

Beaumont Hospital - Dearborn Pharmacy Annual Report 2021

DEFINING MOMENTS AT BHD-PHARMACY

Highlighting our team and achievements that exemplify our mission



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Beaumont

Introduction to the Pharmacy Department

Mission Statement

Pharmacy at Beaumont Health promises an uncompromising commitment to excellence and quality in the delivery of pharmaceutical care. We are committed to the achievement of optimal health outcomes for all Beaumont Health patients.

Vision

Beaumont Health patients and their families will receive the benefit of pharmacist and pharmacy technician involvement in their care. Medication therapies will be personalized, safe, effective, and accessible.

Statement from the Director

"I am pleased to introduce you to the 2021 Beaumont Hospital, Dearborn Annual Pharmacy Portfolio.

The pharmacy department continued to rise to the frequent challenges posed not only by the pandemic but other external factors, such as excessive drug shortages and flooding, and continuously surmounted them. We directly contributed to the health of our community with our prevention and treatment strategies of COVID-19, including running the pharmacy at the COVID-19 vaccine clinic with minimal doses wasted and continuing to update guidelines and procure treatment medications. The pharmacy demonstrated its commitment to excellence with a flawless site sterile compounding survey by The Joint Commission. The department's success comes from its teamwork, commitment to patient safety and quality, and rising to meet ever-changing demands."

-Neha Desai, PharmD

Meet the Pharmacy Leadership Team

The pharmacy management team is comprised of a pharmacy director and three clinical pharmacy managers who strive to facilitate the provision of patient and family centered care.

Beaumont Hospital Dearborn BH-D Dept of Pharmacy Services



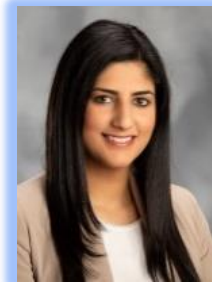
Neha Desai, PharmD



Lama Hsaiky, PharmD, BCPS

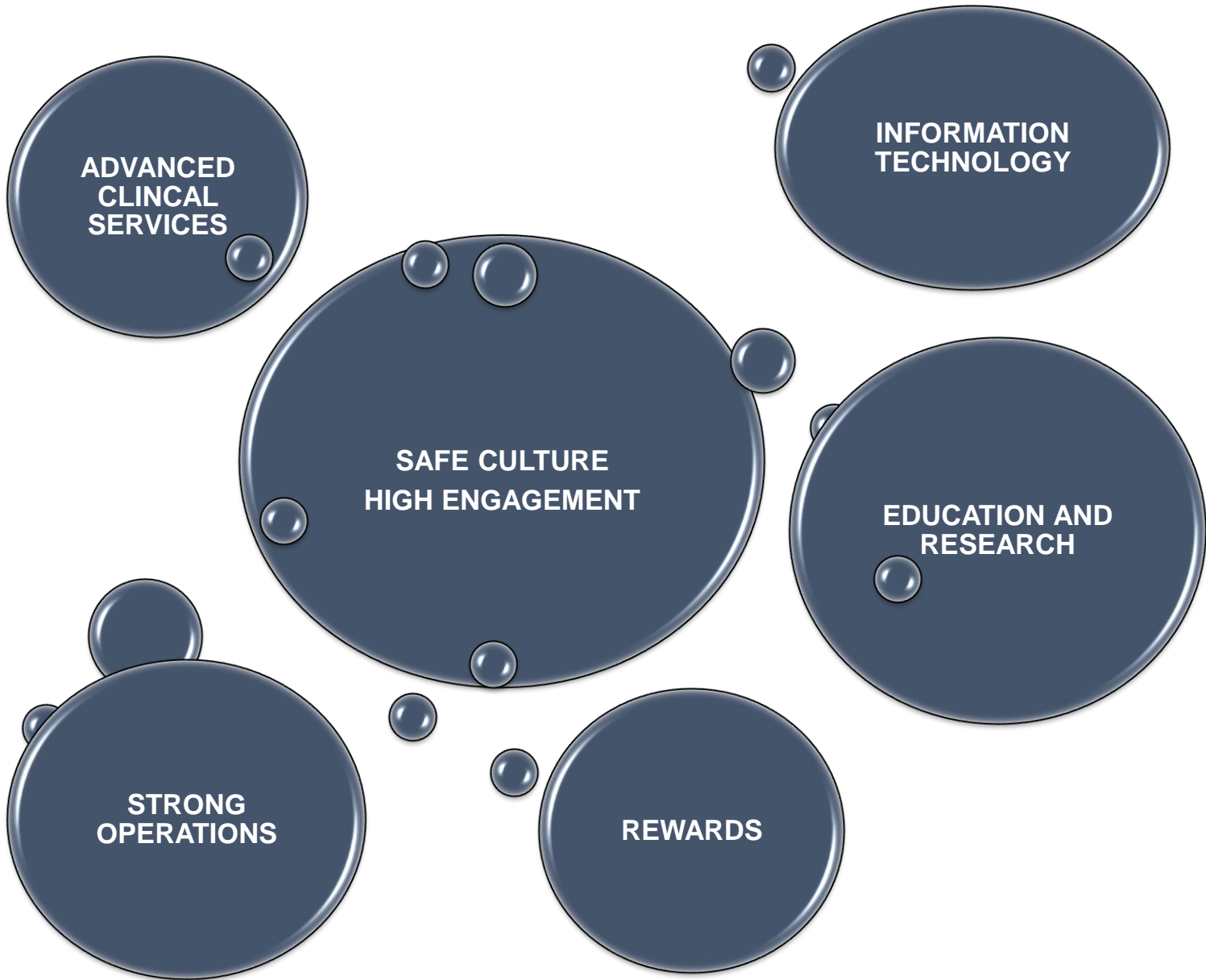


Rima Bazzi, PharmD, AAHIVP

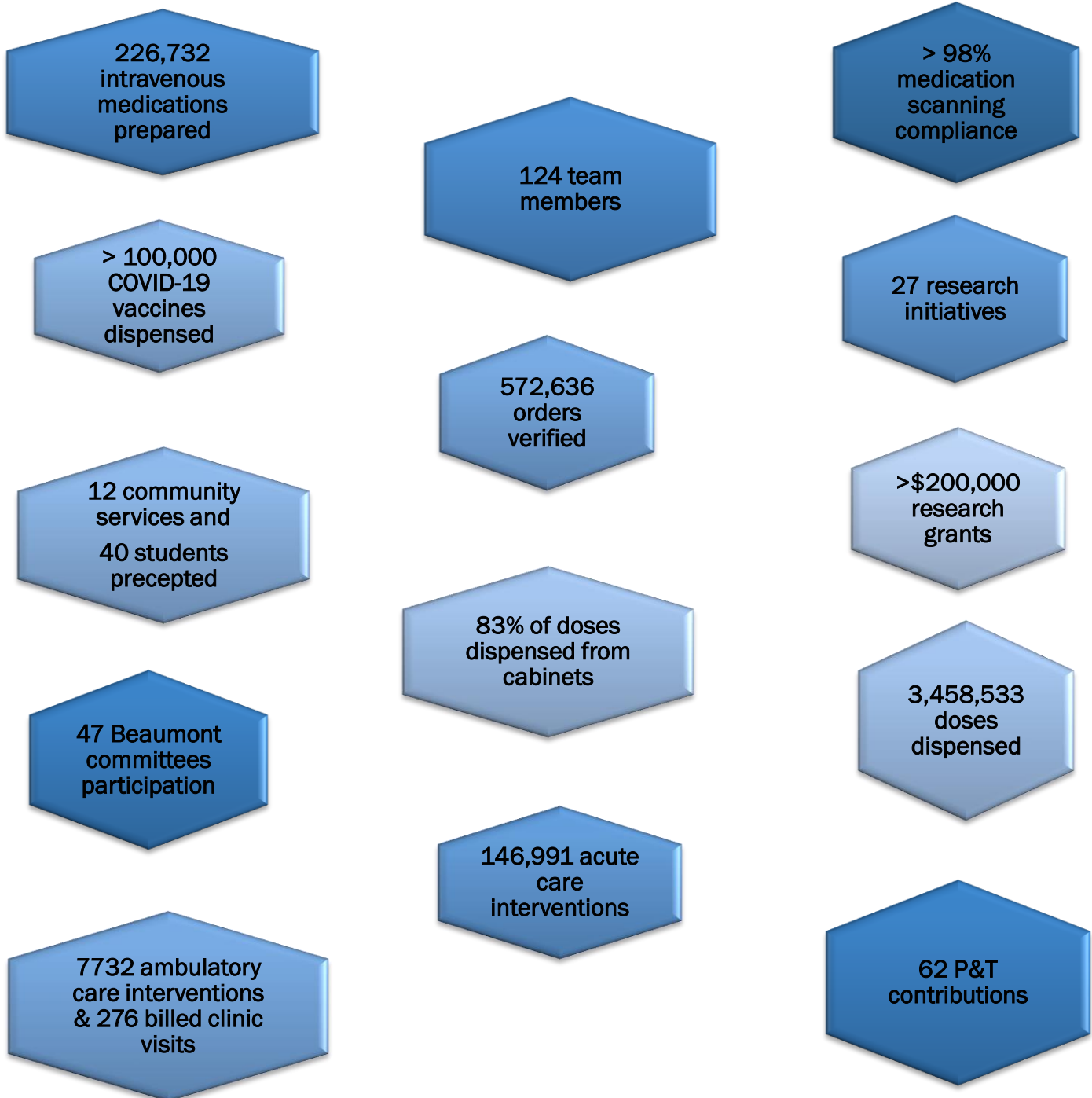


Sonia Hassan, PharmD

PHARMACY OVERVIEW



PHARMACY AT A GLANCE



2021 HIGH-LEVEL OVERVIEW

Achievements

- Expanded residency rotations to outside facilities
- Provided 18 live pharmacy continuous education programs
- Multiple employees recognized for achievements

Implementations

- COVID-19 vaccine clinics
- COVID-19 Monoclonal Antibody [MAB] clinics
- Oral Chemotherapy Pharmacy Program in Oncology Clinic
- New Multidisciplinary Geriatric Service

Developments

- Converted competencies to automated Healthstream modules
- BExtordinary recognition program
- Physical Inventory designated area for 340B

Financial

- 340B savings over \$22.3M for Dearborn
- 100% compliance of Blue Cross stewardship metrics resulting in \$56,000 incentive
- Over \$3M spent in COVID treatments

MEET THE PHARMACY TEAM & WHAT THEY HAVE TO SAY

The pharmacy team consists of 4-6 managers, clinical pharmacists, 8 clinical pharmacy specialists, 4 PGY-1 pharmacy residents, pharmacy interns, pharmacy technicians, specialty pharmacy technicians and pharmacy technician coordinators. In addition to the main dispensing pharmacy, pharmacists and technicians also staff the operating room pharmacy during the week. Together, this team provides medications and clinical support to the entire 632-bed hospital as well as 3 outpatient infusion centers.

“Working in the pharmacy department, there’s a sense of community. Overall, people look out for each other.”

-Louis Cancel, Pharmacy Technician

“Everything we do provides our front-line colleagues with the confidence and certainty to prescribe and administer appropriate medications in a safe, ethical and timely manner for the great benefit of our patients.”

-Bryan Wang, PharmD, MHS

“I strive each day to positively impact the health and wellbeing of my patients by ensuring optimal chronic disease state management. This includes optimizing medication regimens, addressing socioeconomic barriers, and treating each patient like family.”

-Insaf Mohammad, PharmD, BCACP

OUR PHARMACY STAFFING MODEL

	Pharmacist Coverage	Number of Pharmacists		
		Day	Afternoon	Midnight
Centralized	Lead RPh	1	1	
	Order Verification		3	1
	Checker (IV, unit doses)	3	3	1
	Chemotherapy Processing	1	1	
Unit Based	Cancer Treatment Center	1	1	
	Emergency Department	1		1
	3 (+CT, MRI)	1		
	4 (+IR, radiology, electrophysiology)	1		
	5 (+Cath lab, nuclear medicine)	1		
	6 (+Secondary short stay unit)	1		
	7	1		
	8 (+9 North, SICU)	1		
	9 South	1		
	Skillman (+Primary short stay unit, ultrasound, TPN, dialysis unit)	1		
	Ambulatory care, ASP, CCU, ICU, IM, oncology, OR pharmacy, transitions of care	8 Specialists		
	Shift Total		23	10
			Total Pharmacists	35
	Technician Role	Number of Technicians		
	Runner	2	3	
	Cart fill/Pyxis Replenishment	4		1
	Carousel/Pharmogistics	3	2	
	IV Room	3	3	1
	Chemo (compounding and delivery)	3		
	Linker	1	1	
	OR Pharmacy (compounding and stocking)	2	1	
	340B, ADS, Billing, Diversion, Operations, Narcotics, Procurement, Sterile Compounding	8 Coordinators		
	Shift Total		24	10
			Total Technicians	36

PHARMACY TECHNICIANS

The pharmacy technicians at Beaumont Hospital, Dearborn play a critical role in the provision of patient care in filling, compounding, and delivering medications for patients throughout the hospital. Their responsibilities extend to involvement in inventory optimization, process efficiency, controlled substance procedures, and beyond.

"My coworkers are very diligent and have a great work ethic. They take initiative to improve patient care."

-Malak D.

"The collaboration and teamwork amongst our department through the acquisition, preparation, and delivery of medications ensures they are available to patients when needed."

-Olivia K.



"Our pharmacy value is as essential as any other department in the hospital: from food services to facilities to physicians; we all have important roles to help provide an optimized patient experience and improve patient outcomes."

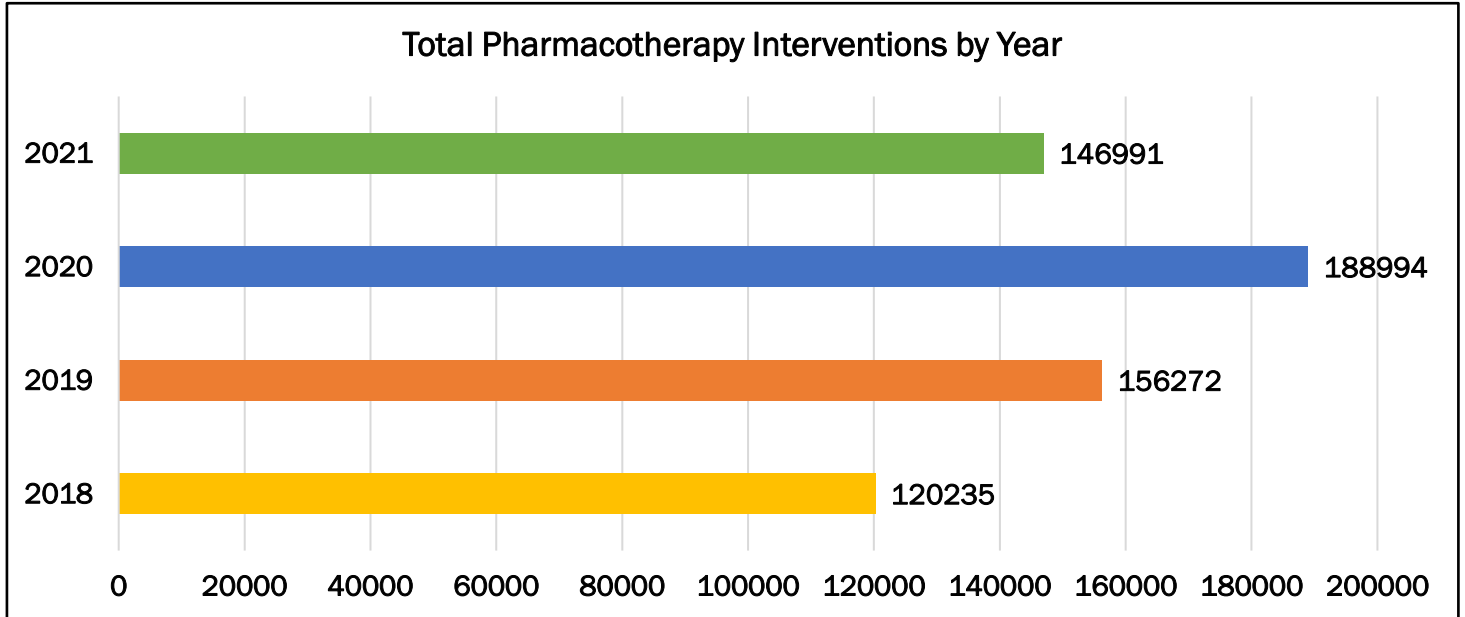
-Jodie R



Procurement Coordinator Olivia Kneip	Maintains inventory/supplies for pharmacy and clinics Identifies and plans for drug shortages; coordinates loan/ borrow delivery Assists in 340b contract compliance
340B Auditor Lori Stocchi	Audits mixed-use and contract pharmacies mediation orders for prescription eligibility Ensures accuracy of accumulators and multipliers of 340B products Verifies product-flow from correct purchasing accounts to medication administration
Sterile Compounding Coordinator Maha Bazzi	Oversees sterile compounding areas (on- and off-site), ensures TJC readiness Ensures personnel training and compliance with USP 797/ USP 800 policies Conducts annual media-fill and gloved-fingertip testing
Automated Dispensing System Coordinator Jodie Robb	Maintains automated dispensing cabinets (ADCs), trouble-shoots ADC hardware and IT issues Optimization of machine inventory and reporting for ADCs Investigates and reconciles discrepancies
Billing Coordinator Holly Dean	Maintains purchase orders and interdepartmental billing accuracy, and submits month-end reports for finance Aids with recalls and unit-dose packing, optimizes inventory, oversees reverse distribution Assists in 340b contract compliance
Diversion Prevention Coordinator Louis Cancel	Performs proactive diversion audits and identifies potential diversion activities Conducts monthly controlled substance (CS) audits Educates and maintains interdepartmental cooperation to maintain CS compliance
Narcotic Coordinator Jackie Mancini	Maintains inventory, documentation, and compliance with CS regulations and policies Identifies and resolves discrepancies and reconciles expired/wasted CS medications with reverse distributor Manages OR and ADC narcotic replenishment and packages narcotic medications and reconciles daily CS restocking reports
Operations Coordinator Jean Schafer	Creates daily/monthly schedules for pharmacy technicians and interns, ensures accurate time keeping for department Leads daily huddles for oncoming shifts Ensures current annual competencies, licensure, and training and serves on advisory board for technician training programs



Pharmacy Outcomes and Interventions



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Intervention Categories, 2021	Total I-vents
Pharmacotherapy Evaluation	32843
Consult	23267
Order Clarification	14197
Patient Care Rounding	12606
Renal	8743
Core Measure	8101
Antimicrobial Stewardship	7691
Other	4818
Order/monitor labs/levels	3765
Duplicate Therapy	3188
Therapeutic Substitution/Formulary management	2184
Medication Reconciliation	2043
Untreated Indication/Improper Drug Selection	1918
Drug Information	1838
Patient Education	1586
IV to PO	1194
Dose Adjustment	1076
Allergy	866
Missing height/weight	779
Med/MAR Chart Review	700
Beacon	660
Code Blue Participation	511
Drug Interaction	390
Discontinue unnecessary therapy	329
Medication History/Medication List Review	240
Failure to receive drug	127
Transition of care	79
Medication Identification	76
Patient Communication	75
Pain Management	65
Adverse Drug Reaction	14
Nutrition support/TPN consult	4
Fall risk	3
Investigational Drug	2

Inpatient Clinical Pharmacy Services

Clinical Pharmacy Services
Lynn Hassoun, PharmD
Lead Clinical Pharmacist

The goal of a clinical pharmacist is to provide safe, effective, rational, and cost-conscious pharmacotherapeutic care for patients through the department's medication management programs at all stages of the medication process.

Antimicrobial Stewardship
Dmitriy Martirosov, PharmD, BCIDP
Clinical Pharmacy Specialist,
Infectious Disease

The Antimicrobial Stewardship Program (ASP) aims to provide processes and tools that ensure the optimal dose, route, and duration of antimicrobials with the goal of improving patient outcomes while reducing costs, adverse events, antimicrobial resistance and hospital-acquired *Clostridioides difficile* infections.

Cardiology
Farzad Daneshvar, PharmD, BCPS
Clinical Pharmacy Specialist,
Cardiology

The goal of cardiology pharmacy is to promote safe and effective use of cardiovascular pharmacotherapy. The cardiology specialist pharmacist rounds in the 18-bed Cardiac Care Unit (CCU), which is a critical care floor along with intensivists in a multi-disciplinary team (including RNs, NPs, dieticians, case managers, and respiratory therapists) as well as the cardiology teaching team (including an attending cardiologist, a fellow, and residents).

Critical Care
Jessica Jones, PharmD, BCPS, BCCCP
Clinical Pharmacy Specialist,
Critical Care

The goal of critical care pharmacy is to promote safety medication use and optimize therapy for critically ill patients using evidence-based medicine with a multidisciplinary team approach.

Critical Care & Cardiac Step-Down
Jennifer Gregory, PharmD, BCPS
Tahniah Alauddin, PharmD, BCPS
Danny Salem, PharmD
Clinical Pharmacists

The clinical pharmacists on the cardiac and critical care step-down units help facilitate every aspect of the medication process. They take full responsibility of all medication related aspects on the unit, including assisting nurses in locating medications, clarifying any medications with providers, answering drug information questions, as well as educating patients regarding their medication.

Internal Medicine
David Wilpula, PharmD, BCPS
Clinical Pharmacy Specialist,
Internal Medicine
PGY-1 Residency Program Director

The goal of internal medicine pharmacy is to ensure pharmacotherapy is safe, effective, and affordable using a patient-centered approach to assessment, intervention, and education.

Transitions of Care
Sean McConachie, PharmD, BCPS
Clinical Pharmacy Specialist,
Transitions of Care
Clinical Assistant Professor,
EACHPHS Dept. of Pharmacy

The goal of the transitions of care pharmacy specialist is to improve every patient's medication knowledge, self-management skills, and knowledge of the healthcare continuum to ensure that they are prepared to manage their diseases going forward.

<p>Emergency Medicine Malak Abbas, PharmD Azzam Moussawel, PharmD Walid Hammoud, PharmD Omar Mouabbi, PharmD Clinical Pharmacists, Emergency Medicine</p>	<p>The Emergency Medicine pharmacists participate as part of an interdisciplinary team to optimize patient care in the acute emergency department (ED) setting 20 hours a day, 7 days a week.</p>
<p>Surgical Services Safana Atwan, PharmD, BCCCP Clinical Pharmacy Specialist, Surgical Services</p>	<p>The operating room pharmacists works in a collaborative manner with various healthcare providers in caring for the surgical patient population. The pharmacist focuses on safe and effective therapeutic management of pre- and post-operative needs while assuring compliance measures are met.</p>
<p>Oncology Brittany Lines, PharmD, BCOP Clinical Pharmacy Specialist, Oncology Medicine</p>	<p>The goal of oncology pharmacy is to ensure safe and effective care for patients receiving chemotherapy and associated treatments through assessing chemotherapy and supportive care orders and monitoring for adverse effects and drug-drug interactions.</p>

Pharmacy Professional Services

<p>Medication Safety/Operation Management Sonia Hassan, PharmD Operations Manager, Pharmacy Professional Services</p>	<p>The goal of medication safety is to evaluate and improve pharmacy operations to advance patient safety and optimize patient care. This role is managed by the pharmacy manager who is responsible for pharmacy technician and intern operations.</p>
<p>Administration/Quality Management Lama Hsaiky, PharmD, BCPS Clinical Manager, Pharmacy Practice Adjunct Associate Professor, EACPHS Dept. of Pharmacy</p>	<p>Administrative/ Drug information pharmacy strives to provide answers to drug information questions and evaluate new FDA approved drugs. This role is managed by the clinical pharmacy manager who focuses on the overall management of all clinical services in pharmacy along with the supervision of the clinical activities and outcomes across the pharmacy enterprise at Beaumont Dearborn.</p>
<p>Pharmacy Informatics Bryan Wang, PharmD, MHA Pharmacy Information System Specialist</p>	<p>The goal of pharmacy informatics is to optimize and maintain interoperability of multiple pharmacy information systems including Pyxis, CII safe, Epic, Pharmogistics and Cardinal Express.</p>

Outpatient Pharmacy Services

Ambulatory Care – Internal Medicine
Insaf Mohammad, PharmD, BCACP
Clinical Pharmacy Specialist,
Ambulatory Care
Clinical Assistant Professor,
EACHPHS Dept. of Pharmacy

Ambulatory care pharmacy practice at Beaumont Hospital, Dearborn focuses on an interprofessional and collaborative approach to patient care via face-to-face clinic visits and non-face-to-face efforts. The goal of the embedded ambulatory care pharmacist is to promote positive health outcomes related to the use of medications.

HIV Clinic
Rima Bazzi, PharmD, AAHIVP
Manager, Pharmacy Professional Services

The mission of the HIV pharmacist is to work on an interdisciplinary team to monitor, educate and participate in selection of safe and effective HIV regimens for patients. The goal is to ensure no drug-drug interactions are present and to suppress the patients' HIV viral load. The HIV pharmacist is also the inpatient clinical pharmacist manager, who oversees all clinical pharmacist generalists and emergency medicine pharmacists.

Oncology Clinic
Corrine Drysdale, PharmD, BCOP
Clinical Pharmacy Specialist,
Oncology
Diebh Faraj, PharmD, BCPS
Clinical Pharmacist,
Oncology

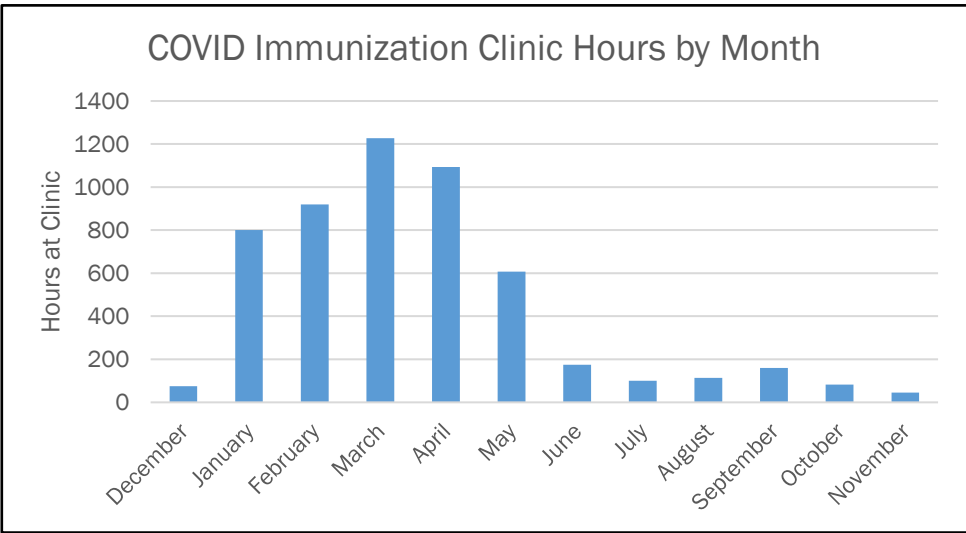
The Ambulatory Oncology Specialist works as a part of a multidisciplinary team to provide optimal care to oncology patients through prevention and management of adverse effects associated with antineoplastic therapy and educating patients and healthcare providers.



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2021 Highlight: COVID-19 Vaccine Clinic

The Beaumont Hospital Dearborn Pharmacy Department answered the call to arms by supporting a massive community vaccination effort throughout 2021, including inventory management, cold chain supply monitoring and reporting, documentation and MCIR reporting. The clinic administered over 105,000 vaccine doses.



Month	First Doses	Second Doses	Booster Doses
January	5395	1	0
February	9717	5244	0
March	21340	10290	0
April	11356	22957	0
May	784	8665	0
June	231	811	0
July	216	216	0
August	232	247	7
September	169	232	80
October	63	155	261
November	38	57	836
December	29	42	1048

Pharmacy Residency Program

The PGY-1 pharmacy residency at BHD is a 12-month program accredited by the American Society of Health System Pharmacists (ASHP) designed to prepare the resident for independent practice in a clinical environment. The purpose of the program is to contribute to the development of clinical pharmacists who are responsible for pharmacotherapeutic care of patients, eligible for board certification, and strong candidates for PGY-2 residency programs.

2021 Application Statistics

Applications	N (%)
Total	68
Wayne State University	26 (38)
University of Michigan	13 (19)
Ferris State University	4 (6)
Out of state	25 (37)

Responsibilities:

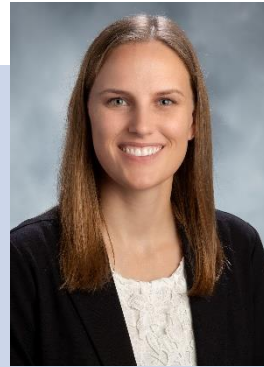
- Required + Elective clinical rotations (total 10)
- Longitudinal outpatient clinic (HIV and Oncology)
- Longitudinal research project presented at a regional conference
- Medication Use Evaluation (MUE) presented at ASHP Midyear Meeting
- Pharmacy Grand Rounds
- Teaching certificate program provided through Wayne State University
- Precept IPPE and APPE/LAPP students
- Rotating code blue participation
- Rotating chief resident responsibility
- Flu vaccine clinic involvement
- Community service



Sahar Ajrouche, PharmD
Wayne State University



Hannah Ferrari, PharmD
Wayne State University



Melanie Johnson, PharmD
University of Michigan



Anisa Wooten, PharmD
Wayne State University

Pharmacy Residency Preceptors



Malak Abbas, PharmD
Rotation: Emergency Medicine



Noor Al-Bassam, PharmD, BCPS
Rotation: Specialty Pharmacy



Safana Atwan, PharmD, BCCCP
Rotation: Operating Room



Rima Bazzi, PharmD, AAHIVP
Rotations: Pediatrics, HIV Clinic



Farzad Daneshvar, PharmD, BCPS
Rotation: Cardiology - Critical Care/Consult Services



Corrine Drysdale, PharmD, BCPS, BCOP
Rotation: Ambulatory Care Oncology



Diebh Faraj, PharmD, BCPS
Rotation: Ambulatory Care Oncology



Jenny Froomkin, PharmD, BCPS
Rotation: Internal Medicine - Geriatrics



Sarah Goldsborough, PharmD, BCPP
Rotation: Inpatient Adult Psychiatry



Brittany Lines, PharmD, BCOP
Rotation: Inpatient Hematology/Oncology



Sabrina Jarjosa, PharmD
Rotation: Orientation, Staffing



Jennifor Gregory, PharmD, BCPS
Rotation: General Medicine - Critical Care Step-Down



Sonia Hassan, PharmD
Rotation: Medication Safety



Lama Hsaiky, PharmD, BCPS
Rotation: Administration



Jessica Jones, PharmD, BCPS, BCCCP
Rotation: Critical Care



Syeda Mahmood, PharmD, BCPS
Rotation: General Medicine - Critical Care Step-Down



Dmitriy Martirosov, PharmD, BCIDP
Rotation: Antimicrobial Stewardship / Infectious Disease



Sean McConachie, PharmD, BCPS
Rotations: Inpatient Transitions of Care, Academia



Insaf Mohammad, PharmD, BCACP
Rotation: Internal Medicine Ambulatory Care Clinic



Danny Salem, PharmD
Rotation: General Medicine - Cardiac Step-Down



Bryan Wang, PharmD, MHA
Rotation: Informatics



David Wilpula, PharmD, BCPS
Rotation: Internal Medicine

Where are Our Residents Now?

2021 Graduates	First Position After PGY-1	Current Position
<i>Aradhna Mayalall, PharmD</i>	Pain Management and Palliative Care PGY2, University of Michigan	Pain Management and Palliative Care PGY2, University of Michigan
<i>Lena Farhat, PharmD</i>	Discount Pharmacy, Allen Park	Discount Pharmacy, Allen Park
<i>Pia-Allison Roa, PharmD</i>	Ambulatory Care PGY2, University of Michigan	Ambulatory Care PGY2, University of Michigan
<i>Keila LaFreniere, PharmD</i>	Clinical Pharmacist, University of Michigan	Clinical Pharmacist, University of Michigan
2020 Graduates		
<i>Andrea Duong, PharmD</i>	Pharmacy Informatics PGY2, NorthShore University Health System	Clinical Instructor/Clinical Pharmacist, University of Illinois Chicago
<i>David A Huynh, PharmD</i>	School of Medicine Student, Wayne State University	School of Medicine Student, Wayne State University
<i>Kevin Marck S Intig, PharmD</i>	Clinical Pharmacist Beaumont Hospital, Royal Oak, Community Practice	Clinical Pharmacist Beaumont Hospital, Royal Oak, Community Practice
<i>Laila K Shammout, PharmD</i>	Clinical Pharmacist, Blue Cross Blue Shield of Michigan	Clinical Pharmacist, Blue Cross Blue Shield of Michigan
2019 Graduates		
<i>Munjal Attawala, PharmD, BCPS</i>	Inpatient Pharmacy Generalist	Internal Medicine Specialist, Medical Center Hospital, Odessa, TX
<i>Allison Golom, PharmD</i>	Ambulatory Care PGY2	Ambulatory Care Specialist, Henry Ford Health System- Detroit
<i>Zeana Khodor, PharmD</i>	Inpatient Pharmacy Generalist	Clinical Pharmacist, C.S Mott Children's Hospital
<i>Sakina Zaheer, PharmD</i>	Pharmacotherapy PGY2	Clinical Pharmacist St. Luke's Hospital IM Clinic, Duluth, MN
2018 Graduates		
<i>Mashal Khan, PharmD</i>	Oncology Pharmacy Specialist	Oncology Pharmacy Specialist, Beaumont Hospital Troy
<i>Irfana Lakada, PharmD</i>	Inpatient Pharmacist Generalist, Beaumont Hospital Dearborn	Clinical Pharmacist, Shields Health Solutions
<i>Adrian Tsui, PharmD</i>	PGY-2 Oncology Pharmacy	Clinical Pharmacy Specialist- Oncology, Ascension Detroit
2017 Graduates		
<i>Stephanie Everard, PharmD</i>	Inpatient Pharmacy Generalist	Outpatient Oncology Pharmacist, Ascension St. John Infusion Center, Detroit, MI
<i>Craig Sauers, PharmD, BCPS</i>	Inpatient Pharmacy Generalist	Internal Medicine Specialist, University of Rochester Medical Center
2016 Graduates		
<i>Nicole Stone, PharmD</i>	Inpatient Pharmacy Specialist	Drug Information Specialist, Beaumont Hospital Farmington Hills
<i>Kevin Xie, PharmD</i>	Inpatient Pharmacy Generalist	Clinical Pharmacy Generalist, Beaumont Hospital Dearborn

Where are Our Residents Now?

2015 Graduates		
<i>Aamna Khan, PharmD, BCPS</i>	Oncology Clinical Pharmacy Specialist	Clinical Medical Liaison- Hematology, Syneos Health, Chicago, IL
<i>Judy Wong, PharmD, BCACP</i>	Ambulatory Care PGY2	Ambulatory Care Specialist, Providence Oregon Medical Center, Portland, OR
2014 Graduates		
<i>Joseph Fava, PharmD, BCACP</i>	Ambulatory Care PGY2	Assistant Professor (Clinical), Wayne State University
<i>Sin-Ling Jennings, PharmD, BCPS</i>	Inpatient Pharmacy Generalist	Clinical Pharmacy Generalist, St. John Providence Hospital, Southfield, MI



Longitudinal Advanced Pharmacy Practice (LAPP) Program

- Longitudinal Advanced Pharmacy Practice Program (LAPP) was created in 2004
- It is aimed at equipping P4 students with the clinical knowledge and skills they need to succeed in both a residency and pharmacist role
- The program accepts up to six LAPP students each year (five students accepted for 2021-2022 academic year)
- LAPP co-coordinator: Insaf Mohammad, PharmD, BCACP
- LAPP co-coordinator: Sean McConachie, PharmD, BCPS
- Student Requirements:
 - **Experiential rotations**
 - **Presentations at pharmacy grand rounds**
 - **Involvement in institution activities**
 - This year, LAPP students were involved in the Quality, Patient Safety, and Infection Prevention fair. They educated patients, physicians, and other hospital personnel on the importance of medication safety, antimicrobial stewardship, and their role in implementing these practices
 - **Research projects**
 - Impact of Inpatient Intravenous to Oral Modification of Antibiotic Dosing Appropriateness at Discharge
 - Prevalence of Inappropriate Antiplatelet Therapy in Inpatients Receiving Oral Anticoagulants
 - Impact of a Quality Improvement Initiative on Naloxone Co-Prescription for Patients on Opioids in a Primary Care Clinic
 - Retrospective Evaluation of Pre-operative Antibiotic Selection in Patients with Documented Penicillin Allergies
 - Evaluation of Self-Care Monitoring Kits in Improving Disease-Related Knowledge and Reducing 30-day Readmission Rates in Patients with Heart Failure



Beaumont

≡ Celebrations! ≡

This year, our department celebrated the arrival of remarkably many 'future pharmacists'!!
Congratulations to all our new (and renewed) parents!

*Bryan Wang
Dana El Masri
Emal Beydoun
Iram Akram
Irfana Lakada
Safana Atwan
Sean McConachie
Sonia Hassan
Syeda Mahmood
Michelle Crisher
Fatima Sobh
Amanda Bates
Helena Makki
Fatima Sader
Hannan Hazyme*



Scholarships and Grants

- **Total Health Care Foundation Grant—Sean McConachie, Neha Desai, Lama Hsaiky, Sonia Hassan, Rima Bazzi**
 - Development of a Medication Navigation Program to Improve Medication Safety and Access in Underserved Patients (\$154,000)
- **Beaumont Health System Greatest Needs Restricted Fund—Lama Hsaiky**
 - Non-occupational post exposure prophylaxis (nPEP) HIV Kits to support Sexually Assaulted Patients (\$26,000)
- **Beaumont Moon Shot Grant—Insaf Mohammad**
 - Diabetes Peer Support Group Program (\$28,285)
- **Reach the Moon Grant – Farzad Daneshvar**
 - Utilization of Medication Pill Boxes & Scales for Reducing Heart Failure Readmissions (\$5000)
- **Reach the Moon Grant – Sean McConachie, Lena Farhat**
 - Optimization of Medical Counseling: Assessing Agreement Between Patients and Providers (\$1500)
- **Reach the Moon Grant – Ali Bazzi, Rima Bazzi, Neha Desai**
 - Take-Home Inpatient Naloxone Kit for High-risk Patients (\$5000)



Accreditation Efforts

- Medication Compounding Certification (HCO 7475) at Beaumont Hospital-Dearborn –
 - Achieved Recertification with no findings



Community Service



- Support of Beaumont COVID-19 vaccine clinic
- Flu Vaccine Clinic – intra-department
- Antibiotic Awareness Week 2021
 - Displayed a table on Antimicrobial Stewardship during Quality Expo at Beaumont Hospital, Dearborn
 - Emailed antimicrobial stewardship handouts regarding penicillin allergy, urinary tract infections and ASP concepts to pharmacists, nurses, and physicians
- COVID-19 community awareness
 - Town hall with Congresswoman Debbie Dingle- discussed COVID vaccine efficacy, safety and the accessibility improvement through the American rescue plan- April 7, 2021
 - U.S. Arab Radio
 - 10-minute national radio interview in Arabic to raise awareness of COVID vaccines- March 18, 2021
 - COVID-19 Vaccine communication committee
 - Dearborn community stakeholder
 - U.S. Arab Radio
 - 10-minute national radio interview in English to raise awareness of COVID vaccines- February 2021
 - Healthy Dearborn Coalition Meeting
 - Discussed COVID-19 vaccine “Myths vs. Facts” - February 16, 2021
- Advocating for Opioid Use Disorder Care. *ACCP Ambulatory Care PRN Listserv* Apr 2021.
- Academic Volunteering
 - Guest instructor for Oakland University William Beaumont (OUWB) School of Medicine Drugs of Abuse team-based learning session
 - Invited instructor for Wayne State University College of Pharmacy Pain, Agitation, & Delirium lecture for critical care elective course
- Wayne State University College of Pharmacy
 - Supervised students obtaining APhA Immunizer Certifications
 - Leadership in Pharmacy
- Professional Advocacy
 - Telehealth and Advocacy Experiences: Lessons Learned and the Path Forward (ACCP Ambulatory Care PRN Advocacy Committee)
 - Opioid Management and Safety Practices: Training Session for Pharmacist Licensure to pharmacy associates at Michigan Pharmacist Association Annual Convention

Beaumont Education Initiatives

- Interprofessional Presentations
 - Update on Epidural Injection of Triamcinolone Radiology Department Beaumont Hospital Dearborn
 - Vasopressors and Inotropes: Selection of the Fittest to Medical Residents and Physicians
 - Neurological Medications in the Emergency Department to Emergency Medicine Nurses
 - Need for Naloxone for Patients on Opioids to physicians and medical residents at Beaumont Hospital Dearborn
- Dearborn Intern Bootcamp Lecture Series
 - Sepsis
 - Fluids and Electrolytes: An Intravenous Fluid Review
 - Shock Pharmacotherapy
 - Management of Pain, Agitation, & Delirium In Critically Ill Patients
 - Community-acquired pneumonia pocket guide
 - Urinary treatment infection pocket guide
 - Cardiology
- Beaumont Pharmacy Residency Series
 - Hsaiky/Jones. Resilience and Burnout Prevention
Stoking Your Career Fire: How to Weather the Burnout Storm
 - McConachie SM. Data Visualization for Pharmacy Residents. November 2021.
 - McConachie SM. Biostatistics for Pharmacy Residents. November 2021.
 - Desai/Jarjosa. Leveraging Technology in Pharmacy. May 2021



New Program Expansions

- Staffing
 - Beacon chemotherapy workflow optimized
 - Skillman pharmacist
- Clinical
 - Implemented pharmacist management of oral chemotherapy at Mercury Drive Oncology Clinic with plans to implement the same at BMG Hem Onc Center- Brownstown
 - Standardized IV chemotherapy teaches including treatment regimen education, creation of dot phrases for each regimen, and creation of patient handouts
 - Initiated APPE student anticoagulation education program for select patient units at Beaumont Dearborn
 - Joined new multidisciplinary geriatric rounds on 9 South
 - *S. aureus* nasal screen expanded to include skin and soft tissue infections
 - Created skin and soft tissue HealthStream module
 - Resident Code Blue Learning Experience formalized
 - Naloxone Quality Improvement Initiative
 - Naloxone prescribing increased from 7% at baseline to 12.5% after second QI cycle)
 - Diabetes Peer Support Group Program initiated in ambulatory clinic
 - Outreach Initiative for patients with uncontrolled hypertension
- Operational
 - Heparin standardized protocols and workflow across BH – live September 2021
 - Standardize IV concentrations and ERXs (ongoing)
 - Flood remediation, new construction, and fix!
 - Launch of standardized USP 800 policies and procedures



Formulary Reviews/Guidelines/Policies/Protocols/Order Sets/Corporate Contributions

Corporate Initiatives (Championed by Dearborn Staff)

- 2020 antibiograms for Beaumont Hospitals Dearborn, Taylor, Trenton, and Wayne
- Tolvaptan guidelines and order set standardization
- Removal of Zolpidem from inpatient formulary and EMR restriction build
- Post exposure prophylaxis (PEP) HIV updates for occupational health
- Post exposure prophylaxis (nPEP) HIV for non-occupational sexual assault
- Antimicrobial stewardship policy update
- Droperidol standardized guidelines
- Platelet Rich plasma with vancomycin for surgical prophylaxis Review
- Methicillin-resistant staphylococcus aureus nasal screening for use in skin and soft tissue infections
- Hyperkalemia guideline standardization
- Opium of tincture EMR build
- Anticoagulation guidelines, and protocols standardization
- COVID accordion flowsheet build in Epic
- Oral/enteral medication conversion policy
- EC medication reconciliation
- Post-splenectomy order set
- Midazolam (Nayzilam) formulary assessment
- Ferric derisomaltose (Monoferric) formulary assessment
- Lokelma medication use evaluation
- Pantoprazole medication use evaluation
- Alvimopan medication use evaluation
- Cabotegravir PO & Cabotegravir/Rilpivirine formulary assessment

Corporate Initiatives (Collaboration by Dearborn Staff)

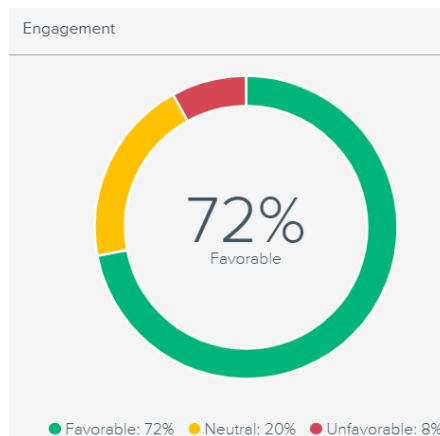
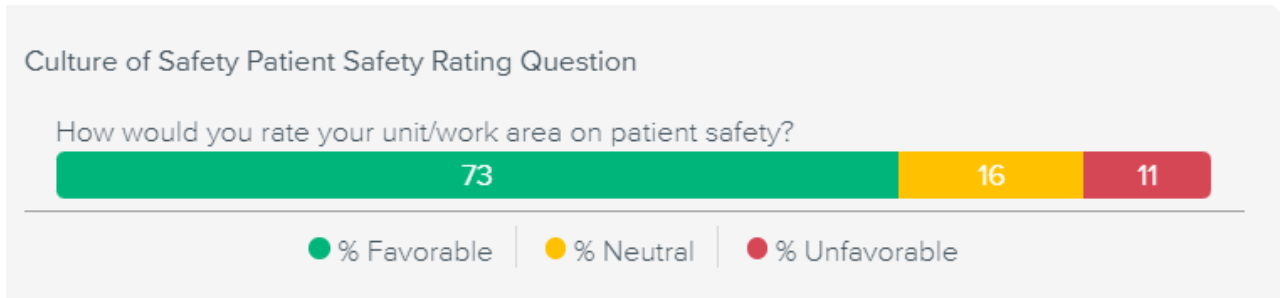
- Corporate and EC inpatient sepsis order set
 - Including optimizing clinical decision support for fluid build as CMS requirements change
- Opioid use disorder ED order set
- Buprenorphine policy & inpatient prescribing guideline
- Continuous infusion standardization & smart pump rollout
- Alcohol withdrawal syndrome treatment guidelines
- EC/IP anticoagulant reversal for life-threatening bleeding protocol and order set
- Hyponatremia policy
- N-Acetylcysteine order set
- Emergent titration policy & smart phrase for nursing block charting documentation

- Heparin post-alteplase protocol/order set/BPA/pharmacist smart phrase
- IV Heparin treatment implementation/rollout and support pharmacist via MH Cure
- RASS Flowsheet for sedative orders in titration documentation window
- Neuraxial best practice alert
- Anticoagulation reversal guidelines and order sets
- Antimicrobial stewardship program Healthstream module
- Amphotericin B order set
- Monoclonal antibody order builds
- Updates to Treatment guidance for hospitalized patients with COVID-19
- Skin and soft tissue infection treatment guideline
- Updates to antimicrobial restriction policy
- Updates to antimicrobial monitoring Policy
- Updates to pharmacist-initiated medication dose adjustment in adult patients
- Updates to adult and pediatric fluoroquinolone restriction policy
- Staphylococcus aureus bacteremia treatment guideline
- Updates to voriconazole dosing protocol
- Skin and soft tissue infection HealthStream module
- Updates to beacon treatment plans
- Standardized oral chemotherapy workflow management for pharmacists
- Standardized IV chemotherapy workflow management for pharmacists
- Updates to rasburicase policy
- Update to IV nitroglycerin Policy
- Guidelines For use of excipients In Neonatal And pediatric patients
- Pharmacy residency offsite rotation policy standardization
- Pharmacy residency licensure policy standardization
- Pharmacy residents' duty hours and moonlighting policy standardization
- Pharmacy residency program dismissal policy standardization
- Pharmacy residents leave of absence policy standardization
- Pharmacy residency preceptor appointment policy standardization
- Fidaxomicin criteria in pediatric patients
- Maternal sepsis order set
- Intra-operative re-dosing guideline
- Mandatory ID consult for Staphylococcus aureus bacteremia Policy
- C. difficile treatment guideline update
- Varicella zoster immune globulin (VariZIG) guideline

Projects and Achievements

- Recognition of Excellence from the Coronary Care Unit nursing staff: Farzad Daneshvar
- Inforum Healthcare NEXT Leadership Certification: Lama Hsaiky
- Beaumont Research Day Project Competition- First Place: Lena Farhat/ Sean McConachie
- Achieved successful TJC re-certification as a primary stroke center of excellence
- Standardized Heparin protocols development, build and go-live support
- Award from Institute for Healthcare Improvement (IHI) for commitment to care of older adults (9th floor)

Culture of Safety and Engagement Scores



Health-System and Institutional Committee Involvement

Beaumont Health System

- Residency Priority Committee (Chair)
- COVID Taskforce Committee
- Corporate Antimicrobial Subcommittee
- Corporate Pre-Operative Committee
- Formulary Standardization Committee
- Antimicrobial Stewardship Committee (Co-Chair)
- Corporate Critical Care Subcommittee
- Corporate EC Sepsis Committee
- Corporate Pharmacy Residency Priority Subcommittee
- IV to PO Optimization
- EPIC Optimization
- IT Willow Stakeholder
- Pharmacy EPIC Stakeholder
- Emergency Center to Inpatient Transition Orders CE Team
- EPIC Order Sets Review
- Ryan White Project
- Beacon
- Pediatric Broselow/Crash Cart Medication Standardization Committee
- Antimicrobial Stewardship Workgroup
- COVID-19 Treatment Committee
- Infectious Disease Microbiology Committee
- COVID-19 Treatment Workgroup
- COVID-19 Anticoagulation Taskforce
- Internal Medicine
- Heparin Standardization Project
- IV Infusion standardization
- Pharmacy IT
- Medication Safety
- Sepsis

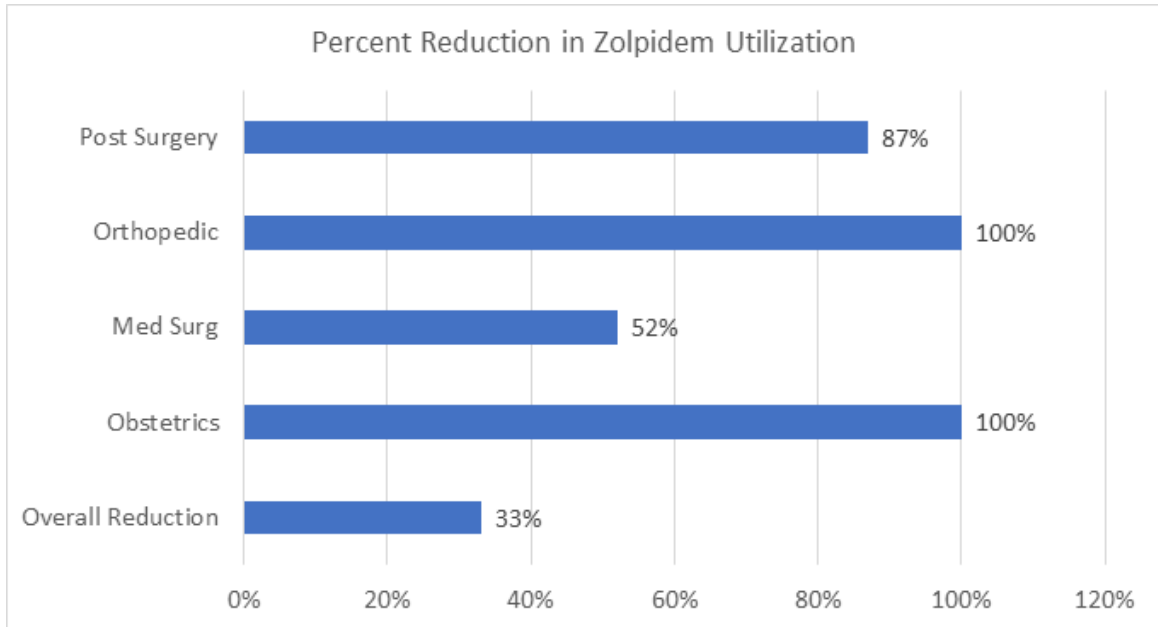


Beaumont Hospital Dearborn

- Antimicrobial Stewardship Committee (Co-chair)
- Hospital Research Committee
- Pharmacy PGY1 Residency Committee
- Residency Advisory Committee
- Infection Control Committee
- Primary Stroke
- Stroke Door to Needle
- Sepsis Committee
- Code Blue Committee
- ED Inpatient Throughput
- Pharmacy and Therapeutics Presentations
- Beaumont Residency Research Subcommittee
- Ambulatory Care Pharmacy Group (Chair)
- Heme/Onc Subcommittee
- Oncology subcommittee
- Cancer Committee
- Cancer Survivorship Committee
- BH infusion PNC
- Cardiology Section
- CVQ Ops (Cardiothoracic Surgery)
- CHF Readmission
- CathLab Quality
- Medication Use Committee

Clinical Services Outcomes

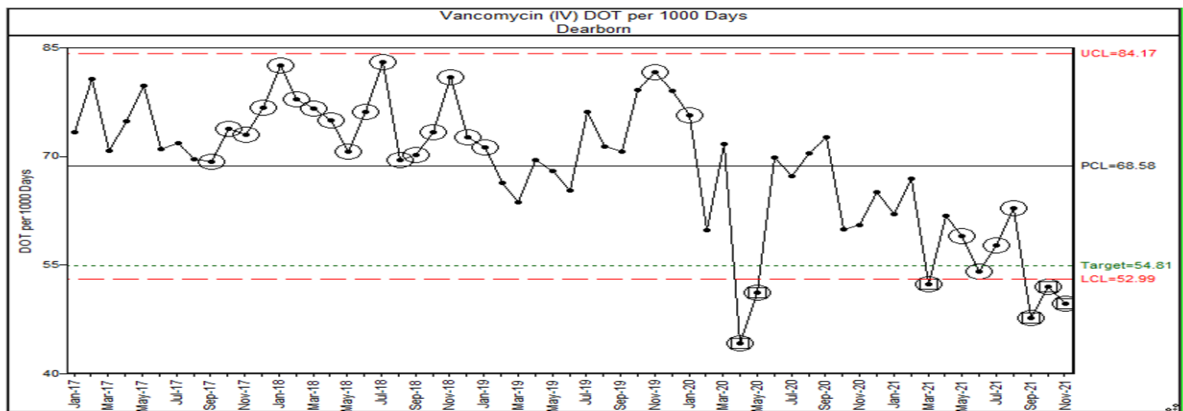
Impact of Zolpidem Criteria Modification on Inpatient Prescribing:



Antimicrobial Stewardship

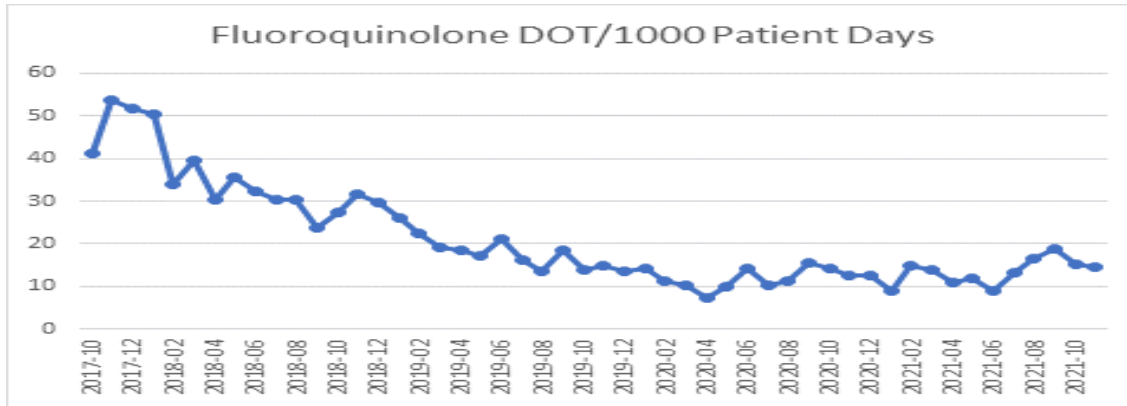
Impact of MRSA PCR nasal screening in SSTI and CAP on Vancomycin DOT/ 1000 pt days

June 2021 - November 2021									
Total Cases	Vancomycin Cases	% of Total Cases	Total Patient Days	Days of Therapy	Days of Therapy per 1000 Days	Status	Status 2 Target	Status 3 Target	Status 4 Target
11,986	2,253	18.80	128,755	6,940	53.90	4	67.96	63.62	54.81



* Includes all inpatients 18 years and older

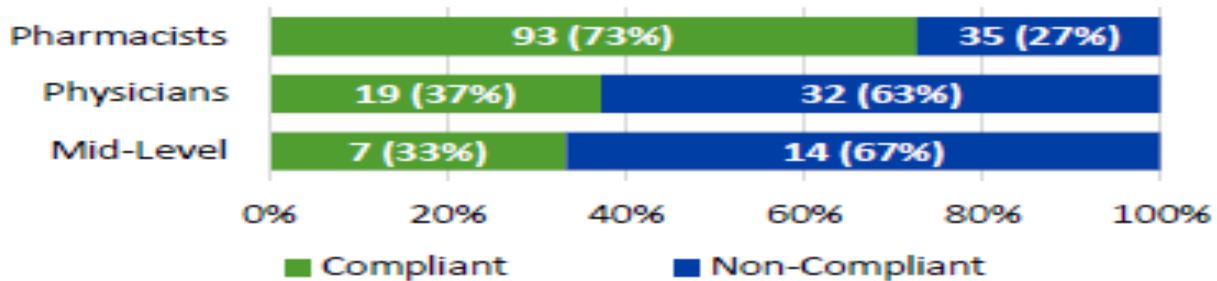
Impact of Restriction Policy on Fluoroquinolone DOT/ 1000 pt days



Surgical and Emergency Pharmacy Services

Impact of Pharmacy Pre-Operative Antibiotics on Guidelines Compliance

Figure 4: Compliance by Prescriber



Impact of Emergency Pharmacy Services on Alteplase Time in Stroke



Impact of Emergency Pharmacy on Antibiotic Compliance in Sepsis

90% Meeting
Compliance Target



Beaumont

Geriatrics Pharmacy Services

Pharmacy Rounding Impact on Geriatrics Patients

	Prior to Initiation ¹	After pharmacist implementation
Benzodiazepine administrations	826 orders	440 orders
Falls with injury	2	1
Restraint use	41	16
Average length of stay³	6 days	5 days

*Benzodiazepine order numbers compared to 2019 to more closely match patient census. All other categories were compared to Jan 2021-April 2021.

Ambulatory Care Services

Oncology Pharmacy Services Interventions

Intervention Category		Total I-vents
BROWNSTOWN		3818
Beacon	Order/monitor labs/levels	2769
	Chemotherapy	589
	Order Clarification	328
	Patient Education	101
	Other (DDI, Dose Adjustment, etc.)	31
DEARBORN CLINIC		3914
Beacon	Patient Communication	1096
	Order/monitor labs/levels	223
	Chemotherapy	1050
	Order Clarification	434
	Patient Education	316
	Drug Information	611
	Other (DDI, Dose Adjustment, Discontinue, etc.)	184

Internal Medicine Pharmacy Services Interventions

- Total of 276 billed visits.
- Initiated several programs targeting, interdisciplinary hypertension management, and naloxone co-prescription with opioids.
 - Diabetes peer support group program
 - Completed 8 of 12 total planned sessions
 - Delivered virtually via Zoom
 - 7 participants to date
 - Hypertension QI initiative: Pharmacy team blood pressure medication interventions occurred in 58.3% of patients contacted.
 - Addition of medication (37.5%)
 - Increase dose (20.8%)
 - Discontinuation of medication (8.3%)
 - Other (33.4%)
 - Naloxone QI initiative
 - Didactic session to providers and medical residents in June 2021 and updated clinic notes template to prompt naloxone prescribing for eligible patients.
 - Preliminary findings reveal 7% naloxone prescribing at baseline, increased to 12.5% after second quality improvement cycle.

Pharmacy Services Publications 2021

Peer Reviewed Articles:

- **Abbas M**, Bakhtyar A, **Bazzi R**. “Neonatal HIV.” StatPearls. 2021. PMID: 33351437
- Gupta A, Petty LA, Gandhi TN, Flanders SA, **Hsaiky L**, Basu T, Zhang Q, Horowitz JK, Masood Z, Chopra V, Vaughn V. Overdiagnosis of Urinary Tract Infection Linked to Overdiagnosis of Pneumonia: A Multi-Hospital Cohort Study. *BMJ Qual Saf*. 2022 Jan 5;bmjqs-2021-013565. doi: 10.1136/bmjqs-2021-013565. Online ahead of print.
- **Mohammad I**, Lobkovich A, Nardolillo J, Wilhelm S. Pharmacy student satisfaction and perceptions following a virtual sterile compounding experience. *Int J Pharm Compd* 2021. [Accepted for publication].
- **Mohammad I**, Berri D, Tutag Lehr V. Pharmacists and opioid use disorder care during COVID-19: call for action. *J Am Coll Clin Pharm* 2021;1-11. <https://doi:10.1002/jac5.1556>.
- **Roa PA**, **Bazzi R**. Crushed Bictegravir/emtricitabine/tenofovir alafenamide in a human immunodeficiency virus-positive patient with pancreatic cancer. *International Journal of STD & AIDS*. 2021 0(0)1-2

Abstracts with Associated Research Presentations:

- **Ajrouché S, Lines B, Wilpula D.** Assessing adherence to Global Initiative for Obstructive Lung Disease (GOLD) directed therapy in patients discharged with chronic obstructive pulmonary disease (COPD). Poster presentation at ASHP Midyear Clinical Meeting & Exhibition. Virtual. Dec 2021.
- Azizi F, Asif J, Nusairat L, **Mohammad I.** Impact of a quality improvement initiative on naloxone co-prescription for patients on opioids in a primary care clinic. Poster presentation at ASHP Midyear Clinical Meeting & Exhibition. Virtual. Dec 2021.
- Daoud A, **Wooten A, McConachie S, Martirosov DM.** Impact of Inpatient Intravenous to Oral Modification on Antibiotic Dosing Appropriateness at Discharge. Poster presentation at ASHP Midyear Clinical Meeting & Exhibition. Virtual. December 2021.
- **Farhat L, Berry N, Podolsky R, Prouty A, Mohammad I, McConachie S.** Evaluation of physician, pharmacist, nurse and patient agreement on new medication counseling points. Ohio Pharmacy Residency Conference. Virtual. May 2021.
Abstract accepted and poster presentation at Beaumont Hospital Dearborn Research Day. May 2021.
- **Ferrari H, Khatib-Shahidi K, McConachie S, Jarjosa S, Fromkin J.** Prevalence of inappropriate aspirin use in patients taking oral anticoagulants. Poster presentation at ASHP Midyear Clinical Meeting & Exhibition. Virtual. Dec 2021.
- **Johnson M, Hariri R, Martirosov DM, Hsaiky L, Atwan SM.** Retrospective evaluation of pre-operative antibiotic selection in patients with documented penicillin allergies. Poster presentation at ASHP Midyear Clinical Meeting & Exhibition. Virtual. Dec 2021.
- **LaFreniere K, Jones JL, Pipta, J.** Inpatient sepsis order set use and impact on SEP-1 compliance in severe sepsis and septic shock. Ohio Pharmacy Residency Conference. Virtual. May 2021.
Abstract accepted and poster presentation at Beaumont Hospital Dearborn Research Day. May 2021.
- **Mayalall A, Wilpula D.** Development and derivation of an inpatient hypoglycemia prediction tool for use in adult patients with diabetes mellitus. Ohio Pharmacy Residency Conference. Virtual. May 2021.
Abstract accepted and poster presentation at Beaumont Hospital Dearborn Research Day. May 2021.
- **McConachie SM, Hanni CM, Wilhelm SM.** Deviant Dosing: A Post hoc Analysis of Pharmacist Characteristics Related to Renal Dosing Decisions. *Ann Pharmacother.* 2021 (Ahead of Print).
- **McConachie S, Roa, P, Martirosov DM.** Inpatient Antibiotic Dosing Errors in Hemodialysis Patients: An Exploratory Analysis. 2021 ACCP Annual Meeting. Virtual Conference. October 2021.
- **Roa P, Mohammad I.** Evaluation of an outreach initiative for patients with uncontrolled hypertension in primary care: retrospective analysis. Ohio Pharmacy Residency Conference. Virtual. May 2021.
Abstract accepted and poster presentation at Beaumont Hospital Dearborn Research Day. May 2021.

- **Wooten A, Daneshvar F, Salem D.** Underutilization of guideline-directed medical therapy in recently readmitted patients with heart failure exacerbation. Poster presentation at ASHP Midyear Clinical Meeting & Exhibition. Virtual. Dec 2021

Non-Peer Reviewed Research Publications:

- Farhat N, **Mohammad I.** Development of a meaningful ambulatory pharmacy quality metric dashboard. *Michigan Society of Health-System Pharmacists (MSHP) Monitor* Jun 2021. [Accepted for publication].
- **Johnson M, Hsaiky L.** The Escalation of Artificial Intelligence in Pharmacy Practice. *Michigan Society of Health-System Pharmacists MSHP Monitor*; Volume 53, Issue 12 | December 15, 2021
- **Jones JL** and Belding T. White Bagging & Brown Bagging: Harmful Practice or the Future of Medicine? *Michigan Society of Health-System Pharmacists MSHP Monitor*. 2021; vol 50, issue 9.
- **McConachie S, Farhat L,** Berry N, Prouty A, Sengstock D, **Mohammad I.** Evaluation of physician, pharmacist, nurse and patient agreement on new medication counseling points. *J Am Coll Clin Pharm* Oct 2021.
- **Mohammad I.** Advocating for Opioid Use Disorder Care. *ACCP Ambulatory Care PRN Listserv* Apr 2021.

Manuscripts Under Review

- Swaminathan, L, Kaatz, S, Chubb, H, Tae, K, Ramesh, MS, Fadel R, Big C, **Jones JL,** Flanders SA, Prescott HC. Impact of early corticosteroids on preventing clinical deterioration in non-critically ill patients hospitalized with COVID-10: a multi-hospital cohort study. [Manuscript completed and under review]. July 2021.

COVID-19 PANDEMIC CONTINUOUS MANAGEMENT

COVID-19 Treatment Guidelines Corporate Task Force

- Expanded to include multiple disciplines (80 members total)
 - Infectious Disease pharmacists
 - Infectious Disease physicians
 - Critical Care physicians
 - Hematology/Oncology physicians
 - Immunologists
 - Cardiology pharmacists
- Objective is to digest high volume/frequency literature on an emerging disease and provide guidance on management of COVID-19
- Meetings are conducted on an as-needed basis depending on evidence involvement

Year	Date	COVID Guideline Development and Changes
2020	13-Mar	First version of treatment guidance released to ID providers
	18-Mar	<ul style="list-style-type: none"> · HCQ as preferred therapy and restricted to ID · Tocilizumab 400 mg x1 dose through tocilizumab approval group
	19-Mar	<ul style="list-style-type: none"> · Azithromycin: recommended in combination with HCQ and duration limited to 5 days · Tocilizumab criteria revised · Added guidance for management in pediatric patients
	24-Mar	<ul style="list-style-type: none"> · Azithromycin: addition of monitoring criteria for starting and monitoring to help prevent QTc prolongation · Kaletra: removed · Pharmacist protocol for adjusting dosage regimen of HCQ and azithromycin to match dosing recommendations · Suggested laboratory monitoring for moderate – severe patients · Guidance for management of COVID-19 in pregnant and breastfeeding mothers
	25-Mar	<ul style="list-style-type: none"> · HCQ criteria updated
	31-Mar	<ul style="list-style-type: none"> · Steroids: added (low-dose course of methylprednisolone or dexamethasone x 5 days [max 7 days] for patients with PaO₂/FiO₂ 6L nasal cannula; NIV or MV) · HCQ ID restriction removed for adults; QTc monitoring recommendations added · Tocilizumab: requirement for mechanical ventilation removed · Anticoagulation: adjunctive treatment with prophylactic enoxaparin · Guidance for COVID-19 for Pregnant/Breastfeeding mothers revised
	1-Apr	<ul style="list-style-type: none"> · Tocilizumab: criteria revised · COVID-19 and suspected MRSA pneumonia: oral linezolid preferred vs vancomycin · Anticoagulation: prophylactic dosing recommendations and pediatric information added
	2-Apr	<ul style="list-style-type: none"> · Zinc: recommended in combination with hydroxychloroquine · Steroids: revised criteria to “sudden decline in oxygenation status with significant worsening seen on chest imaging and/or abrupt increase in inflammatory markers”
	3-Apr	<ul style="list-style-type: none"> · Anticoagulation: recommendations for when to use therapeutic dosing · Tocilizumab criteria revised (refractory to steroids and persistent fever added)
	13-Apr	<ul style="list-style-type: none"> · Tocilizumab: criteria revised · Vancomycin: change from AUC-guided dosing to trough with a goal ~15 mg/L for COVID patients
	17-Apr	<ul style="list-style-type: none"> · Azithromycin: removed · Anticoagulation: VTE prevention at discharge
	27-Apr	<ul style="list-style-type: none"> · HCQ: removed
	10-May	<ul style="list-style-type: none"> · Remdesivir: Limited supply through EUA
	11-May	<ul style="list-style-type: none"> · Tocilizumab: criteria revised (excluded patients with MV >72h and repeat doses)
	13-May	Remdesivir: criteria updated
	28-May	Remdesivir: criteria updated
	1-Jun	<ul style="list-style-type: none"> · Anticoagulation Management Guideline published · Remdesivir: criteria updated

	10-Jul	<ul style="list-style-type: none"> · Remdesivir: criteria updated · Steroids: dexamethasone 6 mg daily for up to 10 days in adult patients with new or worsening hypoxemia and requiring supplemental oxygen · Tocilizumab: criteria for use revised (changed dose from 400 mg to 8 mg/kg; max 800 mg x 1 dose; patient on MV excluded if >48h (vs 72h); removed persistent fever and BL lung infiltrates from inclusion and updated lab criteria supportive of cytokine storm)
	29-Jul	Remdesivir: criteria updated
	12-Aug	Remdesivir: criteria updated
	24-Aug	Remdesivir: criteria updated
	10-Sep	Remdesivir: criteria updated
	29-Oct	<ul style="list-style-type: none"> · Remdesivir: criteria updated (opened to allow all ID physicians to order it using a placeholder - placeholder available in Epic on Nov 12th; MV added to exclusion criteria; eGFR5 ULN moved to precautions)
	17-Nov	<ul style="list-style-type: none"> · Bamlanivimab: added · Tocilizumab: removed · Procalcitonin: information about utility in COVID patients · Anticoagulation: drug-drug interaction between dexamethasone and direct oral anticoagulants
	23-Nov	<ul style="list-style-type: none"> · Convalescent plasma: added
	21-Dec	<ul style="list-style-type: none"> · Casirivimab/imdevimab: added · Preferred steroid in pregnancy added · Baricitinib: statement added to consult ID for patients with contraindication to steroids · Ivermectin: statement added that current data still does not support use
2021	15-Feb	<ul style="list-style-type: none"> Tocilizumab: added for patients on HFNC/NIV or <48 h of MV with specific criteria for use and prescribing restricted to ID physicians • Bamlanivimab-etesevimab: added for patients admitted for reasons not related to COVID-19 with prescribing restricted to ID physicians. • COVID-19 Convalescent Plasma: modified criteria for use • Colchicine: recommended against use for treatment of COVID-19
	3-May	<ul style="list-style-type: none"> Dexamethasone: changed to be the preferred steroid in pregnant patients • Tocilizumab: added statement in the precautions section that prescribers should discuss the risk versus benefit with the patients who have latent tuberculosis • Fluvoxamine: recommended against use for treatment of COVID-19 • Vitamin D: added statement that there is insufficient evidence to support use for the prevention/treatment of COVID-19

20-Aug	<ul style="list-style-type: none"> • Baricitinib: added for patients on HFNC/NIV or <48 h of MV with specific criteria for use and prescribing restricted to ID physicians • Tocilizumab: restricted to patients with GFR<15 ml/min/1.73m² or NPO (including medications) OR patient is not receiving any other oral medications • COVID-19 Convalescent Plasma: recommended to keep as treatment option for patients with impaired humoral immunity with no symptom duration cut-off
4-Nov	<ul style="list-style-type: none"> • Fluvoxamine: recommended to modify the EPIC BPA on fluvoxamine to state “insufficient evidence for inpatient treatment of COVID-19” • Steroids: decision made to keep the high-dose steroid recommendation • Subcutaneous casirivimab-imdevimab: added as an alternative route of administration for both postexposure prophylaxis and treatment in both the inpatient and outpatient setting. The IV route was preferred for the treatment of hospitalized patients that have IV access

Pharmacy COVID Management (March 2020 – December 2021)

Operation Support:

- Daily department huddles with our staff to communicate updates
- Ongoing assessment of workflows and assignments; shift pharmacist and technician responsibilities with workflow changes as needed
- Utilized nursing pool to support the heavy medication preparation efforts
- Switched to select premade infusions

Inventory Support:

- Pharmacy tracked inventory of key medications use in COVID management across health system and sharing amongst sites to ensure no shortage occurred
- Site tracking and accountability
- Infectious disease and critical care pharmacists available on call off hours to support pharmacotherapy questions by clinical pharmacists, infectious diseases, critical care and cohort medical staff
- Pharmacy leadership on call 24/7 to support staff
- Clinical pharmacists reviewing/monitoring COVID patients daily in real time to ensure the treatment guidelines are followed consistently among clinicians
- Pharmacists continued to support code blue emergencies during pandemic
- Re-timing medications and de-escalating unnecessary medications to minimize PPE utilization by nursing
- Optimized medication treatments to minimize the need for blood draws
- Converted pharmacist-patient education via phone to preserve PPE

Clinical Support

- Screened and enrolled patients on remdesivir, Baricitinib and various monoclonal antibodies under emergency use authorization
- Developed Reporting Workbench report to identify COVID-19 patients with low procalcitonin values on antibiotics for suspected CAP for prospective audit and feedback
- Continue to support EMR for emergency use authorizations build
- Ongoing guideline review and development, education

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Farzad Daneshvar	Lynn Hassoun	Zahra Mohammed	Kevin Xie
Holly Dean	Hanan Hazemy	Omar Mouabbi	Huijun Yan
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Karyne Deering	Lama Hsaiky	Denise Ossiff	Kathleen Zein



Beaumont