



(Management Case Study)

**Advancing Medication Therapy Services
in a Pediatric Ambulatory Clinic**

Ricky Ogden, Pharm.D., M.B.A., BCPS

Assistant Director of Pharmacy

Children's Mercy Hospital

Kansas City, Missouri



Disclosure

All planners, presenters, and reviewers of this session report no financial relationships relevant to this activity.

Learning Objectives

- Describe the medication therapy service and how it positively impacts patient care in the clinic.
- List the steps involved in designing and implementing medication therapy services.
- Describe future site and state of medication therapy services in a clinic.

Self-Assessment Questions

1. (True or False) Medication therapy services allows pharmacist to provide medication management according to a protocol.
2. (True or False) The first step in identifying an ideal site for medication therapy services is presentation to the Medical Executive Committee.
3. (True or False) Ideal sites for medication therapy services are where clinical pharmacists already have a site of practice.

Situation

- Cystic Fibrosis (CF) ambulatory clinic
 - Clinic under the Children's Mercy Hospital system (CMH)
 - Located on the Adele Hall campus (located in Missouri)
 - 1.0 Clinical Pharmacy Specialist (CPS) split between inpatient/clinic
 - 1 full-day clinic and 2 half-day clinic per week
 - 8 physicians in clinic setting
 - Certified by National Cystic Fibrosis Foundation as a center for clinical care, education, and clinical research

Clinic Workflow

- Very Structured
 - Each discipline has standard role and order
- Previous pharmacy services in CF
 - More focus on asthma than CF
- Currently pharmacist propose/verbal order medication recommendations
 - No collaborative practice for pharmacists at CMH
 - Physician must co-sign prior to prescription being submitted

Workflow Implications

- Physician required co-signature resulted in workflow stagnation
- Pharmacist-only functions tethered to physician actions
 - Home antibiotic therapy
 - Laboratory orders for therapeutic drug monitoring levels (TDM)
 - Outpatient medications requiring prior authorizations (PA)
- Ultimately led to delay in patient clinic flow

Medication Therapy Services

- 2007, MO legislature amendment allow pharmacist provision of medication therapy services (MTS)
 - Collaborative practice agreement with specified scope and limited duration
 - Pharmacist must obtain MTS certification on state license:
 - PharmD accredited by the Accreditation Council for Pharmacy Education (ACPE)
 - Post-graduate medication therapy certificate course/program by ACPE, ASHP, APhA, American Society of Consultant Pharmacists
 - Certification Board of Pharmaceutical Specialties, Commission for Certification in Geriatric Pharmacy, or National Certification Board for Diabetes Educators
 - Post-graduate medication therapy certificate course

MTS Components

- Assessing patient specific data and issues
- Establishing medication therapeutic goals/medication related action plans for identified medication conditions and medication related concerns
- Assessing and addressing adverse reactions and adverse drug events
- Modifying and monitoring medication regimens
- Improving patient care and outcomes through medication therapy services
- Evaluating treatment progress
- Assessing/monitoring pharmacokinetic and pharmacodynamic changes in medication regimen reviews
- Medication reconciliation
- Drug utilization review
- Applicable state or federal law
- Formulating and documenting personal medication records
- Documenting clinical outcomes
- Interpreting, monitoring, ordering, and accessing patient test results
- Patient education and counseling

MTS at CMH

- Began as suggestion from Senior Director of Pharmacy
 - Where could this work?
 - Timed with resident management rotation
 - Initial work began February 2016
- Exploration
 - Where would this be sanctioned?
 - How would this work with other collaborative practice?
 - Who determines scope?
 - Payment?
 - Informatics impact?

MTS Protocol Medications

Appendix A: Medication Classes Authorized for Medication Therapy Services

Drug Class	Specific Medications
Short-Acting Beta-Agonists (SABA)	<ul style="list-style-type: none"> • Albuterol (ProAir HFA, ProAir Respiclick, Proventil HFA, Ventolin HFA, AccuNeb) • Levalbuterol (Xopenex)
Long-Acting Beta-Agonists (LABA)	<ul style="list-style-type: none"> • Salmeterol (Serevent Diskus) • Formoterol (Foradil Aerolizer, Perforomist) • Arformoterol (Brovana) • Indacaterol (Arcapta Neohaler) • Olodaterol (Striverdi Respimat)
Short-Acting Anticholinergics	<ul style="list-style-type: none"> • Ipratropium (Atrovent HFA)
Long-Acting Anticholinergics	<ul style="list-style-type: none"> • Tiotropium (Spiriva HandiHaler, Spiriva Respimat) • Umeclidinium (Incruse Ellipta) • Acclidinium bromide (Tudorza Pressair) • Minocycline (Minocin) • Tigecycline
Macrolide antibiotics	<ul style="list-style-type: none"> • Azithromycin (Zithromax) • Clarithromycin (Biaxin)
Miscellaneous antibiotics	<ul style="list-style-type: none"> • Vancomycin (Vancocin) • Linezolid (Zyvox) • Clindamycin (Cleocin) • Trimethoprim/sulfamethoxazole (Bactrim, Septra) • Colistimethate (Colistin)
Miscellaneous	<ul style="list-style-type: none"> • Heparin (heparin flush) • Sodium Chloride 0.9% (flush, IV fluids, IPV) • Influenza vaccination • Glucola • Topical Lidocaine (Anecream)

MTS Protocol Medications

Vitamins	<ul style="list-style-type: none"> Vitamin B12 (cyanocobalamin) Vitamin C (ascorbic acid) Vitamin D3 (cholecalciferol) Vitamin D2 (ergocalciferol) Vitamin K (phytonadione) Vitamin A Multivitamins (ADEKs, AquADEKs, MVW Complete, Libertas) 	Inhaled Corticosteroids	<ul style="list-style-type: none"> Beclomethasone (Qvar) Budesonide (Pulmicort, Pulmicort Flexhaler) Ciclesonide (Alvesco) Flunisolide (Aerospin) Fluticasone (Flovent HFA, Flovent Diskus, Arnuity Ellipta) Mometasone furoate (Asmanex, Asmanex Twisthaler)
Proton Pump Inhibitors (PPIs)	<ul style="list-style-type: none"> Omeprazole (Prilosec) Esomeprazole (Nexium) Pantoprazole (Protonix) Lansoprazole (Prevacid) Dexlansoprazole (Dexilant) Rabeprazole (Aciphex) 	Combination Inhalers	<ul style="list-style-type: none"> Ipratropium + albuterol (Combivent Respimat, DuoNeb) Budesonide + formoterol (Symbicort HFA) Mometasone + formoterol (Dulera HFA) Fluticasone + salmeterol (Advair Diskus, Advair HFA) Fluticasone + vianterol (Breo Ellipta) Umeclidinium + vilanterol (Anoro Ellipta) Tiotropium + Olodaterol (Spiriva Respimat)
Histamine-2 Receptor Blockers (H2RAs)	<ul style="list-style-type: none"> Famotidine (Pepcid) Ranitidine (Zantac) Cimetidine (Tagamet HB) Nizatidine (Axid) 	Systemic Corticosteroids	<ul style="list-style-type: none"> Prednisone Prednisolone Methylprednisolone (Solu-Medrol) Dexamethasone
Bowel Preparations	<ul style="list-style-type: none"> Polyethylene glycol (Miralax, Dulcolax Balance) Lactulose Docusate Sennosides Polyethylene glycol + electrolytes (MovPrep, CoLyte, GoLYTELY, NuLYte, TruLyte) 	Pancreatic Enzymes	<ul style="list-style-type: none"> Pancrelipase (Creon, Zenpep, Pancreaze, Pertzye, Viokace, Ultraseq)
Antiemetics	<ul style="list-style-type: none"> 5HT3-Receptor antagonists: ondansetron (Zofran) Anticholinergics: diphenhydramine (Benadryl), meclizine (Antivert, Bonine, Dramamine), scopolamine (Transderm-Scop) Antidopaminergics: chlorpromazine, metoclopramide (Reglan), prochlorperazine (Compazine), promethazine (Phenergan) 	Cystic Fibrosis Transmembrane Conductance Regulator Potentiators	<ul style="list-style-type: none"> Ivacaftor (Kalydeco) Ivacaftor/Lumacaftor (Orkambi)
		Rapid-Acting Insulin	<ul style="list-style-type: none"> insulin aspart (Novolog, Novolog 70/30) insulin lispro (Humalog, Humalog 50/50, Humalog 75/25) insulin glulisine (Apidra)
		Short-Acting Insulin	<ul style="list-style-type: none"> Regular insulin (Humulin R, Novolin R)
		Intermediate-Acting Insulin	<ul style="list-style-type: none"> insulin isophane (Humulin N, Novolin N) insulin isophane + regular (Humulin 70/30, Novolin 70/30) insulin glargine (Lantus, Toujeo) insulin detemir (Levemir)
		Long-Acting Insulin	
		Mucolytics	<ul style="list-style-type: none"> Dornase alfa (Pulmozyme) N-acetylcysteine Sodium Chloride 3%-7% inhalation solution
		Oral antihistamines	<ul style="list-style-type: none"> Loratadine (Claritin) Desloratadine (Clarinex) Fexofenadine (Allegra) Cetirizine (Zyrtec) Levocetirizine (Xyzal)
		Nasal antihistamines	<ul style="list-style-type: none"> Azelastine (Asterlin, Astepro) Olopatadine (Patanase)
		Nasal anticholinergics	<ul style="list-style-type: none"> Ipratropium (Atrovent) Fluticasone + azelastine (Dymista) Beclomethasone (Beconase AQ, Qnasl) Budesonide (Rhinocort Aqua) Ciclesonide (Omnaris, Zetonna)
		Nasal corticosteroids	<ul style="list-style-type: none"> Flunisolide Fluticasone (Flonase, Veramyst) Mometasone (Nasonex) Triamcinolone (Nasacort AQ)
Fluoroquinolone antibiotics	<ul style="list-style-type: none"> Levofloxacin (Levaquin) Ciprofloxacin (Cipro) Moxifloxacin (Avelox) 	Probiotics	<ul style="list-style-type: none"> Acidophilus Lactobacillus
Aminoglycoside antibiotics	<ul style="list-style-type: none"> Tobramycin (IV, Tobi Podhaler, Tobi, BETHKIS) Amikacin Gentamicin 		
Tetracycline antibiotics	<ul style="list-style-type: none"> Doxycycline (Doxy, Vibramycin) 		

MTS Laboratory Orders

Appendix C: Medications and relevant laboratory services

Drug Class	Specific Laboratory Testing
Beta-Lactam Antibiotics	<ul style="list-style-type: none">• Basic Metabolic Panel• Complete Blood Count• Serum drug levels• Hepatic Function Panel
Aminoglycosides	<ul style="list-style-type: none">• Basic Metabolic Panel• Complete Blood Count• Serum drug levels
Miscellaneous Antibiotics	<ul style="list-style-type: none">• Basic Metabolic Panel• Complete Blood Count• Serum drug levels
Ibuprofen	<ul style="list-style-type: none">• Basic Metabolic Panel• Serum drug levels• Urine analysis (UA)
Cystic Fibrosis Transmembrane Conductance Regulator (CFTR) Modulators	<ul style="list-style-type: none">• Hepatic Function Panel

Timeline For MTS

- February 2016
 - Resident worked with regional pharmacists with collaborative practice agreements
- August 2016
 - Presented to P&T
 - Positive yet cautious responses
 - Recommendation is to work with Advanced Practice and Credentialing Committee
- November 2016
 - Met with Advanced Practice Credentialing Committee
 - Ensures all providers with request for advanced privileges meet requirements

Advanced Practice Credentialing Committee

- Standardized process for application of privileges
 - Applies to non-physicians
 - No previous pharmacy applications
 - Not set up for MTS
- Committee make-up
 - 2 physicians
 - 12 APRNs
- Committee voted to approve MTS for limited CF scope

MTS to Medical Executive Committee

- January 2017 Agenda
 - Postponed due to holidays
 - Section Chief of Pulmonology presented proposal
 - Hint: key medical stakeholder is critical
 - Pharmacy administration in audience
- Follow-up
 - Need to change CMH bylaws to allow for pharmacist addition of privileges
 - Need to go to by-laws committee for recommendation back to Med Exec to add pharmacists as those who can apply for privileges

Approval

- April 2017
 - Approved by Med Exec
- May 2017
 - Formal documentation of pharmacist credentials publicized at CMH
- May 2017
 - First confusion on pharmacist prescribed medication
 - Clarification on scope and duration was provide to pharmacy staff

Example of MTS Prescription

Surescripts Rx New Script	
Date/Time Received: 05/25/2017 09:09	Date Effective:
Message ID: 0df623fb-46f8-4962-b76c-223a82	Date Written: 05/25/2017
Patient: [REDACTED]	DOB: [REDACTED]
[REDACTED]	Gender: F
[REDACTED]	Phone: [REDACTED]
Creon 36,000 units oral delayed release capsule	Days Supply: 0
=400 CAPSULE	Refills: 5
SIG: 3 capsule PO w/meals and 1-2 capsule PO w/snacks.	
DAW: 0 Substitution Allowed	Refer NDC: 00032301613
Comments:	
Prescriber: Elizabeth Elson	DEA:
2401 Gillham Road	NPI: 1568755650
Kansas City, MO 64108	SPI: 9692469920001
Phone: 8162343997	State Lic:
Fax: 8163029986	
Prescriber Order #: CERN1306751285.59692469920001	
Supervising Prescriber: Hugo Escobar	Supervisor DEA:
2401 Gillham Road	Supervisor NPI: 1659531846
Kansas City, MO 64108	Supervisor Phone: 8162343997
Supervisor SPI:	Supervisor Fax: 8163029986
State Lic:	

MTS Agreement Highlights

- Specifies what guidelines are used for MTS
 - National CF Guidelines
- All physicians who might supervise must sign
 - No allowance for nurse practitioner collaborative agreement
- Order for MTS must be placed in patient chart to allow MTS
 - Order good for 1 year
- MTS agreement must be resigned annually

Current Issues

- Assurance of cross-covered MTS certified pharmacist
 - Working on two other pharmacists providing coverage for certification
- Out of State patient visits
 - Can pharmacists with MO MTS prescribe outside of MO?
- Multiple clinic involvement
 - How to manage patients who are seen in multiple clinics with pharmacists with MTS

Future State

- Identify revenue opportunities for MTS
 - Pediatric versus adult
- Identify other sites for MTS
 - Current pharmacist presence in clinic is preferred
 - Established relationships
 - Possible established protocols
 - Geographically similar

Key Takeaways

- Key Takeaway #1
 - Critically evaluate where you most successful physician/pharmacist relationship currently exists.
- Key Takeaway #2
 - Identify where current process exists for non-physician privilege/credentialing
- Key Takeaway #3
 - Identify local (and preferable other state) protocols on collaborative practice agreements to reduce the duplicative efforts on a state level

Questions?

- What aspects of this process resonate?
- Which aspects are concerning?
- Which aspects are intimidating?