



ANNUAL REPORT

# Department of Pharmacy

Fiscal year 2018



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**Duke Pharmacy**  
Duke University Hospital

**Message from the Chief Pharmacy Officer**

**Paul Bush**



It is my pleasure to present the 2018 Annual Report for the Department of Pharmacy. This annual report highlights the exceptional work that the Duke pharmacists and staff accomplish on a daily basis and the successful initiatives that transform the quality of pharmaceutical care for our patients. These exceptional accomplishments are detailed in the report under the respective service areas and program categories.

It has been a busy and productive year. I will highlight several accomplishments but suggest that you review the entire report to fully understand all that has been accomplished.

The department implemented several programs to support high quality, safe, compliant and efficient care. Duke Specialty Pharmacy continues rapid growth and is now accredited by URAC. The Patient Assistance Program and Prior Authorization services have been expanded to the PDC clinics in Brier Creek and South Durham. The pharmacy technician-based medication history program has been expanded to Preadmission Testing (PAT). ConsortiEX Assuretrak batch compounding software has been implemented in Duke Compounding Pharmacy to enhance safety and efficiency. Patient Controlled Analgesia (PCA) libraries have been redesigned and expanded for both adult and pediatric populations. The DUHS Controlled Substance Diversion Prevention Program was established and is now led by the Director for Controlled Substance Diversion Prevention.

The production capability of the department continued to grow. Monthly, more than 60,000 units of sterile and non-sterile preparations are prepared, more than 70,000 individual unit dose oral solid and liquids are repackaged, and parenteral product prepared by the i.v.STATION robot has grown to over 6,000 units. The department continued investments in resources and technology with the addition of new high-speed unit dose repackaging technology.

Staffing was expanded based on inpatient, outpatient and retail growth. High risk discharge medication review is now provided for LVAD patients, a pharmacist position is now dedicated to the Pediatric Progressive Care Unit, and a pharmacist has been added to expand the antimicrobial stewardship program to pediatrics.

The "Meds to Beds" discharge medication program was recognized with the It Takes a Team Award for the positive impact on care and patient satisfaction. Duke Compounding Pharmacy received the Strength, Hope and Caring Team Award for contribution and services to the patients of the health system.

The 2018 Milton W. Skolaut Leadership Award recognizing the leadership and professional contributions of a past resident of the Duke University Hospital Pharmacy Residency Program was awarded to Stephen F. Eckel, PharmD, MHA, BCPS.

All this work directly supports our mission and vision for pharmacy services at Duke University Hospital. These accomplishments would not be possible without the commitment and personal dedication of the Duke University Hospital pharmacy leadership team and staff members.

I would like to thank each and every member of the staff for their commitment to the profession and dedication to the care of Duke Health patients.

Sincerely,

A handwritten signature in black ink that reads "Paul W. Bush". The signature is written in a cursive, flowing style.

Paul W. Bush, PharmD, MBA, BCPS, FASHP  
Chief Pharmacy Officer

## II. Departmental Overview

### Mission

We deliver exceptional pharmacy services for a healthier tomorrow

### Vision

To be a distinguished global leader in pharmacy care

### Goals

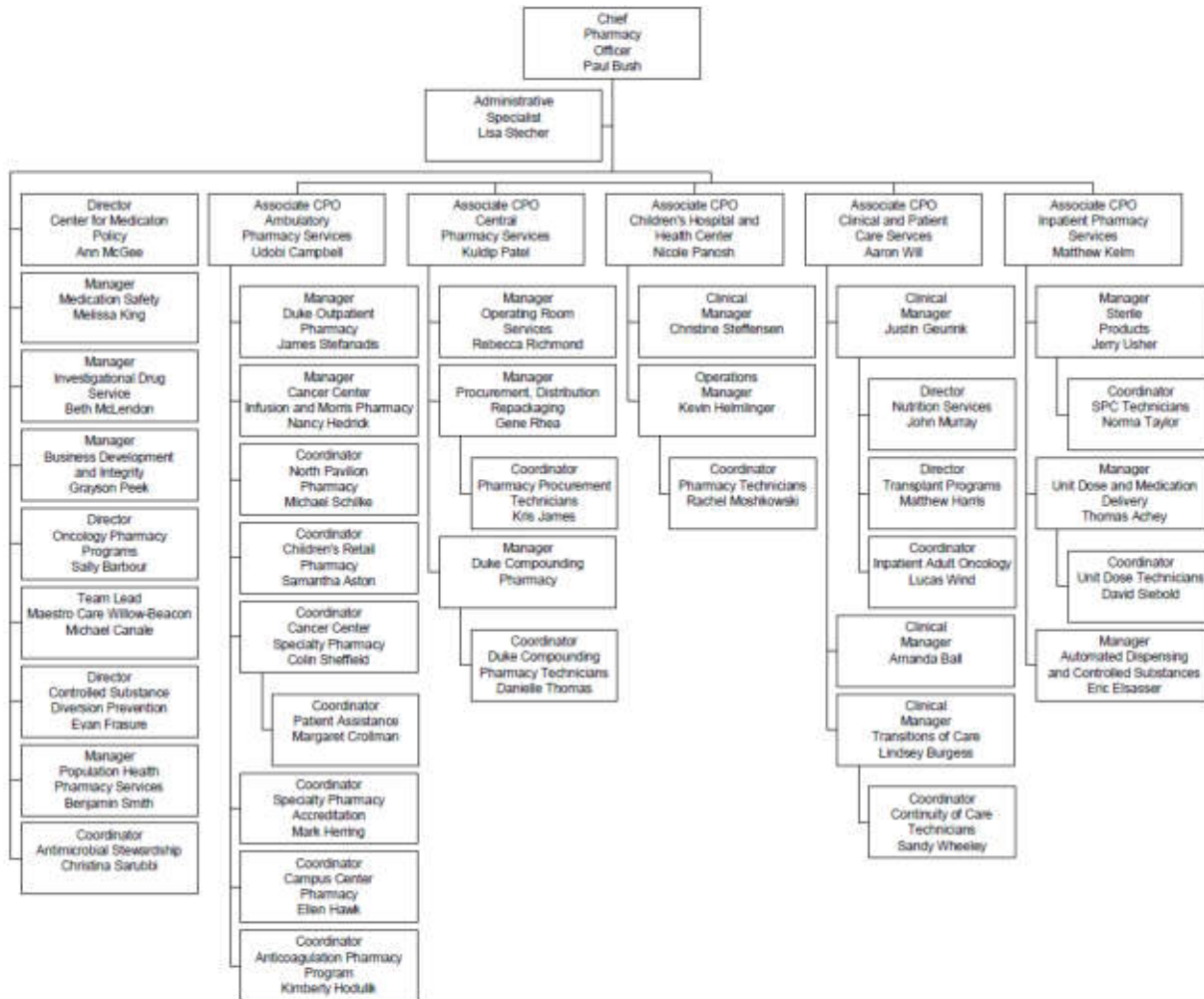
- Improve patient outcomes and provide the highest standards of pharmacy care
- Foster a collaborative approach to medication safety among all disciplines
- Provide an exceptional work environment that will establish Duke as the pharmacy employer of choice
- Integrate new technological developments that improve efficiency and safety
- Promote research to improve patient outcomes and the efficiency of care
- Expand and promote excellence in pharmacy education



### III. Organizational Chart



**Duke Pharmacy**  
Duke University Hospital



## IV. Balanced Scorecard

QUALITY AND PATIENT SAFETY						
Measure	Actual	Target	FYTD Actual	FYTD Target	Freq	
ADM Override Rate (ICU)	4.21%	7.00%	4.53%	7.00%	M	
ADM Override Rate (Non-ICU)	0.23%	1.00%	0.29%	1.00%	M	
Formulary Compliance Post-Verification	99.81%	99.70%	99.80%	99.70%	M	
Medication Turnaround Time - High Priority	8.1	10.0	8.5	10.0	M	
Percent of SRS Events Reported as Good Catches (A - B)	84.6%	40.0%	75.2%	40.0%	M	
Percent of SRS Events Reported with Escalated Harm ( F - I)	0.0%	1.5%	0.2%	1.5%	M	
PATIENT EXPERIENCE						
Measure	Actual	Target	FYTD Actual	FYTD Target	Freq	
HCAHPS: Communication About Medicines	66.5%	64.8%	67.0%	64.8%	M	
Percent Omnicell Stock-outs	0.49%	0.50%	0.47%	0.50%	M	
Retail Pharmacy Customer Satisfaction	91.62%	85.00%	92.90%	85.00%	Q	
FINANCE AND GROWTH						
Measure	Actual	Target	FYTD Actual	FYTD Target	Freq	
Direct Contribution Margin for Outpatient Pharmacy	\$4,084,346	\$2,162,091	\$33,547,593	\$24,353,319	M	
Flex Expense Percent Variance <sup>CSF</sup>	-1.12%	0.00%	0.10%	0.00%	M	
Flex FTE Percent Variance	1.51%	0.00%	0.00%	0.00%	M	
Flex Labor Expense Percent Variance	-1.55%	0.00%	-3.51%	0.00%	M	
Inpatient Drug Expense per Patient Day	\$228	\$240	\$228	\$240	Q	
Pharmaceutical Utilization Management Program (PUMP) Program Savings	\$1,075,819	\$1,000,000	\$4,927,012	\$4,000,000	Q	
PEOPLE AND THE ENVIRONMENT						
Measure	Actual	Target	FYTD Actual	FYTD Target	Freq	
Percent Terminations Annualized: Overall <sup>CSF</sup>	14.85%	16.00%	14.85%	16.00%	M	



**Duke Pharmacy**  
Duke University Hospital

## **V. Overview of Pharmacy Services: Scope and Accomplishments**

Duke University Hospital (DUH) is an academic learning center and serves as the flagship for Duke University Health System. A tertiary and quaternary care hospital, the 957-bed DUH is consistently rated as one of the top hospitals in the United States. It offers comprehensive diagnostic and therapeutic facilities, including: a regional Level 1 emergency trauma center; multiple surgical platforms including a major surgery suite containing 50 operating rooms; an endo-surgery center; an ambulatory surgery center with nine operating rooms; an eye center with five operating rooms; and extensive diagnostic and interventional radiology facilities. DUH also functions as a research facility where innovations in medicine are consistently achieved and implemented. It is a teaching hospital for students of medicine, pharmacy, nursing, and the allied health sciences. The Department of Pharmacy provides a broad range of advanced pharmacy services. The mission of the Department of Pharmacy is to deliver exceptional pharmacy services for a healthier tomorrow.

To achieve this mission, the department employs multiple pharmacy practice models:

- Team and location-based pharmacotherapy specialist pharmacists deployed to the inpatient setting and outpatient clinics
- Specialized pharmacy services operating from discrete areas (e.g. Ambulatory pharmacies, Infusion pharmacies, Operating Room pharmacies, Investigational Drug Services, Production and Packaging and Sterile Products);
- Targeted patient care services (e.g. pain management, nutrition support, anticoagulation, transplantation, pharmacokinetic dosing consults, population health management); and
- Program-based services (e.g., performance improvement, medication safety, medication stewardship, antimicrobial stewardship, drug information and support to medical staff committees including the DUHS Pharmacy and Medication Management, DUHS Medication Safety Committee, DUH Pharmacy and Therapeutics Committee, DUH Medication Safety Committee, DUH Patient Safety and Clinical Quality Committee, Duke Medicine Institutional Review Committees, DUH Infection Control Committee and DUH Ethics Committee).

### **Services Provided to Duke Patients**

- Admission
  - Assure a complete and accurate medication history and reconcile prescribed medication
  - Develop, document and initiate the medication-related components of the patient care plan
- Services
  - Review and approve medication orders before the first dose is administered
  - Review patient-specific medication profiles on a daily basis
  - Monitor the patient's response to medication therapy and adjust medication doses based on response or pharmacokinetic characteristics of the medication
  - Participate in the nutritional support of patients working collaboratively with team members to initiate parenteral nutrition and adjust formulations based on patient response
  - Monitor critically important medication serum concentrations and other clinically important laboratory analyses
  - Participate in patient care rounds
  - Participate in rapid response and resuscitation
- Discharge (Transition)
  - Educate patients about their medication, and establish processes to ensure complete and accurate prescriptions and medication-related continuity of care for discharged patients
  - Provide medications for home use

## Ambulatory Pharmacy Services

Udobi Campbell



### Overview of services

The following listing represents the key areas in the Ambulatory Pharmacy Division at Duke University Hospital, and the primary patient population served by each area:

- Children's Health Center Retail Pharmacy
  - Pediatric patients, Duke employees, Discharged patients
- Duke Cancer Center Specialty Retail Pharmacy
  - Oncology, Transplant, Hepatology, MS, Adult and Peds Rheumatology, Osteoporosis, HIV, CF, Hyperlipidemia, IBD
- Patient Assistance Programs
  - Patient prescription enrollment for Duke Clinics
  - IV Drug Replacement for Duke Specialty Infusion Center patients
- Duke Cancer Center Infusion Pharmacy
  - Oncology Treatment Center, Oncology Clinics, Radiation Oncology
- Duke Outpatient Retail Pharmacy
  - Duke Clinic patients, Duke employees, Duke University Students
- Morris Pharmacy
  - Non-Oncology Infusion Center, Duke Hospital Based Clinics
- North Pavilion Pharmacy
  - Ambulatory Surgery Center, Outpatient Bone Marrow Transplant
- Duke Campus Center Pharmacy
  - Duke Student Health & Wellness
- Clinic Pharmacists
  - Oncology Clinics
    - Breast, Brain Tumor, HOA, GU, Sarcoma, BMT, Thoracic, GI
    - Oncology Treatment Center
  - Duke Outpatient Clinic
  - Duke Family Medicine Clinic
  - Anticoagulation Clinic
  - Infectious Disease Clinic
  - Abdominal Transplant Clinic
  - Thoracic Transplant Clinic
  - Neurology Clinic
  - Hepatology Clinic
  - Rheumatology Clinics
  - Endocrine Clinic
  - Inflammatory Bowel Disease

### Mission

- Provide excellent clinical patient care in accordance with accepted best practices
- Maintain fiscal responsibility over medication use
- Maintain compliance with all pertinent regulatory requirements
- Expand services in response to changing health care needs and the shift towards ambulatory care



## **Goals**

- To foster an environment for responsible medication use
- To develop a business model for self-sustaining clinical pharmacy services within Hospital Based Clinics
- To ensure continuity of care as patients transition from inpatient to outpatient and to strengthen the collaboration between inpatient and outpatient pharmacy services
- To optimize the use of technology and automation to support pharmacy services
- To support pharmacy practice and clinical research, residency training and student clerkships
- To serve as the preferred retail pharmacy for all Duke University Hospital patients and employees
- To positively contribute to the direct contribution margin for Duke University Hospital
- To ensure that pharmacists will be available, visible, and serve as the primary resource for medication related issues across Duke University Hospital Outpatient Areas

## **Locations and Hours of Operation**

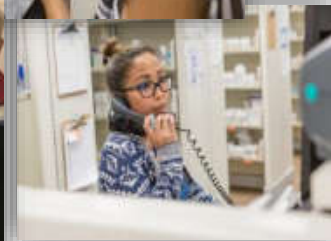
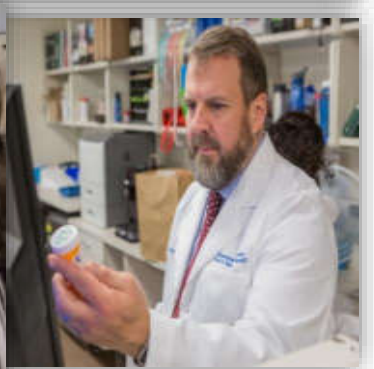
- CHC Retail Pharmacy: 8:30 AM - 8:00 PM M-F; 8:30 AM -4:30 PM Sat & Sun
- Duke Cancer Center Specialty Pharmacy: 8:30 AM - 6:00 PM M-F; 24/7 On-Call
- Duke Cancer Center Infusion Pharmacy: 7:30 AM - 6:30 PM M-F
- Duke Outpatient Retail Pharmacy (OPD): 8:30 AM - 6:00 PM M-F
- Morris Pharmacy: 7:30 AM - 4:00 PM M-F
- North Pavilion Pharmacy: 6:30 AM - 5:00 PM M-F; 7:00 AM – 11:00 AM Sat & Sun
- Duke Campus Center Pharmacy 9:00 AM – 5:30 PM M,W,Th,F; 9:00 AM – 7 PM Tuesdays

## **Major Accomplishments**

- Exceeded goal for enhancing billing opportunities during patient encounters with ambulatory pharmacist providers
- Made significant financial contributions to the Duke University Hospital's bottom-line through the retail pharmacy programs
- Recognized on numerous occasions for good safety catches during medication verification, particularly, in the Cancer Center Infusion Pharmacy
- Actively involved in the design and creation of the new North Pavilion Pharmacy
- Triumphed in the collective ability to maintain service levels for retail pharmacy customers in the face of a devastating fire incident
- Expanded Patient Assistance Program and Prior Authorization services to the PDC clinics in Brier Creek and South Durham
- Successfully attained URAC accreditation effective October 2017
- Obtained pharmacy permits in 8 states which enables shipping of medications to Duke patients residing in those states
- Standardized Maestro Care documentation for ambulatory pharmacist clinicians
- Received hospital leadership support to expand clinical and specialty pharmacy services to the IBD and Peds Rheumatology clinics
- Successfully transition the Pharmacist-In-Charge role for CHC retail pharmacy without impact to patient services
- Winner of the It Takes A Team award for the impact of the Meds-to-Beds Program at Duke University Hospital
- Successfully integrated UNC immersion students into ambulatory clinic services

*Successfully attained  
URAC accreditation*

**Team Members**



## Central Pharmacy Services

Kuldip R. Patel



### Overview of services

Central Pharmacy Services is composed of three separate operating departments inclusive of the Duke Compounding Pharmacy, Perioperative Pharmacy Services, and Pharmacy Procurement, Repackaging, and Distribution.

- *The Duke Compounding Pharmacy* prepares Compounded Sterile Preparations (CSPs) in compliance with the United States Pharmacopeia – National Formulary compounding standards to support DUH and DUHS Pharmacies and Clinics. Duke Compounding Pharmacy supports the organizational mission to support patient safety by preparing medications in ready to use medication packages, and the research mission of DUH by supporting specialized pharmaceutical needs in collaboration with investigational drug services.
- *Perioperative Pharmacy* serves pre-, intra-, and postoperative patients at DUH by providing highly specialized clinical and technical pharmacy services to enhance surgery outcomes. The staff support this goal by collaborating with surgeons, anesthesiologists, nurse anesthetists, nurses, and other ancillary staff to deliver patient centered care, by facilitating safe and appropriate use of medications.
- *Pharmacy Procurement, Repackaging, and Distribution* services provide logistical support by being responsible for purchasing and distributing medications to DUH and DUHS Pharmacies and Clinics. Annual drug expense for DUH Pharmacies in 2016 was over \$200 million. The department uses highly innovative inventory management systems and high-speed solid and liquid packaging technology to organize and manage the supply chain efficiently.

### Locations and Hours of Operation

The Duke Compounding Pharmacy operates 5:00 AM – 10:30 PM (M-F). Designated pharmacists and technicians are available for after-hours emergency support for patient care needs. The pharmacy is located in Duke South, room 0010, Davison Building.

Perioperative Pharmacy services operate two shifts (6:00 am – 10:30 pm) via the decentralized pharmacy satellites located on the 3<sup>rd</sup> Floor in the Duke North and Duke Medicine Pavilion. The Eye Center Perioperative Pharmacy services are available 6:00 AM – 3:15 PM (M-F).

The Pharmacy Storeroom (procurement) is open 24 hours and staffed from 5:00 AM – 11:30 PM (M-F) and 6:30 AM – 3:00 PM (Weekends).

### Major Accomplishments

- Duke Compounding Pharmacy received the “Strength, Hope, and Caring” Team Award for their contribution and services to the patients of DUHS
- Completed a pilot of the safe labeling system (Codonics) in 13 operating rooms.
- Submitted and received approval for a new \$10 million compounding facility that will become an FDA registered, 503B outsourcing pharmacy.
- Implemented barcode scanning of pediatric/adult infusions and adult antibiotics in the operating rooms.

*DUH Compounding Facility prepared over 60,000 units of sterile and non-sterile preparations every month*

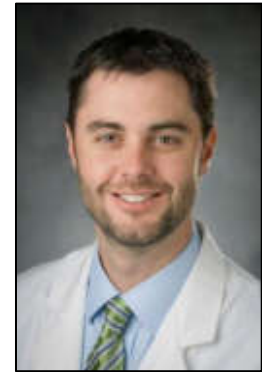
- Implemented ConsortiEX Assuretrak, a new batch compounding software in the Duke Compounding Pharmacy.
- Initiated a LEAN project to optimize Duke Compounding Pharmacy's supply chain and inventory management.
- Completed several "rapid improvement events" with performance services to optimize processes in Duke Compounding Pharmacy.
- Successfully worked with performance services and finance to transition DCF to a flex department.
- Implemented new policy on narcotics reconciliation and auditing procedures in perioperative services.
- Implemented new high-speed unit dose repackaging technology and an overarching repackaging Policy and Procedures.
- Established a new temperature monitoring policy for refrigerators and pharmacy cleanrooms at all DUH Pharmacies.

*DUH Repackaging program prepared over **70,000** individual unit dose oral solids and liquids every month*

### **Team Members**

The Central Pharmacy Services team delivers exceptional services to our internal and external customers utilizing the knowledge, skills, and experience of engaged managers, coordinators, pharmacists, and pharmacy technicians. Staff members actively support the department's mission by participating in clinical quality and process improvement efforts, promoting and fostering a positive work culture, and making the best use of medications to produce positive patient outcomes and customer experiences.





**Overview of services**

The Clinical and Patient Care Services Division (CPCS) comprises all adult inpatient medical and surgical areas and their related specialty areas.

- The pharmacy practice model employed within CPCS is an integrated model consisting of team-based services (e.g. nutrition support, anticoagulation, transplantation), and unit-based services for all inpatient care areas.
- Clinical services include medication monitoring programs and pharmacist protocols, provider order verification, targeted patient education, emergency response, and verification of patient medication histories.
- Clinical pharmacists participate in daily patient care rounds for most medical and selected surgical services.
- Pharmacists maintain competency to recognize and manage the pharmacotherapy needs of adult and geriatric patients.
- Pharmacists serve as primary and team-based preceptors for the University of North Carolina Eshelman (UNC) and Campbell University Schools of Pharmacy and for our Duke University Hospital Pharmacy Residency Programs.
- Clinical services, including clinical monitoring and order verification, operate from the Medication Management Center on evenings, overnights, weekends, and holidays.
- Clinical pharmacists also participate actively on departmental, hospital, and health-system committees involving quality improvement initiatives, informatics, medication policy, clinical research, and medication safety.

**Availability:**

Pharmacists provide services during day shift, Monday through Friday in direct patient care areas, and through order verification and clinical services in the Medication Management Center during weekday evenings, weekends, holidays, and overnight.

**Major Accomplishments**

- Added additional pharmacy support for growth through additional night shift resources.
- Expanded discharge pharmacy medication list review for high risk patients.
- Continued work of CPCS Work Culture Committee.
- Implementation of clinical scoring tool in the electronic medical record.
- Developed Pharmacy Handoff Tool in the electronic medical record
- Implementation of high risk discharge medication review in LVAD population.
- Identified and added additional pharmacist competencies in CAR-T therapy, medication allergy desensitization and dofetilide and sotalol.
- Implemented desensitization policy and order sets.
- Continued Quality Improvement assessments for our clinical programs.
- Provided support to the profession through publications, posters, and presentations.

*High Risk Discharge Medication List Review in General Medicine and Surgery*

*Developed CAR-T protocols and order sets*

- Staff recognized as outstanding preceptors by the Duke University Hospital Pharmacy Residency Programs and by the Campbell University and UNC Eshelman Schools of Pharmacy.
- Supported staff member attendance at regional and national conferences.

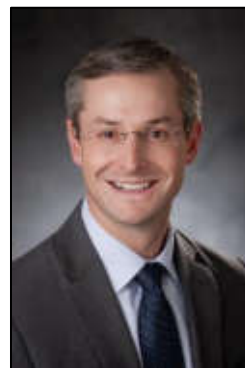
### **Our Team**

The CPCS team consists of well-trained, highly-committed pharmacists who work collaboratively with internal and external customers to meet medication needs of adult patients at Duke University Hospital. Many staff members have greater than 5 years of experience at Duke, and many are trained to work in their specialty area as well as other areas within the division. Many pharmacists have completed one or two residency programs, and are board certified in their practice area. Several pharmacists hold full-time or adjunct faculty appointments at the UNC Eshelman School of Pharmacy and/or the Campbell University College of Pharmacy and Health Sciences. CPCS staff members also actively support the department's mission through ongoing participation in quality, safety, and process improvement efforts, research activities and resident and student education. Many CPCS staff are active members or hold leadership roles in state and national pharmacy organizations. Others have made contributions to the profession through publications and presentations at both local and national organizational meetings.



## Inpatient Operations

## Matthew Kelm



### Overview of services

The Department of Pharmacy Inpatient Operations Division provides an array of services which support care of patients in both the inpatient and outpatient arenas. These services include:

- Sterile preparation and distribution of both hazardous and non-hazardous medications in a USP 797-compliant environment
- Unit dose medication distribution utilizing a hybrid model which involves the use of patient care unit-based automated dispensing cabinets (ADC), unit dose cart-fill, and first dose dispensing
- Comprehensive ADC management
- Controlled substance management
- Code cart procurement, assembly, distribution and maintenance
- Overnight medication preparation, verification and distribution

### Locations and Availability:

Duke University Hospital, zero level, room 0415 and Duke Medicine Pavilion, room 6W60. Services that are provided by the Inpatient Operations Division are available 24 hours a day, 7 days a week.

### Methods of Drug Distribution

Our goal is to have the medication available at the patient care unit before the care nurse needs it for a patient. To meet this goal, we use different mechanisms to transfer medications from central pharmacy to the patient care unit. The most common methods, however, involve the use of highly motivated pharmacy technicians, who make routine deliveries, and STAT technicians who deliver urgent and emergent medications. The pneumatic tube system is another means by which medications are delivered to the patient care unit.

### Use of Technology to Enhance Safety and Operational Efficiency

Several technology systems and software are utilized daily by staff members to accomplish the division tasks. Some of these key systems include:

- Automated compounding devices primarily used to support parenteral nutritional admixtures, eliminating the need for multiple manipulations.
- Dispense Prep and Dispense Check barcode scanning solution which complements the work of both the technician and the pharmacist by providing added verification that drug product selection is accurate.
- Automated dispensing cabinets which provide secure storage of medications while supporting timely availability of medications to the nurse following verification by a pharmacist.
- Controlled substance monitoring software used for tracking movement of scheduled medications and report generation for monitoring and quality assurance.
- Targeted barcode verification of specific high alert medications prior to dispensing or loading into an automated dispensing cabinet
- The i.v.STATION robot assures accurate preparation of sterile products through the use of gravimetric technology. Currently utilized for non-patient-specific preparations.
- Carousel technology is used for drug storage and dispensing. Includes guiding light and barcode technology which help assure accurate medication dispensing practices.
- PharmTrac.PD technology is used for tracking the location of medications once dispensed from the central pharmacy.

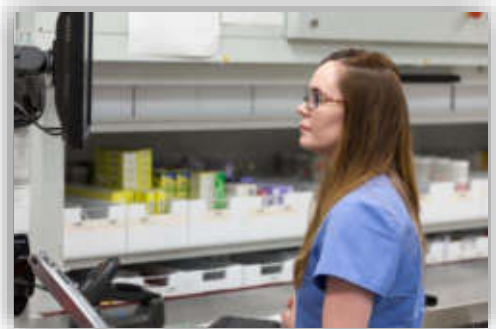
## **Major Accomplishments**

- Improvement in robotic dose production to over 6000 doses monthly
- Significant contributions to the Pharmaceutical Utilization Management Program
- Partnership with Omnicell to install 12 Omnicell XT automated dispensing cabinets as well as partnership to develop stock location optimization algorithm to maximize pharmacy and nursing efficiency
- Digitizing critical inventory reporting to mitigate and increase detection of potential drug shortages
- Support for pharmacists with employee vaccination initiative.
- Implemented carousel optimization and dashboards in the central pharmacy
- Developed standard operating procedure for recycling of compounded sterile products
- Significantly reduced on-hand non-formulary inventory
- Expanded extended stability data for several compounded sterile products
- Executed shortage mitigation strategies for IV fluid and critical medications

*Digitized critical inventory reporting and optimized carousel and dashboards*

## **Our Team**

The Inpatient Operations team is made up of well-trained, highly committed pharmacists and technicians who work collaboratively with internal and external customers to meet the needs of patients at Duke Hospital. Many of the staff members have greater than 5 years of experience at Duke and are cross-trained to work across different areas of the division. Staff members actively support the department's mission through ongoing participation in quality and process improvement efforts, resident and student education, as well as, research activities.







### **Overview of services**

The Department of Pharmacy, Women's and Children's Division provides clinical and distributive services which support the care of pediatric patients and obstetrics-gynecology patients in the inpatient setting (~240 licensed beds). Distributive services are supported on the inpatient side by the 5th floor pediatric satellite pharmacy. Duke Children's Health Center ambulatory clinics are supported by a pediatric infusion center pharmacy located on the 4th floor of the Health Center.

### **Inpatient pharmacy services**

- Practice models within the pediatric division are both integrated as well as specialized. Clinical pharmacists participate in daily patient care rounds to develop individual pharmacotherapy plans, provide medication and dosage recommendations/adjustments, pharmacokinetic evaluation and dosing, parenteral nutrition management, code and rapid response participation, education, research and publication.
- Specialized practice areas include pediatric bone marrow transplant (16 beds), pediatric intensive care (16 beds), pediatric cardiac intensive care (13 beds), and neonatal intensive care (60 beds) units.
- General pediatric pharmacists care for patients on several services, including general pediatrics, hematology-oncology, cardiology, neurology, gastroenterology, solid organ transplant and allergy/immunology.
- The 5th floor pediatric satellite pharmacy supports the medication needs of these patient populations in collaboration with the Inpatient Operations Division.

### **Ambulatory pharmacy services**

- The Children's Health Center Pharmacy is a sterile compounding facility located on the 4th floor of the Children's Health Center.
- Both low- and medium-risk doses of hazardous and non-hazardous compounded sterile preparations are provided to ambulatory pediatric patients.
- Clinical pharmacists, in collaboration with providers, monitor appropriateness of drugs, dosage, frequency, and adherence to protocols. Additionally, clinical pharmacists and technicians support investigational drug use.

### **Mission**

To deliver optimal patient- and family-centered pharmaceutical care through evidence-based practice.

### **Goals**

- To optimize medication therapy
- To prevent adverse effects
- To continuously improve medication safety for our patients and families
- To be a leader in best practices
- To be a leader in innovative research that contributes to prevention and effective treatment of childhood diseases
- To contribute to the overall body of knowledge

## **Availability**

Duke Children's inpatient pharmacy services are provided 24 hours per day, 7 days per week through the clinical and distributive staff and satellite pharmacy. The Pediatric Pharmacy division collaborates with Inpatient Operations to provide comprehensive services. The Children's Health Center Ambulatory Pharmacy operates from 8:00 AM to 5:00 PM, Monday through Friday. Weekend coverage is provided through inpatient services.

## **Major Accomplishments**

- Monthly pharmacist-led pediatric pharmacotherapy presentations to enhance staff competency
- Workgroup initiated to update Alaris pumps with oncology medications
- Pediatric PCA redesign
  - Transition to hourly limits
  - Standardization of available drug concentrations
- Implementation of electronic documentation and handoff
  - Total parenteral nutrition
  - Ketogenic diet medications
- Bed Tower Addition - Pediatric Pharmacy Design Planning
- Technician Shift Descriptions created
- Updated technician Compounding SOP
- Addition of dedicated Pediatric Progressive Care Unit pharmacist
- Standardization:
  - Calcium gluconate IV concentration and preparation standardization
  - Ketogenic diet medication ordering and preparation
  - Updated antibiotic lock policy with additional pediatric antibiotics
    - Standardization of pediatric antibiotic lock orders in EHR
  - Antibiotic dosing in pediatric emergency department
  - Dosing units for pediatric insulin infusion orders
  - Rapid response sepsis protocol with standard antibiotic workflow
  - Opioid infusion Alaris guardrails tightened
- Continued weekly Pharmacy and Nursing rounds
- Pharmacist publications in the American Journal of Health-System Pharmacy and the Journal of Pediatric Pharmacology and Therapeutics
- Pharmacist poster presentations at the Society of Critical Care Medicine Annual Congress and the American Society of Health-System Pharmacists Midyear Clinical Meeting
- Two preceptor of the year awards
- Process mapping for new precision medicine agents such as tisagenlecleucel (Kymriah®)
- High-cost drug approval policy implementation
  - Standardization of financial clearance process
- Continued Beacon protocol review
- Initiation of Early Immersion program
- Continued weekly Pediatric Pharmacy Safety Huddles
- Implementation of Pediatric IV Huddles with Sterile Processing Cleanroom staff

*Continued Pediatric Pharmacy Safety Huddles and implemented Pediatric IV Huddles*

*Redesigned pediatric PCA program*

## **Our Team**

The pediatrics team is comprised of well-trained, highly committed pharmacists and technicians who collaborate with medical and nursing staff and colleagues to optimize medication use among a high-risk, vulnerable patient population. Many staff members are tenured and cross-trained to function and support multiple sub-specialty practice areas. A number of pharmacists have completed one or two residencies. The majority of pediatric pharmacists are board certified in pharmacotherapy, oncology and/or pediatrics. Staff members actively support the department's mission through ongoing participation in quality and process improvement efforts, resident and student education, as well as, research activities. Pediatric pharmacists are frequently recognized for their dedication to patient safety through Good Catch Awards. Two pediatric pharmacists were awarded preceptor of the year awards.

## **Committee Memberships**

Institutional Review Boards	Children's Pharmacy & Therapeutics Committee
Children's Core Safety Team	DUH Medication Safety Committee
Pharmacy Core Safety Team	DUHS Anticoagulation Task Force
Pediatric ADE Committee	Formulary & Informatics Subcommittee
Pediatric Chemotherapy Safety Committee	Pharmacy Oncology Committee
Women's Core Safety Committee	Pediatric Sedation Committee
ICN Executive Committee	Pediatric Nutrition Support Committee
ICN Morbidity and Mortality Committee	PICU/PCICU Morbidity and Mortality Committee
DUHS Smart Pump Quality Oversight Committee	PICU/PCICU Patient Safety and Clinical Quality Committee
ICU/Anesthesia Formulary Evaluation Team	Oncology Formulary Evaluation Team
Pediatric Pain Committee	Code/RRT/Performance Improvement Committee
Pediatric Critical Care Medicine Leadership Committee	Pediatric Emergency Response Committee (PERC)
Work Culture Committee	Employee Activities Committee
ICN Medication Safety Alliance	Residency Advisory Committees
Pediatric Preceptor Development Committee	DUH Preceptor Development Committee
Nephrotoxic Induced Acute Kidney Injury (NAKI-SPS)	Venous Thrombosis Emboli Prevention committee (VTE-SPS)



 **Good Catch** 





### Overview of services

The administrative services team strives to improve quality and perform essential administrative functions within the department of pharmacy at Duke University Hospital. Services provided include:

- Perform monthly medication area inspections to improve patient safety and regulatory compliance
- Conduct routine and random environmental and personnel testing for the 11 sterile preparation areas at Duke University Hospital
- Oversight of the DUHS Controlled Substance Diversion Prevention program
- Human resource and payroll processes
- Pharmacy administration office management
- Coordination of educational efforts including the pharmacy resident teaching certificate program, Joint accreditation/ACPE activities, out of state student rotation requests, and shadowing opportunities
- Manage the departmental intranet and internet sites. Maintaining up to date information and responding to various inquiries
- Administrative oversight for smart pump drug libraries, Joint Commission readiness, and performance metric tracking

### Our Team

The administrative services team has staff in various areas and includes:

- Two (2) Pharmacy Administration office staff including an administrative assistant and HR Coordinator
- Two (2) Quality Assurance technicians – Sterile Preparations and Medication Area Inspector
- One (1) Director – Controlled Substance Diversion Prevention

Our team highlights advanced pharmacy technician roles available within the Department of Pharmacy at Duke. The Pharmacy Administration office staff serve the department of pharmacy through numerous administrative functions.

### Availability

Our office-based team is available during regular business hours and can be reached by calling the Pharmacy Administration office during normal business hours at 681-2414.

### Major Accomplishments

- Enhanced the DUHS Controlled Substance Diversion Prevention program with a dedicated Director for Controlled Substance Diversion Prevention leading this effort
- Increased awareness of controlled substance regulations throughout the organization
- Implementation of annual staff education around controlled substance diversion prevention
- Alignment of and increased safety for PCA and epidural orders within Maestro care and smart pumps across DUHS
- Establishment of Diversion Prevention Dashboard which includes each hospital entity
- Incorporating introduction and overview with member of the pharmacy Senior Management Group (SMG) into new employee orientation.

*Enhanced the DUHS  
Controlled Substance  
Diversion Prevention  
program*



### Overview of services

The Business Development and Integrity team provides oversight and ensures the integrity of business and financial considerations of the department including accounting, revenue management and the 340B Drug Discount Program. The team is also responsible for identifying and coordinating implementation of growth opportunities across the Department of Pharmacy in alignment with the overall objectives of the organization. Specific functions of the Business Development and Integrity team include:

- Managing the daily business and financial functions of the department
- Developing business plans to support recognized growth opportunities
- Overseeing inpatient, outpatient and retail pharmacy revenue and ensuring adequate record keeping, receipt and reporting of revenue
- Coordinating, in collaboration with DUH Finance, completion of the annual operating budget process
- Collaborating with accounts payable on purchasing needs and vendor invoicing/payments, conducting account reconciliation as needed
- Overseeing the process for month end financial closure for the department
- Preparing reports to evaluate productivity, expenditures and profitability
- Maintaining working knowledge of applicable federal, state, and local laws and regulations governing the 340B program and revenue management
- Developing and maintaining the organization's policies and procedures related to the 340B program, Maestro Care and retail pharmacy revenue management processes, including price file integrity
- Maintaining a quality assurance audit plan and performing audits on a periodic basis to ensure compliance with current 340B program regulations
- Planning, developing, organizing, implementing, directing, enforcing, and evaluating the organization's compliance and continuous effectiveness of the 340B program
- Monitoring and managing automated split billing software and Maestro Care/QS1 to ensure proper matching of NDCs and working closely with the software vendors and DHTS team members to resolve related problems
- Maintaining accurate and complete records and documentation related to the 340B program and MC Pharmacy revenue and price files
- Providing timely and accurate reporting or analysis of compliance with 340B program requirements and drug price file integrity

### Our Team

The Business Development and Integrity team was formed in November 2016 and includes:

- One (1) Manager - Business Development and Integrity
- One (1) Accountant
- One (1) Accounting Clerk
- Two (2) Revenue Management Pharmacy Technicians
- One (1) 340B Specialist Pharmacy Technician

### **Availability**

Our team is available during normal business hours by calling the Pharmacy Administration Office at 919-681-2414.

### **Major Accomplishments**

Coordinated business plan development for pharmacies associated with the North Pavilion renovation and expansion

- Initiated split-billing software migration from Verity AutoSplit to Verity V340B
- Convened monthly meetings of the DUH 340B Oversight Committee
- Conducted quarterly comprehensive 340B self-audits
- Completed midyear and year-end physical inventory analyses
- Completed annual Maestro Care pharmaceutical price update and validation
- Assumed responsibility for monthly QS/1 price updates and validation
- Convened biweekly meetings of the mixed-use WAC minimization work group

*Coordinated  
business plan  
development for  
pharmacies  
associated with the  
North Pavilion  
renovation and  
expansion*





**Overview of services**

The Center for Medication Policy (CMP) is a team within the Department of Pharmacy that collaborates with healthcare professionals across the health system to promote safe, effective and fiscally responsible use of medications. The CMP integrates its activities with the clinical, safety, informatics, administrative, and drug distribution systems of the Department to optimize medication use for patients.

Services include:

- Respond to patient specific and general inquiries regarding all aspects of medication use.
- Provide accurate, timely, unbiased evidence based drug information in support of rational medication therapy and policy.
- Provide support to the Pharmacy & Medication Management Committee, Pharmacy & Therapeutics Committee (P&T), and the respective subcommittees (Formulary Evaluation Teams, Formulary & Informatics Subcommittee, and Medication Safety Subcommittee).
- Participate in formulary management activities. Support the dissemination of drug information and medication policy updates via the Center for Medication Policy webpage, electronic newsletters, and staff meetings.
- Participate and support the conduct of medication use evaluations (MUEs). Query the MUE Universe tool to collect retrospective and real time medication utilization data for analysis for a variety of stake holders including P&T, Pharmaceutical Utilization Management Process (PUMP) and Value Analysis Team (VAT). This is one way in which adherence to formulary policies can be assessed.
- Monitor and assist with the implementation of drug shortage action plans.
- Track and develop medication specific Risk Evaluation and Mitigation Strategies (REMS) programs.
- Review FDA safety communications to facilitate changes to formulary policies and informatics systems.
- Review and track departmental drug information reference subscriptions.
- Provide a learning environment in which pharmacy students and residents can acquire or enhance skills necessary to research and respond to medication related queries and review and develop formulary related policies.
- Train a Drug Information Resident in collaboration with GlaxoSmithKline, that provides a learning environment for the resident to acquire and develop skills integral to the practice of hospital based drug information and med use policy.

**Major Accomplishments**

- Lead formulary review through a health system process. In FY18, the Committees completed formulary reviews for over 50 medications.
- Medication Stewardship pharmacist coordinated the Pharmacy Utilization Management Program (PUMP). In FY18, 25 operational, procurement, and utilization initiatives were actively tracked.
- In FY18, 4 therapeutic interchange programs were implemented as a means to guide the use of formulary medications.

*More than 35 drug shortage action plans implemented*



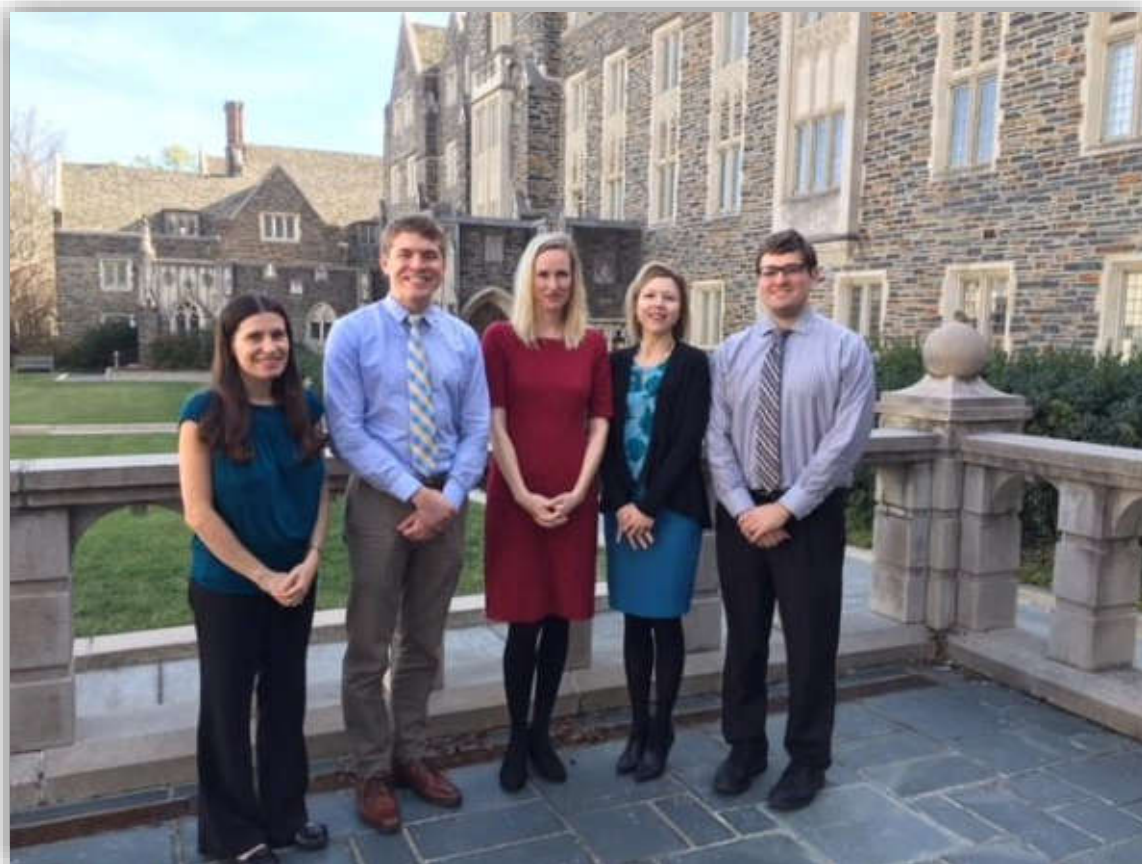
- Supported the drug shortage policy by participating in the development and implementation of drug shortage action plans.
- Maintained an up-to-date Center for Medication Policy website that provides current medication formulary and policy information. This website is accessible across DUHS.
- Supported the 9 Formulary Evaluation Teams (FET) to meet the desired health system goals as outlined in the FET charter.
- Collaborated with pharmacists and technicians from IT, operations, procurement and business finance to devise processes for implementing formulary changes and policy updates into IT systems in a timely manner.
- Monitored the volume of medication alerts firing via Maestro Care. Actions approved at PMMC to reduce non-essential alerts.
- Monitored non-formulary medication use and made suggestions for change to reduce overall utilization. Contributed to achieving the balanced score card performance target for non-formulary medication use.
- Collaborated with the Pharmacy Education Committee to develop research project ideas for 11 UNC students to complete research projects at Duke.
- Manage review of departmental policies.
- Collaborated with an Endocrinologist to apply and receive a Duke Institute for Health Innovation (DIHI) grant for a project aimed at identifying and improving therapy for patients at risk for developing steroid induced hyperglycemia.
- Continuing to advance collaborative PDC Outcomes Research Team (PORT) project aimed at developing reporting tools to identify opportunities for implementing pharmacogenetic testing.

*Supported the formulary review of 50 medications and completion of 15 MUEs*

*Precepted nine P4 pharmacy students, five pharmacy residents, and 12 P2 and P3 immersion students on rotations*

### **Our Team:**

The CMP team is made up of well trained, highly-committed pharmacists who work collaboratively with those in the Department and throughout DUHS to help in the review and development of processes that help meet the medication needs of patients. All team members have completed one or two residency training programs. Some team members are Board Certified Pharmacotherapy Specialists. All support the department's mission through ongoing participation in quality and process improvement efforts, resident education, and research activities. Team members are members of state and national pharmacy organizations. The team makes contributions to the profession through internal and external publications and presentations.



**References:**

The CMP maintains an up-to-date core library of medical, pharmacology, and pharmacy practice texts and electronic references. Drug information references are evaluated as needed for suitability and need for purchase or renewal.

**Locations and Hours of Operation**

The CMP is located in the 0 level of Duke North Hospital across from North Central Pharmacy, and is staffed Monday through Friday from 8 AM to 5 PM. After hours consultations are provided by an on-call system (pager 919-970-8110). Non-emergency requests may be left on voicemail (919-684-5125) or shared via email.



### Overview of services

The Department of Pharmacy Investigational Drug Services supports clinical research involving study drugs for Duke Investigators and supports safety and care for subjects in both the inpatient and outpatient care areas as well as Duke Early Phase Research Unit for Phase I Studies. The Investigational Drug Services integrates its activities with the clinical, safety, informatics, administrative, and drug distribution systems of the Department to optimize study drug therapy for patients.

These services include:

- Creation of study drug orders in Maestro Care
- Integrity of blinding
- Regulatory compliance
- Prevention of errors involving study drugs
- Dispensing of investigational products in a timely manner
- Contribution to study design and data integrity
- Randomization and study drug accountability
- Aseptic preparation of IV's in a USP 797-compliant environment and distribution of both hazardous and non-hazardous study drugs
- Procurement of drugs and supplies for studies as needed
- Preparation of Drug Data Sheets for study drugs used for inpatients
- In-services and education for inpatient studies
- Collaboration with DUH pharmacies to prepare and dispense study drugs as appropriate for patient care
- Support for eIND and IND drugs needed for patient care
- Education of Pharmacy students and residents regarding the research process, IDS team member roles and evaluation of literature

### Availability and Location

Study drugs are received and dispensed from three primary areas, the Investigational Drug Service (IDS), the Investigational Chemotherapy Service (ICS) and the Infectious Diseases Research Pharmacy (IDRP). The Investigational Drug Services are staffed Monday through Friday from 8 AM to 5 PM. Arrangements are made to ensure study success for subjects needing study drugs outside of these hours. A team member from all services is on-call 24/7. (IDS on-call pager 970-8392; ICS and IDRP: individual team members via paging web). Non-emergent requests may be left on voicemail (IDS: 684-3543; ICS: 668-0657; IDRP: 681-1788). The IDS is located on the basement level of Duke Clinic at 0101b, Yellow Zone. The ICS is located within the Cancer Center Infusion Pharmacy on the fourth floor, room 4N33, of Duke Cancer Center. The IDRP is located within the infectious disease clinic, 1K room 1346.

### Major Accomplishments

- Maestro Care:
  - Created study drug builds for all IRB approved studies using our services; an 11% increase from the previous year.
  - Validated approximately 191 order sets/protocols containing study drugs
  - Ongoing collaboration with DOCR, IRB and study teams for validation of study drug order sets/protocols and study drug for standardization and enhanced safety
  - Education and collaboration of study coordinators and investigators regarding study drug order entry options for Maestro Care

*Validated over 191 order sets/protocols containing study drugs*

- ICS and IDS:
  - Participated in 70 audits
  - Participated in National Clinical Trials Network (NCTN) audits (CITN, NCE and CTSU SWOG)
  - Had 1,036 monitoring visits to include site initiation, interim monitoring and close-out
  - Created Willow builds for 191 separate protocols
  - Utilized access to the DOCR redcap site allowed increased study drug build completion before IRB approval; IDS rate = 87%, ICS rate = 89%
  - Overall, 16% increase in dispenses, 9% increase in monitor/audits/SIVs, 6% increase in the average number of open studies
  - Worked with ORAQ to enhance process of assisting physicians and regulatory teams to more efficiently implement IND/EIND drug access.
  - Hosted 12 students/visitors (3 residents, 5 PY4 students, 4 immersion students)
  - Presented a poster to highlight the work and support provided by the ICS for oncology research studies at the Basic Science Day DCI Scientific Retreat
  - IDS's hired and trained a pharmacist, CRC and Pharmacy technician
  - ICS worked with Heme team for pending collocation of clinic to North Pavilion
  - DCI update of core grant application
  - Worked to implement new HR titles for IDSs staff to mirror school of medicine
  - Identified challenges and potential options of USP 800 compliance in the investigational drug setting
  - Collected metrics regarding shipments; Implemented double check of all shipments in IDS
  - Work with team to share space in Morris pharmacy and create storage space for hazardous medications to comply with USP 800
- IRB Coverage: with the help of department of pharmacy pharmacists, 77% (71/92) IRB meetings were covered by a pharmacist

### **Our Team**

The Investigational Drug Service teams are made up of well trained, highly-competent and committed pharmacists, clinical trial specialists, clinical research coordinators, technician and accounting clerk II. IDS members work collaboratively to meet the needs of study coordinators, investigators, sponsors and subjects throughout the Duke Health System. Most staff members have greater than 15 years of experience at Duke and with research for at least 8 years. IDS, ICS and IDRTP Team members support the department's mission through IRB membership, Clinical Research Unit membership, participation in quality improvement efforts, resident/student education, as well as research activities.





### Overview of services

Three pharmacists and one full-time data administrator comprise the dedicated and experienced staff in the Medication Safety division. Services provided include:

- Management, investigation, and scoring of medication-related events reported via the Safety Reporting System (SRS)
- Administration of peer review process for medication-related SRS events
- Generation of monthly and quarterly reports which permit ongoing monitoring, trending, and analysis of medication related safety issues
- Preparation of ad hoc and custom reports to support the safety efforts at local, clinical service unit, institution and health system levels
- Facilitation of discussions around trends or specific medication related events which lead to actions aimed at addressing system failures and associated root causes
- Biweekly distribution of the Institute for Safe Medication Practices Newsletter
- Development of formal and informal safety data presentations tailored to audiences across the health system
- Consultations regarding specific safety issues, new products, and label changes
- Education and promotion of safe medication practices

### Locations and Hours of Operation

The Medication Safety Office is located in Duke North Hospital across from the North Central Pharmacy. Our office is staffed weekdays from 7 AM to 5 PM. Services are covered by pager at all times.

### Major Accomplishments

- Maintained an active and engaged Medication Safety Committee
- Continued to lead and participate on multiple clinical service unit (CSU) level and specialty safety committees
- Participated in medication related root cause analyses and learning from defects meetings
- Encouraged and recognized pharmacy department participation in SRS reporting which resulted in a 9% increase in number of individuals reporting medication related events who identified themselves as pharmacists or pharmacy technicians (from 287 in FY17 to 314 in FY18).
- Generated more than 46 adhoc reports were used for quality improvement and medication safety initiatives used to identify actions to address system failures
- “Good Catch” Adverse Drug Event reporting increased to 50%.
- Provided education and guidance to file managers interested in RL Solutions report writing tools, created safety reporting templates to be utilized by file managers and refined multiple file manager scopes.
- Used refined trigger tool to identify suprathreshold INRs (>5) associated with warfarin. The Medication Safety Pharmacists submitted these events via the Safety Reporting System. Between July 2017 and June 2018, 116 patient charts were reviewed with 67 adverse warfarin events identified (57% positive predictive value). 29 of the 67 warfarin

*Reviewed, investigated,  
and analyzed 6448  
medication-related SRSs*

events (43%) were considered potentially preventable. Risk reduction strategies have been piloted and implemented and as a result of lessons learned.

- Implemented 208 documented system improvements, enhancements and optimizations resulting in safer medication use.
- Reviewed, investigated, and analyzed 6448 medication-related SRSs in FY18, this is a 16.7% increase in reporting volume from FY17 (5524).
- Created template and set up medication-related SRS reports to be auto-generated and issued to representatives for the CSUs.
- Had posters on medication safety topics selected for presentation at the 13<sup>th</sup> Annual DUHS Patient Safety Quality Conference.

*“Good catch” ADE reporting increased to over 50%*

### Our Team





### Overview of services

The Antimicrobial Stewardship and Evaluation Team (ASET) is dedicated to enhancing the quality of antimicrobial use throughout Duke University Hospital. ASET works collaboratively with clinical pharmacists, medical staff and other healthcare workers to provide safe, efficacious, and cost-effective drug therapy to optimize outcomes in patients with infectious diseases.

In FY2018, the financially sustainable initiatives that facilitated optimal antimicrobial prescribing included:

- Conducting prospective audit and feedback for antimicrobial prescriptions and bloodstream infections
- Pharmacist-managed inpatient penicillin allergy assessment and skin testing program and outpatient referral system
- Piloting a pediatric pharmacy stewardship program with audit and feedback and policy development

### Audit & Feedback

Prospective audit and feedback is fundamental to our antimicrobial stewardship activities. We identify patients either through prescribed antimicrobials, rounds, or diagnostic test results (e.g. positive bloodstream infection). After reviewing the medical chart, we engage prescribers to collaboratively determine opportunities for:

- Optimizing antimicrobial dosing
- Determining duration of therapy
- Targeting therapy based on additional diagnostic information
- Transitioning to oral administration
- Consulting Infectious Diseases for *Staph aureus* bacteremia

***The Infectious Diseases Society of America (IDSA) recognized Duke for its excellence in Antimicrobial Stewardship. Duke was only one of two academic sites in the nation to receive this designation upon the creation of the Antimicrobial Stewardship Center of Excellence Program.***



### Major Accomplishments

- Increased our interventions with the hiring of pediatric stewardship medical director and an additional clinical pharmacist to expand our stewardship program
- Developed and implemented the following policies and guidelines: Adult & Pediatric *Clostridium difficile* guideline, Pediatric IV to PO Conversion Policy, Pediatric Pharmacokinetic Policy, Pediatric Febrile Neutropenia Protocol
- Optimized duration of therapy for fluoroquinolones in the outpatient setting
- Precepted 7 pharmacy resident months and 6 UNC pharmacy student months
- Rebekah Wrenn served as a PGY1 resident research advisor
- Presented 2 posters at ID Week and 2 posters at the Duke Health Patient Safety and Quality Conference

### Availability

An ASET member is available Monday through Friday 8 AM to 5 PM.

### Our Team



Deverick Anderson, MD, MPH      Rebekah Moehring, MD, MPH      Christina Sarubbi, PharmD, MBA

Michael J Smith, MD, MSCE      Michael Wolcott, PharmD, BCPS      Rebekah Wrenn, PharmD, BCPS



Duke Antimicrobial Stewardship  
and Evaluation Team



Duke Center for  
Antimicrobial Stewardship  
and Infection Prevention

Duke Center for Antimicrobial Stewardship and Infection Prevention  
Duke Antimicrobial Stewardship and Evaluation Team (ASET)

<https://dcasip.medicine.duke.edu/>

<https://www.customid.org/>

Email: [aset@duke.edu](mailto:aset@duke.edu)

Twitter: @Duke\_ASET





### Overview of services

The Duke University Hospital Adult Nutrition Support-Total Parenteral Nutrition Team (NSS-TPN) is a multidisciplinary collaboration between physicians, pharmacists, dietitians and nurses. It is a consult service for TPN that works in concert with the primary team, as well as the patient, to evaluate the need for specialized nutrition support for the adult patient population. Once the patient is determined to require specialized nutrition therapy, the team:

- Evaluates and determines the appropriate route of therapy including enteral or parenteral therapy
- Develops a nutrition care plan; verifying proper type, placement, and care of parenteral or enteral access including inserting enteral feeding tubes with a specialized device (Cortrak)
- Documents nutrition care plan and goal of therapy in the electronic medical record as agreed upon by the ordering team
- Initiates and manages patient specific parenteral nutrition for adult inpatients, including nutrition product evaluation and management of significant product shortages
- Initiates and manages patient specific enteral nutrition or diet until deemed appropriate to sign over to unit-based registered dietitians
- Evaluates drug therapy (including antibiotic therapy, prokinetic and antimotility agents, opioid sparing pain management, appetite stimulants, short bowel drug therapy, iron replacement, etc.), electrolytes, fluid and recommending changes as it pertains to nutrition care for the patient
- Reevaluate patient periodically to transition patient to a lower level of support, as appropriate (eg. Return to oral diet or transition from TPN to tube feeds)
- Coordinate transition to home or facility (when applicable including proper patient transport and providing guidance to other institutions for making TPN with their available products and vice versa)
- Manages patients receiving parenteral nutrition at home

For patients who require parenteral support after discharge, the NSS-TPN Team plays an integral role in evaluating the adult patient for appropriate therapy and providing guidance to discharge planners to request financial approval and home health services. The NSS-TPN Team provides support for Home Total Parenteral Nutrition (HTPN) patients by:

- Coordinate training to the patient and/or caregiver to be independent with the therapy in the home environment
- Monitor patient clinical condition for response to therapy. This is accomplished by weekly to monthly labs, reports from home nursing visits and clinical assessment via telephone or at clinic visits. Amount of intervention is dependent on patient stability and guidelines for this therapy
- Adjust TPN therapy as appropriate
- Goals are determined by collaborating with the Duke attending and primary care providers. Goals include weight gain, weight loss, avoiding complications of TPN therapy, preparation for surgery, transplantation, GI rehabilitation with diet and drug therapy such as Teduglutide an analog of glucagon-like peptide-2 (GLP-2), and fluid, electrolyte and nutrition maintenance
- Wean TPN therapy when nutrition therapy can be attained enterally
- Document all interventions in the electronic medical record.

The education of future nutrition support practitioners is facilitated through mentoring of pharmacists, dietitians, students, residents and other multidisciplinary staff

### **Major Accomplishments**

- Continued quarterly evaluation process of safety recorded events (SRS) related to TPN therapy. All SRS events from July 2017 to June 2018 were evaluated. Events were collated to examine the location, month, attributable causes and severity. Emphasis is placed on events depending on, likelihood of causing harm, and frequency of occurrence. Focus is placed on identifying the sequence of events that resulted in a deviation from intended care then analyzing and implementing steps to deliver intended care.
- Continued to lead the monthly multidisciplinary Nutrition Council meetings to assist with the development of and maintenance of skilled Nutrition Support practitioners for adults and pediatrics so participants from several disciplines can come together to discuss ways to provide safer, more effective TPN therapy. Multidisciplinary professional continuing education topics of presentation for the 2017-2018 year included: When is TPN Appropriate; ASPEN Consensus Recommendation; Examining the association of Nutrition Support in Patients with Bacteremia; Copper; Fish Oil Containing Alternative IV Lipid Emulsions; Perioperative Enhancement Team (POET); Selenium; Valproate Toxicity and the Use of L-Carnitine; Challenges in HTPN Management; Glucagon-Like Peptide-2 Analog (Gattex); and Chromium Dosing
- Continued to build on the nutrition support forum. The forum provides resources for nutrition therapy and is located on the Pharmacy Department website.
- The first abdominal wall transplant in the state accompanied with the intestinal transplant highlights how the TPN team played an integral role in the success of this patient's care. The inpatient TPN team was consulted in 2014 when the patient was admitted for abdominal obstruction due to adhesions caused by chronic inflammation from an appendix rupture when he was 6 years old. He came to Duke "Desperately ill" as Dr. Sudan says. TPN therapy was provided during this period. Unable to restore his ability to absorb nutrition enterally, Home TPN was required to sustain life. The TPN team collaborated with the Transplant team for 4 years, monitoring labs, contacting the patient by phone and at clinic visits with the Transplant team, and coordinating care with Duke Home Care and Hospice. Home therapy was challenging given his high fistula output and electrolyte losses. He required 5 liters of TPN over 16 hours nightly. Now he is home on an oral diet and tube feeding until oral intake is sufficient.

*Played integral role in the success of the first abdominal wall transplant in NC*



### Overview of services

Oncology pharmacy specialists at Duke provide patient care to adult and pediatric cancer populations in both the inpatient and outpatient settings. Clinical services are tailored to patient care needs and include but are not limited to pharmacotherapeutic medication management, therapeutic drug monitoring, pharmacokinetic dosing, nutrition support, drug information, symptom management, supportive care, and patient education. The pharmacy team is also responsible for safely compounding and dispensing chemotherapy. Pharmacists work collaboratively with other health care providers to provide safe, efficacious, and cost-effective drug therapy to optimize outcomes in patients with malignant diseases. Oncology practitioners are involved in the development, support, and management of research/investigational protocols. Additionally, the education of future pharmacy practitioners is facilitated through mentoring of pharmacy students and residents in a variety of clinical settings.

### Locations and Hours of Operation

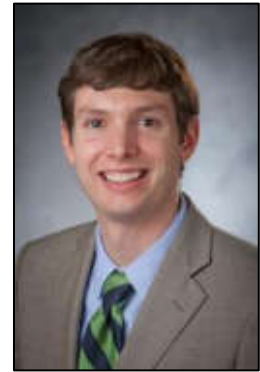
Currently, oncology pharmacists practice in the following areas:

- Ambulatory Oncology Clinics
  - Hematologic Malignancies, Genitourinary, Gastrointestinal, Thoracic, Breast, Sarcoma, Brain Tumor, Adult Bone Marrow Transplant (BMT), Pediatric BMT
- Inpatient Oncology Services
  - Hematologic Malignancies, Solid Tumors, Adult BMT, Pediatric BMT, Pediatric Oncology
- Infusion Pharmacies
  - Cancer Center Infusion Pharmacy
  - North Pavilion
  - Rainbow Day Hospital
- Investigational Chemotherapy Services

### Major Accomplishments

- Continued support and development of Beacon templates supporting standardization and enhanced safety with chemotherapy regimens
- Continued development of standardized chemotherapy patient education materials
- Continued the Duke Oncology Pharmacy Oral Chemotherapy Management Program
- Contribute to maintenance of URAC Accreditation of Duke Cancer Center Specialty Pharmacy
- Continuation of call back program for patients at high risk for chemotherapy induced nausea and vomiting
- Continuation of monthly oncology pharmacy meetings
- Provide clinical review and justification for Medicare audits
- Increase to 7 Clinical pharmacist practitioners (CPP's) within the oncology group
- Participation in the Duke Oncology Network Pharmacotherapy Updates in Cancer Series
- Creating and sending a quarterly newsletter to oncology practitioners across Health system
- Participation in teaching daily Chemotherapy Education Class
- Participation in the development of standardized chemotherapy education information sheets
- Support of PGY2 Oncology residency program and residents

*300+ standardized  
chemotherapy  
regimen education  
sheets developed*



**Overview of services**

Population health pharmacy services are integrated with the Duke Population Health Management Office (PHMO) DukeWELL care management services. The Duke PHMO was officially developed November 1<sup>st</sup>, 2016 to bring together different population health services into a single entity. The goal of the Duke PHMO is to facilitate higher-quality care that results in a greater return on healthcare dollars. The PHMO is responsible for cost and quality for approximately 250,000 patients served by Duke Health and other providers that participate in the Duke Connected Care (DCC) and Northern Piedmont Community Care (NPCC) networks.

Specific population health pharmacy services include:

- Supporting DukeWELL care management with medication reviews and education
- Serving as an education and pharmacy resource for providers
- Communicating policy changes related to Medicaid to providers and community pharmacies
- Conducting pharmacy technician home visits for select patients with medication management or adherence concerns
- Collaborating with specialists in endocrinology, geriatrics, nephrology, palliative care, and cardiology to conduct chart reviews in DukeWELL rounding sessions to provide recommendations to care management and primary care providers
- Utilizing PHMO reports to address medication-related quality measures or medication management improvement opportunities
- Collaborating with payer pharmacists and DukeWELL care management to develop strategies to improve medication-related quality measure performance
- Collaborating with external community resources, including community pharmacies, to improve medication management for DukeWELL eligible patients

*Contributed to efforts that allowed Duke Connected Care to receive a \$9.5 million MSSP shared savings payment from CMS*

**Locations and Hours of Operation**

- Our team is located in the PHMO offices at 718 Rutherford Street and at the NC Mutual Building at 411 W Chapel Hill St. We are available during normal business hours Monday through Friday by calling DukeWELL at 660-9355

**Major Accomplishments**

- Contributed to efforts that allowed Duke Connected Care to receive a \$9.5 million payment from CMS as part of the Medicare Shared Savings Program (MSSP) based on 2017 performance
- Successfully expanded staff with the hire of an additional Population Health Pharmacy Technician
- Successfully contributed to completion of the Duke Connected Care (DCC) annual Medicare Shared Savings Program (MSSP) quality reporting to the Centers for Medicare and Medicaid Services
- Collaborated with data analysts to develop and implement a workflow for identifying patients with elevated microalbumin and no ACE-Inhibitor or ARB therapy
- Contributed to the redesign of the DukeWELL Ambulatory Referral to both highlight and appropriately streamline referrals to the DukeWELL pharmacy team

- Contributed to the design and implementation of the DukeWELL Complex Care Management program
- Contributed to the design of the Maestro Care Dynamic Diabetes Smartset
- Developed and implemented a new workflow to improve medication adherence quality measures for Medicare Advantage patients
- Implemented a monthly in-service continuing education program for PHMO and other DUHS clinical staff
- Developed a Medication Access Resource Guide that was disseminated to primary care practices and linked to Maestro Care
- Developed and disseminated an Immunization Coverage guide to providers and staff

### **Team Members**

- Population Health Pharmacy Services Manager
- Population Health Clinical Pharmacists
- Population Health Pharmacy Technicians



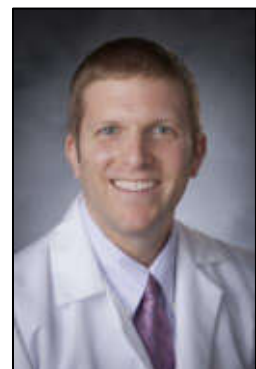
### **Transplant Pharmacy Programs**

**Matt Harris**

#### **Overview of services**

Clinical pharmacy services are provided for heart, intestine, kidney, liver, lung, pancreas, and vascularized composite tissue transplant patients across the continuum of care at Duke Hospital. Seven full time pharmacists and one PGY2 transplant resident comprise the pharmacy transplant team. Services provided include:

- Involvement in the care of patients and donors in the pre-, peri-, and post-operative settings
- Identifying, solving and preventing medication-related problems or deficiencies in the solid organ transplant population and living donors for the abdominal and thoracic transplant programs
- Documenting pre- and post-transplant immunosuppressive plans



- Providing education regarding the safe and effective use of medications in the post solid organ transplant population to patients/families and the healthcare team
- Assisting the transplant teams in medication protocol development, review, and revision on an on-going basis
- Development and management of investigator initiated research and Pharmacy Utilization Management Programs
- Training students and residents in a variety of clinical settings

### **Locations and Hours of Operation**

Inpatient services are provided by a Transplant Clinical Pharmacist seven days a week and all of the pharmacists are available by pager for after-hours questions or concerns. Currently transplant pharmacists practice in the following areas:

- Ambulatory Clinics
  - Abdominal Transplant
  - Thoracic Transplant
- Inpatient Coverage (CPCS)
  - Adult and pediatric abdominal transplant
  - Cardiac transplant/heart failure
  - Medical lung transplant
  - Surgical lung transplant
- Ambulatory Pharmacy
  - Duke Cancer Center Specialty Pharmacy

### **Major Accomplishments**

- Pharmacist initiated research projects presented at the International Society of Heart and Lung Transplant Annual Meeting and the American Transplant Congress
- Presentations at the Lung Transplant Symposium, Pharmacy Grand Rounds, and the Transplant Center Core Curriculum Lecture Series
- Tracking CMS required documentation and activities through iVents
- For the eleventh year in a row the PGY2 Transplant Resident became a board certified pharmacotherapy specialist
- Continued to encourage post-transplant prescriptions be filled at the Duke Cancer Center Specialty Pharmacy generating significant organizational revenue

*Comprehensive medication management for transplant patients across the continuum*

### **Team Members**

Matt Harris, PharmD, MHS, BCPS	Director Transplant Pharmacy Programs
Jennifer Gommer, PharmD, BCPS	Inpatient Abdominal Transplant Clinical Pharmacist
Jennifer Byrns, PharmD, BCPS	Ambulatory Abdominal Transplant Clinical Pharmacist
Mara Watson, PharmD	Inpatient Heart Transplant Clinical Pharmacist
Holly Berry, PharmD	Ambulatory Thoracic Transplant Clinical Pharmacist
Amanda Hulbert, PharmD, CPP, BCPS	Inpatient Medical Lung Transplant Clinical Pharmacist
Kristi Beermann, PharmD, BCPS	Inpatient Surgical Lung Transplant Clinical Pharmacist
Yoko Hirase, PharmD	PGY2 Transplant Resident

## Transitions of Care Program

Lindsey Burgess



### Overview of services

Clinical pharmacists and certified pharmacy technicians are active participants in the various transitions of care that occur during their hospitalization at Duke University Hospital (DUH). The Continuity of Care Team complete admission medication histories for patients admitted to DUH in order to enhance medication safety during the admissions process. The team is comprised of nine full time nationally certified pharmacy technicians and six pharmacy students.

Services include:

- Participate in the pharmacy admissions process by completing medication history patient interviews and documentation in our electronic medical record utilizing Best Practice Medication History (BPMH) processes for patients in the Emergency Department and non-ICU floors at DUH
- Provide training and medication history education to University of North Carolina Eshelman School of Pharmacy students and students training in the DUHS Pharmacy Technology Training Program.
- Complete medication history patient interviews in the Pre-Anesthesia Testing (PAT) clinic (2D) at DUH prior to provider appointments

### Availability:

Inpatient services are available to all admitted non-ICU patients at Duke University Hospital. Continuity of Care team members are available Monday through Friday from 7:00am to 11:30pm and 7:00am to 3:30pm on weekends and Holidays.

### Major Accomplishments

- Standardizing medication history iVent documentation through enhanced use of smart phrases
- Completing a pharmacy technician medication history interview pilot program in the PAT clinic in October 2017
- Focused services on patients at high risk for readmission by utilizing the Readmission Risk scoring tool in Maestro to prioritize patients for medication histories on certain services
- Developed a Continuity of Care training check list to ensure standardized onboarding and training education for all new employees
- Completed a pilot program in the Intensive Care Units (ICUs) to assess the feasibility of pharmacy technicians obtaining medication history information in critically ill patients
- Increased training of fourth year pharmacy students to assist with the pharmacy admission process in collaboration with the COC team and pharmacy preceptors
- Increasing participation of clinical pharmacists in the discharge process by establishing a workflow for pharmacist review of discharge medication reconciliations for high risk patients.

*PAT clinic pharmacy technician program implemented June 2018*

### Our Team

- Transitions of Care Pharmacy Manager
- Continuity of Care Certified Pharmacy Technicians

## **VI. Research Program**

### **Pharmacy Research Committee**

#### **Purpose**

The Pharmacy Research Committee is a scientific advisory committee designed to enhance pharmacy staff, resident and student knowledge and participation in research.

#### **Committee Function**

The scope of the committee responsibilities shall include:

- **Oversee, guide and facilitate research activities to include:**
  - Study feasibility assessment
  - Compliance with Investigational Review Board requirements
  - Adherence to data security requirements via review of the Research Data Security Plan
  - Compliance with institutional training requirements
- **Identify and arrange extra-departmental research support resources which may include:**
  - Statistical consulting services
  - Clinical Research Unit /Institutional Review Board protocol review
  - Duke Office of Clinical Research (DOCR) review
- **Issue a call for research project ideas on an annual basis and maintain a directory of interested research preceptors and their areas of research interests**
- **Establish guidelines/timelines for research projects**
- **Provide assistance to preceptors in developing suitable research projects**
- **Review and provide feedback to study investigators on Research Project Outlines and Research Protocols (including evaluation of scientific merit, design, feasibility, relevance to internal/external audiences, resources and regulatory compliance)**
- **Make recommendations to the Pharmacy Senior Management Group (SMG) regarding approval of projects**
- **Review and provide feedback on abstracts and presentations. Specific feedback shall be provided to pharmacy residents in preparation for the Vizient meeting and Southeastern Residency Conference (SERC)**
- **Perform an annual assessment of the effectiveness of the resident research process**
- **Assess pharmacy staff and residents' learning needs regarding necessary research skills and facilitate the scheduling of research training sessions to meet these needs and those required by the institution**
- **Ensure that investigators maintain a regulatory file, which may be held electronically. Recommended contents of the files could include documents such as a project staff list and training updates, all IRB communications, a copy of the protocol and if applicable, consent templates.**

#### **Membership**

Meredith T. Moorman, PharmD, BCOP, CPP - Chair  
Clinical Pharmacist, Adult Hematology/Oncology Clinic  
Duke University Hospital

Amanda M. Ball, PharmD, BCPS, BCCCP  
Clinical Manager, Clinical Patient Care Services  
Duke University Hospital



Clark Benedetti, PharmD, CPP  
Clinical Pharmacist, Lung Transplant  
Duke University Hospital

Jennifer Byrns, PharmD, BCPS  
Clinical Pharmacist, Ambulatory Abdominal Transplant  
Duke University Hospital

April A. Cooper, PharmD  
Clinical Pharmacy Specialist, Internal Medicine – Duke Regional Hospital  
Clinical Assistant Professor- Campbell University College of Pharmacy & Health Sciences  
Co-Director, PGY2 Internal Medicine – Duke Regional Hospital

Justin Geurink, PharmD, BCPS  
Pharmacy Manager, Clinical and Patient Care Services  
Duke University Hospital

Alicia Hairston, PharmD, BCOP  
Clinical Pharmacist, Inpatient Hematology/Oncology  
Duke University Hospital

Matt Harris, PharmD, MHSc, BCPS  
Director of Transplant Pharmacy Programs  
Clinical Pharmacist, Abdominal Transplant  
PGY2 Transplant Residency Program Director  
Duke University Hospital

Beth McLendon-Arvik, PharmD  
Manager, Duke Investigational Drug Service and Investigational Chemotherapy Service  
Director, PGY1 Pharmacy Residency  
Duke University Hospital

Andrakeia (Drake) Shipman, PharmD, BCPS  
Clinical Pediatric Pharmacist  
Duke Children's Hospital and Health Center

Cathy Vaughan, PharmD  
Drug Information Specialist, Center for Medication Policy  
Duke University Hospital

Catherine Lewis Wente, PharmD, CACP, BCPS  
Clinical Pharmacy Specialist, Internal Medicine – Duke Regional Hospital  
Clinical Assistant Professor- Campbell University College of Pharmacy & Health Sciences  
Co-Director, PGY2 Internal Medicine – Duke Regional Hospital

Michael D. Wolcott, PharmD, BCPS  
Clinical Pharmacist, Clinical and Patient Care Services/Investigational Drug Services  
Duke University Hospital

## **VII. Educational Program**

### **Pharmacy Education Committee**

#### **Purpose**

To promote and support educational activities of the department of pharmacy

#### **Committee Function**

- To establish and maintain an education committee,
- To support the educational needs of department of pharmacy staff (including residency programs offered by Duke University Hospital) and learners from affiliated schools/colleges of pharmacy through sub-committees charged with specific responsibilities and accountabilities

#### **Subcommittees**

Subcommittees for the following areas will assume accountability and responsibility for assigned educational needs:

- Residency Program Noon Conference: Grand Rounds and Case Conferences
- Annual Winter/Spring Symposium
- Preceptor Development
- UNC ESOP APPE Student Learning Experience Scheduling and Support
- UNC ESOP Advanced Immersion Research Subcommittee
- UNC ESOP 4th Year Seminar Class: Fall and Spring Semester activities
- UNC ESOP Early Immersion Clerkships
- Campbell University COP IPPE Student Clerkships
- Campbell University COP 4th Year Student Learning Experience Scheduling and Support
- Pharmacy Internship Program
- Teaching Certificate Program
- Technician Training Program
- Technician Professional Development Committee

#### **Membership**

Jenny Mando-Vandrick, PharmD, BCPS  
Clinical Pharmacist – Emergency Services  
Chair – Residency Noon Conference Subcommittee

Dustin Wilson, PharmD, BCPS  
Clinical Pharmacist – Medicine  
Assistant Professor, Campbell University College of Pharmacy and Health Sciences  
Chair – Preceptor Development Subcommittee

Kristen Bova Campbell, PharmD, BCPS, AQ-Cardiology, CPP  
Clinical Pharmacist - Cardiology  
Chair - UNC ESOP APPE Student Learning Experience Scheduling and Support Subcommittee

Ann McGee, PharmD  
Director, Center for Medication Policy  
Chair - UNC ESOP Advanced Immersion Research Subcommittee

Justin Geurink, PharmD, BCPS  
Manager, Clinical and Patient Care Services  
Chair - UNC ESOP 4th Year Seminar Class: Fall and Spring Semester activities

Kevin Helmlinger, PharmD, BCPS  
Manager, Children's Hospital Pharmacy  
Chair – UNC ESOP Early Immersion Clerkships

Nicole Panosh, PharmD, MS, BCPS  
Associate Chief Pharmacy Officer – Women's and Children's Hospital and Health Center  
Chair - CU COP IPPE Student Clerkships

Andrew T. Wright, PharmD, MSCR, MS  
PGY II Health System Pharmacy Administration Resident  
Chair – Pharmacy Internship Program

Evan Frasure III, PharmD, BCPS  
Director, Controlled Substance Diversion Prevention  
Chair – Teaching Certificate Program

Mathew Kelm, PharmD, MHA  
Associate Chief Pharmacy Officer, Inpatient Pharmacy Services  
Chair – Pharmacy Technician Training

Malphus Stroud, CPhT  
Clinical Research Specialist, Investigational Drug Service  
Chair – Technician Professional Development Committee

Aaron Will, PharmD, BCPS  
Associate Chief Pharmacy Officer – Clinical and Patient Care Services  
Committee Co-Chair

Paul Bush, PharmD, MBA, BCPS, FASHP  
Chief Pharmacy Officer  
Committee Chair

## VIII. Residency Programs

For over 45 years, our program has been training residents to become exceptional pharmacy practitioners and leaders. Residents who complete our program have experienced success in obtaining competitive specialty residencies, fellowships, academic, clinical and pharmacy leadership positions.

A testament to their success is the exemplary institutions that which Duke Pharmacy residents begin their post-residency careers.

We extend our gratitude to our residency program directors:

- |                              |   |
|------------------------------|---|
| ▪ Beth McLendon-Arvik        | Post Graduate Year (PGY) 1*   |
| ▪ Paul W. Bush               | PGY1-2 Health-System Pharmacy Administration*   |
| ▪ Kimberly Hodulik           | PGY2 Ambulatory Care*   |
| ▪ Kristen B. Campbell        | PGY2 Cardiology*  |
| ▪ Bridgette Kram             | PGY2 Critical Care*   |
| ▪ Ann Scates-McGee           | Drug Information (with Glaxo Smith Kline)   |
| ▪ Jennifer Mando-Vandrick    | PGY2 Emergency Medicine   |
| ▪ Richard Drew/Dustin Wilson | Internal Medicine/Infectious Diseases/Academia<br>(with Campbell University School of Pharmacy) |
| ▪ Sally Barbour              | PGY2 Oncology*  |
| ▪ Julia (Jill) Lawrence      | PGY2 Pediatrics*  |
| ▪ Matthew T. Harris          | PGY2 Solid Organ Transplantation*   |

\*ASHP-Accredited

### **2017-2018 Residency Graduates and Current Positions**

The 2017-2018 residents successfully completed all requirements for graduation from the Duke program. These graduates include:

#### **PGY1:**

Anne Rodino	PGY2 Cardiology Resident, UNC Health Care
Carson Tester	PGY2 Pediatrics Resident, Duke University Hospital
Jason Funaro	PGY2 Ambulatory Care Resident, Duke University Hospital
Marcus Kaplan	PGY2 Emergency Medicine Resident, Duke University Hospital

#### **PGY1-2 Health-System Pharmacy Administration:**

Jordan DeAngelis (PGY1)	PGY2 Health-System Pharmacy Administration Resident Duke University Hospital in Durham, NC
Andrew Wright (PGY2)	Pharmacy System Manager, Automation & Technology Wake Forest Baptist Medical Center in Winston-Salem, NC

#### **PGY2 Ambulatory Care:**

Katherine Fuller	Clinical Pharmacy Specialist, Hepatology Clinic Emory University Hospital in Atlanta, GA
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#### **PGY2 Cardiology:**

Stephanie Dougherty	Clinical Pharmacist, Cardiovascular Medicine University of Wisconsin Health in Madison, WI
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**PGY2 Critical Care:**

Benjamin Mancherill

Clinical Pharmacist, Critical Care  
Moses H. Cone Memorial Hospital in Greensboro, NC

**Drug Information:**

Randall Johnson

Content Medical Information Specialist  
Med Communications, Inc. in Durham, NC

**Internal Medicine/Infectious Diseases/Academia:**

Brandon Hill

Clinical Pharmacy Specialist, Infectious Disease  
University of Virginia Medical Center in Charlottesville, VA

**PGY2 Oncology:**

Sebastian Cerdena

Clinical Pharmacist Specialist, Malignant Hematoma/BMT  
Barnes Jewish Hospital in St. Louis, MO

Caroline Mejias-De Jesus

Oncology Clinical Pharmacist  
Beth Israel Deaconess Medical Center in Boston, MA

**PGY2 Pediatrics:**

Magen Cross

Clinical Pediatrics Pharmacist  
Vidant Medical Center in Greenville, NC

**PGY2 Solid Organ Transplantation:**

Melissa Laub

Kidney Transplant Clinical Pharmacist  
Augusta University Medical Center in August, GA

**Chief Resident:**

Andrew Wright

**Preceptor of the Year:**

Brianna Alexander

**Residency Advocate Award:**

Meredith Moorman



**Duke University Hospital Pharmacy Residency Class of 2017-2018**  
(Residents and Program Directors Pictured)

### **2018-2019 Resident Class**

The 2017-2018 recruiting campaign successfully filled 16 residency positions offered at Duke. Listed below are the current residents and their College of Pharmacy or previous PGY1 residency program:

#### **PGY1:**

Alana Ferrari	University of North Carolina Eshelman School of Pharmacy
Kelsey Ohman	University of Florida College of Pharmacy
Mackenzie Magid	University of Kansas School of Pharmacy
Mark Vestal	Wingate University School of Pharmacy

#### **PGY2 Ambulatory Care:**

Jason Funaro	PGY1 Pharmacy Residency – Duke University Hospital
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#### **PGY2 Cardiology:**

Jennifer Cook	PGY1 Pharmacy Residency – The Ohio State University Wexner Medical Center
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#### **PGY2 Critical Care:**

Arzo Hamidi	PGY1 Pharmacy Residency – Massachusetts General Hospital
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#### **Drug Information:**

Elyse Prather	PGY1 Pharmacy Residency – HCA Healthcare in Nashville, TN
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#### **PGY2 Emergency Medicine:**

Marcus Kaplan	PGY1 Pharmacy Residency – Duke University Hospital
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#### **Internal Medicine/Infectious Diseases/Academia:**

David Laurent	PGY1 Pharmacy Residency – Harnett Health
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#### **PGY1-2 Health-System Pharmacy Administration/M.S.:**

Iliana Morataya (PGY1)	University of North Carolina Eshelman School of Pharmacy
Jordan DeAngelis (PGY2)	PGY1 Pharmacy Residency – Duke University Hospital

#### **PGY2 Oncology:**

Breanna Lee	PGY1 Pharmacy Residency – Mayo Clinic in Florida
Heather Morris	PGY1 Pharmacy Residency – Bon Secours Memorial Regional Medical Center

#### **PGY2 Pediatrics:**

Carson Tester	PGY1 Pharmacy Residency – Duke University Hospital
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#### **PGY2 Solid Organ Transplant:**

Yoko Hirase	PGY1 Pharmacy Residency – Emory University Hospital
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#### **Chief Resident**

Jordan T. DeAngelis, PharmD, BCPS



**Duke University Hospital Pharmacy Residency Class of 2018-2019**

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## **IX. Milton W. Skolaut Leadership Award**

### **Overview**

The Milton W. Skolaut Leadership Award is awarded to a past resident of the Duke University Hospital Pharmacy Residency Program. This award recognizes an individual for outstanding leadership and contributions to the profession of pharmacy.

### **About Milton W. Skolaut**

Milton W. Skolaut was born in San Antonio, Texas and earned a bachelor's degree in 1941 from the University of Texas College of Pharmacy. In 1952, Skolaut became Director of Pharmacy Services at the National Institutes of Health (NIH) Clinical Center in Bethesda, Maryland. While at the clinical center, Skolaut established the pharmacy as the central supply point for drug distribution, a relatively new concept at the time but one that quickly became the norm for hospitals nationwide.

Skolaut joined the staff of Duke Hospital in 1970, where he served for 17 years as Director of Pharmacy until his retirement in 1987. During Skolaut's tenure at Duke, the pharmacy established services that included the preparation of unit dose medication packages, intravenous admixtures, and total parenteral nutrient solutions. He was also responsible for the



expansion of a pharmacy within the operating room suites, supplying all materials and medications to the Anesthesia Department. The Department of Pharmacy also instituted clinical services and a residency program under his leadership.

Mr. Skolaut was an active member of ASHP for many years, including serving as president from 1963-64. In 1968, he was one of the three visionary leaders that started the ASHP Research and Education Foundation. In 1979, Skolaut earned hospital pharmacy's highest honor, ASHP's Harvey A. K. Whitney Lecture Award.

### **Past Recipients**

**2014:** Jill S. Bates, PharmD, MS, BCOP

**2015:** James C. McAllister III, MS, FASHP

**2016:** Elizabeth Dodds Ashley, PharmD, MHS, FCCP, BCPS

**2017:** Nancy Allen LaPointe, PharmD, MHS, AACC



### **2018 Recipient:**

***Stephen F. Eckel, PharmD, MHA, BCPS***

Stephen Eckel received his bachelor of science in pharmacy and doctor of pharmacy from the University of North Carolina at Chapel Hill. He completed a pharmacy practice residency at Duke University Medical Center and then joined UNC Hospitals as a clinical pharmacist. Eckel also holds a master's of health care administration from the UNC Gillings School of Global Public Health.

Eckel is the Associate Dean for Global Engagement at the UNC Eshelman School of Pharmacy. He is also a clinical associate professor in the Division of Practice Advancement and Clinical Education (PACE) and currently serving as division's interim chair. In addition, he is director of graduate studies and is in charge of the two-year Master of Science in pharmaceutical sciences with a specialization in health-system pharmacy administration. This degree is hosted at multiple sites across North Carolina. At UNC Medical Center, he is an associate director of pharmacy and director of pharmacy residency programs. He has worked with almost 250 residents over the years. Eckel is a board certified pharmacotherapy specialist.

As an innovator and entrepreneur Eckel spearheaded the development of UNC Pharmacy Grand Rounds with ASHP and launched ChemoGLO, LLC with Bill Zamboni, PharmD, PhD. He is the previous editor of the health-system edition of Pharmacy Times and a passionate supporter of the role of the pharmacist and the use of technology in patient care. He conducts and publishes his research and is frequently asked to speak around the world on these issues.

Eckel has been very active in the North Carolina Association of Pharmacists, serving as President from January 2016 through June, 2017. In addition, he is a member of the Board of Directors of American Society of Health-System Pharmacists, starting his term in June, 2017. He has also served many years in the APhA and ASHP House of Delegates. In 2012, he was presented by APhA the Distinguished Achievement Award in Hospital and Institutional Practice and in 2013, he was awarded the Excellence in Innovation award by NCAP. In 2015, the ASHP Foundation awarded him the Pharmacy Residency Excellence Preceptor Award. He is a Fellow of ASHP, APhA, ACCP, and the National Academies of Practice in Pharmacy.



## **X. Preceptor Awards**

**Student Preceptor of the Year – Andrakeia “Drake” Shipman, PharmD, BCPS, DPLA**



Presented posthumously by: Drs. Paul Bush and Kristen Campbell  
Accepted by Dr. Nicole Panosh on behalf of the Shipman Family

**Resident Preceptor of the Year – Brianna Alexander, PharmD, BCPS**



Presented by: Chief Resident Dr. Andrew Wright

**Resident Advocate of the Year – Meredith T. Moorman, PharmD, BCOP, CPP**



Presented by: Chief Resident Dr. Andrew Wright

## XI. Grants and Publications

### Publications:

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**Kram B,** Weigel K, **Kuhrt M,** Gilstrap D. Discharge prescribing of enteral opiates after use as a weaning strategy from intravenous opiates in the Intensive Care Unit, *J Opioid Management.* 2018, 14: 35.

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