



MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN



Pharmacy Annual Report
2019-2020

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Welcome to the 2019-2020 edition of the Michigan Medicine Pharmacy Department annual report. This year I celebrated my 5th anniversary working at Michigan Medicine. And this past year was like none any of us has ever experienced. Three major events occurred: changing distribution technology from Omnicell to Pyxis; centralizing our satellite pharmacies; and dealing with the impact of COVID 19. These events brought out the tremendous teamwork and work ethic of our team like never before. I am extremely proud of the pharmacy staff who dealt with all of these changes in a constructive and successful manner. This report not only highlights how we dealt with these challenges, but also reflects the many other accomplishments of our divisions.

I would be remiss if I didn't document in some detail the work that the COVID 19 pandemic thrust upon us. Beginning in February 2020 it was predicted that we could have up to 3,000 COVID patients. We quickly assembled teams to address staffing, drug supply, cross-training, and daily operations management. Every member of the department stepped up to contribute in their own way. Daily status updates kept our department informed of events and what was happening in the organization. Highlights include:

- ◆ Deb Wagner and Brian Callahan establishing pharmacy plans for a field hospital in the indoor track and tennis facilities – which we fortunately never had to utilize.
- ◆ Karin Durant and the med use policy team for establishing a field hospital formulary.
- ◆ Scott Ciarkowski for leading our staffing team to determine hiring and cross-training needs.
- ◆ The research pharmacy team for continuing to function and dealing with the regulations surrounding emergency use authorization of remdesivir.
- ◆ The CW team for learning how to handle adult patients and provide pharmacy services to the RICU.
- ◆ The critical care team for overseeing management of over 200 critically ill patients.
- ◆ The analytics team for developing dashboards that helped with predicting necessary drug supply.
- ◆ The purchasing team for making sure we had all of the drugs we needed.
- ◆ The B2 staff and clean room teams for shifting gears to compound and re-distribute drugs to an ever changing patient cohort.
- ◆ The Pyxis team for quickly re-configuring devices to meet the needs of new patient populations.
- ◆ The business support team for keeping track of finances and billing throughout all of the sudden changes.
- ◆ The compounding compliance team for training many new people in aseptic technique in a pinch.
- ◆ Twenty-six staff members took voluntary furloughs to save money while several others took permanent reductions in their appointments. Although we had to cut about 25 FTE's from our department, these efforts minimized the number of employees that had to be reduced from our workforce.
- ◆ The leadership team for helping with difficult decisions related to our economic recovery.

I'm sure I missed extraordinary efforts by many individuals. As such, I want to thank the entire department for your dedication and tireless efforts to service our patients and making our department better during an unprecedented and difficult time.

Let's hope that this next year is a boring one. Go Blue!

Stan Kent, RPh, MS

Central Pharmacy

Central Pharmacy functions as the main medication warehouse for all inpatient satellites, infusion pharmacies, and clinics within the Michigan Medicine enterprise. Central Pharmacy staff 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 as well as play an active role with distribution of medications to the inpatient care areas in the University Hospital. Central Pharmacy staff coordinate and manage the majority of drug shortages incurred by the health system and continue to develop processes to reduce any changes in practice observed by our customers. MUS staff assure that products are ready for barcode scanning at the point of administration. MUS staff also manage the majority of the pharmacy databases that are not directly related to prescriber order entry. MUS staff process all emergency drug box supplies for the health system and local EMS/Ambulance services. MUS staff repackage bulk oral tablets and compound many of the oral suspensions and topical products that are not commercially available for distribution to both the inpatient satellites and multiple outpatient locations throughout the enterprise.

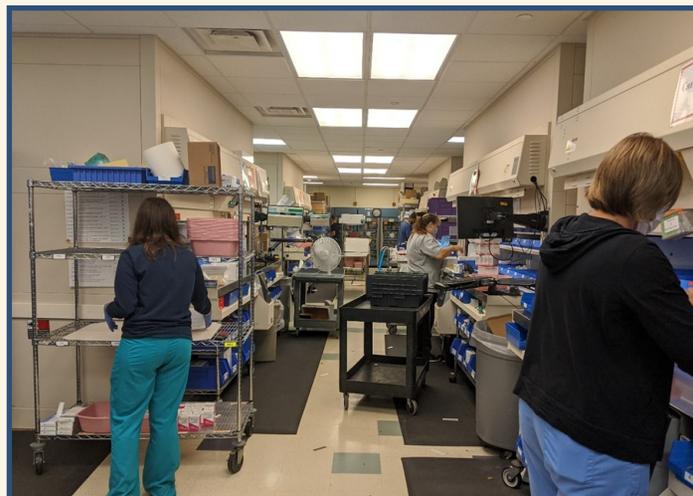
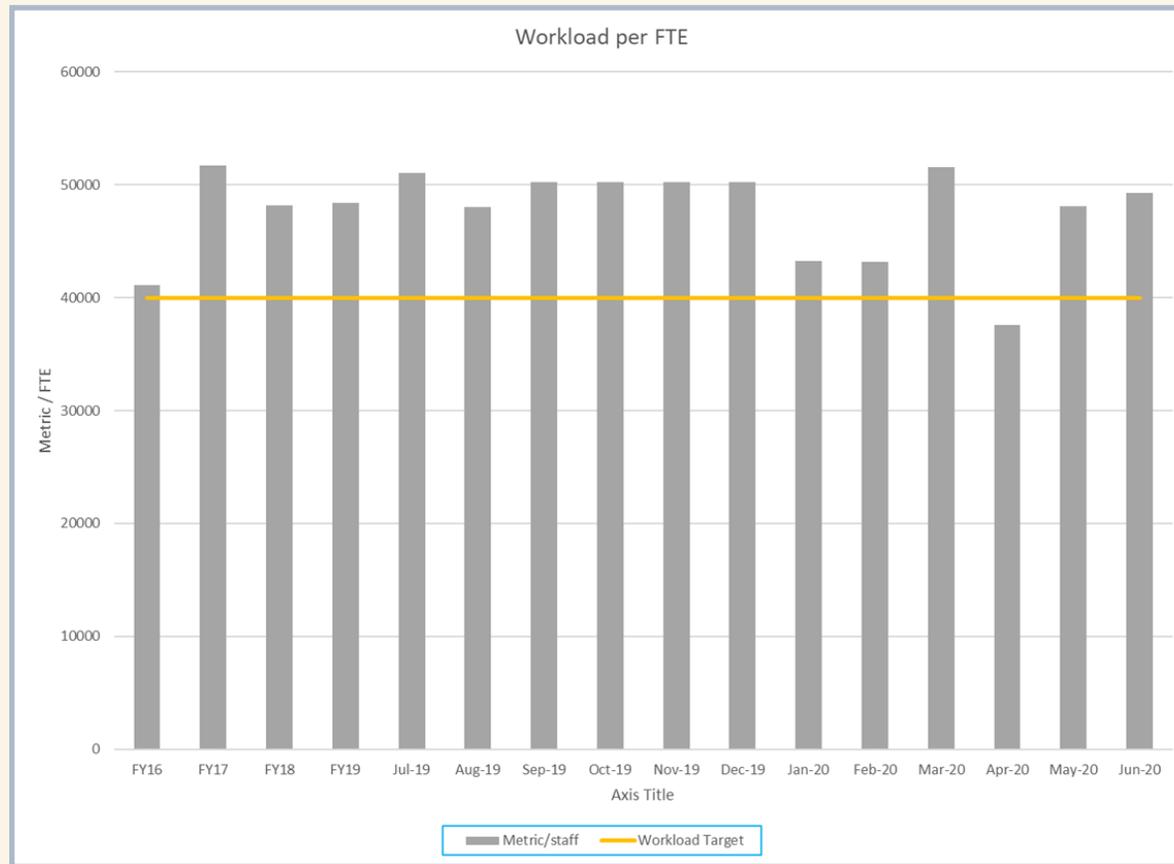
Highlights/Accomplishments

- ◆ Removal and replacement of the 5 carousels with the conversion to BD Pharmogistics inventory management system
- ◆ Installation of BD Pharmopack high-speed packager
- ◆ Conversion from Omnicell Controlled Substance Manager to BD CIIsafe product for management of controlled substances
- ◆ Managed and mitigated multiple extensive shortages with limited impact on end users
- ◆ Constructed new non-sterile hazardous compounding space



Central Pharmacy (continued)

Central Pharmacy Metrics



University Hospital & Cardiovascular Center

The University Hospital (UH) and Cardiovascular Center (CVC) pharmacy teams are comprised of medicine, surgery, cardiology, and oncology service lines. Pharmacists working on these teams collaborate at a multidisciplinary level amongst rounding physicians, physician assistants, nursing and dieticians to name a few. Daily responsibilities include: performing daily reviews of all patients to assess for appropriateness of drug therapy, managing pharmacokinetic dosing and monitoring of antibiotics and anticoagulants, assessing parenteral nutrition, performing patient education, and participating in medication reconciliations and code response.

Pharmacists and technicians working in the Central Pharmacy, OR and CVC satellite pharmacies work in collaboration with team members to ensure timely preparation and delivery of medications. These pharmacies provide services to all admitted patients in UH and CVC as well as to other Michigan Medicine pharmacies and clinics. Services offered by pharmacists and technicians include medication order review and verification, medication preparation and delivery, drug information, code response, and other services as needed. The Central Pharmacy promptly prepares and delivers first dose, STAT, hazardous, and investigational medications. The OR pharmacy services adult surgical cases, and the CVC pharmacy services cardiovascular inpatients and surgical cases.

Together, these pharmacies work to ensure appropriate medication therapy is ready and available for patient care. While the list below is not all encompassing, some of the major highlights and accomplishments for UH, CVC, OR and Central Pharmacy during the 2019-2020 time period include:

Highlights/Accomplishments

UH – B2 & Central Pharmacy:

- ◆ Implemented Dispense Prep medication accuracy check for pre-made products and incorporated barcode scanning into medication dispensing process
- ◆ Implemented Dispense Tracking barcode scanning at various stages of the medication dispensing process, including:
 - ◇ After all sterile compounded products have been prepared
 - ◇ When medications have been tubed
 - ◇ Prior to medication delivery to the various units
- ◆ Successfully consolidated pharmacy services from the UH6 and UH8 pharmacy satellites to the B2 Central Pharmacy
- ◆ Successfully converted automatic dispensing cabinets and central inventory storage and automation to BD Pyxis ES and Pyxis Pharmogistics
- ◆ Completed major construction projects to allow for compliance with upcoming USP 795, 797, and 800 chapters
- ◆ Trained new team members in sterile compounding, including hazardous compounding
- ◆ Implemented DoseEdge technology into the sterile hazardous preparation cleanroom space
- ◆ Implemented MedLink Controlled Substance Waste Tracking as well as spectrophotometry testing of controlled substance waste in the OR as part of diversion prevention program
- ◆ Improved security of propofol by handling as a controlled substance
- ◆ Appointed Micah Pepper as UH Operational Pharmacist Lead
- ◆ Identified and implemented various cost savings initiatives through pharmacist partnerships with MPLAN medical and nursing directors
- ◆ Contributed to scientific literature through collaboration of pharmacist specialists, generalists, residents, interns, students, nurses, and providers
- ◆ Supported health care education by providing learning experiences to pharmacy, nursing, physician, dentistry, and other learners

University Hospital & Cardiovascular Center (continued)

Highlights/Accomplishments (continued)

CVC & OR:

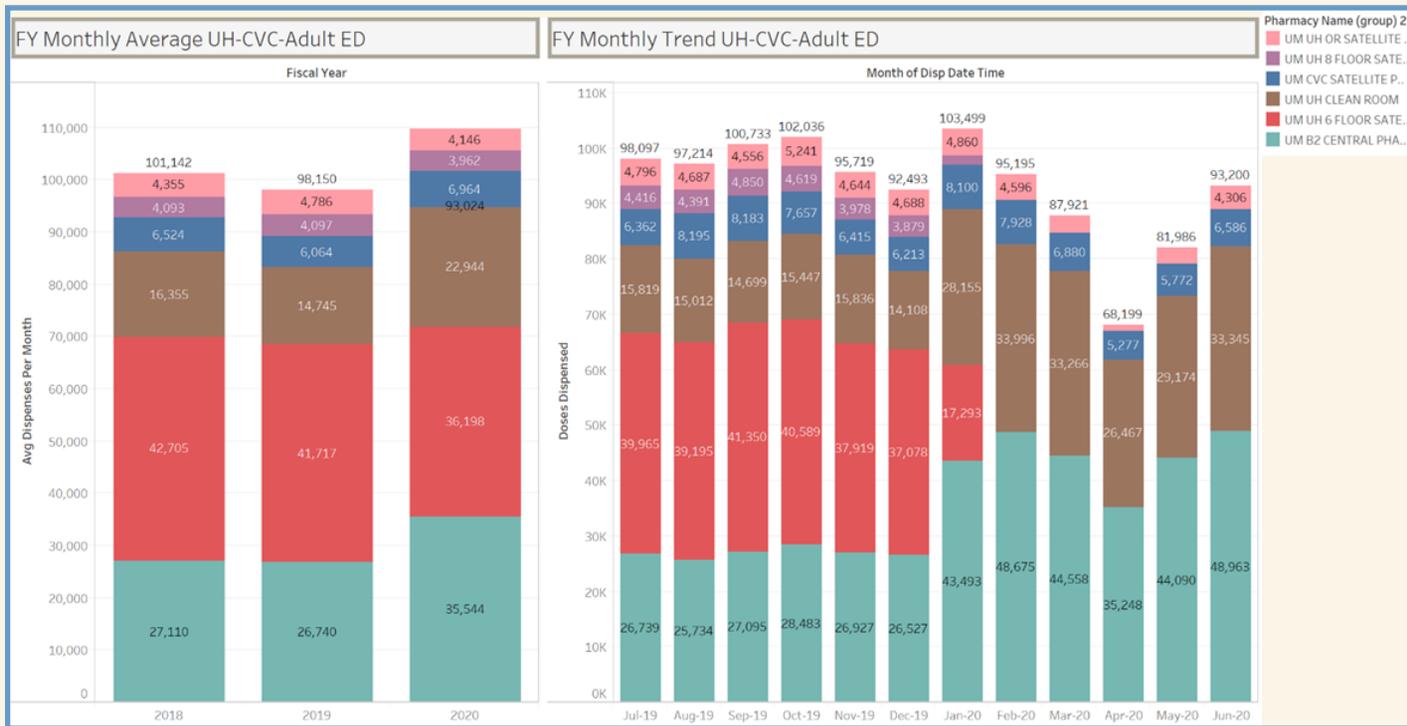
- ◆ CVC and OR renovations for USP 797 compliance
- ◆ Implemented CST 2.0 for controlled substance tracking
- ◆ Reconfigured anesthesia trays
- ◆ Contributed to scientific literature through collaboration of pharmacist specialists, generalists, residents, interns, students, nurses, and providers
- ◆ Supported health care education by providing learning experiences to pharmacy, nursing, physician, dentistry, and other learners
- ◆ Standardized OR infusion concentrations
- ◆ Appointed Courtney Inch as OR/CVC Team Lead
- ◆ Added pharmacist to EAASC
- ◆ Initiated planning to build OR Pharmacy for sterile compounding at EAASC
- ◆ Standardize workflow for ordering, preparation and distribution of infusion orders for the OR.
- ◆ Standardization of OR syringes for improved safety
- ◆ Implemented medication drug packs for COVID-19 patients
- ◆ Expanded OR pharmacy hours to include services on Saturdays at UH OR and BCSC
- ◆ Replaced automatic dispensing cabinets with Pyxis Med Stations
- ◆ Support for COVID-19 pandemic response included:
 - ◇ Increased ICU pharmacist coverage model with expanding ICU beds
 - ◇ Developed guidelines for managing COVID-19 ICU patients including, sedation/analgesic shortage management
 - ◇ Updated anticoagulation guidelines
 - ◇ Established successful means of virtual rounding and communication with teams (e.g. a pharmacy resident initiated the virtual rounding format used in NeuroICU during the initial surge)
 - ◇ Implemented a process for virtual patient education that was developed initially to help care for transplant patients both inpatient and in the clinic setting
 - ◇ Implemented anesthesia medication drug pack for transferring patients



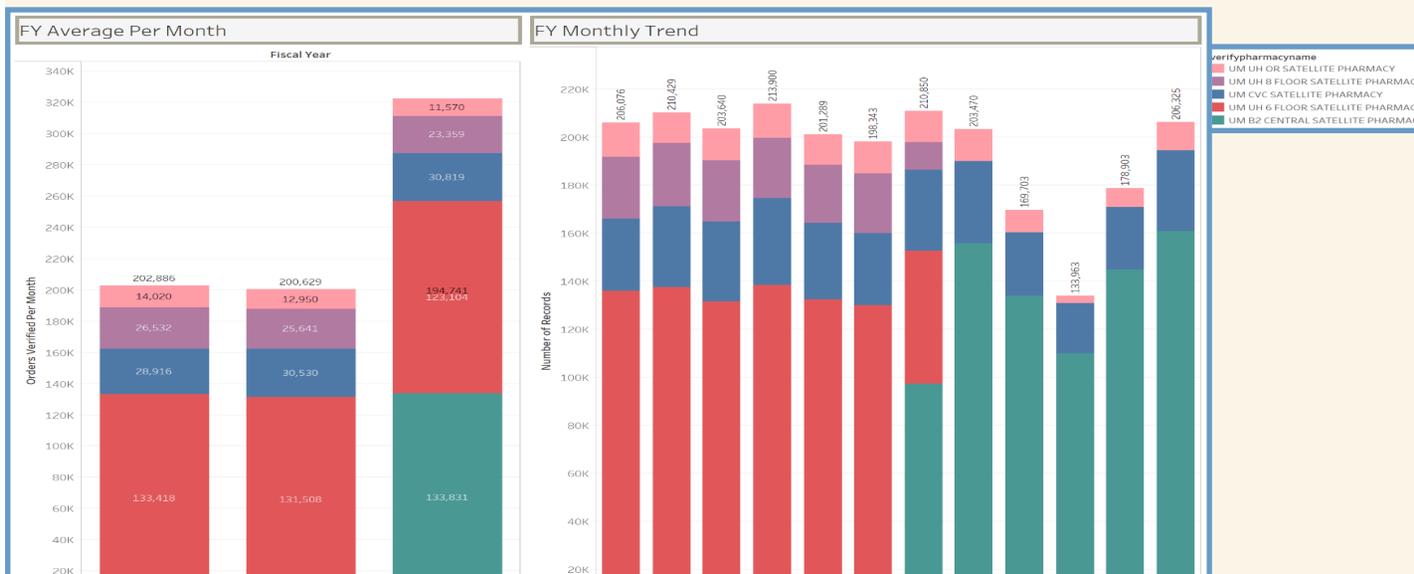
*"In our hearts forever. Rest in Peace, Mike!" –
 Courtney Inch, PharmD, BCACP, FASCP*

University Hospital & Cardiovascular Center (continued)

Doses Dispensed by Pharmacy



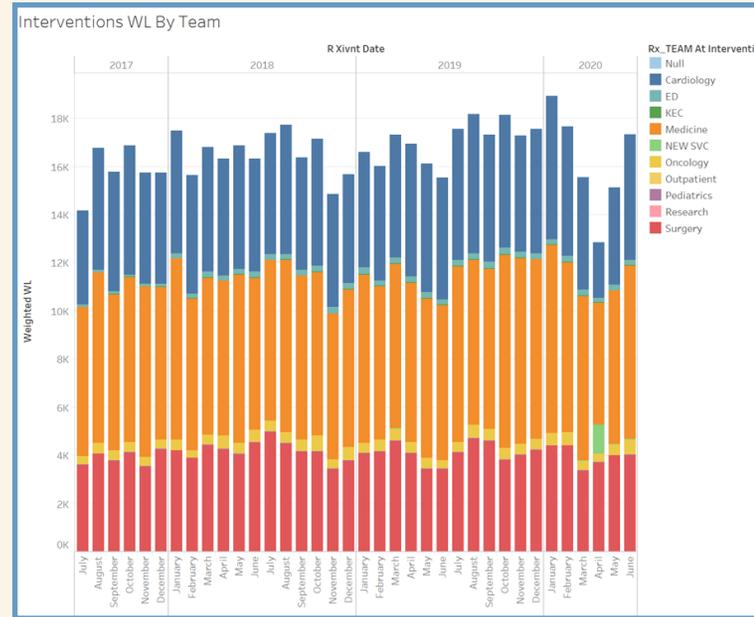
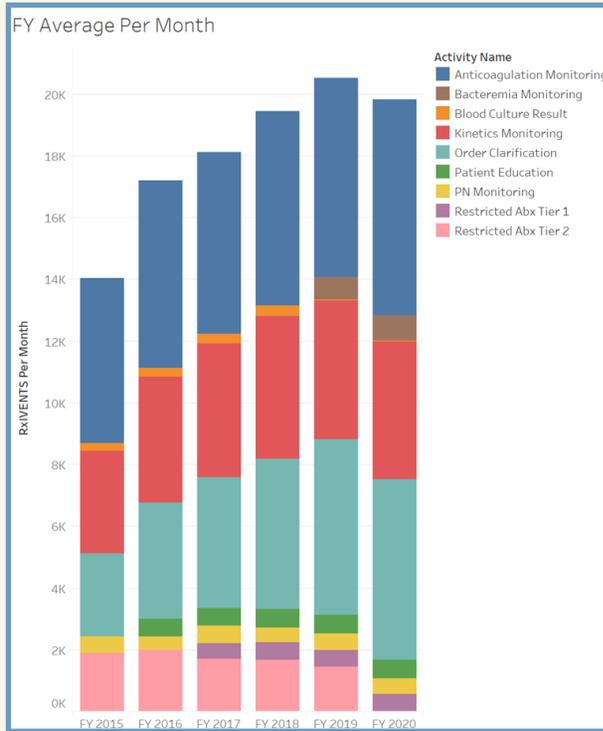
Monthly Orders Verified by Pharmacy



University Hospital & Cardiovascular Center (continued)

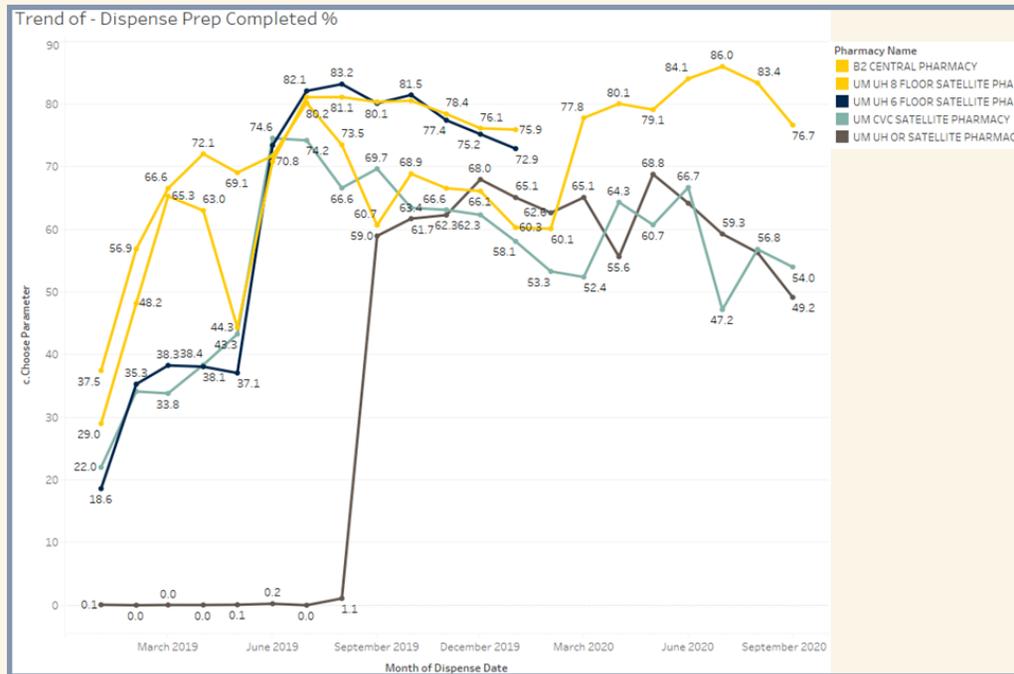
Monthly Average Clinical Workload (Rx iVents)

Intervention Workload By Team



University Hospital & Cardiovascular Center (continued)

Dispense Prep Data (UH/CVC)



Dispense Prep Data (Clean Room)



C.S. Mott Children's and Von Voigtlander Women's Hospital

C.S. Mott Children's and Von Voigtlander Women's Hospital – Michigan Medicine, a 350-bed acute care academic medical center, is a top pediatric and Women's hospital in the State of Michigan and one of the highest ranked pediatric medical centers in the United States. Mott pharmacy provides services for a wide variety of diverse pediatric disease states as well as maternal fetal medicine and women's health, adult oncology, and adult and pediatric infusion services. Once again, U.S. News & World Report ranked C.S. Mott Children's Hospital in all 10 specialties for the 13th consecutive year. Mott is one of only 24 hospitals that are ranked in each category among over 200 children's hospitals in the United States.



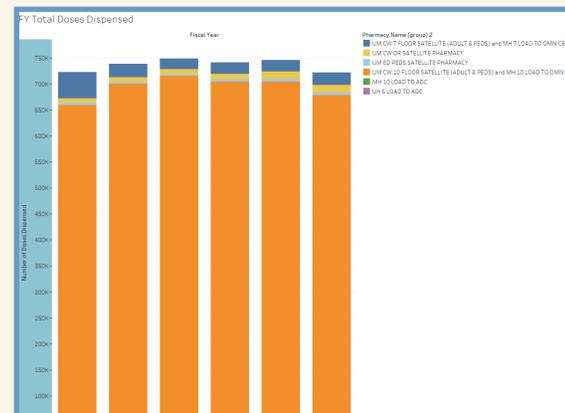
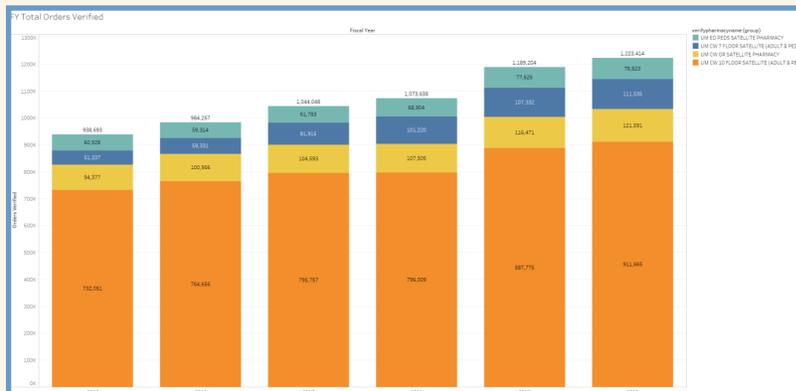
In addition to drug preparation and distribution, operational pharmacy staff work from brand new, state of the art sterile compounding suites to provide top notch sterile compounding services for patients in Mott. Clinical services supported by the CW team include pharmacokinetic and anticoagulation dosing and monitoring, cardiac arrest team participation, nutrition support, medication dosing, patient and caregiver education, and the verification and dispensing of approximately 1 million and 800,000 medication orders, respectively. The General Pediatrics, Critical Care Pediatrics, OR, Emergency Medicine, and Oncology teams are made of a combination of clinical pharmacist generalists, pharmacy technicians, and clinical pharmacist specialists who work in collaboration with the multidisciplinary medical team to support world class care. The CW Pharmacy Team services four different pharmacy satellites providing inpatient, outpatient infusion, operating room, and emergency room services. Together, these pharmacies work together to provide safe and quality services across the continuum of care.



C.S. Mott Children's and Von Voigtländer Women's Hospital (continued)

Highlights/Accomplishments

- ◆ Achieved USP 797 and USP 800 sterile compounding compliance through completion of construction projects in pharmacy satellite areas
- ◆ Dispense Prep barcode scanning technology and Compounding and Repackaging technology for unit dose, non-sterile, and oral liquid medication dosage forms
- ◆ Kit Check technology in CWOR
- ◆ Dispense Tracking technology to improve dose tracking and reduce waste
- ◆ Mobilized and decommissioned two Respiratory ICU (RICU) units in CW to provide specialized care to patients diagnosed with COVID-19
- ◆ Pediatric Intensive Care Unit Bolus from Pump Initiative
- ◆ Pediatric Anticoagulation Policy Expansion, Guideline Updates, and Protocol
- ◆ Pediatric Intravenous Infusion Guidelines (PICU/CES, PCTU, NICU)
- ◆ Standardization of Fluids in Inpatient Setting (SOFI) National Initiative
- ◆ Pharmacy team response to post-partum hemorrhage events in VVH
- ◆ OB guideline revision for Group B Strep algorithm and OB/GYN surgical prophylaxis



Ambulatory Pharmacy Services

Our team members provide high-quality, patient-centered services across the 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, and initiatives to improve cost, quality, and patient safety. Staff collaborate with teams of healthcare providers to provide the best care to all. Ambulatory Pharmacy Services partners and provides care across five outpatient pharmacies, seven infusion pharmacies, specialty pharmacy services, and pharmacists embedded in clinics.

Community Pharmacy Services

The five 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.

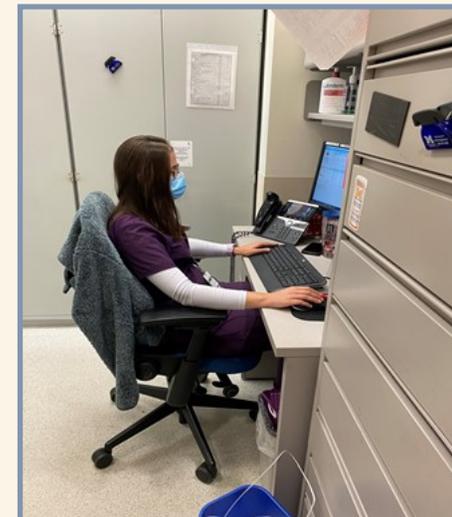
Community Pharmacy Locations

Main Campus Pharmacies – Taubman Center, Cancer Center

Offsite Pharmacies – East Ann Arbor, Kellogg Eye Center, Brighton Center for Specialty Care



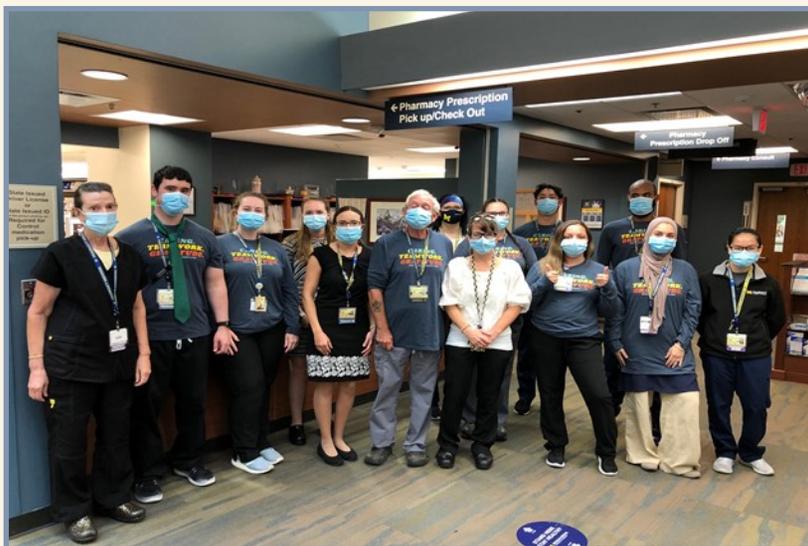
Katherine Bromm - intern



Ambulatory Pharmacy Services (Continued)

Highlights/Accomplishments

- ◆ Filled **253,777** prescriptions from July 1, 2019 to June 30, 2020 across 5 pharmacies for a total of **\$261,637,890** in sales
- ◆ Continued growth of medication therapy management (MTM) program to include medications synchronization for patients with complex care needs
- ◆ Expansion of immunization services to include Tdap and influenza vaccinations to patients of Mott Children's Hospital and caregivers/family. Plan to include Shingrix vaccination in 2020
- ◆ Implementation of insulin syringe/needle standing order, which allows pharmacists to dispense insulin syringe/needle standing order, which allows pharmacists to dispense insulin syringes/needles to patients who require them
- ◆ Expansion of the priority discharge program to include more than 50 multidisciplinary teams across the hospital
- ◆ Provide comprehensive medication reconciliation and education to patients discharging from the hospital, including pediatric counseling to patients less than 17 years of age and dispensing of Deterra Drug Deactivation Systems to those patients receiving opioid prescriptions
- ◆ Installation of opioid take-back receptacle located in the neurology clinic of Taubman Center, Reception C
- ◆ Continued integration of automation into the dispensing process using both ScriptPro with the collator and RxSafe to monitor controlled substances use in the Taubman Pharmacy
- ◆ Conducting controlled substance inventories conducted quarterly in all 5 pharmacies
- ◆ Dedicated and energetic team members delivering exceptional patient centered care



Pictured from left to right: Erin Hennessey, Matt Barras, Kaitlyn Bottorff, Katherine Bromm, Sarah Lakehal-Ayat, Steve Davies, Jen Freel, Leslie Pierce, Renee Ballou, Steven Zou, Mikhaala Baez, Johnny Bansfield, Widad Alchurhaji, Christabel Lo

Specialty Pharmacy



The Michigan Medicine specialty pharmacy team had an extremely productive year. Most notably, the specialty pharmacy received full URAC accreditation which demonstrates commitment to the high-quality care and affords increased access to limited distribution drugs and specialty network provider contracting. The team continues to improve patient access to specialty medications by coordinating financial assistance, providing monthly refill reminder calls, shipping prescriptions to any Michigan location for free, and offering pharmacist on call coverage 24/7.

It was also a year of transition for the specialty pharmacy leadership team, patient management system, and workspace. The team congratulated Pharmacy Manager Sangeeta (Sandy) Goel as she transitioned to a new role within the University of Michigan. Dianne Peters, Pharmacy Financial Coordinator Supervisor, also transitioned to the pharmacy billing team. The team converted from the Asembia1 patient management platform to MiChart in order to continue providing high-touch services to specialty patients. Finally, the specialty pharmacy consolidated most of the team to Specialty South at 2705 S Industrial Hwy.

FY20 Specialty Pharmacy Statistics	
Patients Serviced	~6,800
Rx Volume	~148,000 (~75% transplant)
Packages Shipped	~51,000
Specialty Pharmacy Call Center	~103,000 patient calls (inbound & outbound) Call abandonment rate: 10% Average speed to answer (ASA): 50%
Prior Authorizations (PA)	~4,200 PAs Turnaround times: ~3 days for PA approval ~5 days for medication to patient
Copay/patient assistance	\$20.3M coordinated to offset specialty and transplant patient out-of-pocket medication expenses
Selected pharmacist clinical outcome measures	Enbrel and Humira adherence rate: PDC 0.89 and 0.92, respectively New adherence measure for single-pill regimen for HIV: PDC 0.97

Team Members

- ◆ Specialty pharmacy welcomed two new oral chemotherapy Clinical Pharmacist Generalists and several new Pharmacy Technicians, Pharmacy Financial Coordinators, and learners to the team
- ◆ In October, Ashley Sabourin joined the C.S. Mott Children's Hospital pediatric cystic fibrosis care team to provide com-

Specialty Pharmacy (continued)

Education and Scholarship

- ◆ The specialty team engaged 14 pharmacy students (IPPE and APPE), 2 interns, and residents in managed care, community, ambulatory care, and administration
- ◆ Team members meaningfully contributed to the Vizient/Acentrus specialty pharmacy benchmarking, payer, and clinical workgroups and committees and served as specialty program liaison to other health system specialty pharmacy collaborative members
- ◆ Kaleigh Fisher-Grant, PharmD, CSP, presented “Specialty pharmacy systems integration: patient care, data modeling, and future needs” at the 2020 Michigan Pharmacists Association Annual Convention
- ◆ Heather Gillespie, PharmD, authored *The Impact of Palliative Care Interventions on Medication Regimen Complexity* in the Journal of Palliative Medicine
- ◆ Ashley Sabourin, PharmD and Kaleigh Fisher-Grant, PharmD, CSP authored *Evaluation of a specialty pharmacy hepatitis C virus pharmacy service in the Resident’s edition of the American Journal of Health-System Pharmacists*
- ◆ Sandy Goel, PharmD, was nominated for the University of Michigan Candace J. Johnson Award for Staff Excellence

Highlights/Accomplishments

- ◆ We are proud to announce that both East Ann Arbor Pharmacy and Ambulatory Care Pharmacy received full URAC specialty pharmacy accreditation on 10/1/2019. In accordance with URAC requirements, we also thoroughly reviewed and updated nearly 80 policies and procedures in order to maintain our accreditation through 2022
- ◆ FY20 Patient satisfaction survey results indicate over 97% of patients are extremely satisfied with our services and 98% would recommend our Specialty Pharmacy
- ◆ The Quality Management Committee maintained two active quality improvement projects: “Conversion from high-dose Xeljanz®” following an updated FDA Black Box Warning and “Assessment of pharmacy financial coordinator workload.” The QMC group continues to evaluate quality metrics including health-related quality of life, improvement in patient comfortability with self-injections, complaint turnaround time, and evaluation of drug utilization review flags
- ◆ The team continued collaboration with transplant, hepatitis, multiple sclerosis, pulmonary arterial hypertension, rheumatology, gastroenterology, orthopedics, pulmonary/Cystic Fibrosis clinic, oral chemotherapy and transitions of care colleagues to coordinate, refine, and expand specialty pharmacy services
- ◆ The team maintained its relationship with the UM Prescription Drug Plan to provide ongoing partnership as the dedicated specialty pharmacy provider for the University of Michigan employee/retiree patient population

Infusion Pharmacy

- ◆ The infusion team is located in the Ann Arbor and surrounding suburbs and is composed of roughly 58 team members (pharmacists and pharmacy technicians)
- ◆ There are 3 infusion centers with a dedicated pharmacy on the main medical campus:
 - ◇ C.S. Mott Children's Hospital 7th Floor
 - ◇ A. Alfred Taubman Health Care Center
 - ◇ Rogel Cancer Center
- ◆ The infusion centers located in Ann Arbor suburbs with a dedicated pharmacy include:
 - ◇ Brighton Center for Specialty Care
 - ◇ East Ann Arbor Health Center
 - ◇ Northville Health Center
 - ◇ West Ann Arbor-Parkland Plaza
- ◆ There are additional sites supported by the infusion team members for either infusion medications or intra-bladder BCG preparation:
 - ◇ Livonia Surgery Center—supported by Northville Health Center
 - ◇ West Shore Urology—supported by West Ann Arbor-Parkland Plaza

Location	# Treatment Chairs/Beds	FY20 Patient Visits	FY20 Monthly Average # Orders Verified By Pharmacist	FY20 Monthly Average # Doses Dispensed By Technicians
Brighton	16	10,756	6,127	1,202
Cancer Center	53	30,363	27,425	4,835
CW7 Infusion (adult and pediatric)	39	17,548	10,108	2,058
East Ann Arbor*	10	4,384	1,575	455
Northville	12	8,940	3,834	790
Taubman	12	5,608	2,490	569
West Ann Arbor*	12	4,391	2,430	536
Total	154	81,990	53,989	10,241

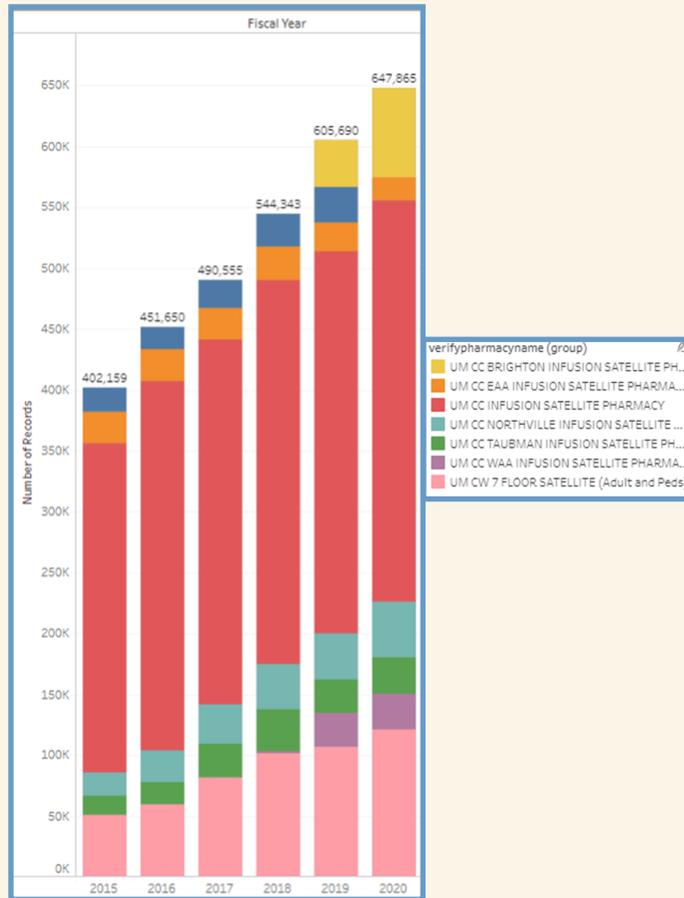
*Both infusion spaces were closed mid-March 2020 due to COVID-19

Clinical Orders Team

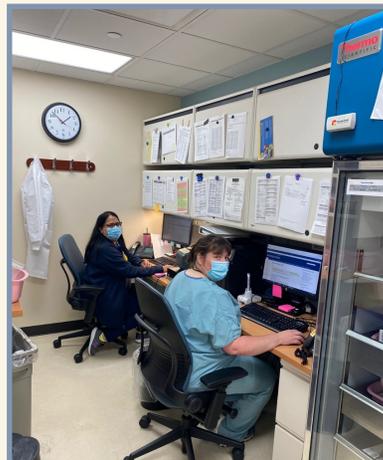
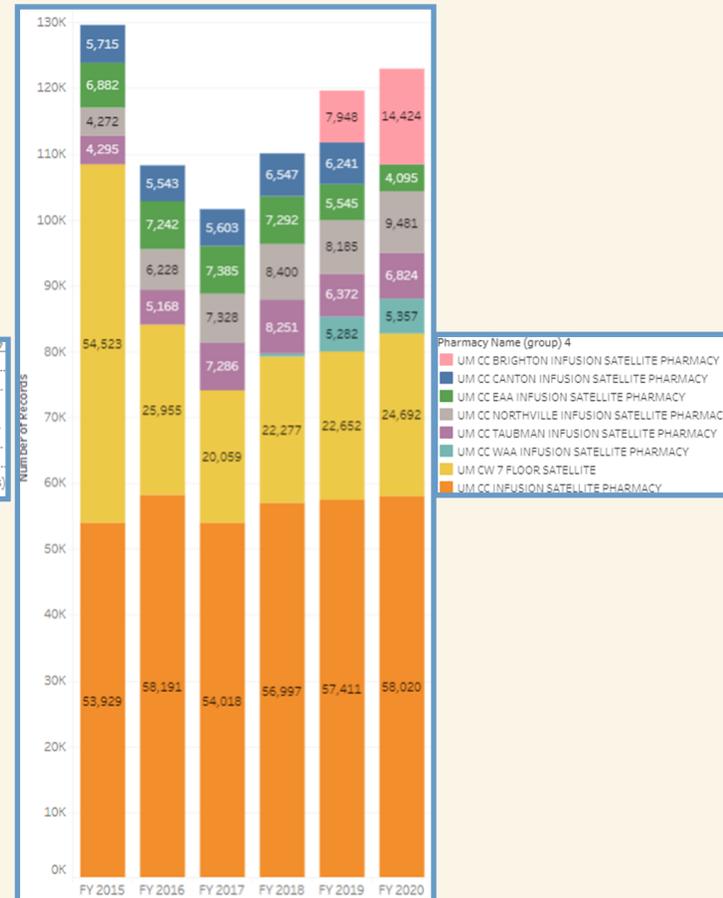
The University of Michigan continues to optimize workflows with the EPIC Beacon product for chemotherapy CPOE, and integration with our pathways product, ClinicalPath (formerly ViaOncology). This work is supported by a clinical orders team, which provides evidence-based reviews for treatment protocol requests and leads a standardized approach to the build for orders templates. The team of 2.5 pharmacist FTEs maintains over 1150 commercial treatment or therapy plans and collaborates to manage over 660 research plans. Their work encompasses pediatric and adult patients receiving outpatient infusions for non-oncology indications as well as inpatient or outpatient treatment for hematology, oncology, and bone marrow transplant populations. In FY20, the team completed a combined 400 requests or projects (10% of which were strictly non-oncology focused), initiated a standardized annual review of adult treatment and therapy plans across all indications, and began work on updating antiemetic pre-medications to match revised institutional guidelines

Infusion Pharmacy (continued)

Total Orders Verified by Pharmacists By Fiscal Year



Total Doses Dispensed by Technicians by Fiscal Year



Jane Crawford
(pharmacist supervisor on left) and Anita Horn
(technician on right) at
Taubman Infusion Pharmacy



Elizabeth Jennings
(tech) working as the
HD sorter position in the
Rogel Cancer Center
Infusion Pharmacy

Infusion Pharmacy (continued)

Hadise Kabil (technician) working as the triage technician at the Rogel Cancer Center Infusion Pharmacy



Jon Haller (technician) compounding in a biological safety cabinet at the Rogel Cancer Center



*Pharmacists from left to right:
Chia Poplawski, Dana Corsello,
Sheena Thomas*



Infusion Pharmacy (continued)

Highlights/Achievements

- ◆ 6 of 7 infusion pharmacies have been renovated and currently meet USP 797 and USP 800 standards. 5 of the infusion pharmacies are now clean room spaces, and 2 of them are segregated compounding spaces
- ◆ We have integrated more pharmacist generalists into the oncology clinic spaces to provide more symptom management clinic coverage
- ◆ We have moved patient care activities and other tasks to be completed remotely using the existing technology to adapt to the changing environment in response to COVID-19 pandemic
- ◆ Expanded the types of services offered at Brighton Center for Specialty Care infusion pharmacy to include research studies and BCGs
- ◆ Increased access for infusion patients by moving injectable medication administration from infusion into the regional injection clinics
- ◆ Began offering a non-traditional P4 student rotation in infusion
- ◆ Updated the infusion compounding chart to include expiration dating for both clean room areas and segregated compounding spaces, along with included any extended expiration dating when applicable
- ◆ Worked to standardize the white-bagging and patient assistance program medication use for adult and pediatric patients that come to infusion
- ◆ An institutional work procedure was created to standardize the various types of lines and tubing that are used for sterile product preparation
- ◆ Successfully worked to convert from Omnicell to Pyxis



Infusion Pharmacy Technician Supervisors from left to right: Kristina Mulzer, Michael Smith, Anita Snow

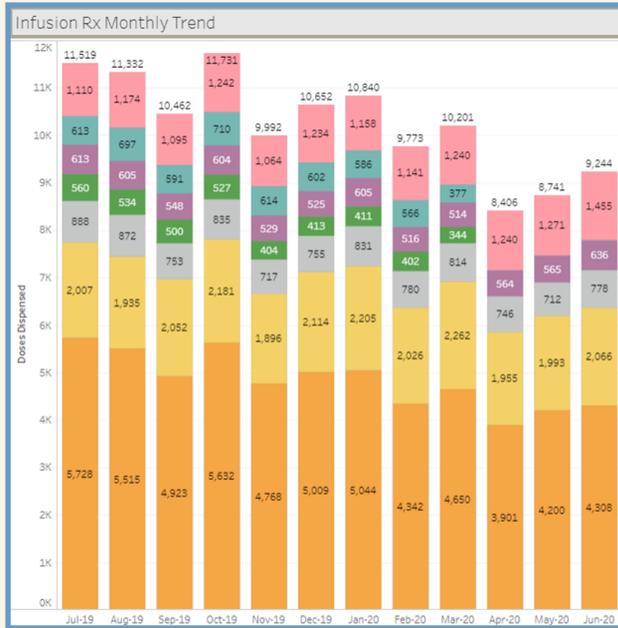


Infusion staff from left to right: Joshua Johnson (pharmacist), Nicole Banta (technician), Julianne Syrylo (technician) working at Brighton Center for Specialty Care

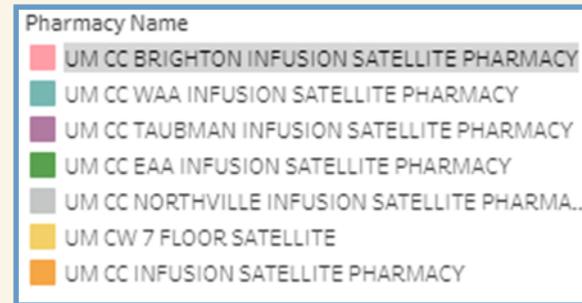


Infusion Staff from left to right: Sarah Zolynsky (technician), Joel Graham (pharmacist), Carlotta Podworski-Korson (pharmacist) working at Northville Infusion Pharmacy

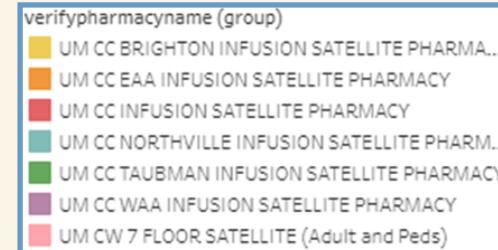
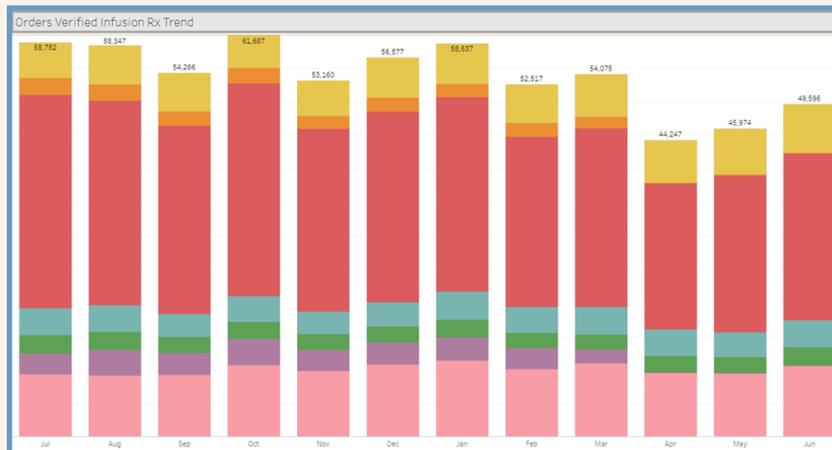
Infusion Pharmacy (continued)



FY20 Doses Dispensed by Month



FY20 Orders Verified by Month



Oncology Clinical Services

The oncology team had a productive year. Team members served in more than 48 committee and tumor board positions, had over 22 publications, delivered over 38 presentations, led didactic lectures for nursing and pharmacy students, and provided over 111 experiential rotation experiences. Team members were also honored with multiple Making a Difference Awards, multiple nominations for Preceptor of the Year (College of Pharmacy, Residency), an Evan Newport HOPE Award nomination, a Hematology/Oncology Pharmacy Association New Practitioner Award nomination and Quality Oversight Committee Exemplary Research Certificate, an American College of Clinical Pharmacy - New Clinical Practitioner Award nomination, and the Michigan Society of Health-System Pharmacists President's Award.

This year, in response to the unprecedented global health crisis that was COVID-19, the team stepped up in multiple avenues. Pharmacists actively cross-trained in inpatient/outpatient chemotherapy operations, anemia clinic, and infusion pharmacy, while helping cover inpatient general medicine services. A number of team members volunteered to work as pharmacists at the field hospital, which was thankfully not needed. Another focus was transitioning patients from inpatient to outpatient, and from outpatient to home infusion where possible. Team members also helped acquire IL-6 drugs for COVID-19 patients, participated as part of the Thrombosis COVID Research Group, and designed research protocol for Tocilizumab Use with COVID, Cytokine Evaluation with COVID, and Defibrotide for COVID. Work from home initiatives were developed to ensure the safety of patients and employees without altering the integrity of patient care.

Inpatient Oncology Pharmacists

The inpatient oncology clinical specialist team is comprised of 7 pharmacists providing care to 10 inpatient oncology services in C.S. Mott Children's Hospital and University Hospital. This team provides care for up to 100 complex pediatric and adult patients per day in the areas of bone marrow transplant, cellular therapy, medical oncology, and hematology. This team continues to advance the role of the pharmacist as an integral member of the care team with treatment planning, collaborative research initiatives, policy and guideline creation, and oncology stewardship.

Ambulatory Oncology Pharmacists

The ambulatory oncology clinical specialist team has grown to 9 pharmacists who provide care in the Rogel Cancer Center, C.S. Mott Clinics, and the Brighton Center for Specialty Care. These pharmacists provide comprehensive oncology care as independent yet collaborative care providers within the constructs of the medical team, including generalist pharmacists working in the anemia clinic, symptom management, and some solid tumor areas. This team provided pharmacist services for over 5,600 patient encounters this year. Last spring, pharmacists led the approval of a collaborative drug therapy management agreement enabling a provider to refer a patient to the pharmacist for management of GI toxicities of cancer, including prescribing new medications within the scope of the agreement. The team's most recent innovation in cancer care was its Chemotherapy Remote Care Monitoring Program (CRCMP), which involved the integration of SMS text Patient Reported Outcome (PRO) in MiChart to identify patients needing pharmacist intervention for chemotherapy-induced nausea and vomiting, which was presented as an oral abstract at the 2020 American Society of Clinical Oncology meeting. Other initiatives the team is working on include transitioning between inpatient and outpatient care, and facilitating processes to ensure safe chemotherapy administration for patients at home.

Oncology Clinical Services (continued)

Oral Medications for Cancer Therapy Program

The Oral Medications for Cancer Therapy Program was initiated in 2012 and follows all patients receiving oral anti-cancer 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-management of adverse effects yet know when to contact their clinic providers. Clinical and quality outcomes are continuously assessed. The team evaluates and cares for more than 3000 patients/year. This year the program has contributed to high performance on many of the ASCO QOPI measures and URAC accreditation in our specialty pharmacy partnership.

Clinical Orders Team

The University of Michigan continues to optimize workflows with the EPIC Beacon product for chemotherapy CPOE, and integration with our pathways product, ViaOncology. This work is supported by a clinical orders team, which provides evidence-based reviews for treatment protocol requests and leads a standardized approach to the build for orders templates. The team of 2.5 pharmacist FTEs maintains over 1150 commercial treatment or therapy plans and collaborates to manage over 660 research plans.

Medication Reconciliation Programs

The pharmacist-run medication reconciliation program for Cancer Center patients is an integral component of improving patient care and clinic efficiency. It is supported by Introductory Pharmacy Practice Experience (IPPE) students through partnership with the University of Michigan College of Pharmacy, and pharmacist interns with infusion clinical pharmacist preceptorship. The program provides complete medication reconciliation for patients prior to their first Cancer Center visit. In addition, pharmacist team members provide Medication Management Services by request in which the pharmacist reviews medications, including herbal and dietary supplements, and assesses for drug- or disease-interactions. Recommendations are communicated with the patient's primary oncology team.



Emergency Pharmacy Services

The emergency department (ED) pharmacy team consists of 10 core pharmacists and 2 core pharmacy technicians who provide 24/7 pharmacy services for two emergency departments – Adult Emergency Services (AES) and Children’s Emergency Services (CES). The ED pharmacy team responds to all codes, traumas, and medical emergencies, assists with optimal drug and dose recommendations, compounds life-saving drips at the bedside, and recommends proper dose titrations to achieve desired patient outcomes.

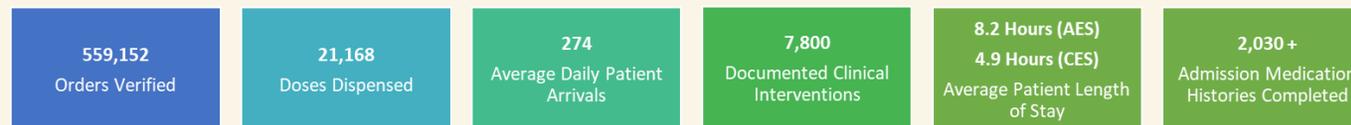
The ED pharmacy team provides pharmacokinetic dosing services for vancomycin and aminoglycosides, and works closely with providers to ensure antibiotic selection is appropriate and dosed correctly for each unique patient case. Additional services provided by 24/7 pharmacist presence in AES and CES include participation in critical airway management, responding to drug information questions and toxicology consults, order verification, patient counseling, focused medication history reviews, and medication dispensing (some of which includes post-exposure prophylactic meds for occupational exposure, rabies vaccine and immune globulin, and investigational drugs). In addition, the AES pharmacist also attends daily rounds for critical patients located in the Emergency Critical Care Center (EC3) within AES. The ED pharmacy technicians play a critical role in medication dispensing, compounding for emergent use, conducting admission medication histories, managing the pharmacy satellite and Pyxis inventory, helping to ensure regulatory compliance, triaging phone calls, and other responsibilities that assist the pharmacist and promote optimal patient care in AES.



Pictured, from Left to Right: Dave Blackford, Liz VanWert, Emily Supenia, Nada Saad, Rebecca Widdick, Liz Macon, Mary Dimo, and Lindsey Clark.

Not Pictured: Adrienne Bell, Amira Gazaly, Christine Egenti, Nancy Jamieson, Aaron Jeffery, and Matt Kalisieski.

Volume of Workload Completed - AES and CES Combined:



Emergency Pharmacy Services (continued)

Highlights/Accomplishments

- ◆ Hired and on-boarded new ED Pharmacy Technician, Amira Gazaly
- ◆ Continued success with the PGY2 EM Pharmacy Residency Program:
 - ◇ Successfully graduated our first PGY2 EM resident (Vivian Kum)
 - ◇ Matched our 2nd PGY2 EM resident (Andrea Setiawan) for the 2020-2021 year
 - ◇ Prepared for the ASHP accreditation survey
- ◆ Precepted 18 pharmacy student and resident rotations in AES and CES
- ◆ COVID response- ED pharmacists served on the front lines throughout the COVID pandemic:
 - ◇ Participated in the modification of existing protocols (e.g., cardiac arrest and RSI protocols) and training of team members on these modifications
 - ◇ Ensured necessary medications were available at bedside and in Pyxis via inventory modifications
 - ◇ Assisted with development of PPE and room entry guidelines for ED pharmacists
 - ◇ Developed a modified bedside response to account for precautions to protect staff & learners
 - ◇ Prepared for a large ED surge; assisted with planning for an offsite overflow ED at East Ann Arbor and planned for possible stat Pyxis changes
 - ◇ Participated in a CDC COVID-19 serosurvey designed for front line ED staff
 - ◇ Assisted with pharmacy representation in daily Hospital Command Center calls
- ◆ Emergency Preparedness: Attended state Bureau of EMS, Trauma, and Emergency Preparedness (BETP) conference, “Pediatric Patients: Bridging the Readiness Gaps,” focused on emergency preparedness and response for pediatric patients
- ◆ Expanded patient access to take home/outpatient naloxone dispensed from ED pharmacies through the multi-site M-OPEN/MEDIC initiative
- ◆ Cost savings and other initiatives:
 - ◇ Converted from use of EpiPen to epinephrine vials for cost-savings.
 - ◇ Converted from use of CroFab to Anavip for greater cost-effectiveness
 - ◇ Implemented several improvements to the ED Pharmacy Workload Dashboard
 - ◇ Implemented updated Employee Post-Exposure Prophylaxis Standing Order and electronic workflow
- ◆ Continued involvement in adult and pediatric pharmacist code training classes
- ◆ Optimized ED pharmacist training, including the updating and converting of training binders and checklists to electronic versions with live links
- ◆ Cross trained several new pharmacists in AES and CES

Transitions of Care (TOC)

The transitions of care (TOC) pharmacy technician team strives to facilitate timely patient access to medications. TOC pharmacy team services include conducting copay checks to assess insurance coverage, facilitating prior authorizations, completing appeal letters, providing insurance formulary options, and coordinating the filling and bedside delivery of discharge medications.

Clinic Team

The TOC clinic team consists of twelve pharmacy technicians who offer medication access assistance in the Dermatology, Hepatology, Gastroenterology/Infectious Disease, Pulmonary/Nephrology, Rheumatology, and Post-Kidney Transplant service lines within the Taubman Outpatient Clinics, Metabolism, Endocrinology, and Diabetes Clinic at Domino's Farms, and Pediatric Multispecialty Clinics at CW. These team members also serve additional clinics at offsite locations within their respective service lines. At these locations, TOC pharmacy technicians are integral and highly valued members of the interdisciplinary health care team. They are frequently consulted by clinic nurses and providers for their services. There has been great interest in continuing to expand our medication access services throughout the health system, and work in this area is on-going!

Discharge Team

The TOC discharge team consists of six pharmacy technicians and one pharmacy intern involved in the process of adult inpatient discharge to home and the discharge medication bedside delivery service, MiRxExpress. Pharmacy technicians currently assist patients discharging from University Hospital, Cardiovascular Center, Von Voightlander Women's Hospital Service, Adult Hematology/Oncology Service, Pediatric Endocrinology Service, and the Adult Emergency Services (AES) department. The team also participates in Medicine Faculty Hospitalist rounds, and serves on hospital committees related to the discharge process. MiRxExpress pharmacy technicians currently provide daily discharge bedside delivery to 14 units (4C, 5A, 5B, 5C, 6A, 6B, 6C, 7A, 7C, 8A, 8B, 8C, 8D, and 9C), including patients involved in the Michigan Patient Arrival and Rapid Throughput (MiPART) priority discharge program (PDP).

Volume of Work Completed



Transitions of Care (continued)

Pictured, Top from Left to Right: Julie Habitz, Staci Joseph, Sara Gentner, Denise Richard, Lindsey Clark, Sue Lott, Brittany Weber, Maria Lara.

Pictured, Bottom from Left to Right: Red-cloud George, Felicia Tilley, Nichole Culter, Christabel Lo.

Not Pictured: Janette Blucher, Katelyn Bottorff, Kori Cantrell, Aliaa Chehadeh, Richard Fauls, Megan Hart, Kaitlyn Henry, Dawn Reid, Jessica Wilson.



Highlights/Accomplishments

- ◆ Discharge Team:
 - ◇ Expansion of the MiRxExpress bedside delivery program to additional units, including UH 6A, 6B, 6C, 7C, and 9C
 - ◇ Expansion of the Discharge Medication Access and MiRxExpress bedside delivery services to the Pediatric Endocrinology service through the Implementation of Insulin Pen Education for New Onset Type-one Diabetic Transitions of Care (iPETT) initiative
 - ◇ Demonstrated outstanding patient satisfaction with our MiRxExpress services
 - ◇ Participation in institution-wide Discharge Milestones initiative
 - ◇ Modification of workflow processes to accommodate delivery of discharge medications to COVID-19 patients
- ◆ Clinic Team:
 - ◇ Expansion of the TOC Clinic Team services to include additional patient populations, including the Taubman Irritable Bowel Disease (IBD) Clinic, Taubman Post-Kidney Transplant Clinic, and CW Pediatric Multispecialty Clinics. The addition of a grant funded position for the Pediatric Cystic Fibrosis Clinic is also in progress
 - ◇ Hiring and on-boarding of 5 new Transitions of Care Pharmacy Technicians to the Clinic Team
 - ◇ Development and implementation of a system strategy to expand medication access services for clinics across the health system, including establishment of the Medication Access Review Committee (MARC) and Medication Access Intake Form
- ◆ Promotion of team members to the next level using the Pharmacy Technician Career Ladder
- ◆ Successful transition to remote work for medication access team members
- ◆ All team members went above and beyond to remain diligent in all aspects of their jobs during the COVID-19 pan-

Pharmacy Analytics, Quality, Regulatory, & Safety

Pharmacy Analytics, Quality, Regulatory & Safety (PQRS) represent four pillar concepts integrated within five teams in this distinct branch of the department. The following five teams provide services under these pillars to support Michigan Medicine and pharmacy services as detailed in the summaries below and pages that follow:

- ◆ Pharmacy Analytics
- ◆ Medication Quality & Safety
- ◆ Diversion Prevention
- ◆ Medication Use Policy
- ◆ Compounding Compliance

Pharmacy analytics is inclusive of the data, tools, and methods used to help us to better understand our work and its impact on patients. Primary tools include project management, business intelligence software, and data visualizations. Major analytics domains for the work include: workload and productivity assessment, drug costs and utilization tracking, clinical outcomes, diversion detection, and safety monitoring.

Quality improvement efforts help us continually improve the care we provide our patients and the services we provide for our customers. This is achieved via area-specific quality improvement projects, continual departmental metric and performance improvement monitoring, medication use evaluations, Pharmacy and Therapeutic Committee activities, and a commitment to becoming a high reliability organization.

Regulatory compliance is an integral part of quality. PQRS teams continually provide guidance to the department and organization regarding regulatory standards and best practices, education of staff about how to best meet these standards, devising detailed policies and standard operating procedures, and perform audits to continually assess our performance relative to standards and best practices to ensure a state of continual readiness and compliance.



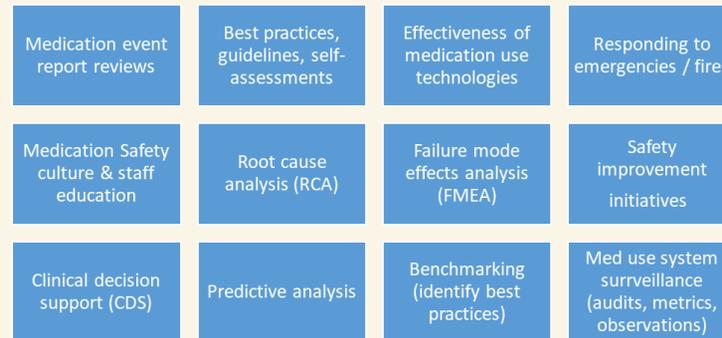
*Bruce W. Chaffee, PharmD.
FASHP Director PQRS*

Over the course of the past two years, we have successfully hosted compounding visits from both the FDA and Joint Commission (TJC) and passed our triennial TJC survey.

Safety is achieved by working in an interdisciplinary manner to optimize the safe and effective use of medications in the health-system. This work is spearheaded by our Medication Safety, Pediatric Medication Safety, and P&T Committees. Our team has interest in working with other health care professionals to expand our presence in pediatrics and ambulatory care and in developing technologic solutions to prevent medication events using active surveillance, machine learning, and predictive analytics.

Medication Safety and Medication Management

Domains of Medication Safety:



- ◆ **Medication Safety Team:** Christina Seeley, Jeff Hurren, and Scott Ciarkowski
Welcomed new Medication Safety Officer (Jeff Hurren)

Highlights/Accomplishments

- ◆ Influencing P&T medication safety on medication P&T sub-committees
- ◆ Reviewed and analyzed over 6,300 voluntary reported medication-related safety events
- ◆ Team focused on events that are cross departmental and have a systematic basis
- ◆ Partnered with Patient Safety on root causes analysis of events with harm
- ◆ Report distribution shows trend toward precursor events and others that do not reach patient (culture factor)
- ◆ Inpatient BCMA compliance: 97% patient & 96.5% order
- ◆ Smart pump library compliance of >85%, >90% in high risk ICU setting
- ◆ Movement in focus to proactive work on risk areas and identifying variability in work practices
- ◆ Pharmacy operations improvements with dispense prep and dispense tracking to increase first time quality with BCMA. As a result, reduction in dispensing errors reported
- ◆ Introduction of BD Pyxis ADCs across the institution and BD inventory control
- ◆ Facility Improvements in clean rooms to meet USP 797 and 800 standards
- ◆ Implementing High Reliability Organization (HRO) training (universal skills & leadership skills) across the institution and leading the teaching of others
- ◆ Responded to ISMP reports to reduce risk and improve learning from external events
- ◆ COVID risk reduction plan, partnering with Nursing to streamline workflows to reduce use of personal protective equipment (PPE) and high alert medications
- ◆ Performed a self-assessment of our utilization of smart pumps in the health system and identified gaps and other areas for improvement.
- ◆ Created and distributed Medication Safety Spotlight newsletters. These are designed to provide education and information to reduce knowledge based errors
- ◆ Reviewed ADC overrides. Targeted examples include propofol, oxytocin and paralytics
- ◆ Assisted the department of Psychiatry on developing guidelines for IV ketamine usage in the ECT area
- ◆ Provided guidance on safe medication dispensing to support pharmacy consolidation practices

Medication Safety and Medication Management (continued)

- ◆ FMEA on delivery of non IV route of medications (intrathecal, intra pleural and bladder)
- ◆ Reviewed process for anaphylaxis kits in Pyxis, made several changes to workflow
- ◆ Partnered with the MiChart team to develop logic for Fuzzy matching and its effects (fuzzy matching s PEIC attempt at improved search functionality for medication orders, labs and order sets)
- ◆ COVID risk mitigation strategy developed to determine PPE consolidation (shortage mitigation) impact on double check, use of alaris pump, propofol inventory management
- ◆ Performed a self-assessment of our utilization of smart pumps in the health system and identified gaps and other areas for improvement

Medication Management Team: Karrie Sokolowski and Mett Zedro

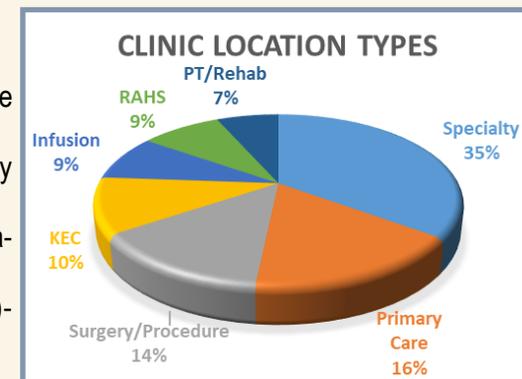
- ◆ Prepare for and respond to regulatory visits by The Joint Commission (TJC) and Centers for Medicare and Medicaid Services (CMS)
- ◆ Represent pharmacy on related committees such as Accreditation and Regulatory Readiness Committee (ARRC)
- ◆ Assure that appropriate individuals from outside of the pharmacy department are included in determining compliance with medication related regulations
- ◆ Identify areas of risk and help develop practice standards to improve compliance
- ◆ Ensure departmental policies are standardized and up-to-date

Highlights/Accomplishments

- ◆ Completed 336 inspections at 167 different ambulatory clinics in FY'20
- ◆ Identified 242 findings in ambulatory care and 248 on inpatient units through inspections
- ◆ Identified and assisted with 35 departmental policy reviews that were required to ensure TJC compliance
- ◆ In-serviced new pharmacy staff on regulatory readiness and department policies
- ◆ Developed a quarterly newsletter for ambulatory staff highlighting hot topics and best practices

Quality: Scott Ciarkowski

- ◆ Quality mLearning module initiated for pharmacy employees
- ◆ Started Quality Improvement projects for pharmacy functional areas
- ◆ 2019 Quality Month posters by pharmacy employees
 - ◇ Impact of a Pharmacist in an Interdisciplinary Post-Cardiac Intensive Care Unit Clinic
 - ◇ Reducing the Frequency of Discontinued Medications Dispensed by Outpatient Pharmacies
 - ◇ Dispense Prep - Implementing Barcode-Assisted Medication Preparation in Inpatient Pharmacies
 - ◇ Multidisciplinary Asparaginase Allergy Review Committee (MAARC)- Ensuring Access to Asparaginase Therapy
 - ◇ Determination of Superior Disinfectants for Pharmacy Compounding
 - ◇ Use of a Modified Caprini Venous Thromboembolism Risk Scoring Tool in Pediatric Patients



Physical Therapy (PT), Regional Alliance for Healthy Schools (RAHS), Kellogg Eye Center (KEC)

Diversion Prevention

Prevention

- ◆ In-serviced new pharmacy staff, students and residents on drug diversion awareness and controlled substance accountability
- ◆ Held 75 in-services, presentations and education sessions for students, staff and external stakeholders
- ◆ Created a new, interactive Drug Free Workplace M-Learning for all Michigan Medicine faculty and staff
- ◆ Assumed increased responsibility for controlled substance reconciliation during COVID-19 pandemic surge, used lessons learned to create more efficient internal processes
- ◆ Promoted program awareness via screen savers, digital signage, in-person events and Michigan Medicine Headlines



Carol Purcell



Christie Campbell



Steven Harvey



Andrew Bradley

Detection & Response

- ◆ Performed over 167 in-depth reviews of anomalous clinical practice
- ◆ Piloted routine testing of anesthesia waste - over 3,300 tests performed
- ◆ Improved algorithm for diversion detection analytics
- ◆ Engaged in root cause analysis to identify opportunities for data and system related improvements
- ◆ Responded to and led investigations of all cases of actual and suspected diversion
- ◆ Performed regulatory reporting requirements for all cases of diversion and significant loss of CS
- ◆ Promoted early intervention and access to treatment for staff with substance use disorders, when applicable

Highlights/Accomplishments

The Diversion Prevention Program's accomplishments, and notably, the management of diversion cases, were highlighted both locally and nationally this year, via the following speaking engagements: American Society of Anesthesia Technologists and Technicians, Ann Arbor, MI; Cardiovascular Symposium, Don't Skip a Beat: Mending the Broken Heart, Ann Arbor, MI; Vizient Legal and Compliance AMC Network Meeting, Chicago, IL; Kit Check's Current Perspectives and Future Trends in Diversion, Webinar; ASHP: Establishing Services around Diversion Prevention, Webinar.

75 in-services performed	>28,000 staff completed MLearning	>5,000 unique analyst database searches	167 in-depth practice reviews completed	5 DEA 106 forms filed	2 diversion cases identified
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Medication Use Policy

The Medication Use Policy (MUP) team's primary focus is to promote the safe and effective use of medications within the health system. The team's main responsibilities include supporting the Pharmacy and Therapeutics (P&T) Committee and providing drug information services. Services include formulary management, medication use evaluations, development and revision of medication use policies/guidelines, and participation in P&T Subcommittees. The MUP team also serves as a primary experiential training site for P4 pharmacy students and PGY-1 pharmacy residents. The team's office is located at Michigan House at 2301 Commonwealth Blvd in Ann Arbor.



MUP Team Members in their remote/home offices (from left to right, top to bottom): Karin Durant, Gundy Sweet, Erin Helmkamp, Julie Berman, Kirsten Smith, Noah Leja (Not Pictured: Paul Walker)

Volume of Work Completed

- ◆ Facilitated 11 P&T Committee meetings
- ◆ Published 11 editions of the Pharmacy ForUM newsletter
- ◆ Assisted with the approval of 2 new P&T subcommittee charters
- ◆ Assisted with 43 new or significantly revised policies/guidelines/protocols
- ◆ Assisted with 46 routine policy/guideline/protocol revisions
- ◆ Oversight of 59 formulary additions/deletions/criteria revisions
- ◆ Completed 3 drug class reviews
- ◆ Assisted with 27 medication use evaluations (MUE)
- ◆ Precepted 16 Pharm.D. Candidates on a Drug Information APPE rotation

- ◆ Precepted 13 PGY-1 Pharmacy Residents on a Medication Use Policy rotation

Highlights/Accomplishments

- ◆ \$1.5 million in estimated cost savings and cost avoidance through product vendor selection, formulation changes, and therapeutic substitutions
- ◆ Standardized the formulary monograph, drug class review, and expanded criteria request templates
- ◆ Standardized the MUE process and reporting templates
- ◆ Assisted the clinical decision support team with reviewing high risk medication best-practice advisory (BPA) alerts for compliance

Regulatory Compliance: Compounding Compliance Team (CCT)

Sterile Compounding Program Scope

- ◆ 21 Compounding Locations (16 in Dept of Pharm) (Fig. 1)
- ◆ ~415 Compounders (343 in Dept of Pharm) (Fig. 2)

FY'20 CCT Achievements ([Link to Detailed Summary](#)):

- ◆ Completed >600 challenges in FY'20- (ongoing media fills suspended April-June due to COVID (Fig. 3)
- ◆ Collected >300 sets of environmental viable samples (Fig. 3)
- ◆ Initiated CCT led audits of sterile compounding pharmacies in July 2019, conducting 197 audits (Fig. 3)
- ◆ Initiation of the multidisciplinary UMHS Hazardous Drug Oversight Committee (HDOC), which coordinated organization wide activities related to USP 800 implementation and will act as the designated person required in USP 800
- ◆ Initiated corrective and preventive action (CAPA) response plans and issue escalation process for audit findings requiring complex resolution efforts or related to FDA insanitary conditions
- ◆ Contributed to COVID-19 pandemic response through
 - ◇ Assisting in pharmacy and organization wide coordination of PPE/[compounding supply shortages](#)
 - ◇ Produced phosphate buffered saline in sterile test tubes for COVID-19 sample transport, totaling ~30,000 tubes between 4/23/20 and 7/31/20
 - ◇ Participated in COVID-19 related compounding regulatory reviews and regulatory advocacy activities
 - ◇ Participated in the construction planning and post-construction activation activities for the following compounding locations: Clean-rooms: CW10, Kellogg, CVC Nuc Med, UH Nuc Med, CW7, Home-Med. Segregated Compounding Areas: CW OR, CVC OR, UH OR

Site Visits and Inspections Expected in FY'21:

- ◆ TJC Compounding re-certification renewal of all sterile compounding locations- *Spring 2021*

Top Priorities in FY'21

- ◆ Facilitate the implementation of USP 800 Phase 1 across UMHS
- ◆ Achieve TJC Medication Compounding recertification
- ◆ Contribute to the implementation of BD IV Prep and action manager and incorporate this new technology in compounder training
- ◆ Conduct a QI project to reduce the prevalence of hazardous drug residue on compounding surfaces

Figure 1.

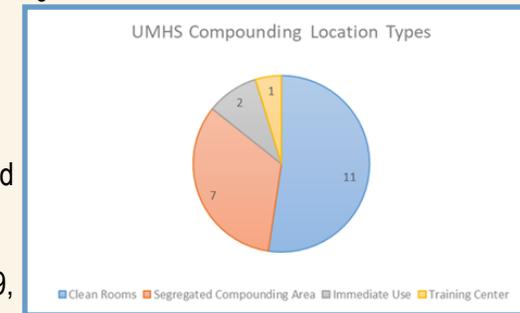


Figure 2.

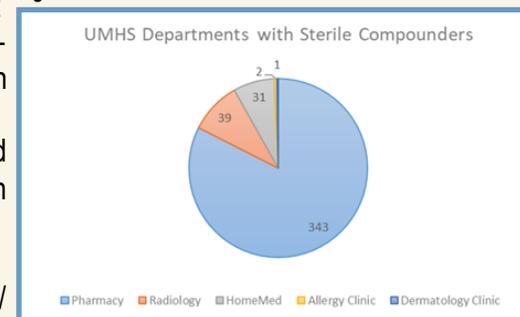
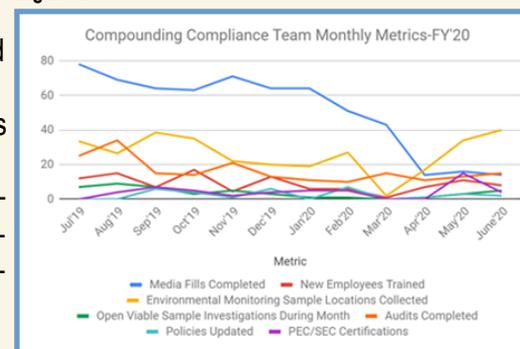


Figure 3.



Our Team



Whenever you find yourself doubting how far you

Research Pharmacy

Vision:

Our vision is to become the national leader in Research Pharmacy Practice and to advance research pharmacy standards on a global scale.

Mission:

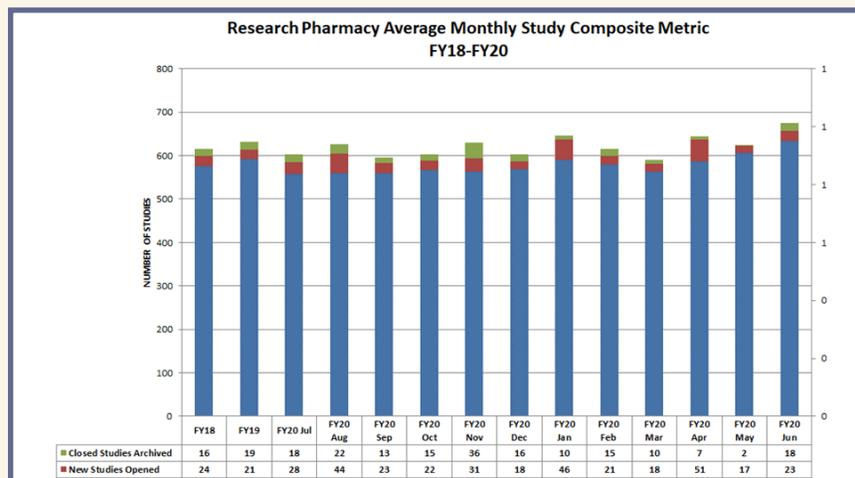
- Education:** Educate current and future healthcare professionals about medication-related research
- Patient Care:** Advance medication therapy by operationalizing research protocols in a safe and compliant manner
- Research:** Collaborate with research and healthcare partners to safely and efficiently conduct quality medication-related research, as well as to progress the practice of research pharmacy



*Investigational Drugs & Research Pharmacy
Residents
Andrew Smith (PGY1) and Jola Mehmeti (PGY2)*

The Research Pharmacy (RP) ensures that clinical trials involving medications at Michigan Medicine are conducted safely, efficiently, and appropriately. In doing so, the RP participates on the 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 Michigan Medicine institutional and Department of Pharmacy policies in conducting its work.

The RP is responsible for all pharmacy aspects of each protocol that it oversees, including – but not limited to – procurement, storage, handling, labeling, dispensing, and disposal of investigational medications. In addition, RP pharmacists develop protocol-specific dispensing guidelines that outline these procedures to ensure that all RP and satellite pharmacy staff are trained in proper per-protocol dispensing and handling of each investigational medication. The RP is responsible for proper documentation, inventory accountability, and oversight of all protocols it manages.



Melissa Goetting (CPhT) and Seth Rice

Research Pharmacy (continued)

Highlights/Accomplishments

- ◆ Managed investigational drug supply and assured patient safety and regulatory compliance for ~600 clinical trials
- ◆ Dispensed or supported dispensing of 10,000+ investigational drug doses
- ◆ Provided pharmacy reviews of nearly 300 new clinical trials and nearly 1600 amendments for Michigan Medicine Institutional Review Board (IRB)
- ◆ Implemented new workflows to support research needs during COVID, including shipment of investigational product to patients, new in-basket for receiving patient prescriptions and other patient care needs, expedited review of IRB applications related to changes for COVID, and alternate work schedules to enhance team safety



A portion of the Research Pharmacy Team: Denise Propes (CPhT), Roxana Dumitrache (Intern), Tiffany Jao (Intern), Elani Sanders (Intern), Cathy Francis (RPh), Seth Rice (Intern), Jeffrey Hurren (RPh), Kim Redic (RPh, Manager), Melissa Goetting (CPhT), Kirk Haddas (RPh), Frank Zaran (RPh), Rebecca Babcock (CPhT), Yihan Sun (RPh)



Yihan Sun (RPh) checking an investigational product that will be dispensed



- ◆ Provided extended support for COVID research via weekend staffing
- ◆ Demonstrated regulatory compliance via internal and external audits and sponsor monitoring visits
- ◆ Supported provision of investigational drugs via expanded access pathways for 90+ patients, including remdesivir EUA
- ◆ Envisioned a new model for study management with priorities of improving training and mentoring for new team members, improving study management distribution and workload, improving service transparency in study status to external customers, and standardizing processes and documents
- ◆ Graduated our first resident from the PGY1-PGY2 Investigational Drugs and Research Pharmacy Residency
- ◆ Maintained Research Pharmacy representation on numerous enterprise-wide research committees and workgroups
- ◆ Provided training sites for College of Pharmacy fourth-year advanced practice students and pharmacy residents
- ◆ Contributed to the advancement of Research Pharmacy practice through prominent participation and contributions to national pharmacy organizations, 4 poster presentations, 3 continuing education programs, 1 publication, and 2 invited podium presentations

Antimicrobial Stewardship Program: Efforts to optimize expenditure and utilization

The antimicrobial stewardship program promotes the appropriate diagnosis, prevention, & treatment of infections in a manner that:

- Minimizes the development of resistance
- Provides cost effective care
- Optimizes publicly reported infection metrics
- Upholds regulatory standards

Key Statistics on Antimicrobial Utilization & Expenditure

Antimicrobial Utilization

59%	% of patients that received an antimicrobial while hospitalized at Michigan Medicine last year
768.9	Antimicrobial utilization last year (Days of Antimicrobial Therapy per 1,000 Patients Days)
3.1%	<u>Reduction</u> in antimicrobial utilization compared to previous year
24.9%	<u>Reduction</u> in antimicrobial utilization compared to 5 years ago

Antimicrobial Expenditure

\$6,533,103	Pharmacy expenditure on antimicrobial agents, second only to expenditure for antineoplastic agents
↓ \$208,103	<u>Reduction</u> in annual expenditure on antimicrobial agents compared to previous year (3.1% decrease)
↓ \$898,826	<u>Reduction</u> in annual expenditure on antimicrobial agents compared to 5 years ago (12.2% decrease)
\$1,033	Average cost per day of IV antimicrobial agents added to formulary within 5 past years (329% cost increase compared to previous 5 years)

Summary:

- Majority of patients admitted to Michigan Medicine receive an antibiotic, and the Antimicrobial Stewardship Program help develop tools, guidelines, and education to promote appropriate therapy
- Despite significant increases in cost of new antimicrobial agents, the Antimicrobial Stewardship Program has consistently reduced antimicrobial utilization and expenditure

Key Statistics on Antimicrobial Stewardship Team Quality Improvement Initiatives

Quality Improvement Initiatives

6	# of infection-related metrics linked to hospital reimbursement, which the AST helps optimize
15	# of committees and workgroups focused on QI, which require AST collaboration
7	# of initiatives where AST has directly reduced mortality, length of hospitalization, readmission or ADEs
2	# of initiatives that significantly reduced drug-drug interactions

Antimicrobial Stewardship Website

149,940	Number of times website guidelines & resources were accessed last year
135	Number of <u>countries</u> that accessed the website last year

Multidrug Resistant Organism (MDRO) Initiative

↓ 10.3 hours	<u>Decrease</u> in time to effective antibiotic therapy following implementation of MDRO initiative
↓ 2 days	<u>Reduction</u> in ICU length of stay following implementation of MDRO initiative
↓ 15.7%	<u>Reduction</u> in 30-day hospital readmission rate following implementation of MDRO initiative

Clostridium difficile Infection Initiative

0.99	Standardized <i>C. difficile</i> infection Rate (SIR) last year, which is down from a high of 1.47 in 2014
↓ 20%	<u>Reduction</u> in <i>C. difficile</i> EIA tests
↓ 48%	<u>Reduction</u> in <i>C. difficile</i> -GI Biofire™ tests
↓ 39.8%	<u>Reduction</u> in utilization of high-risk antibiotics associated with <i>C. difficile</i> infection since 2015

Coordination of COVID-19 Treatment

- Developed antiviral and anti-inflammatory treatment recommendations for COVID-19 patients
- Coordinated involvement in randomized clinical trials
- Reviewed all COVID-19 patients and discontinued unnecessary antimicrobial therapy
- Analyzed data to evaluate efficacy of antiviral and anti-inflammatory treatments

National Recognition

- Center of Excellence in Antimicrobial Stewardship, recognized by the Infectious Diseases Society of America
- Top Tier Performer by Leapfrog Group Ranking of Antimicrobial Stewardship and Infection Prevention Programs

Summary:

- **The stewardship program participates and leads collaborations across the healthcare system to optimize patient outcomes**
 - ✓ Efforts have helped optimize metrics and increase hospital revenue or reimbursement
 - ✓ Targeted initiatives have resulted in significant improvements in mortality, length of hospitalization or readmission
- **The program is a nationally recognized leader in antimicrobial stewardship**
- **The Michigan Medicine economic recovery plan reduced stewardship funding, leading to suspension of 3 quality improvement initiatives that have demonstrated improved outcomes and reductions in cost**

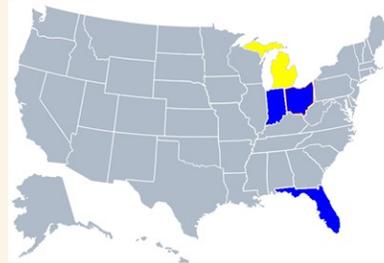
HomeMed Infusion Pharmacy

HomeMed Infusion Pharmacy
 2850 S. Industrial Highway, Ste. 50, Ann Arbor, MI
2019 – 2020



HomeMed Infusion Pharmacy, in the division of Michigan Medicine Post-Acute Care Services, provides traditional and specialty pharmacy home infusion services to UMHS patients throughout Michigan, and in the states of Ohio, Indiana, and Florida. HomeMed facilitates and supports the coordinated continuum of care as patients and their families transition from the inpatient and outpatient settings to the home environment. The HomeMed team provides comprehensive and individualized in-home pharmacy and nutrition infusion products, specialty infusions, sterile compounding, clinical care management services, education and training, and over the threshold delivery.

721,751 Doses
48,646 Orders
1,254,112 Infusion Days



72,690 Prescriptions filled
53,643 Deliveries completed



Construction Begins on Warehouse Airlock



Left to Right:
 Ryan Koeller, CPhT
 Pharmacy Technician Senior
 Sean Squires, CPhT
 HomeMed Supervisor
 Jamie Cox, CPhT
 Pharmacy Technician Inter

Newly Constructed USP <797/800> Clean Room Space !



Kyle Warnke, CPhT
 Pharmacy Technician Inter

HomeMed Integrates with Michigan Medicine Compounding Compliance Committee



Transitioned over 130 patients from MM outpatient infusion centers to patient homes between Feb 2020 and June 2020, due to payer site of care initiatives.

HomeMed Infusion Pharmacy (continued)



Diversity, Equity, Inclusion

HomeMed engaged its staff in quarterly DEI activities this year & expanded knowledge and understanding of DEI principles.

- We recognize all cultures, genders, sexual orientations, religions, & ages
- We challenge bias, harassment, & discrimination
- We Welcome ALL Differences



- ✓ Patient Satisfaction 95.5%
- ✓ Focused education on side effects



- ✓ Implementation of STAR & SBAR
- ✓ HRO Leadership & Staff Training
- ✓ Year-Over-Year ↓ in Medication Events

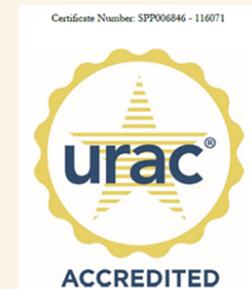


- ✓ Increase in patients served (38,728)
- ✓ Increase in referrals accepted (96%)
- ✓ New Productivity Metrics established



- ✓ Cost contained; expenses < budget
- ✓ Year-Over-Year increase in margin (\$5,810,489)
- ✓ Increased 340B Savings

The URAC Accreditation Committee granted University of Michigan HomeMed Pharmacy FULL Accreditation pursuant to its Specialty Pharmacy, Version 3.1 Program



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.



Medication Use Informatics and Technology

Michigan Medicine's Medication Use Informatics & Technology (MUIT) teams are responsible for supporting enterprise informatics and health information technology, with the aim of facilitating the provision of safe, effective and efficient medication-use. The Medication Use team resides within the HITS Clinical Revenue Cycle division of Michigan Medicine.

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. The medication use informatics and technology teams are located at the 777 Building on East Eisenhower Parkway.

Goals

- ◆ Improve ordering and enhance patient safety and quality of care
- ◆ Exchange information across technologies to support medication reconciliation and transitions of care
- ◆ Support meaningful use and other key initiatives
- ◆ Enhance quality of electronic data to support patient care, education and research

Medication Use Technology

The Medication Use Technology (MUT) team is 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 the Pharmacy DataWarehouse, Sharepoint, Pyxis ES, Pyxis Logistics, Pyxis C2Safe, DoseEdge, ScriptPro dispensing system, LabelSafe, ClinicReq, 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.

Leadership

- ◆ Stephen Ramsey, MBA – *Director, Departmental Applications*
- ◆ Mike Forman, Pharm.D., MBA – *Manager, Medication Use Informatics and Technology*
- ◆ Christopher Zimmerman, Pharm.D., BCPS – *Coordinator, Electronic Health Record (EHR) Decision Support*
- ◆ Susan Crowe, Pharm.D. – *Medication Use Informatics Team Lead*
- ◆ Jason Matuszkiewicz – *Medication Use Technology Team Lead*

Medication Use Informatics

The Medication-Use-Informatics (MUI) team is a group of pharmacists and nurses within HITS 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.

Medication Use Informatics and Technology (continued)

Highlights/Accomplishments

- ◆ BD Pyxis System Hardware and Software Deployments
 - ◇ Installation of 250 Pyxis ES automated dispensing cabinets
 - ◇ Pyxis Logistics hardware and software
 - ◇ Installation of 5 new carousels
 - ◇ C2Safe
 - ◇ PharmoSak high speed packager
- ◆ October 2019 and June 2020 MiChart Upgrades
- ◆ Resolved over 5,000 incidents/requests
- ◆ CancelRx
- ◆ Compounding and Repackaging in MiChart
- ◆ MiChart build for COVID response
- ◆ Converted Cancer Staging to MiChart
- ◆ Infusion charging improvements
- ◆ Expansion of Insulin calculator in adult population
- ◆ Coded Sig for opiates and benzodiazepines
- ◆ Dispense Tracking
- ◆ QS1 quarterly upgrades
- ◆ Beacon communication order retooling
- ◆ Asembia-1 retirement
- ◆ Added medications on hold functionality to Pyxis
- ◆ Implementation of Epic Honor Roll features
- ◆ MAPS Single Sign on (SSO) for Pharmacists
- ◆ Specialty Pharmacy Transition to MiChart
- ◆ DoseEdge Expansions
- ◆ Risk-based QT prolongation drug interaction BPA
- ◆ Two Published HITS-Pharmacy Antimicrobial Stewardship projects
- ◆ Highest possible score for Leapfrog CPOE decision support alerts



Education

Education is one pillar of the Missions of Michigan Medicine and the University of Michigan, and the Department of Pharmacy Services has a strong commitment to education. Three key areas where we support the education Mission include our Pharmacy Residency Programs, Pharmacy Student Experiential Education, and our Pharmacy Internship Program.

Pharmacy Residency Program



The Department of Pharmacy Services has strong [Pharmacy Residency Programs](#) and postgraduate pharmacy training is a deep part of our Department's history, in collaboration with the UM College of Pharmacy. The University of Michigan Department of Pharmacy Services established the first pharmacy residency program in 1927 (at that time called a post-graduate internship) under the leadership of Harvey A.K. Whitney (one of the founders and the first President of ASHP). Our residency program was also among the first accredited pharmacy residency training programs in the nation. In addition, our PGY-1 Pharmacy residency program was recognized with the ASHP Foundation Pharmacy Residency Excellence Award in 2010.

We continue this legacy by supporting residency programs which strive to provide each resident the opportunity to develop practice skills, expand their knowledge, and gain experience in an environment that promotes excellence, innovation, and leadership in the profession. Michigan Medicine preceptors are leaders in their clinical areas and play a critical role in training the residents in complex clinical problem solving through instruction, modeling, coaching and facilitating.

In addition to developing clinical, operational, and patient-care skills and knowledge, pharmacy residents at Michigan Medicine have a variety of extraordinary opportunities: research project, writing project, CE presentation, assisting in teaching and precepting of pharmacy students in the classroom and during experiential rotations, optional teaching certificate, and a formal structured mentorship program. In alignment with our leadership tradition and values, the program aims to develop residents' leadership skills through professional involvement and community service/outreach.

Education (continued)

The 2019-2020 pharmacy residency class consisted of 31 residents in 16 different programs, in addition to one individual completing the Ambulatory Care Fellowship year. The class was supported by two Chief Residents: Brian Bazzell (PGY1 Pharmacy Practice) serving as PGY1 Chief Resident and Morgan Homan (PGY2 Oncology) serving as PGY2 Chief Resident. Oversight of the programs is provided by the Executive Residency Advisory Committee, and the Chair of that committee is the Residency Coordinator. We were very fortunate to have Kate Starosta, PharmD, BCPS, join our team in September 2019 as the Residency Coordinator. She has been a great addition to the team, and she has already achieved a number of goals and made several improvements to our residency programs. She also led us through a successful recruiting season and prepared for accreditation for our 3 new programs (PGY2 Residency in Emergency Medicine, and PGY2 Residency in Pain and Palliative Care, and combined PGY-1/PGY-2 residency in Investigational Drugs and Research Pharmacy), each of which just graduated their first residents.

We now have a total of 34 Pharmacy Residents across 17 Residency Programs*:

- ◆ PGY1 Pharmacy Residency (12 residents)
- ◆ PGY1 Community Pharmacy
- ◆ PGY1 Managed Care Residency (UM Prescription Drug Plan)
- ◆ PGY1 Managed Care Residency (Blue Cross Blue Shield of Michigan)
- ◆ PGY1/PGY2 Health System Pharmacy Administration and Leadership (4 residents)
- ◆ PGY1/PGY2 Investigational Drug Service and Research Pharmacy (2 residents)
- ◆ PGY2 Ambulatory Care (2 residents)
- ◆ PGY2 Cardiology Pharmacy
- ◆ PGY2 Critical Care Pharmacy
- ◆ PGY2 Emergency Medicine Pharmacy
- ◆ PGY2 Infectious Diseases Pharmacy
- ◆ PGY2 Oncology Pharmacy (2 residents)
- ◆ PGY2 Pain Management and Palliative Care Pharmacy
- ◆ PGY2 Pediatric Pharmacy
- ◆ PGY2 Pharmacy Informatics
- ◆ PGY2 Psychiatric Pharmacy
- ◆ PGY2 Solid Organ Transplant Pharmacy

*We also have a PGY2 Ambulatory Care/ Fellowship position



Education (continued)

Pharmacy residents have several opportunities to expand their professional networks and learn from other residency programs and health-system practices. In addition to representing the University of Michigan at the ASHP Midyear Clinical Meeting, they normally represent us at the Great Lakes Pharmacy Residency Conference (GLPRC) in April where they present their research projects and attended other resident presentations. The residents also bond during the annual Residency Exchange Trip (Resi-trip), deepening friendships and forming connections with colleagues across the country, and learning from other institutions and practices. Unfortunately due to the COVID-19 pandemic, residents were not able to attend the GLPRC or the Resi-trip this year.

Despite the rigorous demands of our program, the residents also find time to bond and enjoy social activities as a group, further strengthening their camaraderie and teamwork! Even more importantly, they also find time to give back to the local community. Despite the COVID-19 pandemic, they were still able to take advantage of these opportunities before restrictions and social distancing guidelines were in place. Our residents have volunteered for countless hours through precepting and providing pharmaceutical care at charitable events and free clinics.

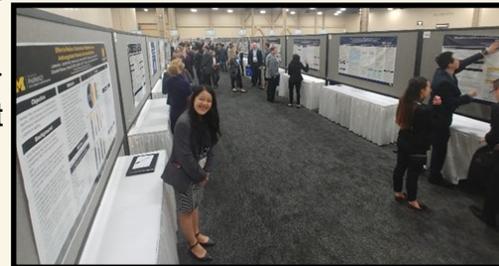
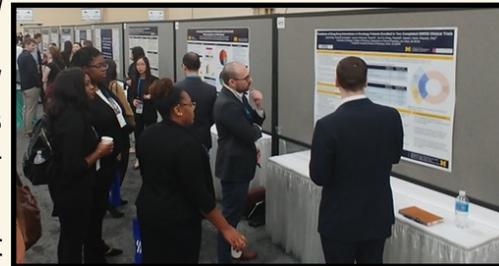


Education (continued)

Pharmacy Student Experiential Education

Experiential education is an essential part of the Doctor of Pharmacy curriculum, and an important part of our Department's support of the education mission. Our preceptors are dedicated professionals and educators who provide exceptional learning opportunities for pharmacy students. We offer a substantial number of both Advanced Pharmacy Practice Experiences (APPEs) for P-4 students, as well as Introductory Pharmacy Practice Experiences (IPPEs) for P-3 and P-2 students at the UM College of Pharmacy. Our APPE and IPPE rotations include learning opportunities in the following categories/practice settings:

- ◆ APPE: Health-System Pharmacy practice, Inpatient General Medicine/General Surgery (Generalist) practice, Inpatient Specialty practice areas, Ambulatory Care practice, Community Pharmacy practice, Management/Leadership practice, and several more highly specialized practice areas (e.g., research pharmacy/investigational drug service, pharmacy informatics, home infusion, etc.)
- ◆ IPPE: Health-System Pharmacy Practice (P-3 students), Direct Patient Care (P-3 students), Community Pharmacy Practice (P-2 students), and a new Ambulatory Care Practice Experience (P-2 students)



This past year, we provided a significant number of experiential rotations for pharmacy students across the entire health-system, including both inpatient and ambulatory care practice sites:

APPE Rotations = 342 individual rotations led by 106 preceptors

P-3 IPPE Rotations = 92 individual rotations led by 33 preceptors

P-2 IPPE Rotations = 97 individual rotations led by 21 preceptors

This contribution of APPE rotations represents approximately half of all of the APPE rotation spots for P-4 students at the UM College of Pharmacy, and a significant number of the IPPE rotations as well. Our pharmacist preceptors have a substantial contribution to pharmacy student education and a profound impact on their future careers through IPPE and APPE rotations, classroom instruction, and formal and informal mentorship as well.

Pharmacy Internship Program

The [Michigan Medicine Pharmacy Internship Program](#) has existed in many forms since at least the 1970's and has trained many prominent figures both within the Department of Pharmacy Services and across the nation at numerous prestigious institutions. The program as we know it today was most recently reformed in 2006 with the hiring of three student interns. Initially working as pharmacy technicians in the adult inpatient setting, the Pharmacy Internship Program slowly expanded into a 2-year program and began to encompass other areas of pharmacy practice, with partial support from the UM College of Pharmacy. As of the 2019-2020 year, the Pharmacy Internship has expanded to encompass 24 intern positions, providing opportunities in a variety of pharmacy practice areas. Pharmacy Interns work throughout the Michigan Medicine health system in areas that include inpatient adult and pediatric care, central pharmacy operations and medication use systems, ambulatory care, oral oncology, infusion pharmacy, research pharmacy (investigational

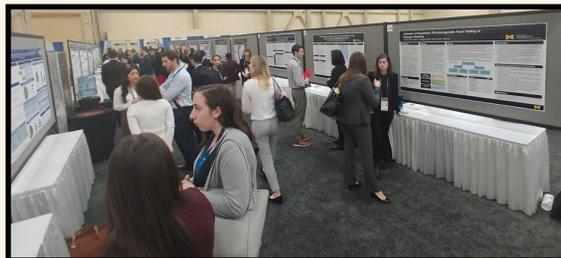
Education (continued)

The Pharmacy Interns also elect 2 Chief Pharmacy Interns, one from each class, who have additional leadership opportunities and responsibilities, and they represent their respective classes of interns. This past year our Senior Chief Intern was Meghan Hoffman (CVC Pharmacy Team), and our Junior Chief Intern was Kirsten Smith (Med Use Policy Team). This upcoming year, Kirsten Smith will move into the Senior Chief Intern position, and Alexander Kim (Infusion Pharmacy Team) will serve as the Junior Chief Intern.

Not only are Pharmacy Interns given the opportunity to cultivate their skills within their area of practice, the internship has a series of professional development meetings throughout the summer, including speakers and facilitators that discuss leadership, professional development, and other topics to foster success for the interns throughout their careers. During the school year, interns had the opportunity to experience a longitudinal relationship with the Chief Pharmacy Officer through monthly meetings that covered a variety of topics to further prepare interns for the workforce. Furthermore, interns can participate in a formal Intern Mentoring Program as well as on-the-job shadowing opportunities.

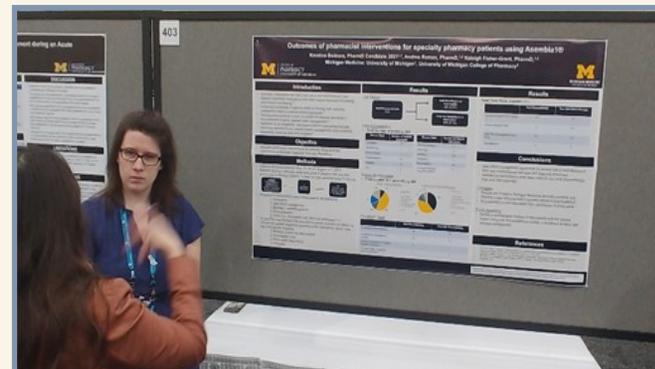
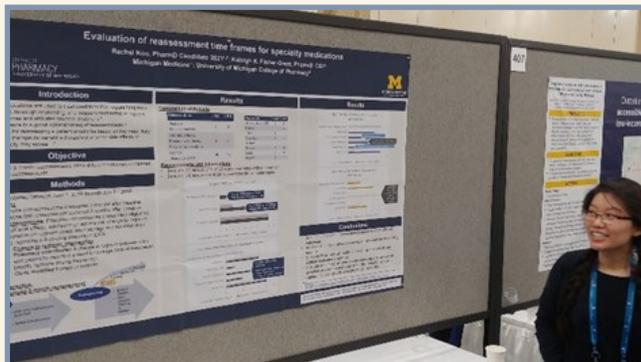
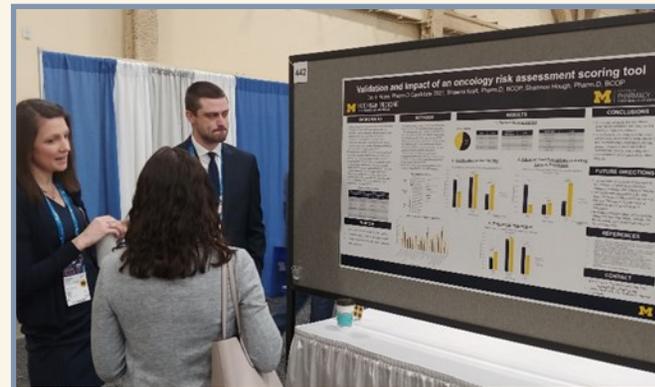
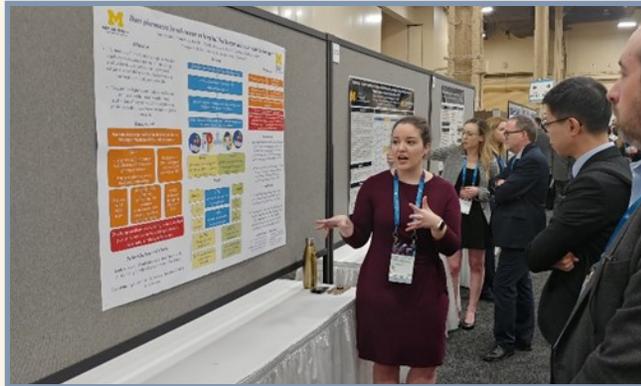
During the 2nd summer of the internship, Senior Interns complete a pharmacy related project, typically in their core area of practice. Topics of projects from this cohort of Senior Interns include:

- ◆ Research Pharmacy Study Complexity
- ◆ Research Pharmacy Transition to Electronic Accountability
- ◆ Validation and Impact of an Oncology Risk Assessment Scoring Tool
- ◆ Evaluation of the Oncology Transitions of Care Pilot Program
- ◆ Outcomes of Pharmacist Interventions in Specialty Pharmacy Using Asembia1®
- ◆ Evaluation of Different Reassessment Time Frames for Specialty Medications
- ◆ Assessment of Opioid Weaning Practices in a Pediatric Cardiac ICU
- ◆ USP <797> Pharmaceutical Compounding: Sterile Preparations
- ◆ Impact of Medication Histories on Patients Admitted to the Medicine Coronary Service
- ◆ Evaluation of Cefazolin Use in Postoperative Pediatric Cardiac Patients During Drug Shortage
- ◆ MiChart (Epic®) Dispense Tracking
- ◆ Impact of Bedside Discharge Medication Counseling on Hospital Readmission Rates



This past year, 9 Senior Interns also received support to attend the ASHP Midyear Clinical Meeting and present their projects as posters. Additionally, 4 Junior Interns received support to attend the Michigan Pharmacist Association Annual Convention and Exposition. For both events, interns attended educational sessions and prepared reports that were distributed to the rest of the Pharmacy Management Team. Through the program, interns have the additional opportunity to become involved with a variety of outreach and advocacy events, including the conduction of hospital tours for prospective students at the College of Pharmacy.

Education (continued)



Administration

The Pharmacy Administration Team has 4 teams that act behind the scenes of Pharmacy to help the folks that are boots on the ground take care of patients daily. This includes: Purchasing, Department Administration, 340b, Financial Reporting, Revenue Cycle and Compliance. We take great pride in our work and look forward to seeing how we can incorporate the Purchasing team into our group over the next year. Below is a summary of each team's contributions to the department and the past year:

Pharmacy Billing

The Pharmacy Billing team is responsible for maintaining compliance with all insurance and state/federal prescription billing requirements. We are also responsible for ensuring charges are entered accurately in EPIC. We do this in several ways; by entering charges sent from outpatient pharmacies that need to be billed to the medical insurance, by reviewing certain charges for accuracy, and by reviewing claims that do not have the proper charge attached. We monitor twelve work queues, clearing an average \$1.8 million per day. We coordinate our efforts with team members from other pharmacy departments, compliance, revenue cycle and clinical areas throughout MM to maximize revenue capture.



Highlight from FY20:

- ◆ Responded to 52 audits from Pharmacy Benefit Managers, with claims totaling \$1.2 million. In the first three months of FY21, we have responded to 30 audits, with claims totaling \$3.7 million.

Purchasing



The Central Pharmacy Purchasing Team orders all of the medications that get administered anywhere in the Health System; that includes all of the inpatient beds, Infusion areas, ORs, and clinics throughout Ann Arbor and the surrounding areas. On a typical day, they order approximately 500 different pharmaceutical products from 20-30 different vendors, and chase down 30-50 items that are needed but unavailable through our normal procurement channels. They are also responsible for managing the inventory in the Central Pharmacy, keeping multiple databases updated, responding rapidly to special product requests, working with pharmaceutical manufacturers to get credit for unused or damaged products, and searching out cost savings opportunities.

Administration (continued)

Highlights from FY20:

- ◆ Helped to build, learn and implemented new inventory management software system
- ◆ Procured over 1 million pharmaceutical products for use in inpatient areas, Infusion centers, ORs and clinics across the Health System
- ◆ Successfully navigated hundreds of drug shortages, including many at the peak of the COVID-19 pandemic, during which we were able to completely avoid running out of any critical medications despite numerous significant supply challenges

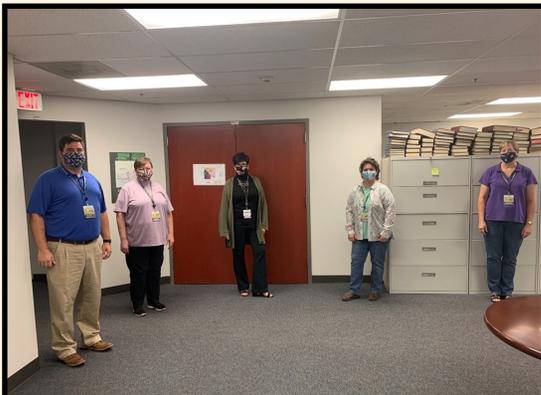
340b Team

The function of the 340B drug team is to ensure Michigan Medicine maintains 340b program regulatory compliance and integrity, while optimizing medication discount capture and margin enhancement through contract pharmacies. The 340B program enables health care organizations to stretch scarce Federal resources as far as possible, reaching more eligible patients and providing more comprehensive services. For FY21, the team looks to improve the 340b program through a comprehensive review of the overall system logic, increased targeted sampling for our self-audit program, continued expansion of the contract pharmacy portfolio, and creation of a 340b Tableau dashboard.



Finance & Administration

The Pharmacy Finance/Admin team runs the day to day operations related to financial oversight and reporting, human resources transactions and reporting, and administrative functions for the Pharmacy Department. FY20 was a year of transition for the team with the implementation of Pyxis, adding a new manager, and overall reorganization of the billing, 340b, and admin groups. In FY21 we will continue to enhance our service unit billing efficiency, transition some functions to the Shared Services Center (voucher matching, expense report processing, etc.), and strive to provide exceptional customer service.



Highlights/Accomplishments:

- ◆ PAR Transactions: 511 (plus an additional 300 for HVI payments)
- ◆ Positions Posted: 134 (reduced from prior years due to the hiring freeze implemented in April)
- ◆ Vouchered expense totals: \$478.6M net pharmacy supply expense, \$643.2M gross pharmacy supply expense

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2019

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Our Leadership



Jeffrey Desmond, MD is the Chief Medical Officer at Michigan Medicine and an Associate Professor in the Department of Emergency Medicine. Dr. Desmond received his B.A. from Williams College in 1982 and his degree in medicine from University of Texas Health Science Center in Houston, Texas in 1987. Dr. Desmond then completed a residency in Emergency Medicine at the University of Massachusetts Medical Center where he served as Chief Resident in 1992-1993.



Stan Kent, RPh, MS, FASHP is the Chief Pharmacy Officer at Michigan Medicine and Associate Dean for Clinical Affairs at the University of Michigan College of Pharmacy. He is also the program director for the Health System Pharmacy Administration and Leadership residency. He received his B.S. in Pharmacy from the State University of New York at Buffalo and an M.S. in Hospital Pharmacy from the University of Wisconsin. He completed a 2-year residency in hospital pharmacy administration at the University of Wisconsin Hospital.



John S. Clark, PharmD, MS practices, teaches, and researches in the area of pharmacy practice management and leadership. He is the Associate Chief Pharmacy Officer at Michigan Medicine and Clinical Associate Professor, University of Michigan College of Pharmacy. Additionally, he is the PGY-1 Pharmacy Residency Director. At Michigan Medicine, John is responsible for inpatient and outpatient, clinical and distribution pharmacy practice. John graduated from the University of Toledo and completed a PGY1/2 Health System Pharmacy Administration Residency from the University of Wisconsin with a Master of Science Degree.



Robert Chang, MD, is an Associate Professor in the Department of Internal Medicine in the Division of Hospitalist Medicine. His area of practice includes inpatient care as well as Informatics. Dr. Chang graduated from the University of Michigan Medical School in 2002, and completed his Internal Medicine residency at the University of Michigan in 2005. Dr. Chang currently serves as the Associate Chief Medical Informatics Officer (Inpatient) Service Chief, Division of Hospital Medicine and is the Medical Director of Pharmacy and the Chair of the Pharmacy and Therapeutics Committee (P&T Committee).

Our Leadership (continued)



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Our Leadership (continued)



Jacob (Jake) Holler, PharmD, MS is Director of Acute Care Pharmacy Services at Michigan Medicine at the University of Michigan. After graduating from University of Michigan's College of Pharmacy, he practiced at the University of North Carolina Health System, where he completed two years of residency, obtained his M.S., and qualified to become certified by the Board of Pharmacy Specialties.



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