Standardized Framework for Cross-Walking Medication Therapy Management (MTM) Services to SNOMED CT Codes

October 2016

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OCTOBER 2016

Background

SNOMED CT (Systematized Nomenclature of Medicine — Clinical Terms) is a standardized, multilingual vocabulary of clinical terminology used by physicians and other health care providers for the electronic exchange and reporting of clinical health information. SNOMED CT has been named by the Office of the National Coordinator for Health Information Technology (ONC) Health IT Certification Program as the standard terminology for clinical documentation outlining health IT standards, implementation specifications and certification criteria adopted by the Secretary of Health and Human Services (HHS).[1]

The ONC Health IT Certification Program supports the availability of certified health IT for its encouraged and required programs under federal, state and private programs.[2] Utilizing SNOMED CT for documentation provides a vendor-neutral way to consistently capture, store, aggregate and share clinical data across multiple sites of care and is fundamental to an interoperable electronic documentation system. It aids in organizing the content of electronic systems by reducing variability in the way data are used for clinical care of patients and research.[3]

As the United States health care system begins the evolution from quantity and process-orientated payments to payment policies focused on rewarding higher quality and improved patient outcomes, SNOMED CT is the standard for documenting diagnoses, interventions, and other clinical information to provide the data needed to study and demonstrate value.

Value Sets are a selection of codes used for documenting clinical information within health care software. Instead of sifting through the 300,000+ codes that exist within SNOMED CT, a subset is developed to help vendors and frontline implementers distinguish which codes to use within software fields for specific types of clinical documentation. Value Sets are used to build documentation frameworks within EHRs and other software solutions to meet interoperability standards and track patient outcomes across the spectrum of care.[4]

In September of 2016, the Center for Medicare and Medicaid Innovation (CMMI) announced The Part D Enhanced Medication Therapy Management (EMTM) Model.[5] The EMTM Model is a pilot project designed to test changes to the Medicare Part D program intended to align prescription drug program (PDP) sponsor and government financial interests and leverage incentives to foster innovation and advancement of MTM services. Participants are granted regulatory flexibility and financial support to explore ways to optimize services with a focus on improving outcomes and reducing overall cost of care. One of the main components of participation is documenting and reporting clinical information using SNOMED CT. The EMTM Model is slated to begin in January 2017. The CMMI has released data specifications that participants can use to meet the SNOMED CT reporting requirements.

1 "SNOMED CT." U.S National Library of Medicine. Department of Heath and Human Services, 13 July 2016. Web. 02 Oct. 2016.

2 "About the ONC Health IT Certification Program." ONC Health IT Certification Program. Office of the National Coordinator, 28 July 2016. Web. 02 Oct. 2016.

3 Ruch P, Gobeill J, Lovis C, Geissbuhler A. Automatic medical encoding with SNOMED categories. BMC Med Inform Decis Mak. 2008;8(Suppl 1):S6. doi:10.1186/1472-6947-8-S1-S6.

4 Pharmacy HIT Collaborative: Implementing SNOMED CT in Practice: A Beginner's Guide – Accessing Pharmacy Value Sets. May 27, 2016. Available at: http://www.pharmacyhit.org/pdfs/workshop-documents/VSC-Post-2016-01.pdf. Accessed July 18, 2016.

5 Part D Enhanced Medication Therapy Management Model." CMS Innovation Center. Centers for Medicare and Medicaid Services, 28 July 2016. Web. 02 Oct. 2016.

As pharmacists and pharmacies begin to utilize EHRs and other systems to document and share health care information in a more standardized manner, the adoption of SNOMED CT codes will be critical. This will require consensus on consistent and standardized definitions for the industry that describe pharmacists' patient care process[6] and recognition of Value Sets used to code for those services.

It is critical for the pharmacy profession to take the lead in defining pharmacists' services now as SNOMED CT codes will be used to document encounter data in the EMTM Model.[7] In addition, the Centers for Medicare and Medicaid Services (CMS) foreshadowed in the 2017 Final Call Letter that SNOMED CT codes will be forthcoming by stating "sponsors should begin to develop the capacity to collect and report drug therapy problems using a standard framework and common terminology.[8]"

6 Joint Commission of Pharmacy Practitioners. Pharmacists' Patient Care Process. Available at: http://jcpp.net/patient-care-process/. Accessed August 11, 2016.

7 The Part D Enhanced Medication Therapy Management (MTM) model will test whether providing Part D sponsors with additional payment incentives and regulatory flexibilities will engender enhancements in the MTM program, leading to improved therapeutic outcomes, while reducing net Medicare expenditures. For more information, please visit: https://innovation.cms.gov/initiatives/enhancedmtm/. Accessed July 19, 2016.

8 CMS - Announcement of Calendar Year (CY) 2017 Medicare Advantage (MA) Capitation Rates and Medicare Advantage and Part D Payment Policies and Final Call Letter. Released April 4, 2016. Available at https://www.cms.gov/Medicare/Health-Plans/MedicareAdvtgSpecRateStats/Downloads/Announcement2017.pdf. Accessed July 24, 2016.

Framework Development Process and Deliverables

The Academy of Managed Care Pharmacy (AMCP), Pharmacy Quality Alliance (PQA), and the Pharmacy Health Information Technology (PHIT) Collaborative jointly convened a multi-stakeholder group on July 12-13, 2016 in National Harbor, MD to develop a standardized framework for cross-walking medication therapy management (MTM) services to SNOMED CT codes. The multi-stakeholder approach provided an opportunity to engage participants in a profession-wide process to create consistency and standardization in how MTM services are defined. The participants also reviewed established MTM Value Sets to determine if gaps exist for services that may not have a corresponding SNOMED CT code and to identify if additional existing SNOMED CT codes should be added to a Value Set.

The meeting participants represented Medicare Part D sponsors, MTM vendors, technology vendors, community MTM providers, pharmacy professional organizations, EHR vendors, integrated delivery networks (IDN), and academia. Representatives from the Centers for Medicare and Medicaid Services (CMS), Center for Medicare and Medicaid Innovation (CMMI), and Office of the National Coordinator (ONC) also participated in the meeting as observers. The multi-stakeholder group represented the key professionals and entities in the pharmacy profession and provides the collective credibility necessary to develop profession-wide recommendations for the development of a standardized framework for cross-walking MTM services to SNOMED CT codes.

The goals of the meeting were as follows:

- **Short-term goal:** To provide a standardized framework for Medicare Part D sponsors participating in the EMTM Model to report data using SNOMED CT codes in a meaningful manner beginning with the initiation of the program. The intent is to promote interoperability and provide efficiencies in analyzing the data to determine which innovative approaches provide the greatest benefit to Medicare Part D beneficiaries.
- **Long-term goal:** To provide a standardized framework to use SNOMED CT codes for the documentation of all MTM services. In addition, to provide an ongoing process for refining the standardized framework as MTM services evolve over time.

In preparation for the meeting, the vast majority of participants completed an intensive pre-work assignment to develop definitions for several MTM services and review draft MTM Value Sets identified by the PHIT Collaborative for gaps and suggested improvements. The results of the pre-work assignments served as the basis for discussion during the on-site meeting.

Participants worked collaboratively to compare and contrast the definitions of MTM services provided during the pre-work to develop recommendations for consistent and standardized definitions for the profession. Participants abided by the following guiding principles:

- Definitions should be specific enough to distinguish one MTM service from another;
- Definitions should be flexible enough to allow for innovation under the EMTM model;
- Definitions must have the ability to evolve with the practice of pharmacy;
- Definitions should be adaptable across all practices of pharmacy and not be limited in application based on care model or payer type; and
- Definitions should align with the principles of evidence-based practice outlined in The Pharmacists' Patient Care Process.[9]

At the conclusion of the meeting, areas of alignment and outstanding questions were compiled in a draft proceedings document. To ensure broad stakeholder input, the draft proceedings document was made publicly available for an open comment period

9 Joint Commission of Pharmacy Practitioners. Pharmacists' Patient Care Process. Available at: http://jcpp.net/patient-care-process/. Accessed August 11, 2016.

between August 15, 2016 and September 16, 2016. Comments were received from thirty-seven pharmacy stakeholders.

In addition, a small workgroup with representatives from each of the Joint Commission of Pharmacy Practitioners (JCPP)[10] was convened to address specific areas requiring further discussion to achieve standardization, and to ensure that the clinician perspective was taken into account in the development of the framework. The workgroup also reviewed the stakeholder comments received and recommended revisions to the draft proceedings prior to finalization of the framework.

The suggested terms and definitions contained in this document incorporate feedback received from the stakeholder meeting in July, the public open comment period, and the JCPP workgroup. The suggested definitions represent the pharmacy profession's current thinking in this area and are intended to serve as a starting point for documenting MTM services using SNOMED CT codes.

However, it is important to note that this document is not intended to be stagnant and the framework should be reviewed and updated as evidence from the EMTM Model becomes available, as innovation in the delivery and documentation of MTM services continue, and as the practice of pharmacy continues to evolve. To ensure this work continues to progress and a profession-wide approach is maintained, it is the vision of the pharmacy profession that The Joint Commission of Pharmacy Practitioners (JCPP) serve as the steward for the MTM definitions and the PHIT Collaborative serve as the steward for Value Sets.

10 JCPP was established in 1977 and serves as a forum on matters of common interest and concern to national organizations of pharmacy practitioners and invited liaison members. For more information please visit http://jcpp.net/.

Suggested Definitions and Rationale for Consistency & Standardization in MTM Services

Drug vs. Medication

While *drug* and *medication* may be used synonymously *medication* is the preferred term and should be adopted moving forward. Therefore, the framework will reference *medication* as the preferred term.[11]

Rationale:

- Medication is a more comprehensive term that encompasses biologics, biosimilars, over-the-counter medications, herbals, and dietary supplements. Food and Drug Administration (FDA) regulatory pathways[12] also differentiate drugs from biologics and biosimilars, and therefore the term drug does not encompass biologics and biosimilars.
- Drug is often associated with a negative connotation by patients and considered to be a reference to illicit substances.

Pharmaceutical Care

Pharmaceutical care is defined as a philosophical approach describing "the responsible provision of medication therapy for the purpose of achieving definite outcomes that improve a patient's quality of life."

Rationale:

- The Hepler and Strand definition[13] of pharmaceutical care was adopted because it is still applicable today.
- Pharmaceutical care consists of the philosophy of practice, the patient care process, and the practice management system that supports the patient-centered patient care practice.
- Pharmaceutical care has a broad definition that includes the preparation, distribution, storage, and dispensing of medications in addition to the cognitive services encompassed as MTM.

Medication Therapy Management (MTM)

Medication Therapy Management is defined as:

> "a distinct service or group of services that optimize therapeutic, humanistic, and value-driven outcomes for individual patients. Medication Therapy Management services are independent of, but may occur in conjunction with, the provision of a medication product. Medication Therapy Management Services may be provided directly to the patient or in some situations, to the caregiver or other persons involved in the care of the patient.
>
> Medication Therapy Management encompasses a combination of professional activities and responsibilities within the licensed pharmacist's, or other qualified health care provider's, scope of practice. These services include, but are not limited to the following, according to the individual needs of the patient:
>
> a. Coordinating and integrating medication therapy management services within the broader health care management services being provided to the patient;
>
> b. Performing or obtaining necessary assessments of the patient's health status;
>
> c. Performing a comprehensive medication review to identify, resolve, and prevent medication-related problems, including adverse medication events;

11 For terms that may be used synonymously, the preferred term will be used in the framework. However, the synonymous terms will be cross-referenced and cross-mapped in the framework. For example, "medication therapy problem" will be cross-mapped to "drug therapy problem."

12 Sections 7001-7003 (Biologics Price Competition and Innovation Act of 2009) of the Patient Protection and Affordable Care Act (Public Law No. 111-148)

13 Hepler CD, Strand LM. Opportunities and responsibilities in pharmaceutical care. Am J Hosp Pharm 1990;47:533-43.

d. Formulating a patient-centered care plan;

e. Recommending, selecting, initiating, modifying, optimizing, or administering medication therapy;

f. Providing education and training designed to enhance patient understanding and appropriate use of his/her medications;

g. Providing information, support services, and resources designed to enhance patient adherence with his/her therapeutic regimens;

h. Documenting the care delivered in the electronic health record (EHR) and communicating essential information to the patient's other health care providers; and

i. Monitoring and evaluating the patient's response to therapy through follow-up, including medication appropriateness, safety, and effectiveness."

Rationale:

- The pharmacy stakeholder consensus definition of MTM developed in 2005[14] was modernized to reflect current pharmacy practice. The 2005 definition was amended to:
  - » Reorder the MTM activities to align with the approach outlined in The Pharmacists' Patient Care Process;[15]
  - » Highlight that MTM services not only optimize therapeutic outcomes for patients, but also optimize humanistic and value-driven outcomes;
  - » Emphasize that MTM services are not only provided directly to a patient, but in some situations may be provided to the caregiver or other persons involved in the care of the patient;
  - » Indicate that MTM services are not limited to the services listed; and
  - » Remove the last paragraph pertaining to payment for MTM services because it was more of a policy statement and inappropriate to include in the definition.
- There was debate whether the definition of MTM should include reference to the analysis of population health data to target individuals for MTM services. While it was agreed that data analytics was critical, it was agreed that the spirit of MTM services is at the individual patient level. Therefore, while data analytics is a mechanism to support the provision of MTM services, it is not appropriate to include in the definition of MTM but rather should be defined under utilization management, population management, or a similar term.
- Several comments suggested that the pharmacy stakeholder consensus definition of MTM developed in 2005 required substantial review and revisions to properly reflect contemporary pharmacy practice, the spectrum of MTM services, and alignment with the JCPP Patient Care Process. It is recommended that the definition of MTM be referred to JCPP for further review and revision beyond what is outlined in this document.

Adherence vs. Compliance

While *adherence* and *compliance* may be used synonymously *adherence* is the preferred term and should be adopted moving forward. Therefore, the framework will reference *adherence* as the preferred term.

Adherence is defined as "the degree to which the patient's behavior corresponds with the agreed upon recommendation from a health care provider."

Rationale:

- The World Health Organization (WHO) definition[16] of adherence was adopted because it is still applicable today.
- Adherence is applicable to both medication-related and non-medication-related (e.g. diet and exercise) recommendations made by a health care provider.
- Adherence encompasses a collaborative approach between a patient and a health care provider to arrive at agreed upon recommendations.

14 Bluml BM. Definition of medication therapy management: development of professionwide consensus. J Am Pharm Assoc. 2005;45:566-72.

15 Joint Commission of Pharmacy Practitioners. Pharmacists' Patient Care Process. Available at: http://jcpp.net/patient-care-process/. Accessed August 11, 2016.

16 Sabate E. Adherence to long-term therapies: evidence for action. Geneva: World Health Organization, 2003. Available at: http://bit.ly/2a8YYf3. Accessed July 18, 2016.

Adverse Medication Reaction vs. Adverse Medication Event

While *adverse medication reaction* and *adverse medication event* may be used synonymously *adverse medication event* is the preferred term and should be adopted moving forward. Therefore, the framework will reference *adverse medication event* as the preferred term.

Adverse medication event is defined as "an unwanted or unintended effect of a medication in a patient."

Rationale:

- The historic definition of adverse drug event, which was first adopted by WHO in 1972 and later adopted by the FDA in 1995,[17] was amended to streamline, modernize, and simplify the definition.
- The term adverse medication event is more comprehensive and includes medication errors, adverse medication reactions, allergic reactions, and overdoses.[18]
- Adverse medication event is considered an umbrella term that encompasses both allergies (immune response to a medication) and side effects (expected and known effects of a medication) as sub-categories. At this time, it is recommended that allergies and side effects remain as sub-categories of adverse medication event since distinguishing between them is not always feasible and the actions taken typically do not differ based upon whether the event is caused by an allergy or side effect. In addition, it is understood that the U.S. Pharmacopeial Convention (USP)[19] is leading an effort to develop consensus definitions for these terms across all health care practice settings and therefore the pharmacy profession should actively participate in that process and defer to USP in this area. However, coding should be as specific as possible when a distinction is made and this is an area that should be reviewed as science evolves and clearer distinctions are able to be drawn.

17 FDA - Guideline for Industry Clinical Safety Data Management: Definitions and Standards for Expedited Reporting ICH-E2A March 1995. Available at: http://www.fda.gov/downloads/Drugs/.../Guidances/ucm073087.pdf. Accessed July 19, 2016.

18 Healthcare Quality and Patient Safety. Adverse Drug Events Overview. Available at: https://health.gov/hcq/ade.asp. Accessed September 14, 2016.

19 The U.S. Pharmacopeial Convention (USP) is a scientific nonprofit organization that sets standards for the identity, strength, quality, and purity of medicines, food ingredients, and dietary supplements manufactured, distributed and consumed worldwide. For more information please visit http://www.usp.org/.

Comprehensive Medication Review (CMR)

Comprehensive medication review is defined as "an interactive assessment of a patient's complete health status, including all medications, herbals, and dietary supplements, to identify medication related problems, develop a prioritized list of patient-centric goals, and create a patient-centered care plan to address them. A CMR includes a medication reconciliation and involves the patient, caregiver, or other persons involved in the care of the patient. "

Rationale:

- The MTM Core Elements Version 2.0 definition[20] of comprehensive medication review was adopted with minor editorial revisions.
- A CMR includes all medications that a patient is taking including prescription, over-the-counter, herbals, dietary supplements, and medications administered in-office.

Education vs. Counseling

While *education* and *counseling* may be used synonymously *education* is the preferred term and should be adopted moving forward. Therefore, the remainder of this document will reference *education* as the preferred term.

Education is defined as "the provision of information and resources to optimize patient outcomes."

Rationale:

- Counseling is an education technique, but education itself is a broader term that encompasses all vehicles for providing education.

20 American Pharmacists Association, National Association of Chain Drug Stores Foundation. Medication therapy management in pharmacy practice: core elements of an MTM service model (version 2.0). Washington (DC) and Alexandria (VA): American Pharmacists Association and National Association of Chain Drug Stores Foundation; 2008 Mar.

Medication Action Plan (MAP)

Medication action plan is defined as "a patient-centric document containing a list of actions for the patient to use in tracking progress for self-management of their medication goals."

Rationale:

- The MTM Core Elements Version 2.0 definition[21] of medication action plan was adopted because it is still applicable today.
- *Medication action plan* is differentiated from a *patient-centered care plan* as a medication action plan is intended for use by the patient, whereas a patient-centered care plan is intended for use by a pharmacist or other health care provider.
- Medication action plan is the terminology used by CMS in the MTM Standardized Format. [22]
- It was noted in comments and during discussion that the current MAP format required by CMS is unwieldy and may not result in the intended benefit to patients and caregivers. It is recommended that CMS work with the pharmacy profession to test alternate formats for the MAP to maximize its intended benefit.

Medication Goals

Medication goals is defined as "the patient-centered desired outcome of medication therapy."

Rationale:

- Medication goals should be individualized to the patient. This should be a collaborative process between the health care provider and patient, caregiver, or other persons involved in the care of the patient to determine what the patient wishes to achieve with medication therapy.

21 American Pharmacists Association, National Association of Chain Drug Stores Foundation. Medication therapy management in pharmacy practice: core elements of an MTM service model (version 2.0). Washington (DC) and Alexandria (VA): American Pharmacists Association and National Association of Chain Drug Stores Foundation; 2008 Mar.

22 Medicare Part D Medication Therapy Management Program Standardized Format. Available at: https://www.cms.gov/medicare/prescription-drug-coverage/prescriptiondrugcovcontra/downloads/mtm-program-standardized-format-english-and-spanish-instructions-samples-.pdf. Accessed July 19, 2016.

Medication Reconciliation

Medication reconciliation is defined as "a systematic and patient-centric process of identifying the most accurate list of all medications, herbals, and dietary supplements that the patient is taking, including name, dosage, frequency, and route, by comparing all necessary sources of information."

Rationale:

- The CMS definition[23] of medication reconciliation was adopted with minor revisions because it is still applicable today.
- Medication reconciliation includes all medications that a patient is taking including prescription, over-the-counter, herbals, dietary supplements, and medications administered in-office.
- Medication reconciliation involves two or more sources of information and involves the patient.
- Medication reconciliation results in the creation of a personal medication list (PML).
- It was debated whether a separate term should be defined for *medication reconciliation by a pharmacist* to indicate when a pharmacist performed medication reconciliation versus another health care provider. Those in favor suggested that a medication reconciliation performed by a pharmacist included additional cognitive services and should be differentiated. Those not in favor suggested that medication reconciliation with additional cognitive services is in essence a *comprehensive medication review*, and therefore the use of a separate term is not necessary at this time. To move forward for the purposes of the EMTM Model, it is recommended that a separate term is not necessary and that if additional evaluation of medication therapies for appropriateness, effectiveness, safety, and adherence occurs, it should be coded as such in addition to coding for medication reconciliation. Also, mechanisms should be in place to identify the provider type for the medication reconciliation service so that data can be evaluated to determine if there are major differences in outcomes for

23 CMS – Stage 2 Eligible Professional Meaningful Use Core Measures, Measure 14 of 17. Issued October 2012. Available at: https://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/downloads/Stage2_EPCore_14_MedicationReconciliation.pdf. Accessed July 19, 2016.

medication reconciliation based upon the provider type performing the service. Based on the learnings from the EMTM Model, the medication reconciliation definition may be refined in the future.

Medication Synchronization

Medication synchronization is defined as "at the patient's direction, a process to proactively adjust the medication quantity or refill schedule and to manage a patient's maintenance medications by coordinating the refill schedules to best meet patient needs and improve patient outcomes."

Rationale:

- The National Association of Boards of Pharmacy (NABP) definition[24] of medication synchronization was adopted.
- The definition of medication synchronization should not indicate that refills be aligned to a single date as depending upon patient preference, refills may be scheduled to purposely stagger throughout the month or be refilled in smaller quantities than a 30 or 90 day supply.
- Medication synchronization may lead to the provision of additional MTM services such as comprehensive medication review, optimizing medication adherence, or minimizing adverse medication events.

Medication Therapy Problem

Medication therapy problem is defined as "any undesirable event experienced by a patient that involves, or is suspected to involve, medication therapy, and that interferes with achieving the desired goals of therapy and requires professional judgment to resolve."

Rationale:

- The Cipolle and Strand definition[25] of medication therapy problem was adopted because it is still applicable today.
- PQA has developed a Medication Therapy Problem Categories Framework[26] to promote consistent categorization of medication therapy problems for use within measures.

Medication Therapy Recommendation

Medication therapy recommendation is defined as "a suggestion made to take a specific course of action to prevent or resolve a medication therapy problem."

Rationale:

- Medication therapy recommendation is a subset of medication therapy intervention.
- In certain situations, dependent upon scope of practice and collaborative practice agreements in place, a pharmacist may have the ability to intervene and take action on their own medication therapy recommendation(s).

Medication Therapy Intervention

Medication therapy intervention is defined as "an action taken to prevent or resolve a medication therapy problem."

24 Model State Pharmacy Act and Model Rules of the National Association of Boards of Pharmacy August 2015. Available at: http://www.nabp.net/publications/model-act/. Accessed July 19, 2016.

25 Cipolle RJ. Strand LM, Morley PC. Pharmaceutical Care Practice: The Clinician's Guide. New York: McGraw Hill; 2004.

26 The Medication Therapy Problems (MTP) Categories Framework is a consensus-based document developed by the Pharmacy Quality Alliance's (PQA's) Measure Development Team (MDT) 9, to provide a framework for development of measures involving MTPs. Available at: http://pqaalliance.org/resources/other.asp. Accessed October 5, 2016.

Rationale:

- *Medication therapy intervention* is differentiated from *medication therapy recommendation* by emphasizing that an intervention requires an action.

Non-Pharmacological Recommendation

Non-pharmacological recommendation is defined as "a suggestion made to take a specific course of action that is not related to a medication, herbal, or dietary supplement such as diet, exercise, smoking cessation, or lifestyle adjustments to improve a patient's overall health status."

Rationale:

- Non-pharmacological recommendation is a subset of non-pharmacological intervention.
- Through discussion and comments, it was recommended that non-pharmacological recommendations and interventions should be differentiated from medication therapy recommendations and interventions as it is important to document that MTM services may result in non-pharmacological recommendations and interventions as well.
- In certain situations, dependent upon scope of practice and collaborative practice agreements in place, a pharmacist may have the ability to intervene and take action on their own non-pharmacological recommendation(s).

Non-Pharmacological Intervention

Non-pharmacological intervention is defined as "an action taken that is not related to a medication, herbal, or dietary supplement to improve a patient's overall health status."

Rationale:

- *Non-pharmacological intervention* is differentiated from *non-pharmacological recommendation* by emphasizing that an intervention requires an action.

Personal Medication List (PML) vs. Personal Medication Record (PMR)

While *personal medication list* and *personal medication record* may be used synonymously *personal medication list* is the preferred term and should be adopted moving forward. Therefore, the framework will reference *personal medication list* as the preferred term.

Personal medication list is defined as "a comprehensive, reconciled, and portable list of the patient's current medications resulting from a MTM-related service."

Rationale:

- The MTM Core Elements Version 2.0 definition[27] of personal medication record was amended to indicate that it must be reconciled and also be in a format that is portable for the patient. In addition, it was clarified that a PML is the end-result of a MTM-related service such as a CMR or medication reconciliation.
- Personal medication list is the terminology used by CMS in the MTM Standardized Format.[28]
- It was noted in comments and during discussion that the current PML format required by CMS is unwieldy and may not result in the intended benefit to patients and caregivers. It is recommended that CMS work with the pharmacy profession to test alternate formats for the PML to maximize its intended benefit.

27 American Pharmacists Association, National Association of Chain Drug Stores Foundation. Medication therapy management in pharmacy practice: core elements of an MTM service model (version 2.0). Washington (DC) and Alexandria (VA): American Pharmacists Association and National Association of Chain Drug Stores Foundation; 2008 Mar.

28 Medicare Part D Medication Therapy Management Program Standardized Format. Available at: https://www.cms.gov/medicare/prescription-drug-coverage/prescriptiondrugcovcontra/downloads/mtm-program-standardized-format-english-and-spanish-instructions-samples-.pdf. Accessed July 19, 2016.

Targeted Medication Review (TMR)

Targeted medication review is defined as "a focused review to assess medication use in order to monitor unresolved medication therapy problems and/or determine if new medication therapy problems have arisen."

Rationale:

- The CMS definition[29] of TMR was amended to remove the reference to transition of care and the timeframe within which a TMR must be performed.
- A TMR may include a patient, but is not required to include a patient. However, TMRs that result in a recommendation to change the patient's medication regimen should include consideration of the patient's perspective as part of the assessment process and notification of the patient for any changes that occur.
- A TMR may occur under several scenarios, including but not limited to:
  - » TMR in follow up to a comprehensive medication review;
  - » TMR not associated with a comprehensive medication review;
  - » TMR in follow up to an algorithmic process to identify patients with potential medication therapy problems; and
  - » TMR with direct communication to a patient's health care provider.
- It was debated whether a TMR must include a patient. Those in favor suggested that a TMR is intended to be an interactive process with a patient and that communications between a pharmacist and physician that do not include the patient should be defined as a different type of activity and not a TMR. Those not in favor referenced a 2012 CMS memo[30] where CMS differentiated between a CMR and TMR and stated under a TMR "Sponsors may also offer follow-up interventions to the beneficiaries' prescribers to resolve medication-related problems or other opportunities to optimize the targeted beneficiaries' medication use. These prescriber consultations may be passive (e.g., faxed or mailed) or interactive when determined necessary." At this time, it is recommended that a TMR may include a patient, but is not required as there needs to be flexibility for patients who decline MTM services or interactions with pharmacists. In those cases, working directly with the physician is the only viable option. The definition of TMR should be further refined as learnings from the EMTM Model are made available and if differences in outcomes are seen for TMRs that involve a patient versus those that do not.

29 CMS 2011 Medicare Part D Medication Therapy Management (MTM) Programs Fact Sheet. Released June 30, 2011. Available at: https://www.cms.gov/Medicare/Prescription-Drug-Coverage/PrescriptionDrugCovContra/downloads/MTMFactSheet2011063011Final.pdf. Accessed July 19, 2016.

30 CMS CY 2013 Medication Therapy Management Program Guidance and Submission Instructions. Released April 10, 2012. Available at: http://go.cms.gov/2dCLJK0. Accessed July 19, 2016.

Development of SNOMED CT Value Sets for Documentation of MTM Services

On behalf of the pharmacy profession, the PHIT Collaborative has become the steward of SNOMED CT codes for MTM services. As a steward, the PHIT Collaborative maintains pharmacy-related SNOMED CT codes and Value Sets which includes identifying existing SNOMED CT codes, managing the request process for new codes, authoring new Value Sets, and managing changes to existing Value Sets. SNOMED CT codes are organized into Value Sets and published within the National Library of Medicine's (NLM) Value Set Authority Center (VSAC)[31] to assist stakeholders in implementation. The PHIT Collaborative maintains a Value Set Committee of appointed members tasked to provide guidance and make decisions on modifications to pharmacy SNOMED CT codes and Value Sets. The PHIT Collaborative provides a mechanism for submitting inquiries and requesting modifications to Value Sets through their website.

Additional information on the PHIT Collaborative Value Set process is located on the PHIT Collaborative resource webpage http://www.pharmacyhit.org/index.php/links.

As part of the pre-work assignment, participants were asked to review draft MTM Value Sets identified by the PHIT Collaborative for gaps and suggested improvements. As a result of participant feedback, the Value Sets were rearranged to align with the four MTM encounter data elements – issue, outcome, procedure, and referral – outlined in the Enhanced MTM Model Encounter Data Specification Plan.[32] In addition, participants identified 179 gaps in the draft Value Sets that were addressed by the PHIT Collaborative as follows:

- 17 SNOMED CT codes were added to existing Value Sets
- 42 SNOMED CT codes were added to new Value Sets that were created
- 44 SNOMED CT codes already existed in Value Sets and were duplicates
- 4 SNOMED CT code requests are considered "pre-coordinated" where two or more existing SNOMED CT codes should be used together to describe the same service
- 20 SNOMED CT code requests do not exist and must be requested through the National Library of Medicine
- 49 SNOMED CT code requests require additional information or clarification prior to proceeding. The PHIT Collaborative is working to reach out to the individuals who requested these codes to seek clarification.

The revised draft of MTM Value Sets were released for public comment. During the public comment period, an additional 323 gaps were identified in the revised draft MTM Value Sets. The PHIT Collaborative is working to review all SNOMED CT code requests received during the public comment period with its Value Set Committee and other stakeholders. An initial analysis of the change requests received during the public comment period is included in Appendix A. At the conclusion of the analysis, the PHIT Collaborative will formally publish the MTM Value Sets on the VSAC and communicate their availability to all stakeholders. The PHIT Collaborative is also working to develop a cadence for how frequently the MTM Value Sets will be updated.

31 National Library of Medicine Value Set Authority Center (VSAC) available at https://vsac.nlm.nih.gov.

32 Medicare Part D Enhanced Medication Therapy Management (MTM) Model Enhanced MTM Model Encounter Data Specification Plan. Released July 28, 2016. Available at: https://innovation.cms.gov/Files/x/mtm-encounterplan.pdf. Accessed August 12, 2016.

Suggested Clarifying Questions for CMMI

The pharmacy profession agrees that it would be beneficial for the Center for Medicare and Medicaid Innovation (CMMI) to release a Frequently Asked Questions (FAQ) document to address areas of ambiguity in the profession's understanding of how to administer SNOMED CT codes for documentation of MTM services in the EMTM Model. Scenarios and examples whenever possible would be beneficial. Suggested areas to address include:

- What are the types of MTM encounters that are reportable using SNOMED CT?
- When multiple SNOMED CT codes exist that are applicable, should the more general or specific term be applied?
  - » Example - targeted medication therapy review vs. pulmonary disorder medication review
- When and how should SNOMED CT be paired with other clinical terms, such as ICD and RxNorm?
  - » Examples - targeted medication therapy review paired with ICD 10 code for pulmonary disorder vs. pulmonary disorder medication review

Areas for Future Consideration

The pharmacy profession is committed to reviewing and updating the suggested definitions and Value Sets outlined in this document regularly as evidence from the EMTM Model becomes available, as innovation in the delivery and documentation of MTM services continue, and as the practice of pharmacy continues to evolve. While the entire framework will be evaluated regularly, the following are specific areas, at minimum, the pharmacy profession commits to addressing and working towards resolution in future iterations of this framework:

- Mechanisms to identify the provider type for all MTM services;
- Mechanisms to document the time and level of effort associated with each MTM service encounter;
- Substantial review and revisions to the definition of Medication Therapy Management to properly reflect contemporary pharmacy practice, the spectrum of MTM services, and alignment with the JCPP Patient Care Process;
- Review of the definition of adverse medication event and its sub-categories to align with recommendations from USP;
- Evaluation of EMTM Model data to determine if there are differences in outcomes for medication reconciliation based upon the provider type performing the service and review of the definition of medication reconciliation as necessary;
- Evaluation of EMTM Model data to determine if there are differences in outcomes for TMRs that involve a patient versus those that do not and review of the definition of TMR as necessary;
- Review of the term medication regimen review, which is currently defined in the CMS State Operations Manual[33] as a required service in the

33 CMS State Operating Manual. Available at https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/Internet-Only-Manuals-IOMs-Items/CMS1201984.html. Accessed October 2, 2016.

long-term care setting, to determine its relevance and applicability across all practice settings;

- Understanding the role of utilization management and population health in MTM and the creation of definitions as necessary;
- Design and testing of alternate formats for the MAP and PML to maximize their intended benefit; and
- Consideration and adoption of a systematic method for building consensus to better promote harmonization and fidelity to established clinical practice standards and individual organizational policies.

Conclusion

Using SNOMED CT codes for documenting clinical services creates a foundation for interoperability and reporting to facilitate well-communicated care across all provider settings and reporting outcomes to demonstrate value. SNOMED CT codes will be required for documentation in the EMTM Model and regulatory agencies are beginning to foreshadow that use of SNOMED CT codes will soon be required in additional areas. Prior to implementation and utilization for MTM services, and regulatory mandates, the pharmacy profession must work together to develop consistent and standardized definitions of MTM services. In addition, the identification and evaluation of pharmacy-related SNOMED CT codes and Value Sets is needed to assist pharmacists in documenting care in alignment with the JCPP Pharmacists' Patient Care Process.

AMCP, PQA, and the PHIT Collaborative convened a multi-prong process to gather input from the pharmacy profession to develop standardized definitions for MTM services and identify draft MTM Value Sets. The recommendations from this multi-prong process represent profession-wide recommendations for the initial development of a standardized framework for cross-walking MTM services to SNOMED CT codes. The framework should be reviewed and updated as evidence from the EMTM Model becomes available, as innovation in the delivery and documentation of MTM services continue, and as the practice of pharmacy continues to evolve. To ensure this work continues to progress and a profession-wide approach is maintained, it is the vision of the pharmacy profession that The Joint Commission of Pharmacy Practitioners (JCPP) serve as the steward for the MTM definitions and the PHIT Collaborative serve as the steward for Value Sets.

Appendix A

Draft PHIT Collaborative MTM Value Sets (updated October 2016)[34]

I. Issues

a. Findings Related to Medication Management

ABCDEF = Request to Add or Modify

ABCDEF = Request to Remove

SNOMED CT Concept
1. IMMUNIZATION STATUS
Immunization status unknown (finding)
Not up to date with immunizations (finding)
Up-to-date with immunizations (finding)
2. HEALTH LITERACY
Deficient knowledge (finding)
Deficient knowledge of disease process (finding)
Deficient knowledge of medication regimen (finding)
Deficient knowledge of therapeutic regimen (finding)
3. MULTIPLE PROVIDERS
Under care of multiple providers (finding)
4. CHRONIC DISEASE PRESENT
Chronic disease present (situation)
Multiple chronic diseases (situation)
One chronic disease (situation)
5. TAKING MEDICATIONS FOR CHRONIC DISEASE
Taking medication for chronic disease (finding)
Taking multiple medications for chronic disease (finding)
Taking one medication for chronic disease (finding)
6. BODY MASS INDEX
Body mass index 20-24 - normal (finding)
Body mass index 25-29 - overweight (finding)
Body mass index 30+ - obesity (finding)
Body mass index 40+ - severely obese (finding)
Body mass index less than 20 (finding)

34 Please note: The draft Value Sets are not intended to be used for implementation and therefore only include the clinical concepts represented by a specific SNOMED CT code. To access complete Value Sets and the complete SNOMED CT code library of 300,000+ codes, please download the US Edition of SNOMED CT from the National Library of Medicine (NLM). You will need to have signed a UMLS Metathesaurus license to access SNOMED CT from NLM. To request a license click "Sign Up" on the UTS Homepage. Additional information can be found on the UMLS License page and on the NLM SNOMED CT License page.

7. EATING HABITS
^ Value Set Name Change ^
Does not eat (finding)
Eating habit unknown (finding)
Eating normal (finding)
Overeating (finding)
Inadequate food diet (finding)
8. DIET
^ New Value Set ^
Diabetic diet (finding)
Cholesterol-lowering diet (finding)
9. EXERCISE
Excessive exercise (finding)
Exercise above recommended level (finding)
Exercise below recommended level (finding)
Exercise physically impossible (finding)
Exercises regularly (finding)
Gets no exercise (finding)
10. TOBACCO USE
Never smoked tobacco (finding)
Tobacco smoking consumption unknown (finding)
Occasional tobacco smoker (finding)
Light tobacco smoker (finding)
Heavy tobacco smoker (finding)
Smokes tobacco daily (finding)
Smoker (finding)
Ex-smoker (finding)
Tobacco user (finding)
Chews tobacco (finding)
11. ALCOHOL USE
Alcohol consumption unknown (finding)
Alcohol intake exceeds recommended daily limit (finding)
Alcohol intake within recommended daily limit (finding)
12. CAFFEINE USE
Caffeine user (finding)
Excessive caffeine intake (finding)
13. ILLICIT DRUG USE
Illicit drug use (finding)
Illicit drug use unknown (finding)

14. LIFE EVENTS
^ Retire Value Set ^
Divorce, life event (finding)
Finding of personal milestones (finding)
Gain of new family member, life event (finding)
Illegitimate pregnancy, life event (finding)
Impending marriage, life event (finding)
Life crisis, life event (finding)
Marital separation, life event (finding)
Offspring leaving home, life event (finding)
Recent marriage, life event (finding)
Retired, life event (finding)
15. TRANSITION OF CARE
Transition from acute care to home-health care (finding)
Transition from acute care to hospice (finding)
Transition from acute care to long-term care (finding)
Transition from acute care to self-care (finding)
Transition from home-health care to acute care (finding)
Transition from home-health care to hospice (finding)
Transition from home-health care to long-term care (finding)
Transition from home-health care to self-care (finding)
Transition from hospice to acute care (finding)
Transition from hospice to home-health care (finding)
Transition from hospice to long-term care (finding)
Transition from hospice to self-care (finding)
Transition from long term care to self-care (finding)
Transition from long-term care to acute care (finding)
Transition from long-term care to home-health care (finding)
Transition from long-term care to hospice (finding)
Transition from self-care to acute care (finding)
Transition from self-care to home-health care (finding)
Transition from self-care to hospice (finding)
Transition from self-care to long term care (finding)
Transition of care (finding)

ABCDEF = Request to Add or Modify

ABCDEF = Request to Remove

b. Reasons for Interventions Related to Medication Management
(a.k.a. Medication Therapy Problems)

SNOMED CT Concept
1. NEW OR ADDITIONAL THERAPY NEEDED
Additional medication required for additive effect (finding)
Additional medication required for synergistic effect (finding)
Additional medication therapy required (finding)
New medication therapy needed for condition (situation)
Preventive medication therapy needed (situation)
2. DOSE TOO HIGH
Duration of medication therapy too long (finding)
Medication dosage interval too short (finding)
Medication dose too high (finding)
Toxic adverse drug interaction with drug (disorder)
Medication administered too rapidly (finding)
3. DOSE TOO LOW
Active ingredient availability decreased due to interaction (finding)
Duration of medication therapy too short (finding)
Medication dosage interval too long (finding)
Medication dose too low (finding)
4. INEFFECTIVE THERAPY
Drug formulation inappropriate (finding)
Improper storage of medication (finding)
Medication dosage form inappropriate (finding)
Medication not effective (finding)
More effective medication therapy available (finding)
Treatment not tolerated (situation)
5. UNNECESSARY THERAPY
Alcohol abuse (disorder)
Drug abuse (disorder)
Drug treatment not indicated (situation)
Medication taken to treat adverse drug reaction (finding)
Medication therapy unnecessary (finding)
Multiple medications taken for condition appropriately treated with single medication therapy (finding)
Patient condition appropriate for non-medication therapy (finding)
Recreational drug user (finding)
Tobacco user (finding)

6. ADVERSE MEDICATION EVENTS
^ Value Set Name Change ^
Adverse drug interaction (disorder)
Adverse drug interaction with alcohol (disorder)
Adverse drug interaction with drug (disorder)
Adverse drug interaction with food (disorder)
Adverse drug interaction with tobacco (disorder)
Adverse reaction to drug (disorder)
Allergic reaction to drug (disorder)
Medication administered too rapidly (finding)
Non dose-related adverse reaction to medication (disorder)
Vaccines adverse reaction (disorder)
Drug interaction potentiation (finding)
7. NON-ADHERENCE
^ Value Set Name Change ^
Improper medication administration technique (finding)
Medication overuse (finding)
Medication taken at higher dose than recommended (finding)
Medication taken at lower dose than recommended (finding)
Noncompliance with medication regimen (finding)
Patient forgets to take medication (finding)
Patient misunderstood treatment instructions (finding)
Patient on numerous drugs (finding)
Patient refuses to take medication (situation)
Patient unable to obtain medication (finding)
Suspected noncompliance with therapeutic regimen (situation)
Takes medication less frequently than recommended (finding)
Takes medication more frequently than recommended (finding)
Unable to self-administer medication (finding)
Unable to swallow (finding)
Uses less medication than prescribed (finding)
8. COST-RELATED
^ Retire Value Set ^
Cost effective medication alternatives available (finding)

ABCDEF = Request to Add or Modify

ABCDEF = Request to Remove

II. Procedures

a. Assessments Related to Medication Management

SNOMED CT Concept
1. GENERAL ASSESSMENT
Functional assessment (procedure)
Pain assessment (procedure)
Assessment of adverse drug reactions (procedure)
Assessment of compliance with medication regimen (procedure)
Health literacy assessment (procedure)
Immunization status screening (procedure)
Fall risk assessment (procedure)
2. ASSESSMENT USING ASSESSMENT SCALE
Assessment using geriatric depression scale (procedure)
Assessment using geriatric depression scale short form (procedure)
Assessment using visual analog pain scale (procedure)
Assessment using World Health Organization fracture risk assessment tool for osteoporotic fracture probability (procedure)
Assessment using National Institutes of Health stroke scale (procedure)
Assessment using congestive heart failure, hypertension, age 2, diabetes mellitus, stroke 2 - vascular disease, age, sex category score (procedure)
Assessment using mini-mental state examination (procedure)
Assessment using generalized anxiety disorder 7 item score (procedure)
Assessment using Mini-cog brief cognitive screening test (procedure)
Depression screening using Patient Health Questionnaire Nine Item score (procedure)
Instrumental activities of daily living assessment (procedure)
Timed up and go mobility test (assessment scale)

b. Interventions Related to Discussion

SNOMED CT Concept
Discussed with doctor (situation)
Discussed with carer (situation)
Discussed with patient (situation)

c. Interventions Related to Medication Managemen

SNOMED CT Concept
1. PATIENT NOTIFICATION [MOVED FROM FINDINGS TO PROCEDURES]
Patient notified of eligibility for medication therapy management service (situation)
2. PROVISION OF DOCUMENTS
Provision of medication list (procedure)
Provision of medication related action plan (procedure)
Medication reminder chart given (situation)
Provision of personal medication record (procedure)

3. COMMUNICATION NEEDS
Interpreter/translator services education, guidance, counseling (procedure)
4. MEDICATION ACTION PLAN
Documentation of medication related action plan (procedure)
5. MEDICATION RECONCILIATION
Documentation of current medications (procedure)
Medication reconciliation (procedure)
Medication reconciliation by pharmacist (procedure)
6. REFILL SYNCHRONIZATION
Synchronization of repeat medication (procedure)
7. COMPREHENSIVE MEDICATION REVIEW
Comprehensive medication therapy review (procedure)
Medication regimen review (procedure)
8. TARGETED MEDICATION REVIEW
Allergy medication review (procedure)
Anticoagulation medication review (procedure)
Asthma medication review (procedure)
Cardiovascular disorder medication review (procedure)
Chronic obstructive lung disorder medication review (procedure)
Coronary heart disease medication review (procedure)
Depression medication review (procedure)
Diabetes medication review (procedure)
Dyslipidemia medication review (procedure)
Endocrine disorder medication review (procedure)
Gastrointestinal disorder medication review (procedure)
Gout medication review (procedure)
Heart failure medication review (procedure)
Hematologic disorder medication review (procedure)
Human immunodeficiency virus medication review (procedure)
Hypertension medication review (procedure)
Immunologic disorder medication review (procedure)
Infectious disease medication review (procedure)
Mental health medication review (procedure)
Metabolic disorder medication review (procedure)
Neurological disorder medication review (procedure)
Oncologic medication review (procedure)
Pain medication review (procedure)
Palliative care medication review (procedure)
Pregnancy and lactation medication review (procedure)
Pulmonary disorder medication review (procedure)
Renal disorder medication review (procedure)
Rheumatologic disorder medication review (procedure)
Smoking cessation medication review (procedure)

ABCDEF = Request to Add or Modify

ABCDEF = Request to Remove

Transplant medication review (procedure)
Geriatric syndrome medication review (procedure)
9. IMMUNIZATIONS
Administration of substance to produce immunity, either active or passive (procedure)
Haemophilus influenzae immunization (procedure)
Hepatitis A immunization (procedure)
Hepatitis B vaccination (procedure)
Influenza vaccination (procedure)
Measles-mumps-rubella vaccination (procedure)
Meningococcus vaccination (procedure)
Pneumococcal vaccination (procedure)
Tetanus, diphtheria and acellular pertussis vaccination (procedure)
Varicella vaccination (procedure)
Vaccination for human papillomavirus (procedure)
Poliomyelitis vaccination (procedure)
Rabies vaccination (procedure)
Yellow fever vaccination (procedure)
10. DEVICE OR EQUIPMENT FITTING
^ Retire Value Set ^
Fitting of arm sling (procedure)
Fitting of orthotic device (procedure)
Fitting of shoe (procedure)
Fitting of splint (procedure)
Fitting stoma bag (procedure)
Fitting/adjustment of crutches (procedure)
Medication reminder device set-up (procedure)

d. Interventions Related to Education

SNOMED CT Concept
1. BEHAVIOR EDUCATION
Education about alcohol consumption (procedure)
Education about risk of fall (procedure)
Education about sleep hygiene behavior (procedure)
Exercise education (procedure)
Eye care education (procedure)
Foot care education (procedure)
Pregnancy and lactation education (procedure)
Smoking cessation education (procedure)
2. DIET EDUCATION
Celiac disease diet education (procedure)
Diabetes mellitus diet education (procedure)
Diet education (procedure)

Dietary education about fluid restriction (procedure)
Dietary education about vitamin intake (procedure)
Dietary education for constipation (procedure)
Dietary education for disorder (procedure)
Dietary education for eating disorder (procedure)
Dietary education for food intolerance (procedure)
Dietary education for hepatic disorder (procedure)
Dietary education for hyperlipidemia (procedure)
Dietary education for impaired glucose tolerance (procedure)
Dietary education for lipid disorder (procedure)
Dietary education for pancreatic disorder (procedure)
Dietary education for renal disorder (procedure)
Dietary education for weight gain (procedure)
Gluten-free diet education (procedure)
High protein diet education (procedure)
Lactose-free diet education (procedure)
Low carbohydrate diet education (procedure)
Low cholesterol diet education (procedure)
Low fat diet education (procedure)
Low salt diet education (procedure)
Osteoporosis dietary education (procedure)
Phenylalanine-free diet education (procedure)
Phenylketonuria diet education (procedure)
Pregnancy diet education (procedure)
Vitamin K dietary intake education (procedure)
Weight-reducing diet education (procedure)
Enteral feeding education (procedure)
3. MEDICAL EQUIPMENT & DEVICE EDUCATION
Blood pressure taking education (procedure)
Medical equipment or device education (procedure)
Infusion care education (procedure)
International normalized ratio monitoring education (procedure)
Education about use of pill box (procedure)
4. IMMUNIZATION EDUCATION
Immunization education (procedure)
5. DISEASES & DISORDERS EDUCATION
Allergy education (procedure)
Asthma education (procedure)
Cancer education (procedure)
Chronic disease process education (procedure)
Chronic obstructive pulmonary disorder education (procedure)
Coronary heart disease education (procedure)
Depression education (procedure)

ABCDEF = Request to Add or Modify

ABCDEF = Request to Remove

Diabetic education (procedure)
Dyslipidemia education (procedure)
Education about cardiovascular disease (procedure)
Education about disorders requiring anticoagulation therapy (procedure)
Education about endocrine disorder (procedure)
Education about gastrointestinal disorder (procedure)
Education about hematologic disorder (procedure)
Education about immune disorder (procedure)
Education about infectious disease (procedure)
Education about metabolic disease (procedure)
Education about neurologic disorder (procedure)
Education about organ transplantation (procedure)
Education about respiratory disorder (procedure)
Gout education (procedure)
Heart failure education (procedure)
Human immunodeficiency virus education (procedure)
Hypertension education (procedure)
Hypoglycemia education (procedure)
Pain education (procedure)
Palliative care education (procedure)
Psychiatric disorder education (procedure)
Renal disorder education (procedure)
Rheumatology education (procedure)
Lab findings education, guidance, and counseling (procedure)
Oral health education (procedure)
Disease process or condition education (procedure)
Geriatric syndrome education (procedure)
Blood glucose control education (procedure)
6. MEDICATION EDUCATION
Education about medication handling (procedure)
Education about medication intake during pregnancy (procedure)
Education about safe storage and management of medication (procedure)
Medication administration education (procedure)
Medication education (procedure)
Medication efficacy education (procedure)
Medication failure risk education (procedure)
Medication interaction education (procedure)
Medication interaction with food education (procedure)
Medication interaction with medication education (procedure)
Medication monitoring education (procedure)
Medication regimen compliance education (procedure)
Medication side effects education (procedure)

Over-the-counter medication education (procedure)
Prescribed medication education (procedure)
Route of medication administration education (procedure)

e. Interventions Related to Medication Regimen

SNOMED CT Concept
1. INITIATE MEDICATION
Dietary supplement started (situation)
Herbal supplement started (situation)
Medication commenced (situation)
Over-the-counter medication started (situation)
Prescription medication started (situation)
2. DISCONTINUE MEDICATION
Dietary supplement discontinued (situation)
Drug therapy discontinued (situation)
Herbal supplement discontinued (situation)
Over-the counter medication discontinued (situation)
Prescription medication discontinued (situation)
3. CHANGE MEDICATION
Medication change to generic (procedure)
Medication changed to therapeutic equivalent (situation)
Medication changed to therapeutic equivalent on formulary (situation)
Medication therapy changed (situation)
4. CHANGE MEDICATION DOSE
Medication dose changed (situation)
Medication dose decreased (situation)
Medication dose increased (situation)
5. CHANGE MEDICATION DOSING INTERVAL
Medication dosing interval changed (situation)
Medication dosing interval decreased (situation)
Medication dosing interval increased (situation)
6. CHANGE MEDICATION COURSE
Medication course changed (situation)
Medication course lengthened (situation)
Medication course shortened (situation)
7. CHANGE MEDICATION DOSAGE FORM
Medication dosage form changed (situation)

ABCDEF = Request to Add or Modify

ABCDEF = Request to Remove

f. Recommendations Related to Medication Regimen

SNOMED CT Concept
1. CONTINUE MEDICATION
Recommendation to continue a medication (procedure)
2. INITIATE MEDICATION
Recommendation to start dietary supplement (procedure)
Recommendation to start drug treatment (procedure)
Recommendation to start herbal supplement (procedure)
Recommendation to start over-the-counter medication (procedure)
Recommendation to start prescription medication (procedure)
3. DISCONTINUE MEDICATION
Recommendation to discontinue dietary supplement (procedure)
Recommendation to discontinue herbal supplement (procedure)
Recommendation to discontinue medication (procedure)
Recommendation to discontinue over-the-counter medication (procedure)
Recommendation to discontinue prescription medication (procedure)
4. CHANGE MEDICATION
Recommendation to change medication (procedure)
Recommendation to change medication to generic equivalent (procedure)
Recommendation to change medication to therapeutic equivalent (procedure)
Recommendation to change medication to therapeutic equivalent on formulary (procedure)
5. CHANGE MEDICATION DOSE
Recommendation to change medication dose (procedure)
Recommendation to decrease medication dose (procedure)
Recommendation to increase medication dose (procedure)
6. CHANGE MEDICATION DOSING INTERVAL
Recommendation to change medication dosing interval (procedure)
Recommendation to decrease medication dosing interval (procedure)
Recommendation to increase medication dosing interval (procedure)
7. CHANGE MEDICATION COURSE
Recommendation to change medication course (procedure)
Recommendation to lengthen medication course (procedure)
Recommendation to shorten medication course (procedure)
8. CHANGE MEDICATION DOSAGE FORM
Recommendation to change medication dose form (procedure)

g. Interventions Related to Monitoring

SNOMED CT Concept
Anesthetic agent monitoring (regime/therapy)
Anticoagulant drug monitoring (regime/therapy)
Blood glucose monitoring (regime/therapy)
High risk drug monitoring (regime/therapy)
Hypertension monitoring (regime/therapy)
Medication monitoring (regime/therapy)
Monitoring adherence to medication regime (regime/therapy)
Monitoring of laboratory results (regime/therapy)
Monitoring physiological parameters (regime/therapy)
Neuromuscular blockade monitoring (regime/therapy)
Renal function monitoring (regime/therapy)
Train-of-four monitoring (regime/therapy)

h. Recommendations Related to Monitoring

SNOMED CT Concept
Recommendation to monitor laboratory results (procedure)
Recommendation to monitor physiologic parameters (procedure)
Recommendation to start medication monitoring (procedure)

i. Consultations

SNOMED CT Concept
Consultation (procedure)
Consultation for transition of care (procedure)
Follow-up consultation (procedure)
Pharmacogenetic consultation (procedure)
Pharmacokinetic consultation (procedure)
Risk evaluation and mitigation strategy consultation (procedure)

ABCDEF = Request to Add or Modify

ABCDEF = Request to Remove

j. Referrals

SNOMED CT Concept
1. REFERRALS FOR SPECIFIC SERVICES
Patient referral for drug addiction rehabilitation (procedure)
Referral for diagnostic investigation (procedure)
Referral for electrocardiogram (procedure)
Referral for warfarin monitoring (procedure)
Referral to diabetes structured education program (procedure)
Referral for physical therapy (procedure)
2. REFERRALS TO OTHER PROVIDERS
Patient referral (procedure)
Patient referral to dietitian (procedure)
Referral to emergency clinic (procedure)
Referral to pharmacist (procedure)
Referral to physician (procedure)
Referral to psychologist (procedure)
Referral to social worker (procedure)
Referral to nurse case manager (procedure)
Referral to occupational therapist (procedure)
Referral to different healthcare provider (procedure)
Referral to clinical trial (procedure)
Referral to health worker (procedure)
Patient referral to dietitian (procedure)
Refer to member of Primary Health Care Team (procedure)
Referral to nutrition professional (procedure)
Referral to nurse behavioral therapist (procedure)

III. Referrals

a. Referral Source

SNOMED CT Concept
Referred by doctor (finding)
Referred by health care professional (finding)
Referred by hospital doctor (finding)
Referred by family (finding)
Referred by member of Primary Health Care Team (finding)
Referred by nurse (finding)
Referred by nurse practitioner (finding)
Referred by payer (finding)
Referred by pharmacist (finding)
Referred by physician assistant (finding)
Referred by primary care physician (finding)

Referred by self (finding)
Referred by specialist physician (finding)
Referred by social worker (finding)

IV. Outcomes

a. Status of Interventions

SNOMED CT Concept
Change recommended (qualifier value)
Not performed (qualifier value)
Performed (qualifier value)
Refused (qualifier value)

b. Status of Recommendations

SNOMED CT Concept
Medication therapy management recommendation accepted by prescriber (situation)
Medication therapy management recommendation refused by patient (situation)
Medication therapy management recommendation refused by prescriber (situation)
Recommendation accepted (situation)
Recommendation refused (situation)

c. Status of Care Goal

SNOMED CT Concept
Goal achieved (finding)
Goal not achieved (finding)
No progress toward goal (finding)

d. Status of Compliance

SNOMED CT Concept
Compliant (qualifier value)
Non-compliant (qualifier value)
Partially compliant (qualifier value)

e. Status of Compliance Ability

SNOMED CT Concept	
Able to comply with treatment (finding)	
Difficulty complying with treatment (finding)	
Does comply with treatment (finding)	
Noncompliance with treatment (finding)	ABCDEF = Request to Add or Modify
Unable to comply with treatment (finding)	ABCDEF = Request to Remove

f. Status of Disease Control

SNOMED CT Concept
Disease condition determination, cured (finding)
Disease condition determination, moderately controlled (finding)
Disease condition determination, poorly controlled (finding)
Disease condition determination, uncontrolled (finding)
Disease condition determination, well controlled (finding)

g. Status of Patient Condition

SNOMED CT Concept
Patient condition resolved (finding)
Patient condition unchanged (finding)
Patient cured (finding)
Patient's condition improved (finding)
Patient's condition poor (finding)
Patient's condition satisfactory (finding)
Patient's condition stable (finding)
Patient's condition unstable (finding)
Patient's condition worsened (finding)

h. Status of Immunizations

SNOMED CT Concept
Vaccine refused by parent (situation)
Vaccine refused by patient (situation)

V. Other

a. Environments of Care

SNOMED CT Concept
Clinic (environment)
Home (environment)
Hospital (environment)
Hospital-based outpatient emergency care center (environment)
Intensive care unit (environment)
Medical or surgical floor (environment)
Pharmacy (environment)
Skilled nursing facility (environment)
Group home managed by voluntary or private agents (environment)

b. Occupations of Health Care Providers

SNOMED CT Concept
Dietitian (occupation)
Hospital pharmacist (occupation)
Nurse case manager (occupation)
Nurse practitioner (occupation)
Occupational therapist (occupation)
Pharmacist (occupation)
Physician (occupation)
Physician assistant (occupation)
Physiotherapist (occupation)
Primary care physician (occupation)
Professional nurse (occupation)
Resident physician (occupation)
Respiratory therapist (occupation)
Retail pharmacist (occupation)
Trainee pharmacist (occupation)
Behavior therapist (occupation)
Clinical psychologist (occupation)
Genetic counselor (occupation)
Social worker (occupation)

ABCDEF = Request to Add or Modify

ABCDEF = Request to Remove

Appendix B

Attendees for July 2016 Stakeholder Meeting in National Harbor, MD

Meeting Participants

- Samm Anderegg, Project Manager, Pharmacy HIT Collaborative
- Jason Ausili, Director, Pharmacy Affairs, National Association of Chain Drug Stores
- Anne Marie Biernacki, Chief Technology Officer and Co-Founder, ActualMeds
- Lynette Bradley-Baker, Vice President, Public Affairs & Engagement, American Association of Colleges of Pharmacy
- Nicki Brandt, Executive Director, Peter Lamy Center on Drug Therapy and Aging and Professor, University of Maryland School of Pharmacy and President, American Society of Consultant Pharmacists
- Anne Burns, Vice President, Professional Affairs, American Pharmacists Association
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Appendix C

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This framework is supported by the following organizations as an initial starting point for documenting MTM services using SNOMED CT codes.

THIS WORK WAS COORDINATED BY:

Academy of Managed Care Pharmacy – www.amcp.org
Pharmacy Quality Alliance – www.pqaalliance.org
Pharmacy Health Information Technology Collaborative – www.pharmacyhit.org