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Improving Medication Safety in High Risk Medicare Beneficiaries Toolkit

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Purpose of the Toolkit

Purpose

Often, when a clinical trial is completed, only the study's results are broadly disseminated. When dealing with complex interventions, experience gained during the clinical trial is often lost, even when such experience could inform the practice of providing such care. This toolkit is based on experience gained in The Medication Evaluation and Drug Use Problem Identification to Improve Safety in High Risk Medicare Beneficiaries (MEDIS-MB) study. We believed that our experiences with providing medication therapy management (MTM) during this study are very beneficial to those planning to implement similar programs and/or for evaluating MTM services.

We developed this toolkit with two primary goals in mind. These were (1) to describe the medication therapy management program assessed in the MEDIS-MB study; and (2) to provide our experience and the tools we used to assess the medication therapy management program. We believe that even if a planned medication therapy management program is different in scope, practice setting, or patient population than what we describe, the material contained herein will be useful to MTM providers to assist in the development and/or assessment of the planned medication therapy management program.

Two groups can benefit from this toolkit: (1) those who are conducting research to evaluate MTM programs and (2) those providing MTM services as part of an MTM program and who need documentation tools for their services. We encourage the use of electronic forms and integration with existing systems in the health care setting. Additionally, the Personal Medication Form that is part of this toolkit should be given directly to the MTM patient and shared with other providers on the patient's health care team. Recommendations made by the MTM provider that result in changes to the patient's therapeutic regimen should also be forwarded to other providers.

This toolkit was developed to assist in the following aspects of preparing a medication therapy management program:

- Develop and conduct a medication therapy management program
    - Describe the development and goals of the MEDIS-MB program
    - Describe the MEDIS-MB program
    - Make clinical MTM tools developed by the MEDIS-MB program research team available to others
- Assess a medication therapy management program
    - Describe the strengths and limitations of the tools used in the assessment of the MEDIS-MB program
    - Make the MTM assessment tools available to others

This toolkit should be very beneficial to providers interested in implementing MTM programs, especially those with a research component. The tools are validated and have strong application for research. The toolkit has good application to MTM service delivery, and the tools are easily modified and integrated into daily practice.

Contents

This toolkit includes the forms/tools shown in Table 1. These forms/tools are designed for delivery/provision of MTM ("Program Tools") or for assessment of an MTM program ("Assessment Tools) or both. Each is described in detail elsewhere in this document. Most forms are also provided in the Appendices.

Table 1. Tools/forms for MTM program and assessment

Title of Tool	Program Tools	Assessment Tools
Patient Screening Form (Appendix 2)	X	—
MTM Provider Interview Tool (Appendix 3)	X	—
MTM Patient Chart Template (Appendix 4)	X	—
Modified PCNE Drug Assessment Form (Appendix 5)	X	—
Prescriber Communication Fax Form (Appendix 6)	X	—
MTM Personal Medication List (Appendix 7)	X	—
Office, Emergency Department, and Hospital Visit Assessment Survey Form (Appendix 8)	—	X
MTM Provider Time Log (Appendix 9)	—	X
Patient Satisfaction Survey (Appendix 10)	—	X

Background and Rationale

Pharmacotherapy is central to the medical care of persons above the age of 65, and this population consumes more than 30 percent of all prescriptions.[1] Of these patients, approximately 50 percent take 5 or more medications, and 12 percent take at least 10 medications regularly.[2] The pervasiveness of therapeutic drug use in community-dwelling elderly has major implications for patient safety. A cohort study of Medicare enrollees in the ambulatory clinic setting demonstrated an adverse drug event (ADE) rate of 50.1 per 1,000 person-years, with 38 percent of the events categorized as severe, life-threatening, or fatal.[3] Furthermore, each ADE in ambulatory patients older than 65 is estimated to cost an average of $1,300 in additional health care expenditures.[4] Key factors predisposing elderly patients to ADEs include age-related changes in physiology and drug metabolism, polypharmacy (use of 5 to 7 medications regularly doubles the risk for an ADE; use of 8 or more medications regularly triples this risk), number of comorbidities, and visits to multiple prescribers.[5-7]

Addressing risk factors for ADEs in an outpatient population is challenging. Ambulatory care is largely decentralized in multiple independent practices, and as such, pharmacotherapy quality and safety initiatives implemented in hospitals or long-term care facilities often do not translate well to community health settings. One approach to managing pharmacotherapy in the ambulatory elderly has focused on inappropriate prescribing based on the Beers list, which indicates medications thought to pose a risk of adverse effects outweighing potential benefits when used in the geriatric population.[8] In isolation, identifying specific drugs to avoid is not sufficient for improving safety.[9] Failure to prescribe potentially useful medications in the elderly may be equally or even more harmful.[10-12] Further areas of concern in pharmacotherapy for community-dwelling elderly include erroneous prescription writing, deficiencies in drug education given to patients, inadequacies of ADE detection systems, and suboptimal monitoring for medication toxicity.[13,14]

Given these conditions, the Medicare Prescription Drug, Improvement, and Modernization Act of 2003 (MMA) included a drug benefit and required that prescription drug plans and Medicare Advantage plans offering prescription drug coverage have a medication therapy management (MTM) program for those beneficiaries who meet certain risk criteria. The law describes MTM as "a program of drug therapy management that may be furnished by a pharmacist and that is designed to assure, with respect to targeted beneficiaries ... that covered part D drugs under the prescription drug plan are appropriately used to optimize therapeutic outcomes through improved medication use, and to reduce the risk of adverse events, including adverse drug interactions."[15] Although this Toolkit is derived from a study of Medicare beneficiaries, the application of MTM is much broader. A consensus definition of MTM services was developed by 11 national pharmacy organizations and published in 2005.[16] It states that MTM "encompasses a broad range of professional activities and responsibilities within the licensed pharmacist's, or other qualified health care provider's, scope of practice."

The core components of MTM in Part D entail patient education, improved adherence to medication, determining patterns of prescription drug use, and detection of ADEs. MTM programs are typically provided by pharmacists, although this is not mandated by the MMA. The value of this approach in the ambulatory setting has been demonstrated in several studies. One randomized controlled trial found that comprehensive chart review by a consultant pharmacist with subsequent modification of a patient's medication regimen led to 1.5 fewer medications.[17] Pharmacist-physician collaboration facilitated resolution of drug-related problems in a Medicaid

population receiving 4 or more medications.[18] Utilization of an electronic prescription database and an alert system for high-risk medications, followed by pharmacist outreach, prompted physicians to adjust drug therapies to more appropriate agents.[19] Under the MMA, a variety of programs have flourished.[19-21] A more broadly defined service model of MTM core elements was developed by the 11 national pharmacy organizations that developed the original consensus definition.[22] The service model for the delivery of MTM services, published in 2008, was built on the consensus definition. It includes five core elements of an MTM service: medication therapy review, a personal medication record, a medication-related action plan, intervention and referral, and documentation and followup. This consensus model provides a framework for comprehensive and targeted MTM service delivery by pharmacists.

However, information on whether critical outcomes of patient safety, morbidity, and mortality can be influenced by MTM program participation is lacking.[23] Issues of MTM program design, such as visit frequency, mechanisms of patient-to-pharmacist and pharmacist-to-physician communication, and optimizing ADE prevention also require further elucidation. To begin to address these questions, we undertook a prospective multicenter study with well defined patient safety outcomes. The details of the methods of this Agency for Health Care Research and Quality (AHRQ) funded study have been previously published.[24]

In brief this study, called the Medication Evaluation and Drug Use Problem Identification to Improve Safety in High Risk Medicare Beneficiaries (MEDIS-MB) study, was a multi-site randomized controlled trial that enrolled 636 Medicare beneficiaries over the age of 65. The study was conducted at three sites—University of Illinois (Chicago), Duke University Medical Center (Durham), and the Baylor Health Care System (Dallas)—and had three arms. The control group (Arm 1) received usual care and had no MTM visits. Patients in the intervention groups (Arms 2 and 3) underwent two MTM visits with a pharmacist over 6 months. Pharmacists did not have access to electronic medical records, in order to replicate the community setting. Main safety outcomes were the number of ADEs, hospital admissions, and emergency room (ER) visits at 90 and 180 days, which were compared among all 3 study arms. Additional outcomes focused on measures of MTM process and delivery. The full results of the study are presented in a forthcoming issue of Journal of the American Pharmacists Association.

This toolkit was developed to assist individuals or organizations interested in adopting some or all of the practices and methods of evaluation employed in the MEDIS-MB study. While these tools may assist in replicating the work of the MEDIS-MB study, alternative approaches and variations in practice sites may be applied, using these tools, to achieve similar results.

With the passage of the Patient Protection and Affordable Care Act of 2010 (Affordable Care Act), medication therapy management services will continue to expand beyond Medicare Part D.[25] Some of the provisions in the Affordable Care Act that include MTM are the Community-Based Care Transitions Program, the Center for Medicare and Medicaid Innovation which will test new MTM models, and the Patient-Centered Medical Home. A new MTM Grant Program will be established through the Agency for Healthcare Research and Quality (AHRQ) that provides grants or contracts for implementing MTM programs delivered by pharmacists. The MTM Grant Program will target individuals who take four or more prescribed medications, take any high risk medications, have two or more chronic diseases, or have undergone a transition of care or other factor that is likely to create a high risk for medication-related problems. It is hoped that elements of this Toolkit can be used in expansions of MTM through the Affordable Care Act.

Preparing an MTM Program

Development of Program Goals

According to the Medicare Prescription Drug, Improvement, and Modernization Act of 2003, medication therapy management programs are expected to accomplish at least one of three main goals. These are:

- Education about medication use;
- Adverse drug event prevention, identification, and resolution; and
- Improve adherence.

While MTM programs may also have other goals, depending on their patient populations (other goals may include improved "presenteeism" for employees, improved HEDIS scores, increased patient satisfaction, and others), accomplishing these three goals require different clinical strategies. For example, education about medication use can be generally accomplished through a consultation between the patient and the medication therapy management provider, educational readings, and other such methods. Targeted education about medication use may require that additional information be collected about how a patient takes their medications and any specific gaps in patient knowledge be addressed. Adverse drug event prevention, identification, and resolution requires a more substantial interaction with the patient, where all of a patient's medications are identified (comprehensive medication review), information regarding how the patient takes the medications is collected, and an assessment of potential (prevention of future possible adverse drug events) and real (adverse drug events being a subset of the drug related problems) drug related problems occurs.

For 2010, the Centers for Medicare and Medicaid Services instituted new guidelines for Medicare Part D MTM programs that attempt to standardize the services that are being delivered. As part of the new guidelines, every patient who qualifies is eligible for a face-to-face comprehensive medication review with quarterly followup. Medication reconciliation frequently requires patient education, assessment, and sometimes contact with the patient's prescriber for a change in the medication. Improving adherence requires assessment of how a patient is taking his or her medication, identification of barriers to good adherence, and an intervention that changes the patient's beliefs and/or behavior. Without the patient's agreement to adhere and ability to adhere, adherence to medications will not change. Improving adherence and medication monitoring require a longitudinal approach, with follow up; while other approaches may require only an initial visit and a followup to assess recommendations and changes made to therapy.

The MEDIS-MB study focused primarily on drug related problem identification and resolution, an assessable intermediate for reducing ADEs. We were therefore able to have just two visits with the MTM provider (initial and followup). Education regarding medication use was provided when the assessment identified education-related drug related problems. Adherence may have also been addressed, although the intervention was not designed to impact behavior change. It is likely that a program attempting to address behavioral changes, such as adherence to medications, would require a more longitudinal intervention to truly be effective.

Determination of Target Audience

Which patient population you choose to target for a medication therapy management program depends on several factors, including:

- Patients at highest risk for medication-related problems;
- Patients who are highest utilizers of health care resources, including drug expenditures;
- Availability of reimbursement for or funding of service;
- Patient and community factors in the region around the medication therapy management program;
- Need for efficiency; and
- Availability of trained medication therapy management providers.

It is important to consider all of these factors when developing a program. Identifying funding sources for the program ensures sustainability, but may impose restrictions on the scope or focus of the medication therapy management program. The same principles apply to internally funded programs in academic institutions or industry (insurers, employers, etc.). Being able to draw customers for the program may in part determine the program focus, sustainability, and design. Special materials or conditions may be required in areas where health literacy is low, the population is at the extremes of age, when language barriers exist, or patients are primarily working and busy. The need for efficiency and sources of MTM providers typically impact how restrictive the program is. Focusing the program to those who will benefit most improves efficiency and lowers the number of patients eligible for the program.

The MEDIS-MB program was funded by the AHRQ, with some of the funding requiring a patient safety focus. As such, we chose to develop an intervention designed to primarily reduce adverse drug events. We were not concerned about reimbursement, as the study funded the intervention. However, we were concerned with developing an intervention that could be easily conducted in a non-academic community environment.

When developing inclusion criteria, we focused on patients who would likely benefit most from the program, thereby increasing the program efficiency. We conducted a literature search to identify individuals who were most likely to have high utilization of healthcare system resources (advanced age; multiple selected chronic co-morbidities; multiple medications), were most susceptible to drug related problems (recent change in medication use; multiple prescribers; recent transition in care), and were likely to respond to the intervention (minimal cognitive difficulty). Our program featured two visits with the medication therapy management provider spaced 90 days apart. The first visit focused on evaluation of patient drug related problems, the second on followup of the recommendations.

Program Implementation

Space for MTM Service Delivery

Face-to-face MTM services are typically delivered in a community pharmacy. Although we studied face-to-face interactions, MTM services may be provided in other venues such as the prescriber's office, medical clinic, patient's home, or by telephone.

Face-to-face MTM services should be delivered in a private or semiprivate area, in accordance with the Health Insurance Portability and Accountability Act. The space allocation may vary according to the structure of the facility and available space.

In the MEDIS-MB study, we utilized two of the patient care rooms located in our outpatient pharmacy. Basic physical space elements included privacy (typically with the option for a closed door), a table or desk, and seating for the patient MTM provider, and if applicable, any family (or caretakers) who might be with the patient.

MTM Provider Training Program

An MTM provider Training Program should be conducted before initiating the MTM program. The purpose of the Training Program is to ensure that all MTM providers possess sufficient knowledge and skills to perform MTM interventions. The Training Program should include a combination of self-study and face-to-face training sessions.

Baseline MTM knowledge is acquired during the self-study. The American Pharmacists Association (APhA) MTM Certificate Training Program, called "Delivering Medication Therapy Management Services in the Community," can be used (see www.pharmacist.com/AM/Template.cfm?Section=Delivering_Medication_Therapy_Management_in_the_Community). This program includes four self-study modules. Module 1 is titled "MTM: A New Era for Pharmacy Practice." It provides a definition of medication therapy management (MTM), the Medicare Part D benefit, and the five core elements of the MTM services model. Module 2 is titled "Becoming an MTM Practitioner: A Plan for Success". It covers issues of business planning for MTM services, describes appropriate activities for technicians, student pharmacists, and pharmacy practice residents involved with MTM services, outlines the process and key considerations of making MTM services operational and integrated with existing services, and identify measures to track the economic, clinical, and humanistic outcomes of an MTM service. Module 3 is titled "Getting Ready for MTM Service Delivery: Knowledge and Skills." It is the most useful in teaching the clinical aspects of MTM provision. Among other concepts, this module identifies areas of therapeutic knowledge essential for providing MTM services, reviews pharmacodynamic and pharmacokinetic changes that are common in elderly adult, explains the risks of medication-related problems in elderly patients, and strategies for reducing their incidence, and describes patient assessment strategies that may be useful during MTM visits. Module 3 also discusses how to communicate with patients—including those with low health literacy and functional impairment—and the concept of motivational interviewing. It reviews the stages of behavior change in the transtheoretical model of change, and strategies for improving the cultural competence of MTM providers and for effectively communicating with prescribers are also covered. Module 4 is titled "Ready for Action: Conducting an MTM Encounter." It defines the responsibilities of the patient as it relates to the MTM process, and identifies pertinent information needed from patients and other

providers. Module 4 also describes the importance of the personal medication record and medication-related action plan, and how the patient should use these. Importantly this module describes the steps involved in completing an assessment of a patient's medication-related needs, and for identifying medication-related problems and possible solutions. This module also describes the primary responsibilities of the clinician in terms of identifying, prioritizing, resolving, and preventing medication therapy problems; and discusses how to recognize opportunities for intervention and/or collaboration with (or referral to) other health care professionals to resolve medication-related problems.

A face-to-face training session should be conducted once the self-study is completed. The face-to-face training should be adapted to the specific practice setting. The primary focus of the face-to-face training is to ensure that MTM providers can perform MTM in the practice setting. The trainer(s) should have experience managing patient pharmacotherapy (e.g. a pharmacist or other advance practitioner with several years of clinical experience). We also recommend that trainer(s) be experienced working with the targeted patient population and in an MTM or ambulatory care clinic setting. The MEDIS-MB study utilized experienced physicians and pharmacists as the trainers. The trainer should prepare a slide set that contains the following elements, adapted to the practice setting:

- An orientation to the Medicare Modernization Act, especially as it relates to Medication Therapy Management, in nontechnical language. This training will include the intended purpose of the law, proposed goals of Medication Therapy Management, and a brief overview of the study's goals, as a type of Medication Therapy Management program;
- MTM Program Overview (diagram);
- MTM Program Initial and Subsequent Visits (diagram);
- An orientation to the patient care process outlined in the study and the forms that will be used to document patient interactions, patient record keeping, and MTM provider – primary care provider communication and documentation;
- Review of clinical documentation needs and requirements, e.g., writing clinical notes for communication with other providers.
- A brief overview and review of managing patients who are older and have multiple chronic conditions, including providing a list of medications that generally should be avoided in elderly patients;
- Brief review of clinical guidelines for common diseases and referral to internal/external site where guidelines are housed; brief review of and practice with useful physical assessment skills (e.g. blood pressure, heart rate, and edema); strategies to quantify subjective information, (e.g., pain, asthma symptoms) to best evaluate drug therapy; and
- Role play exercises in which the MTM provider conducts a comprehensive medication review with a 'patient' in entirety, using the forms as intended. These exercises are then followed by peer feedback and then an example in which best practices are modeled.

The trainer should add or adapt slides that relate to the practice setting and give specific instructions on patient recruitment, setting up appointments, providing the service, etc. The face-to-face training session should conclude with several role play situations and ample time for questions and answers so that MTM providers become comfortable with providing the service and using the forms.

In the MEDIS-MB study, all our MTM providers participated in the self-study. Additionally, a reference describing the rationale for and listing the Beers criteria medications,

those medications thought to pose a risk of adverse effects outweighing potential benefits when used in the geriatric population, was provided for review by the MTM providers.[8] MTM providers were also oriented to appropriate documentation for all of the clinical and study forms. These forms included the following: Patient Screening Form, MTM Provider Interview Tool, MTM Patient Chart Template, Modified PCNE Drug Assessment Form, MTM Provider Prescriber Fax Form, Patient Visit Log, Personal Medication Form, MTM provider Time Log, Patient Satisfaction Telephone Survey, and Baseline Study Visit.

Intervention Description

Overview

The MTM program developed for MEDIS-MB included the following steps: MTM provider training, screening and identifying patients, making appointments with patients, initial MTM visit, subsequent MTM visit, and program assessment. These steps are shown in Figure 1.

Figure 1. MTM program overview

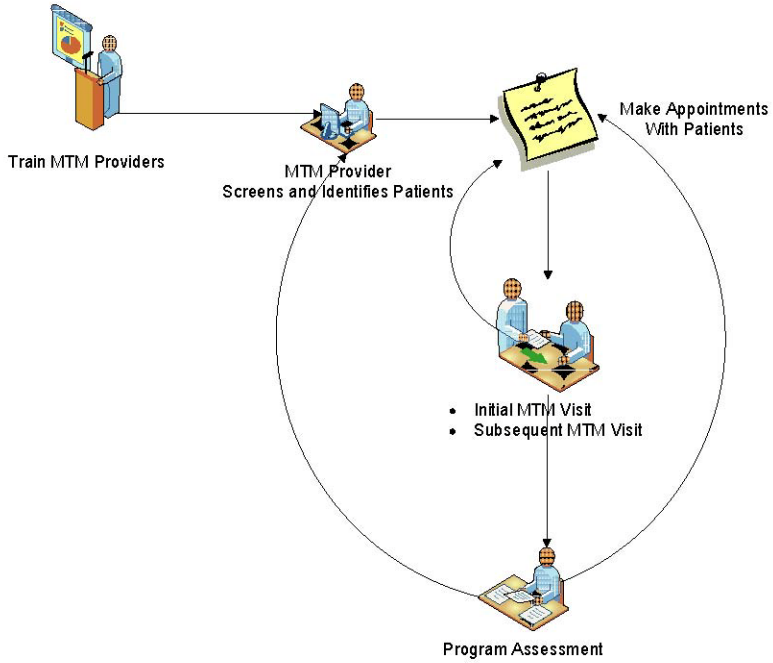
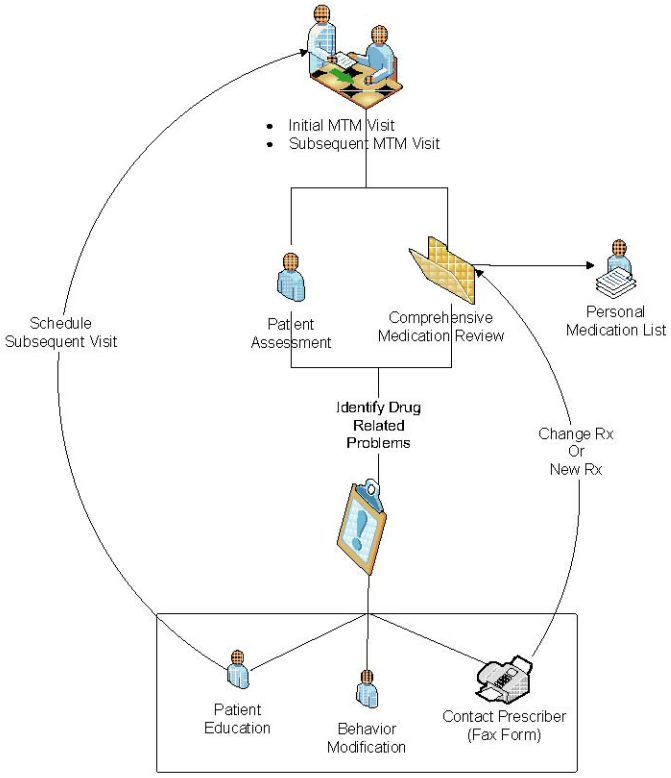


Figure 2 provides an overview of the initial and subsequent MTM visits. In the MEDIS-MB study, the main components of the patient safety-oriented MTM model were patient assessment, medication reconciliation, assessment of drug related problems, and resolution of identified drug related problems. The general components of the MTM provider-based intervention visits provide a framework for improved patient safety while still allowing each visit to be tailored according to patient needs. Patients received a Personal Medication List subsequent to medication reconciliation and drug related problems were identified and resolved. Resolution of drug related problems often included a combination of patient education, behavior modification, and prescriber contact via a faxed form if changes to medications were needed.

Figure 2. Initial and subsequent MTM visits



Screening Patients and Making Appointments

After completion of the MTM provider training, MTM providers or other program personnel can begin screening and identifying patients who are eligible for MTM services. Within the population over 65, there are varying levels of disease burden, frailty, and medication use. It is unlikely that an MTM program applied universally to all elderly ambulatory patients would be useful or cost-effective. The screening criteria presented here were chosen explicitly to identify patients who were frequent health care utilizers and had an elevated risk for ADEs, hospital admission, or ER visitation. While this selection process limited the number of eligible patients for the program, the potential benefits of MTM was especially apparent in this group.

Below are screening criteria we used for the MEDIS-MB study. These criteria may be adapted based on your practice setting. In 2010, Medicare Part D requires sponsors to target beneficiaries who have multiple chronic diseases, take multiple Part D medications, and who will reach a minimum projected annual drug spend of $3000. Sponsors can no longer set restrictive criteria such as 8 or more chronic Part D medications or 3 or more chronic diseases for targeting purposes.

Inclusion criteria for MEDIS-MB study:

- ≥65 years of age at enrollment
- ≥3 comorbid conditions associated with increased health care utilization (e.g., CHF, DM, COPD, HTN)
- ≥2 visits to a prescriber (or advanced practice provider) over the past year.
- ≥6 chronic prescription medications over the 6 months prior to MTM enrollment.

- Situation placing patient at risk for a drug related problem, e.g. change in medication, new prescriber visit, ER visit, hospitalization, invasive procedure within last 30 days.
- 3 or more providers seen within 12 months.

In the MEDIS-MB study we employed a variety of methods for identifying eligible subjects, including prescreening electronic medical and billing records and then contacting potentially eligible subjects via telephone and in-clinic visits. We also accepted referrals from other healthcare providers. Once the MTM patients were screened and identified, appointments for the first MTM visit were made. Appointments are suggested to maximize efficiency of the service and to ensure that time and personnel are available for the appointment. Reminder post cards and/or telephone calls prior to the appointment were used to increase patient participation. Initial visits for MTM required an average of 50 minutes, including documentation. This time does not take into account time required if prescriber contact was needed, usually an additional 10 to 20 minutes.

In the MEDIS-MB study, study subjects who did not show for their MTM appointments were rescheduled if possible. At least three attempts were made to contact an individual. If we were unable to contact the subject, then the subject was considered lost to followup for this visit. Efforts to reduce missed appointments might include scheduling these to occur in conjunction with already planned physician visits or medication pick-ups so as to avoid extra trips for patients.

Clinical Synopsis

In the MEDIS-MB study, we developed a clinical synopsis as part of each MTM visit. The clinical synopsis is an example of an approach combining uniformity and practicality while maintaining flexibility to serve individual patient needs. In community practice, MTM providers often have little information about patients other than a record of prescriptions; access to full charts is rare. The premise of the clinical synopsis is that additional patient-specific data (i.e., list of comorbidities, formal record of allergies) will improve recognition of drug related problems, facilitate patient-provider communication, and promote informed decision making on medication changes compared to MTM visits performed in the absence of such data. The clinical synopsis represents a combination of information obtained directly from the patient, and a minimum data set obtained from the patient's medical chart. The template was assembled so that members of a prescriber's office staff (medical assistants, nurses) could complete the form in 10 minutes or less and fax it to an the MTM provider. Some community pharmacies already have an analogous system in place.

Information Provided by Patient

A patient assessment is a key part of the initial MTM visit. The MTM provider should assess the patient's level of knowledge about their health conditions and their medications, and how they are taking their medications. In the MEDIS-MB study, the information provided by the patient was combined with information from the medical chart to prepare medication reconciliation and to begin to identify drug related problems. The *MTM Provider Interview Tool* was used to perform the patient assessment and gather information provided directly by the patient.

MTM Provider Interview Tool

Purpose. Collect patient-specific data that will assist in the recognition of drug related problems, facilitate patient-MTM provider communication, and promote informed decision making on medication changes compared to MTM visits performed in the absence of such data.

Brief Description. The MTM Provider Interview Tool is a template of questions to ask the patient about their medications.

Key Components. The MTM Provider Interview Tool consists of a series of 14 questions.

How To Use. The MTM provider should interview the patient and document their interaction with the patient. Differences between the clinical synopsis and information provided by the patient will be documented.

Information Provided From Chart

Information provided from the MTM patient's medical chart completes the clinical synopsis. The chart report is beneficial since patients often cannot recall or may not know all of their medical information. It improves the ability to identify drug related problems. In the MEDIS-MB study, data was collected from the electronic medical record using the *MTM Patient Chart Template* and provided to the MTM provider to use in their assessment of the patient. In the community setting, we recommend that the form be forwarded to the prescriber's office in advance of the MTM appointment, filled out by members of the prescriber's office staff, and returned to the pharmacy. This method has been used successfully by some MTM programs currently being offered in the community.

MTM Patient Chart Template Form

Purpose. Collect patient-specific data that will assist in the recognition of drug related problems, facilitate patient-MTM provider communication, and promote informed decision making on medication changes compared to MTM visits performed in the absence of such data.

Brief Description. The MTM Patient Chart Template is a form that is faxed to the patient's prescriber to collect information from their chart for purposes of MTM.

Key Components. The MTM Patient Chart Template has the following sections: Patient Demographics, Allergies, Medical History, Chemistries, Complete Blood Count, Vitals, Diabetes, Drug Levels, Liver Function Tests, Lipid Panel, Coagulation, Thyroid Panel, and Notes.

How To Use. It is expected that completion of this clinical synopsis will take 10 minutes or less. The template was assembled so that members of a prescriber's office staff (medical assistants, nurses) could complete the form and fax it to the MTM provider. Some commercial pharmacies already have an analogous system in place. The name and professional designation of the prescriber (MD, DO, NP, PA, etc.) should be included in this form, along with all other relevant providers on the patient's health care team. It should also be noted if the patient uses multiple pharmacies.

Comprehensive Medication Review

A thorough medication review is necessary to identify and resolve medication therapy problems. Patients are vulnerable during transitions of care, and reconciling their medications as they transition from one setting to another is extremely important. The comprehensive medication review is a key element of MTM as mandated by Part D, and MTM is a focus of coordinated care models and transitions of care in the Affordable Care Act.

At the end of the initial patient visit and following resolution of any drug related problems, the MTM provider gives the patient a list of all of the patient's medications and directions. Medication reconciliation must be complete and accurate. It has been shown that incomplete or inaccurate medication history during transitions of care is a major issue and source of adverse events. With improved medication reconciliation accuracy, patient safety should be increased. Improvements in the ability of MTM providers to support their recommendations with this additional clinical information are likely to improve prescriber acceptance of recommendations and therefore patient safety.

Prescription Bottles

MTM patients should be asked to bring in all of their medications to the initial visit with the MTM provider. Patients should be asked to display containers for all prescription medications, over-the-counter (OTC) products, herbal products and nutritional products (if available). If items are not available, the patient should be asked to display a list of medications. If the patient cannot provide either, they should be rescheduled for a time when they are able to bring in all of their medications. The patient should be prompted to try and remember patches, creams, eye drops, inhalers, sample medications, shots, optic, herbals, vitamins, and minerals.

In the MEDIS-MB study, patients were required to have their prescription bottles at the time of the MTM intervention. On the few occasions when prescription bottles were not available, the MTM providers stated that they were not at all certain that the medication list was accurate or that their identified drug related problems were real. Incorrect drug related problem identification could adversely impact patient safety and communication of erroneous information can damage the MTM provider credibility with the prescribing physician.

Assessment of How Patient Actually Takes Medication

In the MEDIS-MB study, MTM providers used the *MTM Provider Interview Tool* to assess how the patient was taking their medications. For each medication that the patient was taking, the MTM provider should ask the following questions:

- How do you take this medication?
- What condition does this medication treat?
- When did you start the medication or how long have you taken this medication?
- When was the last time the dose of this medication was changed?
- How many times in the past 2 weeks have you forgotten a dose of this medication?
- What time of day do you take this medication?

The MTM provider used the information from the prescription bottles and the patient assessment to prepare a personal patient medication list.

Preparation of Medication List (MTM Provider Documentation and Patient Med List)

In the MEDIS-MB study, the MTM provider prepared a personal medication list as part of each MTM visit. The patient was instructed to keep the list with them at all times and to show it to their doctor or prescriber any time they have a doctor's appointment, if they were hospitalized, and whenever they received a new prescription. If medications are changed or drug related problems were identified, the patient was instructed to have the personal medication list updated.

MTM Personal Medication List

Purpose. The MTM Personal Medication List provides a comprehensive list of medications for MTM patients and their providers.

Brief Description. The MTM Personal Medication List is the patient's record of all their medications. They should keep it with them at all times, and share it with their doctor or prescriber or any time they interact with a health care provider.

Key Components. The MTM Personal Medication List includes the patient name, date of birth, date form updated, and allergies. For each medication the patient is taking, information includes the start/stop date, name of medication, tablet strength, how to use/when to use, and what the medication is for.

How To Use. The Personal Medication List should be completed by the MTM provider and given to the patient during the initial MTM visit or when drug related problems are identified and resolved. The patient should keep the Personal Medication List with them at all times, especially when visiting their providers or the hospital.

Drug-Related Problem Assessment

In the MEDIS-MB study, the MTM providers screened for drug related problems using a list of questions and information collected from the clinical synopsis including patient assessment for each drug and documented potential drug related problems. Identified drug related problems were either addressed with the patient, or in the case of a needed change in medication or dose, forwarded to the patient's primary care physician via a faxed form. The MTM provider contacted the prescriber by phone if the identified drug related problem was considered urgent. The MTM provider also referred the patient to the nearest emergency department for emergent situations. If a response was not obtained from the patient's primary care physician in a reasonable time frame, the physician's office was contacted by phone. The response to the MTM provider's recommendations was recorded and changes to the patient's medication regimen were documented by the MTM provider. A prescription was generated if requested by the physician. New prescriptions or changes to medications were forwarded to the pharmacy of the patient's choice and were communicated to the patient. An updated medication list was generated and mailed to the patient.

Drug-Related Problem Identification

In the MEDIS-MB study, the MTM provider screened for potentially inappropriate medications. One approach to managing pharmacotherapy in the ambulatory elderly has focused on inappropriate prescribing based on the Beers list, which indicates medications thought to pose

a risk of adverse effects outweighing potential benefits when used in the geriatric population. In isolation, identifying specific drugs to avoid is not sufficient for improving safety. Failure to prescribe potentially useful medications in the elderly may be equally or even more harmful. Further areas of concern in pharmacotherapy for community-dwelling elderly include erroneous prescription writing, deficiencies in drug education given to patients, inadequacies of ADE detection systems, and suboptimal monitoring for medication toxicity. The MEDIS-MB study providers were instructed to address medications on the Beers list, identify conditions for which an indicated medication was missing, identify adverse drug events, and assess medication appropriateness, potential drug-drug and drug-food interactions, dose and route of administration, and patient use of their medications.

Drug-Related Problem Documentation

In the MEDIS-MB study, drug related problems were defined as an event or circumstance involving drug therapy that actually or potentially interferes with desired health outcomes. Our definition included not only those events or issues related to drug administration, but also those related to a lack of necessary drug therapy. Upon identification of drug related problems, the MTM provider completed a form derived from the Pharmaceutical Care Network Europe (PCNE) Classification system.[25] [see www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15054145 and http://www.pcne.org/dokumenter/PCNE%20scheme%20V4.00.pdf].

Modified PCNE Drug Assessment Form

Purpose. The Modified PCNE Drug Assessment Form helps the MTM provider document and assess all drug related problems.

Brief Description. The Modified PCNE Drug Assessment Form is both a checklist and a documentation tool that helps the MTM provider assess and document all drug related problems.

Key Components. The Modified PCNE Drug Assessment Form consists of the patient's name, date, visit number, and a series of questions about the drug related problem for each medication. For every drug the patient is receiving, the MTM provider should check for each of the following drug related problems:

- ADE-allergy
- ADE-non-allergic reaction
- ADE-toxic reaction to the drug
- A problem with the choice of the drug for the indication in this patient.
- A problem with the drug dose being taken by the patient.
- The patient is having difficulties with taking the drug.
- The patient is having or at risk for a significant drug interaction.
- There are other problems the patient is having with their drug therapy.
- The patient is at risk for a potential ADE.

The determined cause(s) of the drug related problem should be documented using the cause code list which identify five potential cause domains and one "other" list. Those cause domains are:

- Selection of the drug or dosage schedule is inappropriate or there are better choices
- The patient uses the drug inappropriately despite appropriate knowledge
- Instruction or education is needed for the patient to take the drug appropriately
- Patient behavior interferes with appropriate drug use
- Prescribing or dispensing error

How to Use. The MTM provider uses the Modified PCNE Drug Assessment Form both as a checklist and as a documentation tool. For each drug related problem identified by the medication therapy management provider, the general problem is checked off from a list of seven potential general problems. The specific problem identified from the list of potential specific problems in the box to the right of the general cause code is then circled. If more than one specific problems exist (e.g. drug not appropriate for patient characteristics (2.1) AND no clear indication (2.5)), then both problems should be circled. All appropriate cause codes are written into the box to the far right, using the reference sheet for cause codes. Finally, the medication name, details regarding the problem and action plan/recommendation are written in the numbered box below the problem and cause codes. This information can then be directly transferred to the prescriber fax form if desired.

Drug-Related Problem Resolution

Patient Education

Patient education is one of the core components of MTM. Once the MTM provider identified and assessed a drug related problem, patient education was just one of the methods used for resolving the drug related problem. In our study, patient education referred not only to a one-way flow of information about a patient's medications and conditions, but also to active listening, goal setting, and other interactive forms of communication to improve patient acceptance, activation, and participation. Skills outlined in the MTM provider training program should be used in patient education. The MTM provider documented all efforts in the patient record. Some MTM programs include providing the patient a patient-centered medication action plan as part of the education to assist the patient in managing their medications.

Barrier Assessment/Behavior Modification

Behavior modification is a component of patient education. If the MTM provider determined that patient behavior needed to be altered, for example with poor adherence to a medication regimen, then efforts were taken to work with the patient to modify their behavior. Skills learned in the MTM provider training program were used by the MTM providers for assessing barriers and behaviors. Depending on the patient's willingness and ability to change his or her behavior, different types of intervention may be more effective. Similarly, non-behavioral barriers that prevent patients from adhering to their therapies, diet, and physical activity regimens often require innovative and varying approaches that are patient specific. All efforts in assessing barriers to therapy and interventions should be documented in the patient record.

The MEDIS-MB program was not specifically structured to address behavior modification, as the visits were too infrequent and spaced too far apart. Ideally, programs addressing behavior modification would be longitudinal in nature, with more than two visits spaced no more than 30 days apart. We encouraged our MTM providers to address behavioral issues where appropriate.

Changes to Medications and Prescriber Communication

Identified drug related problems requiring changes to prescriptions were forwarded to the patient's primary care physician (PCP). A faxed form was used for communicating the change. In other circumstances or when the drug related problem resolution is urgent, the MTM provider may contact the physician by phone. The MTM provider referred the patient to the nearest emergency department for emergent situations. If a response is not obtained from the patient's primary care physician, the physician's office should be contacted by phone. The response to the provider's recommendations was recorded and changes to the patient's medication regimen should be documented by the MTM provider and a new prescription generated (if indicated). New prescriptions or changes to medications were dispensed by the community pharmacy or forwarded to the pharmacy of the patient's choice and communicated to the patient. An updated medication list was generated and sent to the patient.

Prescriber Communication Fax Form

Purpose. The purpose of the Prescriber Communication Fax Form is to provide a method for the MTM providers to convey drug related problems to the prescriber along with recommendations and to provide an opportunity for response and resolution of the drug related problems.

Brief Description. The Prescriber Communication Fax Form is a one-page form that is faxed to the patient's physician or other health care provider to communicate drug related problems and their associated recommendations. MTM providers, as part of the health care team, are encouraged to communicate their findings to all appropriate health care providers. The form provides an opportunity for the provider to respond to the recommendations by accepting or not accepting the recommendation provided by the MTM provider.

Key Components. The Prescriber Communication Fax Form includes the following components: prescriber name, patient name, patient date of birth, MTM provider name, drug related problem, recommendation, comments, and response from the prescriber (accept/do not accept recommendation).

How to Use. Upon identifying a drug related problem, the MTM provider completes the Prescriber Communication Fax Form and faxes it to the patient's physician. The patient consent form or medical release form should be signed by the patient. This can be included as a cover page to the fax to the prescriber. The MTM provider includes a recommendation and comments for each drug related problem identified. The Prescriber Communication Fax Form has a check box for the prescriber to accept, reject, or alter the recommendation made by the MTM provider. Upon receipt of the fax back from the prescriber, the MTM provider can continue to resolve the drug related problem.

Followup Visit

A followup MTM visit was conducted 90 to 120 days after the first MTM visit. During this visit, patients underwent a second medication reconciliation and drug related problem assessment. The components of the followup visit were the same as with the initial visit. In addition, drug related problems identified in the first visit were assessed for resolution. As the MTM provider was already more familiar with the patient's medical status, the followup visit took approximately 30 minutes, significantly less time than the initial visit.

Assessment of the Medication Therapy Management Program

Assessment of the MTM program should be based on the program's objectives. If the program has been designed specifically to address adherence-related issues, then the assessment of the program should target adherence. The MEDIS-MB program focused on reducing drug related problems and ultimately adverse drug events. Therefore our assessments primarily targeted these outcomes, along with the terminal outcomes of hospitalizations, emergency and urgent care visits, physician office visits and patient satisfaction. We also assessed several process-related outcomes, such as time to conduct the intervention and followup, recommendations made to the patient's physician, and recommendations accepted by the patient's physician, to aid in determining areas where efficiencies could be improved. Additional outcomes such as progression toward goals of therapy should be tracked, specific to the stated goal of each individual MTM program.

Adverse Drug Events

The assessment of a medication therapy management program designed to impact adverse drug events should attempt to determine its impact. We chose a validated research tool to assess adverse drug events. Study subjects were telephoned 90 days after each medication therapy management visit and asked questions from the symptom assessment survey.

Symptom Assessment Survey Form

Purpose: To identify and categorize symptoms that a patient believes may be related to their medications, and to determine whether the symptom is a potential adverse drug event.

Brief Description: To assess symptoms potentially related to medications, patients in the MEDIS-MB program were asked questions from parts two and three of a validated research tool developed by Jarernsiripornkul et al.[26] [see www.ncbi.nlm.nih.gov/pubmed/11874396 and www.blackwellpublishing.com/products/journals/suppmat/BCP/BCP1547/BCP1547sm.htm] Part two (labeled Part A in the MEDIS-MB study) of this questionnaire assesses potential side effects of medications through a system by system approach. Part three (labeled Part B in the MEDIS-MB study) of the questionnaire assesses the status of the side effect if the drug was stopped. Additional questions about the status of the medication were also included in the MEDIS-MB questionnaire. Once symptoms potentially related to medications were identified, attribution of the symptom was assessed by an MTM provider using a modification of the Naranjo algorithm. [www.ncbi.nlm.nih.gov/pubmed/7249508]

How to Use: Each question of MEDIS-MB Symptom Assessment Survey Part A was asked of patients in a telephone interview. For each positive response to the Part A question, a Part B form was filled out. Each Part B was reviewed. Assessment of symptoms that may be side effects of medications was conducted by an MTM provider using the Naranjo algorithm. We assumed that scores of one or more on the Naranjo questions were considered possible adverse drug events.

Strengths and Limitations of the Forms: The strength of the MEDIS-MB Symptom Assessment Survey is that using a system-by-system approach identifies more potential adverse drug events. However, a limitation is that Part A of the survey is very lengthy and identifies very

general symptoms that are difficult to attribute to any single medication without additional detective work.

Drug-Related Problems

The assessment of a medication therapy management program designed to identify and resolve potential adverse drug events should include an assessment of the program's impact on drug related problems. We chose a validated research tool to assess drug related problems. Medication therapy management providers were required to fill out the Modified Pharmaceutical Care Network Europe (PCNE) drug assessment form at each patient visit. There is no established standard for assessment of drug related problems, and other classification systems exist.

Modified PCNE Drug Assessment Form

Purpose: The Modified PCNE Drug Assessment Form helps the MTM provider assess and categorize all drug related problems.

Brief Survey Description: Drug related problems were assessed by the medication therapy management providers using a modification of the hierarchical assessment tool developed by the Pharmaceutical Care Network Europe (PCNE).[25] [see www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15054145 and www.pcne.org/dokumenter/PCNE%20scheme%20V4.00.pdf]. The components of the tool were described in the Program Implementation section of this toolkit.

How to Use: The form is filled in by the MTM provider as described in the Program Implementation section of this toolkit. The responses can be combined and summarized to assess the numbers and types of drug related problem problems and causes identified and addressed in the MTM program. These statistics can assist with directing MTM provider training, streamlining program practices, and other continuous improvement initiatives.

Strengths and Limitations of the Forms: The Modified PCNE Drug Assessment Form used in the MEDIS-MB study is a hierarchical scale, making analysis much easier than for some other tools. Although it is very comprehensive, documentation the drug related problem was relatively simple once providers became familiar with the tool. Limitations include difficulty identifying the appropriate problem(s) or cause(s) associated with each drug related problem. Other methods of documenting drug related problems are available, although each has its own strengths and limitations.[25]

Office Visits and Hospitalizations

The assessment of a medication therapy management program designed to reduce adverse drug events should include the program's impact on physician office visits, emergency department visits, and hospitalizations. Study subjects were telephoned 90 days after each medication therapy management visit and asked to complete the Office, ED, and Hospital Visit Assessment Survey.

Office, Emergency Department, and Hospital Visit Assessment Survey Form

Purpose: To quickly determine by telephone when and how often patients receiving medication therapy management visit their physician(s), emergency department, and are hospitalized to assess whether the medication therapy management program affected the use of these resources.

Brief Survey Description: The Office, Emergency Department, and Hospital Visit Assessment Survey is a 12-item survey that assesses whether, how frequently, and when a patient has had a medical visit. The form also identifies whether or not that visit was related to a medication side effect. It is divided into three sections, each assessing patient visits to the doctor's office, emergency department, or hospital.

How to Use: In the MEDIS-MB study, patients were called 90 days after each medication therapy management visit and asked to complete the office, ED, and hospital visit assessment survey. Responses to survey questions were documented directly on the form using the grid located on each page (for each different type of visit). Responses to the Office, Emergency Department, and Hospital Visit Assessment Survey can be summarized and compared with responses from a control setting, another program, or over time. These comparisons can be used to assess the clinical impact of the program and to justify program funding.

Strengths and Limitations of the Forms: The Office, Emergency Department, and Hospital Visit Assessment Survey is a relatively quick survey to conduct, requiring under five minutes to complete in most cases. Using a survey to obtain healthcare use information is reasonable when access to insurance information is not available. As with all surveys, there is some concern about memory and reporting biases influencing results. Rare and major events, such as hospitalizations and emergency department visits, are likely less prone to these biases than are common and minor events, such as physician office visits. Surveying patients more frequently, such as monthly, reduces the risk of bias but is more costly and increase respondent burden. Accuracy can be improved if patients keep a log or calendar of these visits, or by looking at the electronic medical record (if available) for documented visits.

Programmatic Time and Costs

The assessment of a medication therapy management program should include an assessment of the time required for the intervention. Medication therapy management providers were required to complete the MTM Provider Time Log at each patient visit and whenever physician or patient contact occurred. Log entries should include patient contact, physician contact, drug related problems evaluation, and documentation time.

MTM Provider Time Log Form

Purpose: To log and calculate the time spent conducting and documenting the intervention and followup.

Brief Survey Description: This tool is a simple table with six columns maintained by the medication therapy management provider. The six columns include patient name, date of time log entry, type of time log entry, time started, time finished, and time elapsed.

How to Use: Time should be logged by the medication therapy management provider after each episode of patient or physician contact, evaluation of drug related problems, or documentation (i.e. whenever time was spent related to delivering or documenting the intervention). This data can be averaged by patient visit and need for prescriber contact. The resulting statistics can assist with planning for MTM visit duration and identifying areas for improving the efficiency of the MTM program. It can also be used to compare different MTM delivery methods to identify more efficient practices.

Strengths and Limitations of the Forms: The MTM provider time log was a quick and efficient way of documenting time spent for various activities. Additional detail, such as "time with patient" and "time to document," could be added to the form at the expense of increasing

the effort required to document time. One difficulty with using this form is encouraging providers to consistently document their time. Electronic forms or methods may facilitate documenting time.

Patient Satisfaction With Medication Therapy Management Services and Overall Satisfaction With Health Care Received

The assessment of a medication therapy management program should include evaluation of patient satisfaction with the program and with overall healthcare received. MEDIS-MB study subjects were telephoned 90 days after each medication therapy management visit and asked to complete the Patient Satisfaction Survey.

Patient Satisfaction Survey Form

Purpose: To assess patient satisfaction with medication therapy management services and with overall healthcare received.

Brief Survey Description: Two different tools were used to assess patient satisfaction with their care. The Pharmaceutical Care Questionnaire (see www.ncbi.nlm.nih.gov/pubmed/9782692) is a 10-item survey that assesses satisfaction with cognitive pharmacy services on three domains: technical-professional, knowledge, and interpersonal relationship.[28] The ten items of the Pharmaceutical Care Questionnaire provide statements that patients are asked to rate on a five-point scale ranging from strongly disagree to strongly agree. Statements focus on the interaction between the MTM provider and the patient, pharmacist professionalism, and explanations and education provided by the MTM provider. Some questions are negatively worded, such as "Does not take time to make sure I understand the importance of my medications." In addition, three questions were asked to assess overall satisfaction with healthcare received. These questions assess the staff, overall care at visit, and likelihood of recommending the facility to others. General satisfaction with care is assessed on a five-point scale ranging from "Very Poor" to "Very Good."

How to Use: The Pharmaceutical Care Questionnaire statements are read to the patient (or read by the patient if not being conducted over the telephone), the patient selects their level of agreement from a five point Likert scale of strongly disagree, disagree, are not sure, agree, or strongly agree. The scores can then be averaged for a group of patients and compared with responses from a control setting, another program, or over time. The same methods can be applied for assessing the general satisfaction with care questions.

Strengths and Limitations of the Forms: The Pharmaceutical Care Questionnaire and general satisfaction with care questions required less than ten minutes to complete in most cases. In some patients, Likert scales are difficult to administer over the phone. Memory and reporting biases are a concern with surveys, although contacting the patient within a month of their MTM visit may reduce memory bias.

Medication Therapy Management Provider Recommendations and Prescriber Followup and Acceptance

The assessment of a medication therapy management program should include evaluation of recommendations made by clinical pharmacists, response rates by prescribers, and acceptance of MTM provider recommendations. Fax forms sent to prescribers, faxes received back from prescribers, and their responses were tracked in the MEDIS-MB study.

Prescriber Communication Fax Form

Purpose. To assess recommendations made, prescriber responses, and prescriber acceptance of recommendation.

Brief Survey Description. The Prescriber Communication Fax Form is a tool used by the MTM provider to communicate recommended changes to patient medication regimens to the prescribing physician. The components of the tool were described in the Program Implementation section of this toolkit.

How to Use. The Prescriber Communication Fax Form is filled in by the MTM provider as described in the Program Implementation of this toolkit. The number of prescriber responses to recommendations divided by the total number sent can provide valuable information regarding the mode of information exchange. A low response rate may mean that prescribers are not receiving the information or that they are choosing not to act on the information. Outreach to local prescribers or a change in the method of intervention delivery may improve response rates. The number of recommendations accepted divided by the total number sent or divided by the total number of prescriber responses received can provide valuable information regarding the quality of the recommendations made and the willingness of the prescriber to accept professional advice from the medication therapy management provider. Time, outreach to local physician groups through educational programs, support for the program from local employers or insurers, and improving relations with local physicians can all be helpful in improving the medication therapy management provider–prescriber relationship and lead to higher acceptance of recommendations.

Strengths and Limitations of the Forms. The Prescriber Communication Fax Form was an effective method of quickly and easily transferring information to prescribers. However, variability in physician practices impacted the form's utility in all settings. The form can also be used solely as a documentation tool for verbal communication of requests to prescribers.

Summary

This toolkit describes patient enrollment, program tools, and assessment tools used in the MEDIS-MB study. These tools were developed by clinicians involved in the development of the study, using a combination of validated measures and clinical expertise. These tools may be used as is or modified to better suit the practice setting and patient population. The tools can be used both for routine provision of medication therapy management and/or for future research.

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Appendix A. Reviewer Comments: Suggested Modifications to the Tools

Some of the reviewers made suggested revisions to the tools that appear in this Toolkit. We chose to provide the tools as used in the study since these are the validated tools. MTM providers and researchers are encouraged to consider the suggestions described below. Modifications may be made to any of the tools to fit various practice or research settings.

General Comments:

- Due to the variety of acceptable MTM providers, it is recommended to track the professional degree of the MTM provider(s), level of training, certification, or credentialing.
- Patient Access – cost is a major determinant of a patient's adherence to medication therapy. There should be increased attention to the price the patient pays, whether or not the patient has prescription drug insurance, the availability of patient assistance or other discount programs, formulary status and resultant copayment or coinsurance of their prescribed medications.
- Adherence rates should be verified by pill counts or pharmacy transaction records.
- An attempt should be made to assess the MTM business model by tracking reimbursement methodologies used in the MTM services provided.
- There are multiple programs that employ similar tools to the ones discussed in this toolkit. All of these tools should be considered and evaluated for usefulness when developing an MTM program.

Comments Regarding Specific Tools

- MTM Provider Interview Tool
  - Question 1 – allergies. Include non-medication allergies such as lactose intolerance, seafood, iodine sensitivity.
  - Question 4 – if the person providing the assistance is not present, the MTM provider should get their contact information in order to verify the rest of the interview.
  - Question 8 – move to follow Question 5.
  - Question 6 and 7 – combine.
  - Question 11 – probe deeper in order to provide an avenue for patient education by asking the patient if they know which lab results coincide with which conditions and medications.
- MTM Patient Chart Template
  - Information should be obtained from a chart review.
  - Track ethnic and geographic health disparity information.
  - Provide additional space for other standard vitals including respiratory rate and temperature. Include 0-10 pain assessment as a fifth vital sign.
  - MTM provider should check vitals and weight at the time of each visit.
  - Include an assessment of fall risk, especially for frail patients, relative to medications the patient may be taking for pain, blood pressure, undiagnosed or undertreated osteoporosis, among others.
  - Record the reaction associated with patient allergies on this form as well as the personal medication form.

  - Medication List – add a column that includes brand name, manufacturer and NDC number of the medication that the patient takes. Different brand name drugs have different Orange Book AB ratings, and generics vary in their combination of excipients, etc.
  - Medication List – regroup by indication, in medical as well as layman's terminology.
  - Short layman's definitions should be provided for the terms to trigger the pharmacist to use them, as patients may not recognize the medical terms listed.
  - Many patients do at-home monitoring (eg, blood pressure, blood sugar) or self management (eg, sliding scale insulin dose). This information should be taken into account and incorporated into the encounter with the MTM provider.
  - The prescriber status should be included (MD, DO, NP, PA, etc). Include their contact information along with that of other providers on the patient's health care team.
  - Include all pharmacies where the patient gets their prescriptions filled. Pay more attention to multiple pharmacies.
  - Include the type of packaging, such as loose pills in a bottle, unit of use packaging, pill box, pharmacy refill reminders, or automatic refill services.
- MTM Personal Medication List
  - Provide the contact information of the MTM provider who compiled the list in the event that the patient is taken to the emergency room, or admitted to the hospital, and the provider has questions about the patient's medication regimen.
  - Regroup by indication, in layman's terminology.
  - Omit the word 'tablet' in the column headed 'tablet strength' since all dosage forms are not tablets.
  - This form should be typed and not handwritten. It should be sent to all other providers on the patient's health care team. Any recommendations resulting in changes to the patient's therapeutic regimen, as well as an updated MTM Personal Medication List, should be forwarded to all other providers on the patient's health team.
  - Add a column that reflects the actual DOSE as well as the number of dosage units the patient is taking, for example: 100mg (2 tablets).
  - The 'name of medication' column should include vitamin or herbal supplements.
  - The prescriber(s) along with their contact information should be listed on this form.
- Modified PCNE Drug Assessment Form
  - Question 2b – 'dose form' should be changed to 'dosage form.'
  - Question 4 – change to reflect the possibility of the patient taking too much of the medication (e.g., confusion between teaspoon versus tablespoon).
  - PCNE classification C2.5, if the MTM provider is not involved in dispensing, they may not be able to verify this information. Use all methods available, such as pharmacy transactions, compilation systems, any available State databases, and third party payer transactions.
- Prescriber Communication Fax Form
  - 'Drug related problem' may not be well recognized or received by prescribers to whom the communication is directed. List medical terminology secondary to a drug related problem (e.g., hypotension secondary to amlodipine dose too high).
  - Add space to explain the clinical rationale for the recommendation which is to follow.

- The Prescriber Communication Fax Form should accompany the MTM Personal Medication List, and if the communication results in any changes, then the updated MTM Personal Medication List should be sent back to the prescriber as well as other members of the health care team.

Appendix B. Patient Screening Form

Patient Screening Form

I need to ask a few questions to see if you would be eligible for the medication therapy management program. It should take no more than 10 minutes.

1. What is your date of birth?

____ ____ _____ 97 97 9997 98 98 9998

MM DD YYYY REF DNK

IF 65 OR OLDER: ELIGIBLE

IF LESS THAN 65 OR REF OR DNK: INELIGIBLE

2. Has your doctor changed your medication dose or added a new medication within the past month? YES NO

IF YES: Date of medication change

____ ____ _____ 97 97 9997 98 98 9998

MM DD YYYY REF DNK

► *if YES can skip to question 6*

3. Have you seen a new doctor in the past month? YES NO

IF YES: Date of new provider visit

____ ____ _____ 97 97 9997 98 98 9998

MM DD YYYY REF DNK

► *if YES can skip to question 6*

4. Have you been seen in the Emergency Room in the past month? YES NO

IF YES: Date of ER visit

____ ____ _____ 97 97 9997 98 98 9998

MM DD YYYY REF DNK

► *if YES can skip to question 6*

5. Have you been discharged from the hospital in the past month?

YES NO

IF YES: Date of discharge

____ ____ _____ 97 97 9997 98 98 9998

MM DD YYYY REF DNK

►*IF ANSWERED NO TO QUESTIONS 2-5 THEN INELIGIBLE FOR STUDY*

6. Have you been told by your doctor that you have any condition that might prevent you from completing this 6-month study?

YES NO

7. Have you had an interview at some time in the past year where you have been asked to bring in all of your medications to a pharmacist, nurse, doctor, or other healthcare professional and been given a list of all your medications?

YES NO

8. Do you have any of the following medical problems?

a.	Diabetes	YES NO
b.	Heart failure	YES NO
c.	Asthma	YES NO
d.	High blood pressure	YES NO
e.	High/abnormal Cholesterol	YES NO
f.	Emphysema (COPD)	YES NO
g.	History of heart attack, heart blockage (e.g. stent placement or bypass surgery)	YES NO
h.	Poor kidney function	YES NO
i.	Arthritis	YES NO
j.	Depression	YES NO
k.	Memory problems	YES NO
l.	Chronic pain	YES NO
m.	Take blood thinner (warfarin/Coumadin) on a daily basis	YES NO

9. Can you tell me the names of your medications, including over the counter medicine, vitamins or supplements, that you take every day? (Write down medication names only. Do not include directions. Use patient prescription bottles to assist in identifying medications)

Appendix C. MTM Provider Interview Tool

MTM Provider Interview Tool

Start with a formal form of Introduction and brief description of events to take place

Ask patient to display containers for all prescriptions medications, OTC products, herbal products and nutritional products (if available).

If item(s) not available, ask patient to display a list of medication(s)

If patient cannot provide either have patient verbalize list of medications.

(Prompt the patient to try and remember patches, creams, eye drops, inhalers, sample medications, shots, optic, herbals, vitamins, and minerals).

1. Do you have any allergies? If so, with what drugs and what was the reaction?
2. What is your height?
3. What is your weight?
4. Does anyone normally help you remember to take your medicines?
    a. If yes, who? (allow that person to assist with answering the questions)
    b. If no, then patient must answer all questions without assistance.
5. What medicines are you taking at the moment (brand/generic)?
6. What is the … for each medication listed.

    Dosage

    Route

    Directions for use (sig) as prescribed
7. For each medication ask:
    a. How do you take this medication?
    b. What condition does this medication treat?
    c. When did you start the medication or how long have you taken this medication?
    d. When was the last time the dose of this medication was changed?
    e. How many times in the past 2 weeks have you forgotten a dose of this medication?

f. What time of day do you take this medication?

8. Do you take anything that you buy without a prescription from a health food store, supermarket, etc? If yes, repeat questions 5, 6, and 7.

9. Have you recently stopped any medications? Why?

10. Has the prescriber changed any medications recently?

11. Do you have any other conditions for which you are not taking any prescription or non-prescription medications or natural products?

12. Does the prescriber periodically check labs, blood pressure, etc to monitor your conditions? If yes, how often, list the last date, any results if known.

13. Are you suffering any side effects now?

a. If yes, what side effects?

b. Which of your medication(s) do you think is (are) causing the problem(s)?

14. Do you have any questions or concerns about your medications?

Appendix D. MTM Patient Chart Template

MTM Patient Chart Template Form

Date: / /

Name: _____
Last *First* *Middle*

Patient ID: _____

DOB: / /

Height: _____ ☐ inch ☐ cm **Weight**: _____ ☐ lbs ☐ kg

Site:

Prescriber: _____

Phone Number: ( ) -

Fax Number ( ) -

Pharmacy Name:

Pharmacy Phone: ( ) -

Allergies

Drug: ☐ PCN ☐ Sulfa Other: _____ **Food:** ☐ Sulfite ☐ Shell Fish Other: _____

Medical History (check where applicable):

☐	Anemia	☐	Dermatophytosis	☐	Hypertension	Other(s): _____
☐	Asthma	☐	Diabetes Mellitus	☐	Hypokalemia	
☐	Atrial Fib/Atrial Flutter	☐	DVT/PE	☐	Kidney Transplant	
☐	Chronic Renal Failure	☐	Gastric Ulcer	☐	Myocardial Infarction	
☐	Constipation	☐	GERD	☐	Obesity	
☐	COPD	☐	Heart Failure	☐	Osteoarthritis	
☐	Coronary Artery Disease	☐	Hepatitis	☐	Osteoporosis	
☐	Depression	☐	Hyperlipidemia	☐	Stroke/CVA	

Most Recent Laboratory Values:

Chemistries

Date Lab Drawn: / /
Na (mEq/L) _____
K (mEq/L) _____
Glucose (mg/dL) _____
Creatinine (mg/dL) _____
BUN (mg/dL) _____

Liver Function Tests

Date Lab Drawn: / /
AST (U/l) _____
ALT (U/l) _____

Coagulation

Date Lab Drawn: / /
INR: _____
Goal INR:

Complete Blood Count

Date Lab Drawn: / /
Hemoglobin (g/dL) _____
Hematocrit (%) _____
WBC (/ul) _____
Platelets (/mcl) _____

Lipid Panel

Date Lab Drawn: / /
TC (mg/dL) _____
LDL (mg/dL) _____
HDL (mg/dL) _____
TG (mg/dL) _____

Thyroid Panel

Date Lab Drawn / /
TSH (µIU/ml)

Vitals

BP: _____/____ HR ___ Date / /
BP: _____/____ HR ___ Date / /

Diabetes

Date Lab Drawn: / /
HbA1C (%)

Drug Levels: (name)

Date Lab Drawn / /
Level:
Goal:

MTM Clinic Only:

CrCl (ml/min)

Specialist Name:
Phone #: ( ) -

NOTES:

	Medication Name *Generic (trade)*	**Strength** ***Dosage Form and #*** ***tabs*** *(Ex: 25 mg x2)*	**Frequency** *(Ex: qday, bid, tid, qid, qod)*	**Indication** *(Ex: DM,HTN, etc.)*	**Initiation of Drug** *≤ 30 days, 1-6 months, > 6 months*	**Last Titration Date**	**Prescriber Name**	**Source** *Medical Record (MR), Patient (Pt), Caregiver (Cg), or Other (Oth)*	**Is pt. taking the drug?** *(reported by pt)*	**How is pt taking the drug?** **(Ex: am/pm) (reported by pt.)**
1					□ ≤30d □1-6m □ >6m	___/___/___		□ MR □ Pt □ Cg □ Other	□ 0-30% □ 30-80% □>80%	
2					□ ≤30d □1-6m □ >6m			□ MR □ Pt □ Cg □ Other	□ 0-30% □ 30-80% □>80%	
3					□ ≤30d □1-6m □ >6m			□ MR □ Pt □ Cg □ Other	□ 0-30% □ 30-80% □>80%	
4					□ ≤30d □1-6m □ >6m			□ MR □ Pt □ Cg □ Other	□ 0-30% □ 30-80% □>80%	
5					□ ≤30d □1-6m □ >6m			□ MR □ Pt □ Cg □ Other	□ 0-30% □ 30-80% □>80%	
6					□ ≤30d □1-6m □ >6m			□ MR □ Pt □ Cg □ Other	□ 0-30% □ 30-80% □>80%	
7					□ ≤30d □1-6m □ >6m			□ MR □ Pt □ Cg □ Other	□ 0-30% □ 30-80% □>80%	
8					□ ≤30d □1-6m □ >6m			□ MR □ Pt □ Cg □ Other	□ 0-30% □ 30-80% □>80%	
9					□ ≤30d □1-6m □ >6m			□ MR □ Pt □ Cg □ Other	□ 0-30% □ 30-80% □>80%	
10					□ ≤30d □1-6m □ >6m			□ MR □ Pt □ Cg □ Other	□ 0-30% □ 30-80% □>80%	

Note: Use another form if additional medications need to be entered.

	Medication Name *Generic (trade)*	**Strength** ***Dosage Form and # tabs*** *(Ex: 25 mg x2)*	**Frequency** *(Ex: qday, bid, tid, qid, qod)*	**Indication** *(Ex: DM,HTN, etc.)*	**Initiation of Drug** *≤ 30 days, 1-6 months, > 6 months*	**Last Titration Date**	**Prescriber Name**	**Source** *Medical Record (MR), Patient (Pt),Caregiver (Cg), or Other (Oth)*	**Is pt. taking the drug?** *(reported by pt)*	**How is pt taking the drug?** **(Ex: am/pm) (reported by pt.)**
_1					□ ≤30d □1-6m □ >6m	___/___/___		□ MR □ Pt □ Cg □ Other	□ 0-30% □ 30-80% □>80%	
_2					□ ≤30d □1-6m □ >6m			□ MR □ Pt □ Cg □ Other	□ 0-30% □ 30-80% □>80%	
3					□ ≤30d □1-6m □ >6m			□ MR □ Pt □ Cg □ Other	□ 0-30% □ 30-80% □>80%	
_4					□ ≤30d □1-6m □ >6m			□ MR □ Pt □ Cg □ Other	□ 0-30% □ 30-80% □>80%	
_5					□ ≤30d □1-6m □ >6m			□ MR □ Pt □ Cg □ Other	□ 0-30% □ 30-80% □>80%	
_6					□ ≤30d □1-6m □ >6m			□ MR □ Pt □ Cg □ Other	□ 0-30% □ 30-80% □>80%	
_7					□ ≤30d □1-6m □ >6m			□ MR □ Pt □ Cg □ Other	□ 0-30% □ 30-80% □>80%	
_8					□ ≤30d □1-6m □ >6m			□ MR □ Pt □ Cg □ Other	□ 0-30% □ 30-80% □>80%	
_9					□ ≤30d □1-6m □ >6m			□ MR □ Pt □ Cg □ Other	□ 0-30% □ 30-80% □>80%	
_0					□ ≤30d □1-6m □ >6m			□ MR □ Pt □ Cg □ Other	□ 0-30% □ 30-80% □>80%	
1					□ ≤30d □1-6m □ >6m			□ MR □ Pt □ Cg □ Other	□ 0-30% □ 30-80% □>80%	
_2					□ ≤30d □1-6m □ >6m			□ MR □ Pt □ Cg □ Other	□ 0-30% □ 30-80% □>80%	
_3					□ ≤30d □1-6m □ >6m			□ MR □ Pt □ Cg □ Other	□ 0-30% □ 30-80% □>80%	
_4					□ ≤30d □1-6m □ >6m			□ MR □ Pt □ Cg □ Other	□ 0-30% □ 30-80% □>80%	
5					□ ≤30d □1-6m □ >6m			□ MR □ Pt □ Cg □ Other	□ 0-30% □ 30-80% □>80%	
_6					□ ≤30d □1-6m □ >6m			□ MR □ Pt □ Cg □ Other	□ 0-30% □ 30-80% □>80%	
_7					□ ≤30d □1-6m □ >6m			□ MR □ Pt □ Cg □ Other	□ 0-30% □ 30-80% □>80%	
_8					□ ≤30d □1-6m □ >6m			□ MR □ Pt □ Cg □ Other	□ 0-30% □ 30-80% □>80%	
_9					□ ≤30d □1-6m □ >6m			□ MR □ Pt □ Cg □ Other	□ 0-30% □ 30-80% □>80%	
_0					□ ≤30d □1-6m □ >6m			□ MR □ Pt □ Cg □ Other	□ 0-30% □ 30-80% □>80%	

Appendix E. Modified PCNE Drug Assessment Form

Modified PCNE Drug Assessment Form

For every drug the patient is receiving, assess each of the following DRPs. *Mark all that apply* .

Patient Name: Date:

General Drug Related Problem: check box if "yes"	Specific Drug Related Problem (Modified PCNE Problem Code)	Yes? (circle)	Cause Code/comments
☐ **1. The patient is having an adverse drug event (ADE) as a result of the drug.**	a. Is the ADE an allergy? (1.1) b. Is the ADE a non-allergic reaction? (1.2) c. Is the ADE a toxic reaction to the drug? (1.3)	A B C	

Medication	Problem Identified	Action/plan/recommendation	MTM Provider	Date Resolved
1.				
2.				
3.				

☐ **2. There is a problem with the choice of the drug for the indication in this patient.**	a. Is the drug not appropriate for the indication given this patient's specific characteristics? (2.1)	A	
	b. Is the drug dose form not appropriate for the indication? (2.2)	B	
	c. Is the drug an inappropriate therapeutic duplication of another drug taken by the patient? (2.3)	C	
	d. Does the patient have a contraindication for the drug? (2.4)	D	
	e. Is there no clear indication for use of the drug in this patient? (2.5)	E	
	f. Is there an untreated indication for which drug therapy is available? (2.6)	F	

Medication	Problem Identified	Action/plan/recommendation	MTM Provider	Date Resolved
1.				
2.				
3.				

☐ **3. There is a problem with the drug dose being taken by the patient.**	a. Is the dose too low or prescribed at too low of a frequency? (3.1) b. Is the dose too high or prescribed at too high of a frequency? (3.2) c. Is the duration of treatment too short? (3.3) d. Is the duration of treatment too long? (3.4)	A B C D	
Medication	**Problem Identified**	**Action/plan/recommendation**	**MTM Provider** **Date Resolved**
1. 2. 3.			
☐ **4. The patient is having difficulties with taking the drug.**	a. Is the patient not taking the drug enough or at all? (4.1) b. Is the patient receiving the incorrect drug (dispensing error)? (4.2)	A B	
Medication	**Problem Identified**	**Action/plan/recommendation**	**MTM Provider** **Date Resolved**
1. 2. 3.			
☐ **5. The patient is having or at risk for a significant drug interaction.**	a. Is the patient at risk for a potential drug interaction? (5.1) b. Is the patient suffering from an actual drug interaction? (5.2)	A B	
Medication	**Problem Identified**	**Action/plan/recommendation**	**MTM Provider** **Date Resolved**
1. 2. 3.			

☐ **6. There are other problems the patient is having with their drug therapy.**	a. Is the patient dissatisfied with the drug, despite taking it correctly? (6.1) b. Does the patient have knowledge deficits that are affecting the drug therapy? (6.2) c. Does the patient have unclear complaints requiring further investigation? (6.3) d. Is the therapy found to be ineffective in this patient? (6.4)	A B C D	

Medication	**Problem Identified**	**Action/plan/recommendation**	**MTM Provider**	**Date Resolved**
1.				
2.				
3.				

☐ **7. The patient is at risk for a potential ADE.**	a. Does the patient have an allergy to the drug or similar drug? (7.1) b. Has the patient had an ADE to a similar drug? (7.2)	A B	

Medication	**Problem Identified**	**Action/plan/recommendation**	**MTM Provider**	**Date Resolved**
1.				
2.				
3.				

- Insert 1 or more Cause Code for every affirmative DRP using the PCNE DRP Causes List (attached)

MTM Provider initials

_____ _____

_____ _____

_____ _____

PCNE Causes Form

N.B. One problem can have more than one cause.

Primary Domain	Code V5.01	Cause
1. Drug/Dose selection The cause of the DRP is related to the selection of the drug and/or dosage schedule	C1.1	Inappropriate drug selection
	C1.2	Inappropriate dosage selection
	C1.3	More cost-effective drug available
	C1.4	Pharmacokinetic problems, incl. ageing/deterioration in organ function and interactions
	C1.5	Synergistic/preventive drug required and not given
	C1.6	Deterioration/improvement of disease state
	C1.7	New symptom or indication revealed/presented
	C1.8	Manifest side effect, no other cause
2. Drug use process The cause of the DRP can be related to the way the patient uses the drug, in spite of proper dosage instructions (on the label)	C2.1	Inappropriate timing of administration and/or dosing intervals
	C2.2	Drug underused/ under-administered
	C2.3	Drug overused/ over-administered
	C2.4	Therapeutic drug level not monitored
	C2.5	Drug abused (unregulated overuse)
	C2.6	Patient unable to use drug/form as directed
3. Information The cause of the DRP can be related to a lack or misinterpretation of information	C3.1	Instructions for use/taking not known
	C3.2	Patient unaware of reason for drug treatment
	C3.3	Patient has difficulties reading/understanding Patient Information Form/Leaflet
	C3.4	Patient unable to understand local language
	C3.5	Lack of communication between healthcare professionals
4. Patient/ Psychological The cause of the DRP can be related to the personality or behaviour of the patient.	C4.1	Patient forgets to use/take drug
	C4.2	Patient has concerns with drugs
	C4.3	Patent suspects side-effect
	C4.4	Patient unwilling to carry financial costs
	C4.5	Patient unwilling to bother physician
	C4.6	Patient unwilling to change drugs
	C4.7	Patient unwilling to adapt life-style
	C4.8	Burden of therapy
	C4.9	Treatment not in line with health beliefs
	C4.10	Patient takes food that interacts with drugs
5. Logistics The cause of the DRP can be related to the logistics of the prescribing or dispensing mechanism	C5.1	Prescribed drug not available (anymore)
	C5.2	Prescribing error (only in case of slip of the pen)
	C5.3	Dispensing error (wrong drug or dose dispensed)
6. Others	C6.1	Other cause; specify
	C6.2	No obvious cause

Appendix F. Provider Communication Fax Form

MTM Provider / Prescriber Communication Fax Form

Prescriber Communication Fax Form

TO: Prescriber name: _____ Fax _____
Regarding patient: _____ DOB _____

From: MTM Provider_____ Fax _____
Phone _____

The following medication related problems have been identified for your patient. Recommendations to address the drug related problem are included.

Please complete the form below by _____
When completed fax back to _____

Drug Related problem Recommendation Comments

□ I accept the recommendation □ I do not accept the recommendation
□ I am not managing this medication please contact:
MD Name: _____ Phone # _____

□ I request the following alternative order _____
_____

Drug Related problem Recommendation Comments

□ I accept the recommendation □ I do not accept the recommendation
□ I am not managing this medication please contact:
MD Name: _____ Phone # _____

□ I request the following alternative order _____
_____

Prescriber Signature: _____ **DEA number** _____

Date: _____

MTM Provider Signature: _____ Date: _____

For office use only
Fax sent (MM/DD/YYYY) _____ Fax received (MM/DD/YYYY) _____

Appendix G. MTM Personal Medication List

Personal Medication Form:

Bring this form with you and show it to your prescriber or MTM provider any time you have a doctor's appointment, if you have to go to the hospital, and whenever you have a new prescription filled at your pharmacy.

Patient Name: _____

Date of Birth: ___/__/_____ **Date Form Updated:** ___/___/____

mm/dd/yyyy mm/dd/yyyy

Allergies / Reaction: _____

_____

Medications:

	Start Date / Stop Date	Name of Medicine	Tablet Strength	How to Use / When to Use	What is this Medicine for?
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

Appendix H. Office, Emergency Department, and Hospital Visit Assessment Survey Form

Office, Emergency Department, and Hospital Visit Assessment Survey Form

ED VISITS

1. Have you been to the emergency room in the last 3 months?

   Yes No

   If no, proceed to question 5

2. How many times have you had to go to the emergence room in the last 3 months?

   Enter number: _____

   If "0" proceed to question 5

3. What was the date (as best as you can remember) that you went for your (**first, second, …)** visit to the emergency room? (ENTER DATES IN GRID BELOW)

4. Was this emergency room visit resulting from a side effect to one of your medicines? (ENTER YES / NO IN GRID BELOW)

REPEAT QUESTIONS 3 AND 4 UNTIL ALL ED VISITS (FROM QUESTION 2) ARE REPORTED

PATIENT REPORTED ED VISITS

DATE	MEDICATION SIDE EFFECT?
___ ___ / ___ ___ / ___ ___	□ Yes □ No
___ ___ / ___ ___ / ___ ___	□ Yes □ No
___ ___ / ___ ___ / ___ ___	□ Yes □ No
___ ___ / ___ ___ / ___ ___	□ Yes □ No
___ ___ / ___ ___ / ___ ___	□ Yes □ No
___ ___ / ___ ___ / ___ ___	□ Yes □ No
___ ___ / ___ ___ / ___ ___	□ Yes □ No
___ ___ / ___ ___ / ___ ___	□ Yes □ No

HOSPITAL VISITS

5. Have you been admitted to the hospital in the last 3 months?
   Yes No

   If no, proceed to question 9

6. How many times have you been admitted to the hospital in the last 3 months?

   Enter number: _____

   If "0" proceed to question 9

7. What was the date (as best as you can remember) that you were admitted for your (**first, second, …)** hospitalization? (ENTER DATES IN GRID BELOW)

8. Was this hospitalization resulting from a side effect to one of your medicines? (ENTER YES / NO IN GRID BELOW)

REPEAT QUESTIONS 7 AND 8 UNTIL ALL HOSPITALIZATIONS (FROM QUESTION 6) ARE REPORTED

PATIENT REPORTED HOSPITALIZATIONS

DATE	MEDICATION SIDE EFFECT?
___ ___ / ___ ___ / ___ ___	□ Yes □ No
___ ___ / ___ ___ / ___ ___	□ Yes □ No
___ ___ / ___ ___ / ___ ___	□ Yes □ No
___ ___ / ___ ___ / ___ ___	□ Yes □ No
___ ___ / ___ ___ / ___ ___	□ Yes □ No
___ ___ / ___ ___ / ___ ___	□ Yes □ No
___ ___ / ___ ___ / ___ ___	□ Yes □ No
___ ___ / ___ ___ / ___ ___	□ Yes □ No

DOCTOR'S OFFICE VISITS

9. Have you visited your doctor in the last 3 months?

Yes No

If no, proceed to next survey

10. How many times have you visited your doctor in the last 3 months?

Enter number: _____

If "0" proceed to next survey

11. What was the date (as best as you can remember) of your (**first, second, …)** visit to your doctor's office? (ENTER DATES IN GRID BELOW)

12. Was this doctor's office visit resulting from a side effect to one of your medicines? (ENTER YES / NO IN GRID BELOW)

REPEAT QUESTIONS 7 AND 8 UNTIL ALL DOCTOR'S OFFICE VISITS (FROM QUESTION 6) ARE REPORTED

PATIENT REPORTED DOCTOR'S OFFICE VISITS

DATE	MEDICATION SIDE EFFECT?
___ ___ / ___ ___ / ___ ___	□ Yes □ No
___ ___ / ___ ___ / ___ ___	□ Yes □ No
___ ___ / ___ ___ / ___ ___	□ Yes □ No
___ ___ / ___ ___ / ___ ___	□ Yes □ No
___ ___ / ___ ___ / ___ ___	□ Yes □ No
___ ___ / ___ ___ / ___ ___	□ Yes □ No
___ ___ / ___ ___ / ___ ___	□ Yes □ No
___ ___ / ___ ___ / ___ ___	□ Yes □ No
___ ___ / ___ ___ / ___ ___	□ Yes □ No
___ ___ / ___ ___ / ___ ___	□ Yes □ No
___ ___ / ___ ___ / ___ ___	□ Yes □ No
___ ___ / ___ ___ / ___ ___	□ Yes □ No
___ ___ / ___ ___ / ___ ___	□ Yes □ No

END OF SURVEY

Appendix I. MTM Provider Time Log

MTM Provider Time Log:

Patient ID	Date	Visit	Time Started	Time Ended	Time Elapsed
		❑First Patient Visit ❑Second Patient Visit ❑Prescriber contact / DRP Resolution			
		❑First Patient Visit ❑Second Patient Visit ❑Prescriber contact / DRP Resolution			
		❑First Patient Visit ❑Second Patient Visit ❑Prescriber contact / DRP Resolution			
		❑First Patient Visit ❑Second Patient Visit ❑Prescriber contact / DRP Resolution			
		❑First Patient Visit ❑Second Patient Visit ❑Prescriber contact / DRP Resolution			
		❑First Patient Visit ❑Second Patient Visit ❑Prescriber contact / DRP Resolution			
		❑First Patient Visit ❑Second Patient Visit ❑Prescriber contact / DRP Resolution			
		❑First Patient Visit ❑Second Patient Visit ❑Prescriber contact / DRP Resolution			
		❑First Patient Visit ❑Second Patient Visit ❑Prescriber contact / DRP Resolution			
		❑First Patient Visit ❑Second Patient Visit ❑Prescriber contact / DRP Resolution			
		❑First Patient Visit ❑Second Patient Visit ❑Prescriber contact / DRP Resolution			
		❑First Patient Visit ❑Second Patient Visit ❑Prescriber contact / DRP Resolution			
		❑First Patient Visit ❑Second Patient Visit ❑Prescriber contact / DRP Resolution			
		❑First Patient Visit ❑Second Patient Visit ❑Prescriber contact / DRP Resolution			
		❑First Patient Visit ❑Second Patient Visit ❑Prescriber contact / DRP Resolution			

Appendix J. Patient Satisfaction Survey

Patient Satisfaction Telephone Survey

Instructions to interviewer

The following questions are related to patient satisfaction with their MTM provider. Please read them to the patient and circle the patient's level of agreement or disagreement with each item according to the scale.

Satisfaction with MTM services:

SCRIPT: I will read to you ten statements. Each of these statements refers to the care you received. For each statement, tell me whether you strongly disagree, disagree, are not sure, agree, or strongly agree with the statement. Indicate "not applicable" for the tenth (last) statement if you did not receive care from an MTM provider.

NOTE: For access to the Pharmaceutical Care Satisfaction Questionnaire, please contact Dr. Dick Gourley at dgourley@uthsc.edu.

Overall satisfaction with healthcare received

SCRIPT: Now, I will read to you three statements. Please indicate your satisfaction with the care received by all of your healthcare providers by selecting the response that best fits your opinion. The possible responses are "very poor," "poor," "fair," "good," or "very good."

Item #	Question	Very Poor	Poor	Fair	Good	Very Good
1.	How well staff worked together to provide care	□	□	□	□	□
2.	Overall rating of care received during your visit(s)	□	□	□	□	□
3.	Likelihood of your recommending our facility to others	□	□	□	□	□