CHAPTER 7

MEDICATION THERAPY MANAGEMENT

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Abstract

Medication therapy management (MTM) provides a systematic framework for optimizing therapeutic outcomes through comprehensive medication review, problem identification, and targeted interventions. Comprehensive medication reviews systematically evaluate all medications including prescription, non-prescription, supplements, and complementary therapies through structured assessment of indication, effectiveness, safety, and adherence. Drug therapy problem identification employs standardized taxonomies categorizing issues including unnecessary therapy, suboptimal dosing, adverse effects, interactions, and adherence barriers requiring resolution. Intervention strategies encompass prescriber collaboration, medication regimen optimization, patient education, care coordination, and documentation with appropriate follow-up planning. Evaluation methodologies assess clinical, economic, and humanistic outcomes through both objective measures and patient-reported experiences using validated instruments and systematic data collection. Quality metrics demonstrate MTM impact through standardized measures addressing medication appropriateness, adherence rates, adverse event reduction, and therapeutic goal achievement. This patient-centered approach improves medication use through personalized interventions addressing specific medication-related needs while reducing healthcare costs, preventing adverse events, and enhancing quality of life through optimized pharmacotherapy.

Keywords: *Comprehensive Medication Review, Pharmaceutical Care, Drug-Related Problems, Therapeutic Optimization, Outcome Assessment*

Learning Objectives

After completion of the chapter, the learners should be able to:

- Conduct comprehensive medication reviews systematically assessing indication, effectiveness, safety, and adherence for all medications.
- Identify and categorize drug therapy problems using standardized taxonomies addressing unnecessary therapy, dosing issues, adverse effects, interactions, and adherence barriers.
- Implement targeted intervention strategies addressing identified medication-related problems through prescriber collaboration, regimen optimization, and patient education.
- Design appropriate follow-up evaluation plans to assess intervention outcomes, therapeutic goal achievement, and resolution of identified problems.
- Apply quality metrics and performance measures to demonstrate the impact of medication therapy management services on patient outcomes.
- Develop systematic approaches for prioritizing patients who would benefit most from comprehensive medication management services.

MEDICATION REVIEW

Medication inventory compilation documents all active treatments including prescription medications, over-the-counter products, supplements, and alternative therapies through multiple source verification including patient interviews, prescription records, previous medical records, and caregiver reports. Indication assessment evaluates each medication against documented medical conditions, identifying both untreated conditions requiring therapy and medications without clear indications for potential discontinuation. Regimen analysis examines the complete medication profile for therapeutic duplication, potential interactions, inappropriate combinations, and cumulative anticholinergic or sedative burden beyond evaluation of individual medications in isolation.

Table 7.1: Medication Review Components

Review Component	Assessment Elements	Clinical Tools
Medication Reconciliation	Prescription medications, OTCs, supplements, sample medications	Brown bag review, patient interview guide, EHR medication history
Indication Assessment	FDA-approved uses, evidence-based off-label uses, therapeutic duplication	Clinical guidelines, formulary criteria, diagnosis-medication matching tools
Effectiveness Evaluation	Therapeutic goal achievement, symptom control, disease markers	Disease-specific monitoring parameters, patient-reported outcomes
Safety Analysis	Adverse effects, contraindications, high-risk medications, drug interactions	Beers Criteria, STOPP/START, interaction checkers, adverse effect scales
Adherence Assessment	Refill patterns, self-reported adherence, barriers to adherence	Morisky scale, refill records, pill counts, adherence barrier questionnaires
Medication Costs	Out-of-pocket expenses, insurance coverage, financial burden	Pricing tools, assistance program eligibility, therapeutic alternatives
Patient Understanding	Knowledge of purpose, directions, monitoring, precautions	Teach-back assessment, medication knowledge questionnaires
Care Coordination	Communication with providers, care transitions, fragmentation issues	Care team roster, SBAR communication, transition documentation

Targeted Medication Review Focus

High-risk medication identification prioritizes review for medications with elevated safety concerns including those on Beers Criteria for older adults, ISMP high-alert medications, narrow therapeutic index drugs, or those requiring specialized monitoring parameters. Disease-specific evaluation addresses medication appropriateness for specific conditions including heart failure, diabetes, chronic kidney disease, or behavioral health disorders through condition-focused review against current treatment guidelines and quality measures. Care transition assessment specifically examines medication changes during transfers between settings including hospital discharge, long-term care placement, or provider changes to identify unintentional discrepancies, inappropriate continuations, or

communication gaps.

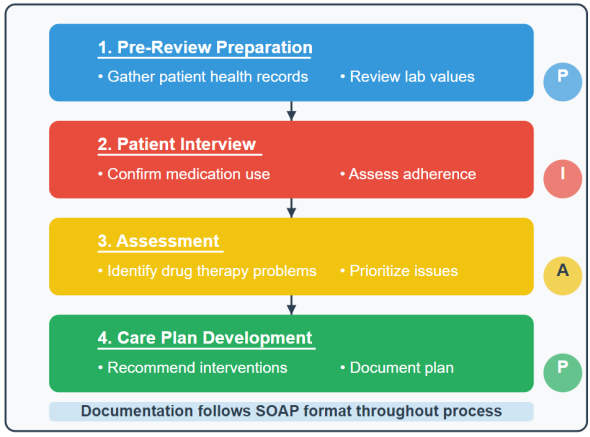

Figure 7.1: Medication Review Process

Patient-Specific Appropriateness Evaluation

Dosage optimization assesses medication quantities, frequencies, and timing against patient-specific factors including age, weight, organ function, genetics, and comorbidities to identify potential adjustments beyond standard dosing recommendations. Administration practicality evaluates whether prescribed regimens align with patient capabilities including physical limitations, swallowing difficulties, cognitive status, and daily routines that may impair proper medication use despite appropriate selection. Cost consideration examines financial impact of medication regimens including insurance coverage, copayment burden, and availability of more affordable alternatives with similar efficacy to address economic barriers to adherence.

Evidence Application to Individual Patients

Guideline individualization adapts standardized recommendations to specific patient circumstances, recognizing when guideline-recommended therapy requires modification based on comorbidities, patient preferences, prognosis, or competing health priorities. Benefit-risk assessment weighs potential therapeutic advantages against possible harms for each medication within the specific patient context rather than population-averaged expectations, particularly important for preventive therapies in elderly or multi-morbid patients. Deprescribing consideration systematically evaluates opportunities to discontinue medications with unfavorable risk-benefit profiles,

questionable ongoing need, or minimal benefit relative to treatment burden based on current health status and life expectancy.

Adherence and Understanding Assessment

Medication-taking behavior exploration identifies actual usage patterns through non-judgmental questioning revealing intentional non-adherence (purposeful dose alteration or omission), unintentional non-adherence (forgetting, misunderstanding), or hybrid patterns requiring different intervention approaches. Knowledge evaluation assesses patient understanding of medication purposes, administration requirements, expected effects, and monitoring needs, identifying education gaps requiring targeted counseling beyond simple directions. Barrier identification explores challenges affecting medication use including physical limitations, health literacy issues, belief conflicts, side effect concerns, or logistical obstacles requiring practical intervention strategies beyond regimen optimization.

DRUG THERAPY PROBLEMS

Hepler and Strand classification categorizes medication-related problems into seven categories: unnecessary therapy, need for additional therapy, ineffective drug, dosage too low, adverse drug reaction, dosage too high, and non-compliance—providing a comprehensive framework addressing both clinical and behavioral aspects of medication management. PCNE (Pharmaceutical Care Network Europe) taxonomy employs a multi-dimensional approach categorizing problems, causes, interventions, and outcomes with hierarchical sub-classifications allowing detailed documentation of pharmaceutical care activities. VA MedSAFE classification system addresses medication safety specifically through categories including prescribing problems, dispensing issues, administration errors, monitoring failures, and patient-related factors contributing to adverse drug events.

Indication-Related Problems

Unnecessary medication identification recognizes therapies without current indications including those prescribed for self-limited conditions that resolved, prophylactic treatments no longer needed, or medications continued through clinical inertia despite lack of ongoing benefit. Untreated condition recognition identifies documented diagnoses without appropriate pharmacotherapy, including both completely untreated conditions and partially treated conditions requiring additional therapy for comprehensive management. Inappropriate drug selection addresses medications unsuitable for specific patient

conditions based on contraindications, precautions, or availability of more effective alternatives for the documented indication.

Table 7.2: Drug Therapy Problem Classification and Assessment

Problem Category	Definition	Assessment Indicators	Resolution Approaches
Unnecessary Drug Therapy	Medication without valid indication	No current diagnosis matching medication, duplicate therapy, therapy duration exceeded	Discontinuation, tapering plan, therapeutic substitution
Need for Additional Therapy	Untreated condition requiring medication	Untreated diagnosis, suboptimal prophylaxis, preventive therapy indicated	Therapy initiation, preventive medication addition, adjunctive therapy
Ineffective Drug	Wrong drug for condition	Lack of response, disease progression despite therapy, inappropriate drug selection	Therapeutic substitution, augmentation strategy, alternate drug class
Dosage Too Low	Subtherapeutic dose	Inadequate response, subtherapeutic levels, underdosed for indication	Dose increase, frequency adjustment, formulation change
Adverse Drug Reaction	Undesirable effect	Symptoms of ADR, laboratory evidence of toxicity, intolerable side effects	Dose reduction, scheduling change, therapeutic alternative, adjunctive therapy
Dosage Too High	Excessive dose	Toxicity symptoms, supratherapeutic levels, inappropriate for patient factors	Dose reduction, frequency adjustment, extended-release conversion
Nonadherence	Failure to take medication as prescribed	Missed doses, improper administration,	Simplification, adherence aids, cost reduction

Problem Category	Definition	Assessment Indicators	Resolution Approaches
Drug Interactions	Medication combinations causing undesirable effects	Potential or actual drug-drug, drug-food, drug-disease interactions	Spacing doses, alternative agent, monitoring plan, dose adjustment
Inappropriate Selection	Medication not optimal for patient	More effective, safer, or cost-effective alternatives available	Therapeutic substitution, guideline-directed alternatives
Medication Access	Barriers to obtaining medications	Insurance issues, availability problems, cost barriers	Prior authorization, assistance programs, therapeutic substitution

Effectiveness Problems

Suboptimal response identification recognizes inadequate therapeutic outcomes despite medication adherence, potentially requiring dosage adjustment, regimen intensification, or alternative therapy selection. Inappropriate drug selection for efficacy addresses medications unlikely to achieve desired outcomes based on patient-specific factors including genetic variations affecting response, disease severity exceeding medication capabilities, or past treatment failures with similar agents. Dosage insufficiency identifies underdosing relative to therapeutic needs including doses below evidence-based recommendations, failure to titrate to effect, or inappropriate intervals allowing breakthrough symptoms between doses.

Safety Problems

Adverse drug reactions include both predictable side effects (dose-dependent, pharmacologically expected) and idiosyncratic reactions (immunologic, unpredictable) requiring different management approaches including dosage reduction, alternative therapy selection, or supportive management. Drug-drug interactions occur through various mechanisms including pharmacokinetic effects (altered absorption, distribution, metabolism, or elimination) and pharmacodynamic effects (synergistic or antagonistic activity at receptors or physiological systems) with clinical significance varying from theoretical concerns to life-threatening consequences. Drug-disease interactions represent situations where medications adversely affect coexisting conditions including beta-blockers exacerbating asthma, NSAIDs worsening heart