network (MPBRN), as well as through the investigators’ professional networks. After confirmation of willingness to participate, practice contacts helped to identify stakeholders (pharmacists, support staff, prescribers, and patients) to approach for participation. Those eligible were at least 21 years of age, proficient in English, able to consent, and either an employee participating in MTM delivery, a patient receiving MTM who reported having at least 1 chronic medical condition, or a prescriber interacting with the practice through the delivery of MTM. Pharmacists and support staff at the participating practices, as well as prescribers, were informed about the study via telephone or e-mail, after which the investigators discussed the study in more detail by telephone. Recruitment of patients took place by telephone before their medication therapy review (MTR) or in the waiting area at the participating practices. Study procedures were approved by the Purdue University Institutional Review Board.

**Data collection**

From Fall 2013 to Spring 2015, 2 to 3 investigators (M.E.S., H.A.J., S.A.G.) visited each practice for 2 to 3 days to observe MTM activities and collect data with the use of 4 techniques, including 1) administration of a survey tool, 2) observations and contextual inquiry, 3) semistructured interviews, and 4) audiorecorded investigator debriefs. The survey tool consisted of a modified Assessment of Chronic Illness Care (ACIC) instrument (v. 3.5; Appendix A, available on JPhA.org as supplemental content),26 which characterizes elements of the CCM. The ACIC was administered to participating pharmacists and support staff to assess their perception of the extent to which CCM elements were incorporated by their practice into MTM delivery. Possible scores range from 0 to 11 for both the overall score and the individual subscales, with higher scores indicating more comprehensive chronic care delivery.27 Wording modifications were made with permission to improve relevance to the delivery of MTM; emphasis was placed to ensure that each question’s intent was preserved. Data for patient MTM appointment volume and percentage of MTM appointments provided under Medicare Part D were collected as self-reports from pharmacists and support staff after semistructured interviews.

During observations, investigators timed a purposeful sample of the MTM activities observed at each practice, attempting to capture both initial and follow-up MTM encounters as well as activities occurring before (e.g., preparatory work), during, and after (e.g., documentation) the MTR. Time observations were recorded as unstructured notes and dictated by investigators during daily debriefings for subsequent professional transcription and coding. These notes included the MTM action being performed, the type of participant performing each action, and the time spent in minutes and seconds on each action.

Finally, qualitative data were collected through individual semistructured interviews, investigator debriefings of observations, and contextual inquiry with practice stakeholders to identify themes pertaining to the CCM elements. Qualitative data procedures and findings are described elsewhere.28

**Data analysis**

After investigators’ notes of timed observations were transcribed, we created a coding scheme to characterize MTM-related activities with the use of the time-and-motion study tool published by the Agency for Healthcare Research and Quality (AHRQ) and the pharmaceutical care process as guiding frameworks.3,13 This coding scheme included both “major” and “minor” actions. Major actions were defined as the overarching MTM activity observed. These were 1) preparatory work for an MTR, 2) conduct of an MTR, 3) wrap-up work following an MTR, and 4) contact with a patient about an MTR. Major action codes included 1) whether the MTM...
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