

# University of Michigan Pharmacy



Patient Care  
Education  
Research  
Community

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## Harvey A.K. Whitney

(1894-1957)

Harvey A. K. Whitney received his Ph.C. degree from the University of Michigan College of Pharmacy in 1923.

He was appointed to the pharmacy staff of University Hospital in Ann Arbor, Michigan in 1925 and was named Chief Pharmacist there in 1927. He served in that position for almost 20 years. He is credited with establishing the first hospital pharmacy internship program—now known as a residency program—at the University of Michigan in 1927. Harvey A. K. Whitney was an editor, author, educator, practitioner, and hospital pharmacy leader. He was instrumental in developing a small group of hospital pharmacists into a subsection of the American Pharmaceutical Association and finally, in 1942, into the American Society of Hospital Pharmacists. He was the first ASHP President and co-founder, in 1943, of The Bulletin of the ASHP, which in 1958 became the American Journal of Hospital Pharmacy.

The Harvey A. K. Whitney Lecture Award was established in 1950 by the Michigan Society of Hospital Pharmacists (now the Southeastern Michigan Society of Hospital Pharmacists) to honor the first Chairman of the American Society of Hospital Pharmacists. Responsibility for administration of the Award was accepted by the American Society of Hospital Pharmacists in 1963, and since that time it has been presented annually to honor outstanding contributions to the practice of pharmacy in health systems. The Harvey A. K. Whitney Lecture Award is known as “health-system pharmacy’s highest honor.”

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Among his many awards are: the College of Psychiatric and Neurologic Pharmacists Lifetime Achievement in Pharmacy Award (2005); the American College of Clinical Pharmacy Service Award (1982); Poland’s Medical Center of Postgraduate Education 20-Year Anniversary Award (1979); the Medical School of Krakow 600-Year Anniversary Medal from Jagiellonian University (1977); and the Southeastern Texas Society of Hospital Pharmacists Leadership Award (1967).



Chief Pharmacy Officer  
Stan Kent



Stan is both the Chief Pharmacy Officer at the University of Michigan Health System and the Associate Dean for Clinical Affairs and Clinical Assistant Professor of Pharmacy at the College of Pharmacy.

Stan was previously the assistant vice president of Pharmacy Services at NorthShore University Health System, located in Evanston, Illinois.

## Annual Report Introduction

It is my pleasure to present this report of significant achievements of the pharmacy division at the University of Michigan Hospitals and Health Centers. While only the highlights are included here, it is also recognized that many other individual and unit accomplishments were realized this past year.

The mission of our division is to provide safe, high quality, and cost effective care for the patients we serve, conduct and support research efforts, and train future pharmacy practitioners. This is only achieved through the dedication and diligent work of our pharmacists, technicians, management and support staff. A manager is only as effective as the people that work for them. My hope is that our front line staff feel supported in their day-to-day efforts to help us achieve that mission.

It is absolutely fitting that this report began with a description of the importance of Harvey A.K. Whitney to the practice of hospital pharmacy and UMHS. I plan to honor Dr. Whitney's contributions by updating our pharmacy conference room and naming it after him - more on this later in the year.

This year we saw record financial performance, largely due to our specialty pharmacy business and 340B participation. Related to this we've added staff to support our specialty pharmacy business and hired a 340B program manager, Rachel Cortis. In support of keeping our patients and caregivers safe we implemented a formal drug diversion and prevention program, led by Carol Purcell. We've made strides to improve our drug preparation and distribution systems with some remodeling in our central pharmacy and started rolling out a fully cartless distribution system.

In addition, we continue to work with the DEA, and most recently the FDA, in our quest to exceed regulatory expectations.

On the clinical side of practice, the antimicrobial stewardship team continues to be on the cutting edge of practice and won a best practice award from MSHP for their bacteremia response initiative. We've also made several improvements to better manage anticoagulation and parenteral nutrition. With the support of the College of Pharmacy we have been able to create a structure for our clinical faculty to better meet academic and research expectations.

Our residency programs have expanded to include a Health System Pharmacy Administration residency and an additional managed care and ambulatory care slots.

Thanks to input from the staff and managers we have identified several key goals for the near future that will position us for continued clinical and financial success. Perhaps none of these will be more important than focusing on our people: better aligning the department organizational structure, formally recognizing the roles and contributions of our pharmacist leads and coordinators, improving our training programs, and developing staff and management knowledge and skills. The practice advancement committee will create a vision for the future of pharmacy practice at UMHHC, which will undoubtedly result in projects that help us achieve that vision. Finally, thank you to Katherine Kuhlman and Nada Rida, two of our interns who did a stellar job of assembling this new format for our annual report!



Director of Pharmacy Services  
John Clark

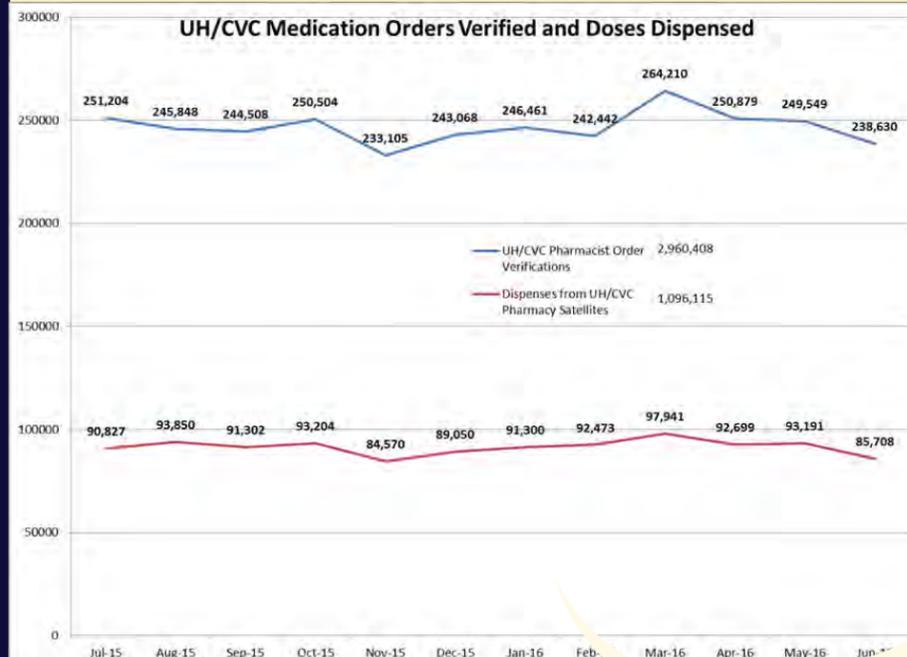


John Clark teaches, practices, and researches in the area of pharmacy practice management and leadership. He is the director of the Department of Pharmacy Services at University of Michigan Hospitals and Health Centers and clinical assistant professor in the U-M College of Pharmacy. Additionally, Clark is the PGY-1 pharmacy residency director. He is responsible for precepting pharmacy students and residents in pharmacy practice management and leadership.

# University Hospital & Cardiovascular Center

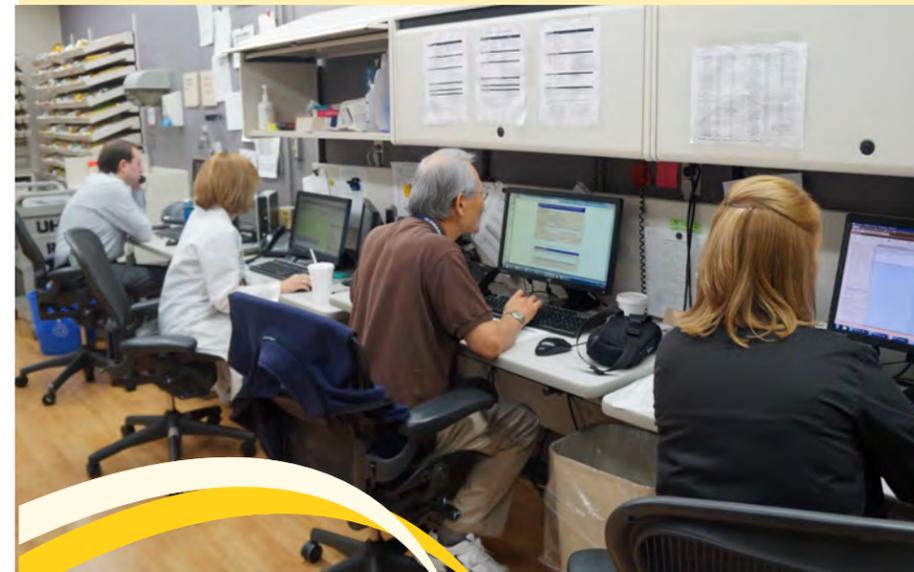


The University Hospital and Cardiovascular Center Pharmacy team is comprised of the adult Cardiology, Emergency, Medicine, Oncology, and Surgery service lines. These teams work together to provide comprehensive pharmacy services to all inpatient, procedural, surgical and short stay patients within the walls of UH and CVC. Team members are the leaders and best in their areas of practice and make significant contributions in the realm of patient care, education, and research. Pharmacists and technicians provide 24/7 services in the form of medication order review, medication preparation and delivery, patient education, medication reconciliation, drug information, code blue response, par-enteral nutrition assessment and monitoring, and the dosing and monitoring of vancomycin, aminoglycosides, and certain anticoagulants. They do this work by collaborating with nurses, providers, respiratory therapists, dieticians, and others as members of the interdisciplinary care team.



# Highlights 2015-2016

- ◆ Implemented Inpatient LACE interventions in the form of medication reconciliation and discharge education
- ◆ Enhanced clinical service provision due to increased number of specialist and generalist pharmacist positions
- ◆ Enhanced evening and weekend service provision due to increased number of generalist pharmacist and technician positions
- ◆ Established new role: Palliative Care Pharmacist Specialist
- ◆ Implemented pharmacy support for a new Medical Short Stay Unit
- ◆ Combined Emergency Services team (Children and Adult)
- ◆ Improved 6UH satellite medication delivery processes to reduce turnaround time
- ◆ Coordinated off-hours support of ambulatory care pharmacy to facilitate patient discharges
- ◆ Developed and implemented an electronic tracking tool for controlled substance distribution, tracking and monitoring in the OR setting and expanded OR pharmacy hours to support controlled substance management
- ◆ Implemented a peer review process for clinical services
- ◆ Piloted unit-based practice model to supplement medical team based model
- ◆ Increased support for College of Pharmacy faculty who practice at UMHS



# Children & Women's Pharmacy

## C.S. Mott Children's Hospital

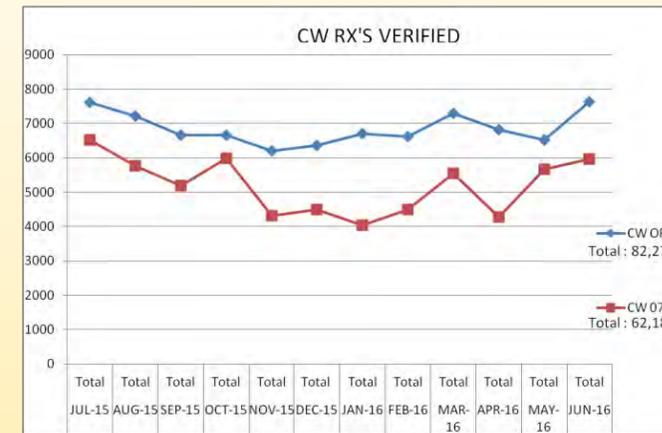
The Children and Women's (C&W) Pharmacy Services provides pharmacy services to all patients within the C&W Hospital. The C&W Hospital has 348 inpatient beds, including 3 intensive care units (PCTU, PICU and NICU), 50 bed Women's floor, 42 bed Adult BMT and Adult Oncology unit, 16 operating rooms, and a pediatric emergency department. CW Pharmacy Services is comprised of 4 pharmacies including pediatric emergency services, pediatric operating services, pediatric and women's inpatient critical care and general medicine services and outpatient infusion pediatric and adult oncology services. C&W pharmacy staff place a priority on patient safety, teamwork, and customer service.



Duties inside the pharmacy satellites include prescription order verification and filling, IV compounding, chemotherapy compounding, medication delivery to the units, including bedside delivery to pediatric patients, omniceil delivery, and providing drug information and dosing information to the medical staff. Clinical services are provided to all pediatric and oncology patients and include active participation in multidisciplinary rounds, aminoglycoside and vancomycin pharmacokinetic dosing, anticoagulation management, renal dose adjustments, sepsis and antimicrobial management, nutrition support and patient and family education.



The CW Pharmacy staff work closely with physicians, nurses, respiratory therapists, nutritionists and leadership in other departments to develop strong relationships to provide quality care, desired therapeutic outcomes, and ensure that patient safety is of the utmost importance.



## Accomplishments

- ◆ Decentralized pharmacists to perform order verification, medication reconciliation, and discharge counseling onto patient floors
- ◆ Improved workflow to better ensure timely delivery of medications to patients.
- ◆ Implemented narcotic tracking system for OR Cases in OR pharmacy
- ◆ Provide infusion services to cancer center overflow patients
- ◆ Evaluated need/usage of cardiac emergent drips that we were able to pre-make to increase function in our clean room and decrease wait time and utilize barcode technology in compounding process
- ◆ Recruited and trained 12 Pharmacists and 19 pharmacy technicians in 2016.



Our team members provide high-quality, patient-centered services across the outpatient care continuum, including medication use and regulatory support to our ambulatory clinics. Our pharmacists, technicians, residents, and interns are involved in direct patient care, medication provision, initiatives to improve cost and quality, and collaborate with teams of healthcare providers to provide the best care to all. Ambulatory Pharmacy Services encompass four outpatient pharmacies, five infusion pharmacies, specialty pharmacy services, outpatient oncology services, and transitions of care services.



## About Ambulatory Pharmacy

### University of Michigan Community Pharmacies

The four outpatient pharmacies at the University of Michigan Health System provide services to patients receiving care from University of Michigan Hospitals and Health Centers, patients discharged from UMHS hospitals, emergency departments, and surgery centers, along with University of Michigan employees, retirees, and dependents. Many patients and family members find it convenient to get their prescriptions filled at these pharmacies, as UMHS pharmacies specialize in carrying medications not found in local community pharmacies, including compounded medications.

#### Outpatient Pharmacy Locations

- ◆ Main Campus- Taubman Pharmacy, Cancer Center Pharmacy
- ◆ Offsite Pharmacies- East Ann Arbor, Kellogg Eye Center

### Transitions of Care

The vision of the transitions of care pharmacy team is to ensure all patients discharging from our institution leave our care with a discharge medication plan in place, with focus on ensuring patient ability to gain access to their medications in a timely manner. Our services include the identification and resolution of medication access barriers and the processing of discharge prescriptions. Our team currently serves patients discharging from University Hospital. The transitions of care pharmacy team has played an integral role in the UMHS Mi-PART Priority Discharge program., a capacity management program focused on discharging a targeted number in order to free up inpatient beds. Most recently, our services expanded into the Taubman Pulmonary, Dyspnea, Assisted Ventilation, and Nephrology Clinics.



### Pharmacist-run anemia management clinic

This is an ongoing program which functions under a collaborative practice agreement to provide laboratory monitoring, medication dosing and ordering. TheraDoc is utilized for patient tracking to ensure compliance with FDA REMS program for ESAs. Pharmacist team members provide Medication Management Services where the pharmacist reviews medications, including herbal and dietary supplements, and assesses for drug- or disease-interactions. Recommendations are communicated with the patient's primary oncologist.



## Ambulatory Highlights

- ◆ Implementation of Mirixa and Outcomes MTM Medication Therapy Management (MTM)
- ◆ Expansion of hours in Taubman Pharmacy to seven days per week
- ◆ Completion of 500 patient admission interview surveys covering medication access, adherence, and literacy in order to assess medication-related causes of readmissions
- ◆ Poster Presentation at the 2015 American Society of Health-System Pharmacists Midyear Meeting in New Orleans, LA, entitled "Transitions of Care Pharmacy Technician Role: Assisting Patients in Accessing Medications by Overcoming Insurance & Financial Obstacles"
- ◆ Platform Presentation at the 2016 Michigan Pharmacists Association Annual Conference & Exhibition in Detroit, MI, entitled "Overcoming Medication Access Barriers Through a Transitions of Care Pharmacy Technician Program"



## Ambulatory Highlights

◆ Transitions of Care team participation in the charity 5k event for St. Jude Children’s Research Hospital

◆ Established several new Specialty Pharmacy clinical services in collaboration with clinic providers and/or U-M College of Pharmacy clinical faculty including:



◆ Introduced 6- and 12-month comprehensive medication reviews (CMRs) evaluating adherence in kidney and liver post-transplant patients

◆ Introduced baseline and 1-month follow-up CMRs around significant drug interactions, medication reconciliation, and medication adherence for patients with Hepatitis C



## Oral Medications for Cancer Therapy Program

The Oral Medications for Cancer Therapy Program was initiated in 2012 and follows all patients receiving oral anticancer medications. The focus of this program is on streamlining and providing support for medication access, providing medication reconciliation, patient medication education, patient compliance/adherence information, drug-drug interaction review and medical record documentation. This team also works on creating and providing the health system with oral medication education, to empower patients in self-care management of adverse effects yet know when to contact their clinic providers. Clinical and quality outcomes are continuously assessed and we evaluate and care for more than 1000 patients/year. This year the program has contributed to high performance on many of the ASCO QOPI quality metrics.

## Specialty Pharmacy Services

Specialty Pharmacy Services provides high-touch services to patients with specialty medication needs including medication fulfillment, financial coordination, and clinical programs. Specialty medications are generally high-cost medications used to treat patients with specialized diseases requiring complex treatment and coordinated care. These services include: financial coordinators to improve patient access and affordability to their specialty medications; monthly refill reminder calls; mail order delivery of their prescription medication(s) within the state of Michigan; a pharmacist on call 24/7; and medication therapy management.



## Infusion Pharmacy



## Cancer Center Infusion Pharmacy

- ◆ Supports 65 patient chairs/beds, providing service to 150-200 patients per day
- ◆ Provides approximately 46,000 infusion procedures annually to both oncology and non-oncology patients
- ◆ Provides dispensing and infusion support to the Research Pharmacy team
- ◆ Utilizes closed system device technology to safeguard employees and patients from hazardous medication exposure
- ◆ Performs quality and safety checks at each step of the dispensing process. Monitors patient laboratory results and recommends dose adjustments when appropriate
- ◆ Provides nursing education for new medications
- ◆ Provides training/educational support to our College of Pharmacy students

Infusion pharmacies are currently located in the Cancer Center, Canton Health Center (25-35 patients/day), East Ann Arbor Health Center (20-25 patients), Northville Health Center (30-45 patients/day) and Taubman Health Center (25-35 day). Sites frequently contact pharmacy staff for assistance with new drug availability, reimbursement support and individual patient drug-related support.



Anita Snow , Pharmacy Technician for 2 years states that UMHS has a “Big focus on equality, making sure UMHS has the best patient care, even some things are bigger than myself,”

## Accomplishments

- ◆ We hired an additional Pharmacist, 2 Pharmacy Technicians, and 2 Pharmacy Financial Coordinators to continue providing great service and support the growing number of new patients and prescriptions filled.
- ◆ Established several new clinical services in collaboration with clinic providers and/or U-M College of Pharmacy clinical faculty including:
  - Transplant: 6- and 12-month comprehensive medication reviews (CMRs) evaluating adherence in kidney and liver post-transplant patients
  - Hepatitis C: baseline and 1-month follow-up CMRs around significant drug interactions, medication reconciliation, and medication adherence
  - Hepatitis B: annual CMR for liver transplant patients with hepatitis B core antibody positive donor
  - Multiple sclerosis: Gilenya workflow/follow-up calls in patients newly started on treatment
  - Cardiology: established workflow for new cholesterol-lowering specialty medications

## Specialty Pharmacy

Specialty Pharmacy Services provides high-touch services to patients with specialty medication needs including medication fulfillment, financial coordination, and clinical programs. Specialty medications are generally high-cost medications used to treat patients with specialized diseases requiring complex treatment and coordinated care (eg, transplant, hepatitis, oral chemotherapy, multiple sclerosis).

These services include: financial coordinators to improve patient access and affordability to their specialty medications; monthly refill reminder calls; mail order delivery of their prescription medication(s) within the state of Michigan; a pharmacist on call 24/7; and medication therapy management.

The Specialty Pharmacy program continues to grow as new specialty drugs become available, increasing the number of patients we are privileged to serve and the volume of prescriptions we manage.



### Abstract citations

Zee J, Bello GA, Oguntimein M, Beil C, Liu Q, Park J, Saulles AR, Goel S et al. Comparison of the effects of brand name versus generic immunosuppressants on long-term graft failure risk among U.S. kidney transplant recipients: analysis of SRTR and Medicare claims data. Abstract accepted: 26th International Congress of the Transplantation Society; August 18-23, 2016; Hong Kong.

### Poster sessions

Carver L, Essenmacher M, Brusseau J, Ellis J. History making new treatment for hepatitis C: timely and patient-centered accommodations for 500 concurrently waiting patients. UMHS Quality Month 2015. University of Michigan Health System, Ann Arbor, MI, October 6-7, 2015. Poster

## Accomplishments

- ◆ Specialty Pharmacy continues to serve the specialty medication needs of the university's employee, retiree and dependent prescription drug plan population.
- ◆ We successfully completed an extensive document review and on-site survey to ensure our program meets the standards necessary as a member of the University Health System Consortium (UHC) Specialty Pharmacy program. The surveyors were very complimentary of the scope of our program, and the commitment of our team.
- ◆ Secured access to three manufacturer limited distribution oral chemotherapy medications (Lynparza, Tagrisso, Iressa) allowing patients to fill their specialty medications at UMHS.
- ◆ Consistent with the institution's educational mission, we engaged several pharmacy students and residents in direct patient care, community pharmacy, and clinical service experiences.



# About Research Pharmacy

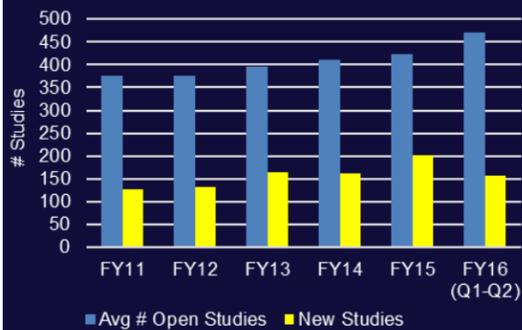
Formerly known as Investigational Drug Services

The Research Pharmacy (RP) ensures that clinical trials involving medications, including investigational drugs, are conducted safely, efficiently, and in compliance with study protocols and applicable regulations. In doing so, the RP participates on the UM Medical School Institutional Review Board (IRB) by reviewing protocols for approval and continuing review. The RP will only handle protocols that have been IRB approved. Additionally, the RP adheres to federal law, study sponsor protocols, the Joint Commission regulations, and University of Michigan Health System policies in conducting its work.

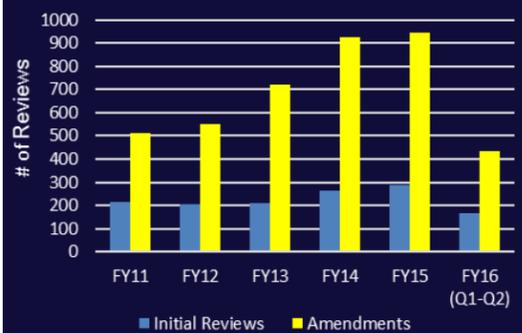


## Upward trends

Studies Managed and New Studies



IRB Reviews



# Highlights of Research Pharmacy

- ◆ IRB review and pharmacy management of ~ 450 clinical trials, with continued growth
- ◆ Participated in multidisciplinary research teams, including MI-CHR-MCRU, Ravitz Phase I, COG Phase I, melanoma, & multiple myeloma
- ◆ Demonstrated regulatory compliance via internal and external audits performed by the following agencies and cooperative groups: FDA; Clinical Trials Network; NCI; UM Clinical Trials Office (QARC); NANT; SWOG; COG, and Theradex
- ◆ Provided representation on institution research oversight and other committees such as IRBMED, MICHN CTO, MiChart Research Leadership Team, MICHN-MCRU feasibility team, Expanded Access Committee, and Cancer Center Orders Team
- ◆ Precepted College of Pharmacy fourth-year APPE students (10), and PGY- 2 resident (2)
- ◆ Contributed to the advancement of Research Pharmacy practice through participation in national organizations (ASHP, SWOG, UHC) and research on safer labeling practices and development of innovative new policies regarding clinical trial management and patient safety



- ◆ Implemented measures to enhance security and align with department processes for investigational drugs that are also controlled substances



- ◆ Formed work groups to evaluate and revise processes internal processes related to dispensing guidelines, workflow, and medication safety





The Drug Information Service (DIS) at the University of Michigan Health System focuses on promoting rational, safe and effective use of medications with the health system. The DIS coordinates the activities of the system Pharmacy and Therapeutics (P&T) Committee and serves as the primary drug use policy body for the organization. Responsibilities include oversight and coordination of the P&T and related medication use subcommittees, formulary management, development, revision and implementation of medication use guidelines and policies. The DIS is also a primary experiential training site for P-4 pharmacy students and PGY-1 pharmacy practice residents.

## Drug Information Service

2015-2016 Accomplishments:

- ◆ Implementation of FormWeb: an on-line integrated database for formulary/guideline document keeping;
- ◆ Major revision of the medication voucher / financial assistance process within the health system;
- ◆ Establishment of a process for biosimilar review, approval and substitution;
- ◆ Major revision to chemotherapy policy to permit use of home pump chemotherapy in select circumstances including prototype order documentation with MiChart for future “home pump policy.”
- ◆ Re-establishment of monthly non-formulary summary and analysis.



## Medication Safety

The Medication Safety Committee at the University of Michigan Health System focuses on safe medication practices within the medication use system. The committee is represented by hospital administration, home care services, nursing, physicians, a physician assistant, pharmacy, and office of clinical safe. Meetings are held monthly along with our sister committee, Pediatric Med Safety, and report directly to the Pharmacy & Therapeutics Committee.

### Accomplishments in 2015-16

- ◆ Implementation of Carefusion PCA pumps enterprise-wide for PCA therapy. Movement of all controlled substances infusions in adult patients to be delivered in a lockable PCA device.
- ◆ Revision of EMR PCA orderables to match infusion pump entry and nursing workflow.
- ◆ Completed Joint Commission accreditation survey with minimal medication management findings.
- ◆ Addition of dosage for medications on the After Visit Summary (AVS) and e-prescriptions (e.g. – take 5 mL (5 mg) daily of drug X).
- ◆ Addition of 23.4% NaCl to the NeuroICU Omnicell for the treatment of neurological emergent/urgent situations with safeguards of requiring pharmacy order review prior to removal and Omnicell cell label dispensed with Omnicell bar-code scanning.



### Voluntary reported Medication Events

YR	2015	2014	2013	2012	2011
#	3505	3672	2869	2654	2350



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HomeMed is recognized within the industry by the National Home Infusion Association (NHIA) for its commitment to integrity and adherence to standards for ethical practice.



## HomeMed Pharmacy and Specialty Infusion

HomeMed is a licensed pharmacy and home infusion provider.

Our unit is uniquely positioned within the UMHS to effectively contribute to a complete and coordinated continuum of care as patients and their families transition from the inpatient and outpatient settings to the home environment. Our team provides comprehensive and individualized in-home pharmacy infusion products, specialty infusions, clinical care services, training, and delivery throughout Michigan, Northern Ohio, Northern Indiana, and Florida.

## Fiscal Year Metric Assessment\*

		Δ FY'15
Gross Revenue / Charges	\$98,934,924	↑
Bad Debt (% of Gross Rev.)	1.54%	↓
Pharmaceutical Spend	\$24.5 Million	↑
Infusion Days	852,355	↑
Average Patient Census	2,172	↑
New Services Initiated	116,844	↑
Prescription Fills	72,154	↑
Doses Prepared	704,840	↑
Orders Processed	41,401	↑
Patient Deliveries	419,328	↓
Home Nursing Visits	5,231	↑
Staff FTEs	114	↑

\*Year end extrapolation

## Accomplishments in 2016

- ◆ Joint Commission Survey with no findings
- ◆ RxX 340B Audit with no findings
- ◆ Manual Qualification of 340B eligibility
- ◆ Full Compliance with DSCSA using TraceLink™
- ◆ Successful ICD.10 conversion with accurate claim submissions
- ◆ Enhanced patient and clinician education related to continuous infusion chemotherapy
- ◆ Created Spanish language translations of several key education resources
- ◆ Completed Employee Engagement Plan
- ◆ Employee Recognition Awards
- ◆ Implementation of the MSD Patient Home Delivery Program

## Accomplishments Cont.

- ◆ Established a hemophilia factor emergency supply plan with the UMHS Hemophilia & Coagulation Disorders Program
- ◆ Fully implemented the conversion to the Sapphire™ ambulatory infusion smart pump
- ◆ USP <797> Gap Analysis; Launch of Collaborative UMHS USP <797/800> standardization group; pursuit of compounding accreditation
- ◆ Patient Family Centered Care (PFCC) collaboration through meetings and patient document reviews
- ◆ Insourcing of hourly hospital deliveries
- ◆ Three Fred Pryor on site staff education and development sessions
- ◆ Compliant Controlled Substance Audit(s)
- ◆ Expansion of the Electronic Medical Record within HC360™ and MiChart™
- ◆ Expanded MiChart™ Home Infusion Order sets
- ◆ Launch of Patient Education and Use of Co-pay programs
- ◆ Successful completion of payer audits
- ◆ Transition of Courier Services to Strategic Supplier
- ◆ Adult and Pediatric Cancer Center Huddle participation
- ◆ Indexing & Tracking of ROI Requests





## Business & Purchasing

Acting as the GPO for the University of Michigan Department of Pharmacy, the medication contracting and purchasing function is intended to provide the University with optimal pricing on pharmaceuticals thereby minimizing overall spend through the purchasing function. This is accomplished by contracting for products where ever possible. The areas that directly benefit from this activity include the University Hospital Central Pharmacy, HomeMed Pharmacy and all the Ambulatory Pharmacies as well as Infusion Centers and Outpatient Clinics.

Information is also shared with Drug Information, Oncology and other clinical areas in the pursuit of optimal product choice where pricing is a consideration. A significant amount of effort is also applied to review of vendor product changes, like contract deletions and additions, pricing actions and new products, all to ensure continued best pricing for the University. This function is also the main point of contact for the University's Prime Vendor (AmerisourceBergen) and Pharmaceutical Manufacturers.

## Activities

	2014-2015	2015-2016
Contracts & Amendments processed	100	128
Cost Savings Analysis performed	51	24*
Pricing Actions evaluated	Data N/A	260
Pharmaceutical Vendor visits	214	201**



## Antimicrobial Stewardship

In 2015, the antimicrobial stewardship program (ASP) at the University of Michigan Health System (UMHS) continued its efforts to promote judicious antimicrobial utilization and improve the care of patients with infectious diseases while providing cost-effective therapy. Similar to previous years, initiatives that promote compliance with national quality performance measures and improve patient outcomes for the management of specific infectious diseases are an important component of ASP efforts. In 2015, we expanded our ASP group as well, with the additions of Alison Tribble (pediatric infectious diseases physician), Daniel McClung (adult infectious diseases physician), and Twisha Patel (infectious diseases clinical pharmacy specialist).

### Examples of Responsibilities

Disease-based stewardship, drug-based stewardship, cost savings initiatives, antimicrobial expenditure and utilization, antimicrobial drug shortages, antimicrobial resistance trends, and restricted antibiotic workflow changes.



Given the significant antibiotic shortages leading to inability to continue intravenous antibiotics in both the inpatient and outpatient setting, the ASP has worked in collaboration with the University of Michigan Pharmacy Shortages and Inventory groups to develop appropriate restricted criteria for use. Review of inpatient use is conducted weekly during times of severe shortage for select antimicrobials and interventions including switching agents, dosing, IV to PO interchanges, and defining durations is made where appropriate.





## Medication Use Technology

The Medication-Use-Technology team is a group within MCIT assigned to support technology and systems in the department of Pharmacy. This includes technical support of the MiChart Willow and Beacon systems as well as other non-MiChart pharmacy systems. The team supports automated dispensing systems, provides ad hoc report production, and provides other technical assistance such as device support. Critical non-MiChart systems supported include Omnicell, DoseEdge, OPC inventory system, the Robot, ScriptPro dispensing system and the QS/1 outpatient pharmacy system.

The group provides Pharmacy systems support 24 hours per day, 7 days per week, 365 days per year. The team responds to an average of 150 MCIT help desk calls per month.



### Notable 2015 Team Accomplishments

- ◆ MiChart Willow 2015 upgrade scope and build completion
- ◆ Pharmacy SharePoint web portal implementation
- ◆ Specialty/Transplant Pharmacy DME to MiChart Revenue Project
- ◆ Sedation area Omnicell cabinet implementation project
- ◆ DoseEdge, Robot, QS/1, FastTrack, and Omnicell system upgrades
- ◆ Pharmacy SQL server DB migration to 2012 platform



## Medication Use Informatics

The Medication-Use-Informatics (MUI) team is a group of pharmacists, nurses, and a business analyst within MCIT which supports clinical informatics for the MiChart Willow (Pharmacy) and Beacon (Oncology) applications. The team is responsible for all medication build, inpatient medication order sets, ambulatory medication smart sets, oncology regimens, ambulatory infusion therapies, and research medication and protocol build. Additionally, the team facilitates associated workflow validations and process improvements as they pertain to the electronic health record. The team relocated to Arbor Lakes Building 3 in April 2016.

Goals	Leadership
Improve ordering and enhance patient safety and quality of care	Carleen Penozza, MHSA, BSN, RN – Director, Inpatient Applications, Medical Center Information Technology
Exchange information across technologies to support medication reconciliation and transitions of care	Rick Rinke, RPh, MBA – Medication-Use-Technology Manager
Support meaningful use and other key initiatives	Heather Somand, PharmD, BCPS – Medication-Use-Informatics Manager
Enhance quality of electronic data to support patient care, education and research	Christopher Zimmerman, Pharm.D., BCPS – Coordinator, Electronic Health Record (EHR) Decision Support; PGY-2 Pharmacy Informatics Residency Program Director

## Medication Use Informatics and Technology

University of Michigan Health System (UMHS) Medication-Use Informatics & Technology teams are MCIT groups responsible for supporting enterprise informatics and health information technology, with the aim of facilitating the provision of safe, effective and efficient medication-use.

In addition to implementation and support activities, the Medication-Use teams are actively involved in the education of pharmacy informatics professionals through the PGY2 Pharmacy Informatics program and precepting of an Informatics intern, pharmacy residents, and students on rotation from the College of Pharmacy.

## Accomplishments

- ◆ Expanded controlled substance vault to 24 x 7 service to help centralize CS dispensing, including kit building for EAA Surgery Center and Omnicell restocks
- ◆ Requested resources were approved for expansion of the controlled substance vault, planning meetings and architectural drawing reviews continue into FY2017
- ◆ Incorporated 23 new Omnicells for nurse sedation areas into inventory and vault processing workflows
- ◆ Designed new drug shortage website
- ◆ Started data processing for University Hospital cartless project roll out
- ◆ Finished B2 Pharmacy Area Expansion construction which commenced 4 years ago



## Medications Use systems

The Medication Use Systems Pharmacy Services is based out of the B2 pharmacy area. We are responsible for a wide variety of services to both internal (inpatient satellite pharmacy staff) and external (Omnicell end users, clinic staff) pharmacy customers. We procure, receive, process, repackage and distribute the majority of medications (controlled and non-controlled) from wholesalers and direct manufacturers for inpatient and infusion pharmacies, health system clinics and research laboratories. We process carfill medications for adult patients. We coordinate and manage the majority of drug shortages incurred by the health system. We assure that products are ready for barcode scanning at the point of administration. We manage the majority of the pharmacy databases that are not directly related to prescriber order entry. We process all emergency drug box supplies for the health system and local EMS/Ambulance services. We also compound many of the oral suspensions and topical products that are not commercially available for health system patients.



## Internship Opportunities

A two year experience for second and third year pharmacy students

In addition to the IPPEs and APPEs offered to UM College of Pharmacy students at UMHS, there are also opportunities for pharmacy internships. The University of Michigan Health System Department of Pharmacy Services Internship Program strives to foster the professional development of pharmacy students by providing them with the abilities, skills and knowledge necessary to thrive as future pharmacists and by exposing them to health system pharmacy as a whole through shadowing opportunities and weekly speakers. Additionally, the program aims to promote progressive thinking by providing students with the opportunity to take part in innovative projects that leave a lasting impact on the institution.



### Current Positions Include:

- ◆ UH 6th Floor Inpatient Pharmacy
- ◆ Research Pharmacy
- ◆ Cardiovascular Center Pharmacy
- ◆ Mott Children's Hospital Inpatient Pharmacy
- ◆ Cancer Center Infusion Pharmacy
- ◆ Ambulatory care
- ◆ Pharmacy Informatics/MCIT
- ◆ Drug Information
- ◆ Specialty Pharmacy
- ◆ UH Central Inpatient Pharmacy
- ◆ Taubman Center Outpatient Pharmacy





# Education: Pharmacy Residents

## About our Pharmacy Residency Program

Oversight of programs is provided by the Residency Advisory Committee (RAC).

We have co-chairs of RAC – John Clark and Pam Walker.

Preceptors are a key component of our program and our essential to our outstanding training.

Our residents participate heavily in the education and training of pharmacy students.

Research and writing are key to the development of our resident practitioners.

In the past 5 years, we have increased from 12 to 18 residents; we will have 21 residents in 2016-2017.

Leadership training, professional involvement, and community service are key components of our program.



Pharmacy residencies have been deeply engrained in the University of Michigan Pharmacy Department since 1927 when the first pharmacy residency was formed by Harvey AK Whitney. At that time, the pharmacy residency was known as a post-graduate internship. We currently have 18 pharmacy residencies in 12 programs. Our pharmacy residency programs undergo a rigorous accreditation process overseen by the American Society of Health-System Pharmacists (ASHP).

“Patients and Families First” is the motto of the University of Michigan Health System. The pharmacy department strives to see patients and their families through a number of services and locations.

We serve our patients both in the inpatient and outpatient setting. When patients are in the hospital or receiving care at a UMHS facility, pharmacists are there working with physicians and nurses to ensure best care. Pharmacists serve as experts in drug therapy and dosing. Pharmacists perform functions like making sure chemotherapy orders are correct and properly dosed, helping patients and physicians with anticoagulation dosing, and dosing for drugs such as antibiotics and anticonvulsants.

The pharmacy also provides outpatient locations for patients to fill prescriptions. Because of the specialized care that UMHS provides, often other community-based pharmacies are not equipped to handle some of the complicated prescriptions that our patients receive.



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