Geisinger Enterprise Pharmacy

2019–2020 Year in review

Geisinger

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Message from vice president of Enterprise Pharmacy and chief pharmacy officer

It is my pleasure to present the 2019–2020 Geisinger Enterprise Pharmacy Annual Report. This annual report highlights the exceptional work that the Geisinger Pharmacy team accomplishes daily and the successful initiatives that are continually transforming the quality of pharmacy care for our patients. Some of these exceptional accomplishments are detailed in this report under the respective service areas and program categories.

Enterprise Pharmacy implemented several programs to support high-quality, safe, compliant and efficient care. Specialty Pharmacy continues rapid growth and is now dual-accredited by URAC and the Accreditation Commission for Health Care (ACHC). The system medication prior authorization services have been now centralized in pharmacy. We have continued investments in staffing resources and technology with the addition of technology solutions. Staffing was expanded based on our acute, ambulatory, retail, mail-order, specialty, infusion, operations, business intelligence, managed care and pharmacist-managed telehealth programs. We have expanded our pharmacy residency offerings from three to eight programs. The "Meds to Beds" discharge medication program has been recognized as a vital tool to promote adherence and decrease medication-related readmissions, and had a positive impact on patient satisfaction.

When faced with the state and national emergency of COVID-19, Enterprise Pharmacy made swift adjustments to ensure patients received the seamless and high-quality care they deserve and engaged in new ways to provide patient care. All this work directly supports our mission and vision for pharmacy services at Geisinger. These accomplishments would not be possible without the commitment and personal dedication of the Geisinger Pharmacy leadership team and staff. I would like to thank each and every member of our staff for their commitment to the profession and their dedication to the care of Geisinger patients and communities.

Michael A. Evans, RPh
Vice President of Enterprise Pharmacy
Chief Pharmacy Officer
Geisinger

Enterprise Pharmacy

The last year has seen Enterprise Pharmacy grow and realign its pillars to better support our mission to serve our communities. The number of employees in Enterprise Pharmacy has expanded to 953, with over 400 pharmacists and 300 technicians throughout the system in numerous clinical and administrative areas. Each and every member of the Enterprise Pharmacy team plays a vital role in the delivery of pharmacy care to our patients and health plan members.

Our pillar system continues to evolve as new pillars emerge and others align themselves in a more comprehensive manner. Each pillar helps stand up all that is Enterprise Pharmacy and, by working collaboratively, they develop and execute initiatives to support those within Geisinger.

Enterprise Pharmacy consists of the nine pillars listed below:

Acute Programs, overseeing pharmacy clinical operations in Geisinger's seven different acute care facilities.

Planning, Strategy and Analysis, directing Enterprise Pharmacy's future using clinical and business analytics to develop strategies for expanding pharmacy care services.

Operations and Compliance, overseeing medication safety, corporate compliance, and accreditations for Enterprise Pharmacy.

Ambulatory Programs, managing the medication therapy and disease management programs. In the last fiscal year, the outpatient distribution systems in retail pharmacy, specialty pharmacy, and home infusion were brought under the pillar of Ambulatory Programs.
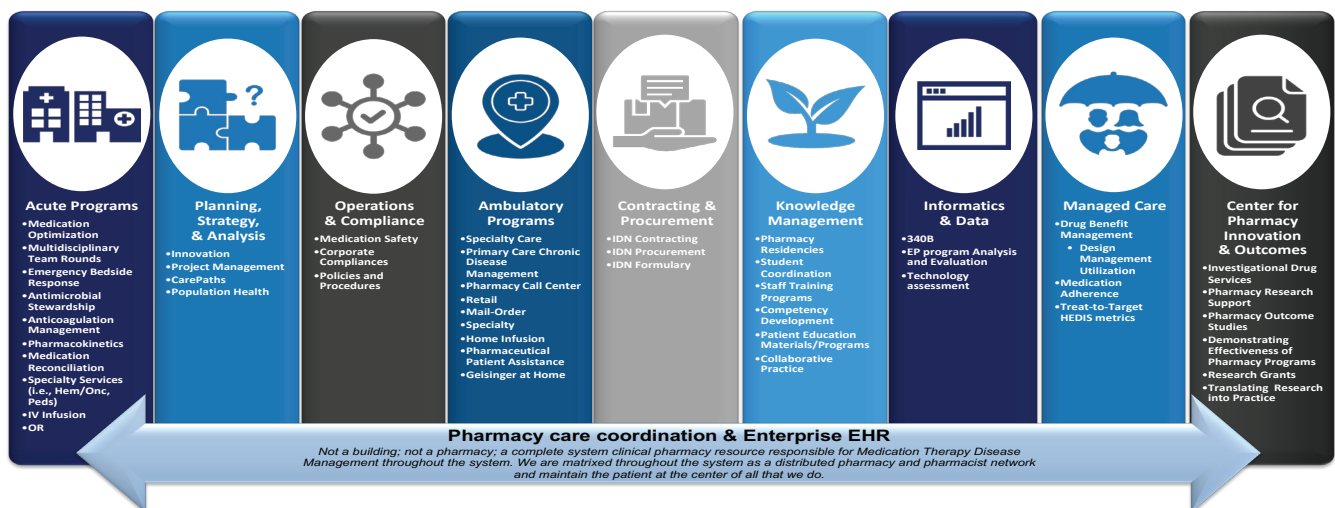
Formulary and Procurement, directing the management of medication resources for the Geisinger system.

Knowledge Management, coordinating the education and professional development needs of Enterprise Pharmacy, providers and patients.

Informatics and Data, overseeing technology assessments, electronic health record pharmacy operations and 340B programming.

Managed Care, managing the medication and pharmacy-related needs of Geisinger Health Plan.

Center for Pharmacy Innovation and Outcomes, coordinating the research and innovation initiatives related to pharmacy and medication-related services for Geisinger.

Acute Programs	Planning, Strategy, & Analysis	Operations & Compliance	Ambulatory Programs	Contracting & Procurement	Knowledge Management	Informatics & Data	Managed Care	Center for Pharmacy Innovation & Outcomes
•Medication Optimization •Multidisciplinary Team Rounds •Emergency Bedside Response •Antimicrobial Stewardship •Anticoagulation Management •Pharmacokinetics •Medication Reconciliation •Specialty Services (i.e., Hem/Onc, Peds) •IV Infusion •OR	•Innovation •Project Management •CarePaths •Population Health	•Medication Safety •Corporate Compliances •Policies and Procedures	•Specialty Care •Primary Care Chronic Disease Management •Pharmacy Call Center •Retail •Mail-Order •Specialty •Home Infusion •Pharmaceutical Patient Assistance •Geisinger at Home	•IDN Contracting •IDN Procurement •IDN Formulary	•Pharmacy Residencies •Student Coordination •Staff Training Programs •Competency Development •Patient Education Materials/Programs •Collaborative Practice	•340B •EP program Analysis and Evaluation •Technology assessment	•Drug Benefit Management • Design Management Utilization •Medication Adherence •Treat-to-Target HEDIS metrics	•Investigational Drug Services •Pharmacy Research Support •Pharmacy Outcome Studies •Demonstrating Effectiveness of Pharmacy Programs •Research Grants •Translating Research into Practice

Pharmacy care coordination & Enterprise EHR

Not a building; not a pharmacy; a complete system clinical pharmacy resource responsible for Medication Therapy Disease Management throughout the system. We are matrixed throughout the system as a distributed pharmacy and pharmacist network and maintain the patient at the center of all that we do.

Update on the pillars of Enterprise Pharmacy

Acute Programs

Acute Programs FY20 by the numbers

- 9 hospitals
- 2 ambulatory surgery centers
- 15 ambulatory infusion centers

Geisinger's Enterprise Pharmacy Acute Pharmacy pillar provides services to 9 hospitals, 2 ambulatory surgery centers, 14 ambulatory infusion centers (which includes all hematology/oncology infusion sites) and many hospital-based clinics located throughout Pennsylvania — and it also includes our hematology/oncology ambulatory medication therapy disease management (MTDM) program.

Our nationally recognized, long-standing, progressive pharmacy practice model features clinical pharmacists practicing decentralized embedded on patient care units with both clinical and operational responsibilities. Our pharmacists practice autonomous medication therapy management under a collaborative practice agreement with our inpatient physician partners — and they work in general practice as well as across a myriad of specialty areas. Technology, automation and our skilled pharmacy technician staff enable and sustain our current practice model.

Since our pharmacists are embedded in the patient care units, they are readily accessible to nursing, advanced practitioners, physicians and other healthcare staff, as well as to our patients. In general, our clinical pharmacists are responsible for order review and verification, dispensing, pharmacokinetics, antimicrobial stewardship, anticoagulation management, opioid stewardship, renal dosing adjustments, therapeutic substitution, IV to-oral therapeutic interchange, medication reconciliation, patient education and emergency bedside response.

In several of our hospitals, the pharmacists attend daily multidisciplinary patient care teaching rounds, where they provide valuable input to the patient care team and provide medication therapy recommendations right at the patient's bedside. All platforms have interdisciplinary team rounds in which the pharmacists actively participate making individualized medication therapy recommendations, ensure appropriate monitoring, and identify and address potential issues with the patients' medication therapy in the patient's plan of care for the day.

Additionally, in some more specialized practice areas, the clinical pharmacist also provides additional pharmacy clinical services. One of those areas is hematology and oncology, where we not only provide clinical pharmacist services on the inpatient side but also have a very comprehensive ambulatory MTDM. Hematology/oncology MTDM pharmacists practice under a collaborative practice agreement with our providers and provide routine medication management of patients on oral chemotherapy and those undergoing bone marrow transplant. Patients are referred to this program via a referral order placed by the provider and they monitor labs, toxicities, adverse events, dose adjustments, provider refills and various supportive care needed throughout the course of therapy. The hematology MTDM pharmacists provide clinical support in pre-transplant medication reconciliation and stem cell mobilization support/management, followed by post-transplant support in areas of transition of care management, GVHD surveillance, infection surveillance, vaccine compliance and management of immunosuppression.

Pharmacists further build and manage Beacon regimens, treatment algorithms, patient and nursing education materials, and clinical protocols for medication management. And they implemented the medication-related problem

Pharmacy practice areas:

Adult critical care (Neuro, Med-Surg, Trauma, Cardiac)

Bone marrow transplant

Cardiology

Emergency medicine

Hematology

Infectious diseases

Internal medicine

Neonatal critical care

Nephrology

Nutrition

Oncology

Operating room

Pediatric critical care

Pediatric hematology/oncology

Pediatrics (general)

Rehabilitation

Solid organ transplant

Trauma

Emergency pharmacist bedside response services:

Adult and pediatric codes

Adult and pediatric trauma alerts

Pulmonary embolism alerts

Sepsis alerts

Stroke alerts

Others: RSI, STEMI, conscious sedation

pharmacist intervention tracking tool that allows for a quantitative and qualitative assessment of the pharmacist interventions.

A key area for our decentralized pharmacists is acting as a conduit for Geisinger's meds-to-beds program, MyBedside Rx, to ensure that patients leave the hospital with their needed medications on discharge from the hospital. This has been especially important this past year, since one of our largest focuses as a system has been around increasing prescription capture from our retail, mail-order and specialty pharmacies.

In order to really drive down on specifics of the "how-to" for a best-in-class capture rate for our meds-to-beds program, Geisinger Lewistown Hospital (GLH) was chosen as the pilot site to then translate those learnings to the rest of those campuses. Our comprehensive pharmacy team at GLH, including inpatient, retail and strategy, brought together a multidisciplinary team including nursing, providers and case managers to develop the best approach to enroll patients and fill their discharge prescriptions. GLH has been successful over the past fiscal year at bringing their capture rate from less than 10% to greater than 50%, and that's been sustained over the past few months. In the next fiscal year, we'll seek not only to increase GLH's capture rate further to our goal of 80%, but also to increase the capture rates at the rest of the campuses that have an embedded retail pharmacy. We also have a pilot MyBedside Rx program at Geisinger Wyoming Valley Medical Center's heart hospital. But instead of having an opt-in program for patients to enroll in MyBedside Rx, we have an opt-out program in which the floor pharmacist enrolls the patient automatically in the program.

Another success story for this past fiscal year was gaining approval to expand our medication history technician program and hiring those positions at our Geisinger Wyoming Valley (GWV) and Geisinger Community Medical Center (GCMC) campuses in northeast PA. Medication reconciliation is another key target area as we

focus on the overall health of our patients. So, knowing they have an accurate medication list when they enter not only ensures they are prescribed the correct medications when they're hospitalized, but it is the key to having an accurate discharge medication list. And that prevents medication misadventures and potential readmissions. This program expansion brings our total to 13 medication history technician FTEs across the system.

Yet another major aspect of an acute clinical pharmacist's responsibilities is teaching, which follows not only Geisinger's mission statement but that of Enterprise Pharmacy as well. Enterprise Pharmacy leadership believes strongly that we have a duty to provide education to our healthcare colleagues, to our patients and to the future practitioners of our profession. We actively collaborate with several schools of pharmacy as well as our own Geisinger Commonwealth School of Medicine. Our pharmacists have many opportunities to teach. They precept pharmacy residents and pharmacy students across our hospital campuses. Over this past fiscal year, the first phase of our residency expansion plans came to fruition beginning with additional position approvals and recruiting into these new positions. Beginning with the July 2020 residency class, we added 2 new PGY-1 residency programs with 2 residents each at GCMC and GLH. A new PGY-2 program in Critical Care Medicine at Geisinger Medical Center (GMC) was implemented, too. We also added another PGY-1 resident position to our GWV program and another resident to our PGY-2 oncology residency at GMC. These residency program expansion efforts brought our acute care residency positions from 8 to a total of 15 for the current residency class in 2020–2021. We are continuing our residency expansion efforts for next year's class as well.

In addition to precepting residents, our pharmacists precept pharmacy students from more than 10 schools of pharmacy for both APPE and IPPE learning experiences. Preceptor development is a required component of each acute clinical pharmacist's annual feedback summary, ensuring that our pharmacists are well-equipped to be top-notch educators. There are formal opportunities to present at multidisciplinary continuing education conferences and nursing in-services, as well as daily opportunities to teach patients and other healthcare professionals on a one-on-one basis. Pharmacists also participate in many other avenues related to patient care. Many are active participants on multidisciplinary committees and workgroups. They complete formulary drug reviews; develop guidelines and best practice standards; conduct medication use evaluations; develop order sets for our electronic health record; participate actively in national, state and local pharmacy organizations; and volunteer. Our pharmacists can also participate in research, partnering with our colleagues in the Center for Pharmacy Innovation and Outcomes.

A large portion of the past year was dedicated to addressing the challenges that the COVID-19 pandemic brought to all of our hospitals. These included policy and guideline development, medication procurement and shortages, workflow changes, pharmacist virtual staffing models, and surge planning. The key element in our approach to all of them was collaboration across the system in acute care as well as in other pillars of pharmacy and across disciplines in our organization — while always keeping the patient at the forefront. Our teams worked together and accomplished a large amount of work in a very short time frame to implement changes for patient care very quickly. This was only possible because the lines of communication were consistently open to facilitate idea-sharing and problem-solving. The successes of the acute care pharmacy team that arose from the challenges brought by the COVID-19 pandemic are definitely at the pinnacle of our accomplishments as we look back on this past year.

Major accomplishments in the year

- Successful system standardized pharmacy COVID pandemic planning
- Significant pharmacy residency program expansion: Total resident positions increased from 8 to 15 positions
  - ◆ PGY1 Programs (Acute Care):
    - › Geisinger Medical Center, Danville (5 residents)
    - › Geisinger Wyoming Valley, Wilkes-Barre (3 residents) – 1 resident position added
    - › Geisinger Community Medical Center, Scranton (2 residents) – new program
    - › Geisinger Lewistown Hospital (2 residents) – new program
  - ◆ PGY2 Programs:
    - › Hematology/Oncology, Geisinger Medical Center (2 residents) – 1 resident position added
    - › Critical Care, Geisinger Medical Center (1 resident) – new program
- Expansion of medication history technician program at Geisinger Wyoming Valley and Geisinger Community Medical Center
- Addition of oral oncology MTDM technician in oral oncology clinic
- Implementation of full-time bone marrow transplant clinical pharmacist
- Geisinger Lewistown Hospital pharmacy conversion to 24/7
- Geisinger Lewistown Hospital addition of Emergency Department clinical pharmacist (FTE neutral)
- Final completion of all pharmacy construction projects related to USP 797/800
- Biosimilar therapeutic substitution launched with first product, peg-filgrastim
- Implementation of technician recruitment strategies with significant decrease in technician turnover rate

FY19 highlights/accomplishments:

- Development of role of neuro-oncology clinical pharmacist
- Expansion of our Summer Intern Program at Geisinger Medical Center to 5 interns
- Successful QOPI certification for Western Region hem/onc practice
- Development of USP 800 hazardous medication list, PPE requirements, education modules
- Implementation of closed system transfer devices for hazardous drug preparation
- Geisinger Community Medical Center full implementation of dispense prep and check
- Omnicell XT cabinet upgrades
- Anesthesia Workstation (AWS) implementation at all other campuses (GMC completed in FY19)
- Integration of antimicrobial stewardship pharmacist documentation flowsheets in Epic
- Implementation Epic automatic dose rounding for chemotherapy and biologics

Hospital	Beds	Pharmacy satellites	Operating hours	Supported services
Geisinger Medical Center (GMC)	524	Cancer Center Operating room Inpatient Hem/Onc Pediatrics	24/7	4 amb infusion ctrs 1 ASC
Geisinger Wyoming Valley Medical Center (GWV)	252	Cancer Center Operating room	24/7	2 amb infusion ctrs
Geisinger Community Medical Center (GCMC)	293	Cancer Center Operating room	24/7	1 amb infusion ctr
Geisinger Holy Spirit (GHS)	306		24/7	1 amb infusion ctr
Geisinger Lewistown Hospital (GLH)	123		24/7	1 amb infusion ctr
Geisinger Bloomsburg Hospital (GBH)	76		7 days/wk day shift	
Geisinger Shamokin Area Community Hospital (GSACH)	48		7 days/wk day shift	
Geisinger South Wilkes-Barre (GSWB)	48		7 days/wk day shift + evenings	4 amb infusion ctrs
Geisinger Jersey Shore Hospital (GJSH)	25		5 days/wk day shift	
Windmere	N/A		5 days/wk day shift	1 amb infusion ctr ASC

Hospital	RPh FTE	PGY-1 residents	PGY-2 residents	Pharm Tech FTE	Med Hx Tech FTE
Geisinger Medical Center (GMC)	54.35	5	1	41.2	4
Geisinger Wyoming Valley Medical Center (GWV)	35.8	2		22.2	
Geisinger Community Medical Center (GCMC)	25.3			18.25	
Geisinger Holy Spirit (GHS)	16.45			14.55	3.7
Geisinger Lewistown Hospital (GLH)	8			10.46	
Geisinger Bloomsburg Hospital (GBH)	2.1			3	
Geisinger Shamokin area Community Hospital (GSACH)	3			4.3	
Geisinger South Wilkes-Barre (GSWB)	2			3.5	
Geisinger Jersey Shore Hospital (GJSH)	1.1			2	
Hem/Onc	10.4			6.5	
Infusion	3				

Hospital	Leadership		
Geisinger Medical Center (GMC)	Director	Assistant director	Tech supervisor
Geisinger Wyoming Valley Medical Center (GWV)	Director	Assistant director	Tech supervisor
Geisinger Community Medical Center (GCMC)	Director	Assistant director	Tech supervisor
Geisinger Holy Spirit (GHS)		Assistant director	Tech supervisor
Geisinger Lewistown Hospital (GLH)		Assistant director	Tech supervisor
Hem/Onc		Assistant director	
Infusion		Assistant director	

Hospital	Working managers		
Geisinger Medical Center (GMC)	Manager	4 coordinators	3 lead pharm techs
Geisinger Wyoming Valley Medical Center (GWV)	Manager	3 coordinators	3 lead pharm techs
Geisinger Community Medical Center (GCMC)	Manager	2 coordinators	2 lead pharm techs
Geisinger Holy Spirit (GHS)		1 coordinator	
Geisinger Lewistown Hospital (GLH)		1 coordinator	
Geisinger Bloomsburg Hospital (GBH)	Manager		
Geisinger Shamokin area Community Hospital (GSACH)	Manager		
Geisinger South Wilkes-Barre (GSWB)	Manager		
Geisinger Jersey Shore Hospital (GJSH)	Manager		
Hem/Onc		3 coordinators	
Infusion		2 coordinators	

Planning, Strategy & Analysis

Geisinger's Enterprise Pharmacy Acute Pharmacy pillar provides services to 9 hospitals, 2 ambulatory surgery centers, 14 ambulatory infusion centers (which includes all hematology/oncology infusion sites) and many hospital-based clinics located throughout Pennsylvania — and it also includes our hematology/oncology ambulatory medication therapy disease management (MTDM) program.

Services

Clinical and business transformation – Driving both financial margin and quality improvement through a portfolio of projects that deliver top- and bottom-line growth across all distribution channels

Digital enablement – Due diligence, planning and implementation of medication-centered digital and predictive technologies that drive operational improvements and clinical outcomes and/or reduce total cost of care

Growth and expansion planning – Developing retail, home infusion and MTDM expansion strategies to ensure organizational support, effective management and investment return

FY20 highlights/accomplishments

- Defined 4-year performance improvement and business transformation strategy and roadmap to drive an additional $120 million in margin impact to Geisinger
- Implemented machine learning model to manage heart failure populations and priority-rank patients most likely to benefit from MTDM interventions to optimize evidence-based therapies
- Released Geisinger pharmacy portal and mobile app that enables Rx management, delivery and reminders across web, app, text and voice

Planning, Strategy & Analysis FY20 by the numbers

- $171 million in operational improvements realized in the past 3 years, including an incremental $70 million driven in FY20.
- 24% revenue growth across all distribution channels (Retail, Specialty, Mail-order, and Home Infusion) in FY20 to $420 million

Operations & Compliance

Operations & Compliance FY20 by the numbers

- Installation of 150+ automated dispensing cabinets and 110+ anesthesia workstations
- 15 active Corporate Compliance Audits
- 20 OIG workplan assessments related to Organizational Risk mitigation
- Over 40 medication safety process changes

The Operations & Compliance pillar spans a wide array of topics and locations within Enterprise Pharmacy. We are responsible for oversight of a number of systemwide pharmacy initiatives and play an important role at all Pharmacy locations to assist sites in regulatory readiness and expansion of accreditation at a number of locations.

Services

Operations – Engage with Pharmacy and other departments on system initiatives to improve medication management.

Corporate Compliance – Review various compliance workplans to assess any potential organizational risk. Develop compliance tools to help team improve overall performance. Develop auditing processes to identify risk and prevent future errors. Participate in preparedness and regulatory inspections.

Medication Safety – Coordinate a comprehensive program, helping to ensure the highest level of medication safety and quality. Facilitate an ongoing evaluation of the medication management system and implements strategies that represent national medication safety best practices. Play an integral role in identifying and defining priorities to correct deficiencies as well as enhance existing safety systems.

Controlled Substance (CS) Diversion Prevention – Coordinate systemwide controlled substance oversight programs. Facilitate controlled substance management process changes to enhance existing policy and practices related to controlled substance management and diversion prevention.

FY20 highlights/accomplishments

Expansion of decentralized dispensing modeling across the health system

This effort consisted of the installation of 150+ automated dispensing cabinets in nursing units at multiple hospital sites. The goal of these process changes is to have approximately 85% of medications readily available for nursing. Additionally, the implementation of AnywhereRN© has reduced nursing time at the dispensing cabinets by 30–40%, with key integration with the electronic health record allowing nurses to queue up medications in advance at the dispensing cabinets.

Expansion of anesthesia workstations

The expansion of anesthesia workstations consisted of the installation of more than 110 cabinets across the health system. These cabinets have improved the medication accessibility for the operating room (OR) staff and led to a number of significant practice changes related to the management of controlled substances in the OR. Additionally, they have helped improve data capture of controlled substance transactions, which has reduced the potential of diversion.

Controlled substance waste program

We have worked with our pharmaceutical waste vendor to implement a controlled substance waste program at all hospital facilities. This includes providing a mechanism to render unused controlled substances non-retrievable and helps to ensure a more ecologically friendly mechanism to dispose of controlled substances.

Prescriber compliance

With a systemwide dashboard, we determined controlled substance prescribing patterns. In conjunction with our ambulatory pharmacists, we have created an audit tool to monitor our primary care providers' prescribing patterns for opioids and other controlled substances. Through this process, the team has been able to assist a number of providers in improving the management of chronic pain management patients as well as be sure any challenging patient is referred to the Ambulatory Pharmacy team to assist in patient management.

Moving forward

- Expansion of controlled substance waste program to Geisinger clinic settings
- Development of compliance activities related to our Specialty and Retail Pharmacy locations
- Development of a controlled substance program manager position to lead the systemwide management program
- Enhancement of the medication safety program to include additional ambulatory locations and review of medication management at newly acquired Geisinger sites

Ambulatory Programs

Over the past several years the Ambulatory Programs pillar at Geisinger has continued to grow, evolve and adapt to an ever-changing healthcare environment. Fiscal year 2020 was no different. In addition to adding several new specialty practice areas to our MTDM program, implementing telemedicine as an ambulatory patient visit option and launching new initiatives in the Telepharmacy and 340B space, the pillars formerly known as "Medication Distribution" were brought into the Ambulatory Pharmacy Program team. This included Specialty Pharmacy, Retail Pharmacy, Home Infusion, Patient Assistance, Mail-Order Pharmacy, Home Infusion and the newly created Central Medication Hub. The result was an alignment of resources and initiatives, a streamlining of operations, and a huge opportunity created for knowledge-sharing, cross-training and inter-pillar support. But most importantly, it established a cohesive, adaptive and highly functional ambulatory pharmacy team that is now strategically positioned to innovate and advance the patient care model of the future. This was no more evident than in early 2020 when COVID-19 made its way into the state of Pennsylvania, bringing with it several challenges and conversely, opportunities — opportunities to explore additional collaborations across the pharmacy platforms, to cross-train staff, to create efficiencies and to implement several innovative changes in our practice models, most notably televideo patient visits.

Ambulatory Disease Management

For over 25 years, Geisinger ambulatory disease management (also referred to as MTDM, or Medication Therapy Disease Management) pharmacists have played a critical role in the optimization of medication therapy and disease management and the delivery of high-quality, patient-centered care. The program began as one pharmacist managing anticoagulation in 1995 and has grown to become a nationally recognized model for clinical pharmacy services, particularly around quality and innovation. In the early 2000s, the program set its sights on chronic disease management in primary care and beginning in 2012, ventured aggressively into the specialty practice arena. In 2016, the program received the ASHP Award of Excellence as well as the PSHP Innovative and Collaborative Practice Award, and later that same year, it was named as a finalist for the ASHP Award of Excellence in Medication Safety for its Chronic Pain Management Program.

Ambulatory Disease Management FY20 by the numbers:

- 79 ambulatory disease management pharmacists
  - » 59 pharmacists in primary care practice sites across Geisinger
  - » 20 pharmacists on specialty practices (14 unique clinical specialty areas)
  - » 38 pharmacists are certified insulin pump trainers
- 15 pharmacy clinic support staff
- 348,739 completed patient encounters: 113,397 (32.5%) office visits, 1,857 (0.5%) televideo visits, 233,485 (70%) phone visits
- 26,328 new pharmacist consults
- Average A1C reduction of 2.3 points after 9 months of being followed by MTDM clinic

Currently, the entire ambulatory disease management team includes 79 clinical pharmacists embedded in one of the 70 primary care or specialty practice sites across the system. This expansive team is supported by 34 technicians within Telepharmacy and 15 clinical support staff. Empowered by collaborative practice agreements with several hundred Geisinger physicians, the pharmacists manage patients' medication therapy for 25 medical conditions and contribute to the delivery of value-based care by improving clinical outcomes while reducing cost of care and maintaining excellent patient experience. Within the ambulatory disease management team, there are three practice models: primary care, specialty medicine and home-based primary care (Geisinger at Home), and Telepharmacy. Within the past year, Geisinger clinical pharmacists have joined our Keystone ACO and Federally Qualified Health Center partners to manage their patients with chronic diseases. Additionally, they have become key members of the care team within two Geisinger 65 Forward Health Centers, a new Geisinger initiative offering a more senior-focused, personal, primary care approach for patients 65 years and older.

Services

Primary care – There are 59 primary care pharmacists embedded within family practice, internal medicine and KACO sites across the health system. The pharmacist's practice is a model of care based on comprehensive and high-value office-based visits — and most recently, telemedicine visits. They are responsible for the ongoing management and co-ownership of chronic disease patients at primary care sites. These pharmacists help to improve medication-related patient outcomes and assist primary care providers in decreasing healthcare costs and meeting quality benchmarks. The pharmacists perform comprehensive medication reviews and medication reconciliation, identify and resolve medication-related problems, manage chronic disease states through evaluation of the safety and effectiveness of medication regimens (including titration and

monitoring towards targeted patient outcomes), design patient-centered, cost-effective medication regimens and provide education to patients and providers.

Specialty medicine – In addition to primary care team members, 20 ambulatory pharmacists are integrated into various specialty medicine departments. The specialty practice model, which is primarily telemedicine-based, is customizable to the needs of the medicine department and tends to be more population-health–focused. Specialty ambulatory pharmacists help lead the system's clinical treatment pathway development process within their medicine disciplines and work closely with pharmacists from Geisinger Health Plan and Geisinger Specialty Pharmacy to coordinate and optimize patient care.

Home-based primary care – One of Geisinger's newest initiatives, Geisinger at Home, is an interprofessional home-based primary care model instituted to increase access and decrease high-cost utilization for the system's neediest patients. Two clinical pharmacists work in collaboration with registered nurse case managers, advanced practitioners, community health assistants and regional medical directors. The pharmacists primarily practice telephonically and through telemedicine, communicating with another Geisinger at Home provider while they are in the patient's home. They provide acute medication and disease management, drug information, assistance with drug procurement, acute disease co-management and disease state monitoring. They work closely with other members of the Geisinger at Home team to optimize patients' medication regimens. Some of these patients are on upward of 30 medications, requiring a through medication reconciliation during the patient's transition of care. This medication reconciliation is performed via telemedicine between the pharmacist in the clinic and the community health associate while they are in the patient's home.

FY20 highlights/accomplishments

- Implemented televideo within all 70 primary care and specialty care sites. Televideo visits provide a safe alternative to the traditional in-person visit while allowing patients to still receive personal one-on-one care for their disease and medication management.

- Adapted our traditional practice model in response to COVID-19

  » Developed a full-time work-from-home model for our clinic office support staff

  » Developed a hybrid work-from-home/work-in-clinic model for our patient-facing clinical pharmacist staff embedded within primary care and specialty sites

  » Redeployed 32% of our MTDM clinical pharmacists to other pharmacy platforms such as Telepharmacy, Mail-Order and Retail to assist with growing volumes in response to COVID-19

- Expanded Geisinger's residency program to Geisinger primary care clinics. This inaugural class of PGY1 residents matched 2 residents for the Western Region and 2 residents for the Northeast Region.

- Achieved the 90th percentile or better in patient satisfaction on the Press Ganey's 2019 Patient Satisfaction survey, causing 6 ambulatory pharmacy MTDM clinics to be rated in the top 10% in the nation

- Developed and rolled out Ask-a-Pharmacist for anticoagulation and pain management

- Expanded ambulatory clinical pharmacy care into 3 KACO facilities: Wayne Memorial, Evangelical Community Medicine and Family Practice Centers

- In response to COVID-19, ambulatory clinical pharmacists in specialty sites (e.g., rheumatology and neurology) assisted with transition from hospital-based intravenous medications to subcutaneous medication alternatives and administration to decrease the number of patients in infusion centers

Moving forward

The upcoming year's strategic plan holds promise for many opportunities within the primary care and specialty sites for our ambulatory clinical pharmacists. In primary care, we will be expanding into three additional 65 Forward locations and several primary care sites across the system will be moving into new or newly remodeled buildings, offering a brighter, more pleasant atmosphere and increased patient access to specialty services. There will be expansion of clinical pharmacists in the behavioral health space, providing patient medication optimization and monitoring, and allowing the behavioral health providers to see more acute patients. Televideo will continue to be an option for patients who are unable to come into the clinic for a face-to-face visit. Geisinger will also graduate our first group of PGY1 residents and begin to recruit for the next upcoming class, in hopes of expanding the program from 4 residents to 6. In our specialty sites, expansion will focus primarily on our two most recent endeavors in Infectious Diseases and Pharmacogenomics, then expand into Endocrinology, Pulmonology and Dermatology after the first of the year. The infectious diseases pharmacist will develop and expand an outpatient antimicrobial stewardship program along with continuing to support the infectious diseases platform. Our pharmacogenomics pharmacist has just begun to explore the array of options at Geisinger, and will begin integrating state-of-the art technology into medical care and improve patient outcomes by expanding patient and provider access to the scientific innovation of genomics research.

Telepharmacy

Over the past 3 years Telepharmacy has experienced many changes, evolving from a refill call center into a multifunctional clinical Telepharmacy hub consisting of 24 pharmacists and 36 pharmacy technicians. Over the past year alone, Telepharmacy has expanded its medication refill management services and integrated clinical driven programs into its workflow.

Services

Most notably over this past fiscal year, Telepharmacy has expanded its medication management services into select specialty platforms, onboarding Gastroenterology, Neurology and Rheumatology starting in May 2020. Since that time, our pharmacy team has decanted more than 8,000 orders from these clinics. Centralizing the refill workstream for these platforms will allow Telepharmacy to identify opportunities regarding Geisinger Mail-Order and Retail capture, as well as align with a larger initiative involving MTDM, Geisinger Specialty Pharmacy, 340B, and the newly formed Centralized Medication Hub. This collaborative approach to medication management in our specialty patient population will enable the Ambulatory Pharmacy team to better identify opportunities regarding therapy optimization and prior authorization management, as well as maximize the benefits of our 340B program.

Expanding clinical services has also been a focus during this past year. In addition to remotely managing anticoagulation patients enrolled in our ambulatory service, Telepharmacy is involved in an initiative to reduce ED utilization due to UTI symptoms and complications. UTI diagnosis continues to be one of the highest populations to utilize ED resources, driving costs to both the patient and the system. Telepharmacy now manages all female patients >18 years old presenting with symptoms of uncomplicated UTI for our family medicine sites. Our pharmacists order urine cultures, evaluate results, order antibiotic therapy and counsel patients on what to expect from their treatment. Since August of 2019, Telepharmacy has managed over 350 patients, resulting in a faster turnaround time for therapy initiation and reduction in ED visits.

Telepharmacy FY20 by the numbers:

- Medications managed: 962,476
- Lab care gaps identified: 125,436
- Lab care gaps closed: 85,000 (68% completion)
- Patient calls handled: 445,928
- Specialty integration (started in June 2020): 8,842 medications managed
- Anticoagulation management: 46,950 patients managed, 68% WNL
- Uncomplicated UTI management: 350+ patients referred by RN triage and managed by telepharmacists
- Patient referrals for MTDM services (DM and COPD): 802 patients identified, 581 referred to services
- New patient capture to mail-order: 1,430

FY20 highlights/accomplishments

- Experienced 130% increase in new to mail-order capture over the previous year due to the integration of enhanced Epic functionality as well as employee incentive programs.

- Expanded Medication Management program into select specialty departments (Gastroenterology in May, Rheumatology and Neurology in June). Centralizing the refill process for these platforms is part of a collaborative effort involving MTDM pharmacists, Geisinger Specialty Pharmacy, Central Med Hub and 340B. This care path will maximize our ability to identify opportunities around 340B to capture, improve and standardize the prior authorization process, promote services through our Specialty, Mail-Order and Retail outlets, as well as grow our Ambulatory pharmacy clinical footprint.

- Keystone ACO initiative to reduce ER utilization due to UTIs: Expanded program to include a broader patient age demographic.

- Mail-order collaboration: Telepharmacy technicians assist in the management of over 10K orders per month. Allowing for reallocation of mail-order staff to assist with other patient-focused workflows.

Moving forward

Plans to scale the medication management and UTI pharmacist services are scheduled for this coming FY. Additional specialty departments (Pulmonology, Endocrinology and Dermatology) have been identified to be integrated into the medication management workflow. We are also collaborating with multiple acute platforms across the clinical enterprise to develop a comprehensive multidisciplinary program around transition of care. Telepharmacy's role will consist of providing consultation/education to the patient between hospital and follow-up, with a focus on medication reconciliation. And finally, Telepharmacy will continue its collaboration with our partners at GHP regarding population health opportunities to improve patient outcomes and cost savings initiatives.

Specialty Pharmacy and Central Medication Hub

Specialty Pharmacy FY20 by the numbers:

- Filled >52, 000 Rx's in FY20
- Contributed >$255M in revenue
- Revenue increase of 19% YOY
- Obtained >$4M in patient assistance funding
- Call Center handled >53,000 phone calls with a 4% call abandonment rate

Geisinger Specialty Pharmacy serves the specialty pharmacy needs of Geisinger patients throughout the state of Pennsylvania, as well as New York, New Jersey, Ohio, Delaware, Maine, Florida, Connecticut and Indiana. Our clinical focus is in the areas of multiple sclerosis, hepatitis C, hematology/oncology and autoimmune diseases. Specialty Pharmacy operations are supported by a leadership team including manager, coordinator and pharmacy technician supervisor. The staff includes 4 clinical pharmacists, 12 pharmacy technicians, 2 pharmacy assistance coordinators, 2 pharmacy support associates and a service technician. Our patient management program provides detailed patient assessments completed by trained specialty pharmacists at the beginning of each patient's treatment, scheduled reassessments throughout therapy, monthly patient refill assessments and an extensive coordination of care process involving patient tracking through episodes of care in the electronic health record (EHR). Quality service is priority, with quality improvement projects continually being developed to ensure our processes and procedures are producing expected results and allowing for the process and clinical innovation. Our patient financial assistance services help identify financial barriers to critical treatments by researching and incorporating available financial assistance for underinsured patients and those with high out-of-pocket costs.

Services

In February 2020, the Central Medication Hub was formed by incorporating medication prior authorizations and pharmacy reimbursement into Geisinger Specialty Pharmacy. Workflow changes that streamline processes and limit handoffs of work are being piloted in select specialty areas where the burden of prior authorizations has taken a toll on clinic staff resources. Using the expertise of embedded specialty MTDM pharmacists allows for increased capture of prescriptions at Geisinger Specialty Pharmacy and contributes to the overall quality of care the patient receives.

FY20 highlights/accomplishments

- Achieved URAC specialty pharmacy re-accreditation: January 2020
- Obtained access to several limited distribution drugs to better serve our patients
- Created Central Medication Hub: February 2020

Moving forward

- Expand the Central Medication Hub scope of services to include all specialty medications prescribed within Geisinger
- Obtain second specialty pharmacy accreditation through ACHC

Home Infusion

Geisinger Home Infusion has provided quality infusion services to our community in more than 46 counties in Pennsylvania since 1988. It is staffed with 83 employees, including 9 pharmacists, 16 pharmacy technicians, 26 registered nurses, a dietitian, reimbursement coordinators, delivery drivers and warehouse associates. Over the past year, Home Infusion began to expand and grow its nursing staff to allow for the in-house provision of nursing services in the home, a service that was previously subcontracted out to local home health agencies. Expanding our service offerings has allowed high-cost medications to be infused in the home instead of in the clinic or hospital setting; increased patient satisfaction and compliance; and freed up access at hospital, clinic and infusion sites across the system. Our current therapy offerings include total parenteral nutrition, antibiotic infusions, enteral, chemotherapy infusions, biologics, immune globulins and other miscellaneous therapies (e.g., pain, hydration, steroids).

Services

Geisinger Home Infusion was able to accommodate moving patients from clinic to home with a big push for assistance during COVID. In March, we began supporting ophthalmology by compounding serum tears in our facility and providing non-contact pickup for the patients; to date we provided for 41 patients. We worked with Pediatrics to provide bili blankets to decrease hospital stays and readmissions. Since Nov. 1, 2019, 78 blankets were dispensed to patients at an average of use 72 hours each and 8 platforms served with 28 blankets.

FY20 highlights/accomplishments

- Rapidly and successfully transitioned over 200 patients to home infusion during the initial COVID surge in winter and spring of 2020
- Implemented a process for no-contact delivery for all patients
- Began supplying serum tears for the system
- Partnered with Geisinger Women & Children's Institute to maintain and supply bili blankets
- Pediatric cytarabine: Transition all pediatric subcutaneous syringes to Geisinger Home Infusion
- Implemented a new myGeisinger process and a 24-hour 800 number for our enteral patients, which allows for refill requests and patient messages

Moving forward

- Implementing a process for procurement and supply of enteral feeds directly to patients in place of the current system, which uses a third-party vendor. The new process will streamline the distribution of these products, provide for efficiencies in the workflow and reduce the system's costs.

Retail and Mail-Order

Retail and Mail-Order Pharmacy FY20 by the numbers:

- Mail-Order Pharmacy fills approximately 2,150 prescriptions a day and triages 500 calls a day, on average
- Mail-Order Pharmacy filled close to 500,000 prescriptions and answered 126,500 calls in FY20
- Retail Pharmacies filled 980,000 retail prescriptions in FY20
- Geisinger Belleville, Dallas and Pottsville filled 43,000 prescriptions for LIFE Geisinger in FY20

Our outpatient retail pharmacy model offers standard dispensing services as well as clinical services to support our providers and patients and meet the demands of the ever-changing retail environment. Being integrated with our hospitals/medical clinics, our outpatient pharmacy sites not only offer prescription filling, dispensing and pharmacist counseling, but also various other ancillary services to enhance the Geisinger patient experience — including compliance packaging, bedside delivery and compounding. We continue to operate 12 retail locations from State College to Mount Pocono, and our mail-order facility operates out of its headquarters in Elysburg. Staff includes 1 assistant director, 13 pharmacy managers, 25 pharmacists, 71 pharmacy technicians, 3 retail service technicians, 4 mail-order service technicians, and 1 pharmacy buyer.

Geisinger Mail-Order Pharmacy provides a high level of service to its customers, while also reducing the costs associated with providing prescription benefits to Geisinger employees, as well as other Geisinger Health Plan members, including Medicaid and Medicare patients. Our mail-order facility provides pharmacy delivery to patients in 9 states: Pennsylvania, Delaware, New Jersey, New York, Ohio, Florida, Indiana, Wisconsin and Maine.

FY20 highlights/accomplishments

- Geisinger Mail-Order Pharmacy achieved a new fill record in April 2020, filling 50,197 prescriptions
- Launch of Retail ship to home, curbside delivery and contactless bedside delivery in 2020
- Addition of services to LIFE Geisinger Burnham from Geisinger Pharmacy Belleville in addition to services being provided to LIFE GSWB, LIFE Scranton, LIFE Kulpmont from Geisinger Pharmacy Dallas and Geisinger Pharmacy Pottsville
- Training and onboarding of 11 redeployed Geisinger employees during COVID-19
- Cross-training of MTDM and Refill Call Center Pharmacy team to assist with call volume and order filling at both Mail-Order and Retail locations from April to June 2020
- Addition of 10 new mail-order positions to support growth and volume as well as to provide high-touch customer service, including rapid turnaround time and speed to answer at Mail-Order Call Center.

Moving forward

- Opening of 2 new retail locations in early FY2021 at GCMC and Lock Haven
- Expansion of Meds to Beds program and operational hours for fall 2020 at GMC and GWV
- Launch of GCMC Meds to Beds program in winter 2020/21
- Addition of LIFE Geisinger services to Minersville, fall 2020; Wilkes-Barre, winter 2021
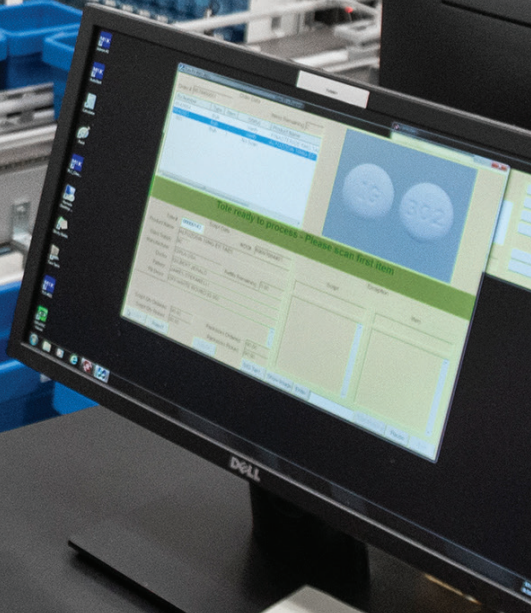
Formulary & Procurement

The Formulary & Procurement pillar includes formulary, pharmacy procurement/inventory management and pharmaceutical contracting.

Formulary & Procurement FY20 by the numbers

- Annual savings of over $1,000,000
- Completed 68 new drug reviews, 33 expanded indication reviews, 7 class reviews, and 187 rejections from System Formulary

Services

Formulary – The role of the Formulary team is to work with our clinician partners to evaluate pharmaceutical products using an evidence-based approach to identify which products provide the best outcomes to our patients. Once identified, the team works with pharmaceutical vendors to negotiate the best possible price for these products.

Pharmacy Procurement/Inventory Management – The Procurement team works hand in hand with the formulary team and communicates daily with the acute care hospitals and ambulatory clinics to be sure pharmaceutical products are readily available for patients.

Pharmaceutical Contracting – The Contracting team evaluates potential contract opportunities with vendors that result in partnerships with pharmaceutical companies. The team consists of members from across the Pharmacy enterprise, inclusive of Geisinger and Geisinger Health Plan. These partnerships lead to cost savings opportunities.

Major accomplishments this year

- Partnering with Geisinger Supply Chain on the IV Solution Vendor change to streamline the communication process and evaluate clinical alternatives for COVID-19 planning and response
- Proactively purchased a 6-week medication inventory for all acute care hospitals, clinics and Retail Pharmacies prior to COVID-19 to assist with limiting disruption to patient care
- Evaluated medication inventory across the enterprise to maintain stock on hand for moderate surge planning
- Worked closely with the Pennsylvania Department of Health to communicate remdesivir allocation and shipment information to Geisinger acute care sites
- Weekly evaluating and reporting of COVID-19 medication inventory list, Braun IV Solutions, dialysate solutions, and personal protective equipment

FY20 highlights/accomplishments

Formulary

- Implemented a process to streamline the Formulary Drug Review process, which in turn took our outstanding drug review list from over 200 drugs needing to be reviewed to less than 50

- This process also assures Formulary Steering Committee time is high-value time, and time is spent evaluating drugs that are believed to have a role on the System Formulary and will benefit Geisinger and its patients

- Partnered with a repackaging vendor to outsource oral solids and oral liquid repackaging needs, in order to alleviate operational impact at the Acute Care Platform

Pharmacy Procurement/Inventory Management

- During FY20, inventory began to relocate to the CLAM to take advantage of direct shipping opportunities, as well as maximizing inventory control

- During the next fiscal year, the plan to maximize inventory control will continue to develop as more inventory is relocated to CLAM for centralized distribution, including evaluation of Centralized Inventory Pharmacy Software Program

- Assisted VITALine Pharmacy with transitioning from an outside distributor managing Enteral Feed distribution to centralizing at the CLAM Warehouse

Contracting

- In FY20, over 60 individual contracts were evaluated to optimize Geisinger contracting opportunity

- During FY20, the procurement team began aggressively pursuing contracting opportunities for newly launched oncology biosimilars and is currently revisiting new contracting opportunities for existing biosimilar products. These opportunities will provide additional savings and value for both Geisinger and its patients.

- Geisinger committed to participate in the Premier ProvideGX Program in an effort to ensure adequate supplies of emergency syringes for our patients

Knowledge Management

The Knowledge Management pillar in Enterprise Pharmacy exists to coordinate and promote learning and professional development. The pillar's efforts are broad and extend to pharmacists, pharmacy technicians, pharmacy residents and pharmacy students. Its reach also extends into opportunities outside of pharmacy to connect with other Geisinger professionals to facilitate interprofessional learning opportunities, clinician education and patient education.

Services

Student Rotation Coordination

Under the preceptorship of Geisinger pharmacists, Enterprise Pharmacy maintains relationships with regional pharmacy schools as well as those within Pennsylvania and across the United States. For academic year 2019 – 2020, pharmacists in Enterprise Pharmacy partnered with 11 different schools of pharmacy, hosted 217 introductory and advanced pharmacy practice experiences, and welcomed 19 medical students to participate in interprofessional learning activities. Students came to us from:

- University of Buffalo
- Campbell University
- Creighton University
- Duquesne University
- Geisinger Commonwealth School of Medicine
- Lake Eric College of Osteopathic Medicine
- Marshall University
- Philadelphia College of Pharmacy
- University of Pittsburgh
- Temple University
- University of South Carolina
- Wilkes University

In addition to the student rotations, Geisinger Medical Center continued to support its Pharmacy Student Summer Intern Program. Coordinated by Angela Slampak-Cindic and Sarah Hale, the program offers pharmacy students a 12-week "mini-residency" with the pharmacists and pharmacy team in Danville. Student interns are welcomed into pharmacy operations, participate in the clinical rounding and services maintained by the clinical pharmacy team, and conduct presentations for pharmacy staff. The program is always a success with students and preceptors and we plan to expand it in the upcoming years.

Graduate Pharmacy Education

Geisinger continues to maintain excellent PGY1 and PGY2 residency programs at both Geisinger Medical Center (GMC) and Geisinger Wyoming Valley Medical Center (GWV). In September 2019, the American Society of Health-System Pharmacists conducted an on-site reaccreditation visit for the PGY1 residency and PGY2 oncology residency at GMC in Danville. Both programs received exceptional reports from the accreditors and were awarded an 8-year accreditation though the commission.

Several new residency expansions were approved for the 2020 academic year and new residency leaders took on the task of setting up these programs to prepare for the arrival of new residents in late June or the beginning of July.

- Geisinger Community Medical Center was approved to begin a PGY1 residency with 2 positions. Danielle Karaffa, PharmD, BCPS, was selected as the program director.
- Geisinger Clinics in the northeast were approved to begin a PGY1 residency with 2 positions. Michael Kachmarsky, PharmD, BCACP, was selected as the program director.

- Geisinger Clinics in the West were approved to begin a PGY1 residency with 2 positions. Sarah Krahe-Dombrowski, PharmD, BCACP, was selected as the program director.

- Geisinger Lewistown Hospital was approved to begin a PGY1 residency with 2 positions. Cory Ulisse, PharmD, was selected as the program director.

- GMC was approved to begin a PGY2 residency in critical care medicine with 1 position. Angela Slampak-Cindric, PharmD, BCPS, BCCCP, was selected as the program director.

- GMC's PGY1 residency program transitioned its leadership to Sara Gaines, PharmD, BCPS

- GWV's PGY1 residency program, under the leadership of Jamie Kerestes, PharmD, BCPS, was approved to expand to 3 positions.

- GMC's PGY2 residency in oncology, under the leadership of Benjamin Andrick, PharmD, BCOP, was approved to expand to 2 positions.

Pharmacy Technician Education

With the increased demand for technicians capable of meeting the rigorous responsibilities of a pharmacy technician, enterprise pharmacy sought to identify resources for pharmacy technician recruitment as well as offerings to support the development of our own technicians, elevating them to certification through the Pharmacy Technician Certification Board or the National Healthcareer Association. In addition to the resources offered through internal development and subscriptions to TRC's Pharmacy Technician Letter and Hospital Pharmacy Technician Letter, Enterprise Pharmacy entered into an affiliation agreement with Penn Foster College's Pharmacy Technician Diploma Program. The partnership with Penn Foster College serves to support those already in pharmacy looking to pursue a diploma program for pharmacy technicians or for those interested in pursuing a career as a pharmacy technician.
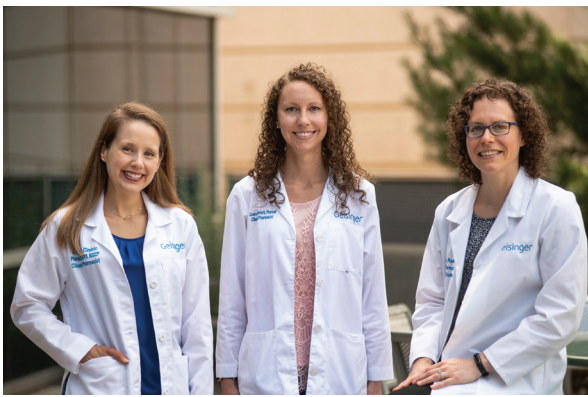
FY20 highlights/accomplishments

- Our resident graduates and where they are going:

  » Grant Lee (2019–2020 PGY2 Oncology) accepted an outpatient hematology/oncology clinical pharmacist position at the ChristianaCare Helen F. Graham Cancer Center.

  » Krushna Shah (2019–2020 PGY1 GWV) accepted an inpatient clinical pharmacist position at Geisinger Community Medical Center.

  » Jennifer Yannuzzi (2019–2020 PGY1 GWV) accepted an inpatient clinical pharmacist position at Geisinger Wyoming Valley Medical Center.

  » Kayla Hart (2019–2020 PGY1 GMC) accepted a PGY2 position in Oncology at Geisinger Medical Center.

  » Melissa McGowan (2019–2020 PGY1 GMC) matched to a PGY2 position in Transplant and the University of Cincinnati.

  » Jessica Curtis (2019–2020 PGY1 GMC) matched to a PGY2 position in pediatrics at Children's National in Washington, D.C.

  » Amanda Boyer (2019–2020 PGY1 GMC) accepted a position with Geisinger Home Infusion Pharmacy.

  » Amber Heffelfinger (2019–2020 PGY1 GMC) accepted a position at Tower Health in Reading, Pa.

- Residency program Preceptors of the Year:
  - » PGY1 Geisinger Medical Center: Laura Brickett
  - » PGY2 Geisinger Medical Center: Amy Ellenburg
  - » PGY1 Geisinger Wyoming Valley Medical Center: Kayla Kotch
- The PGY1 pharmacy and PGY2 oncology pharmacy residencies at GMC were awarded an 8-year accreditation by ASHP.
- The newly established PGY2 specialty residency in Critical Care at GMC was awarded an ASHP Foundation Grant for new or expanding residency programs.
- The annual examination process for pharmacists was transitioned to an online format using different online tools available through Geisinger. In collaboration with the Geisinger Commonwealth School of Medicine, pharmacy is now able to develop courses to house instructional materials and assessments for staff in Enterprise Pharmacy.
- Clinical Pharmacy Retreats in October and March highlighted the work of each of the Enterprise Pharmacy pillars and provided insight into some of the groundbreaking work being done by members of the Enterprise Pharmacy teams. Drs. Ed Hartle (executive vice president and chief medical officer) and Jerry Maloney (chief medical officer) were guests at each of the programs and provided valuable comment and insight into the role of Pharmacy in fulfilling Geisinger's mission.
- Due to limitations on the physical gatherings, the Clinical Pharmacy Retreat went virtual. At the conclusion of the week's offerings, pharmacists and pharmacy technicians competed in an online quiz competition. Kimberly Limouze (pharmacist, GMC) and Casey Trombley (pharmacy technician, GMC).
- Pharmacy was represented by Justin Troutman & Haley Kay in Schwartz Rounds: *Managing pain for patients with substance misuse and abuse disorders* (Oct. 17, 2020).
- Geisinger has formed a systemwide Health Professions Education Committee to oversee and discuss the management of student learning in the system. Representation on the committee includes nursing, physicians, pharmacy, nurse practitioners, physician assistants, podiatry, radiology and nutrition.
- The residency programs in Enterprise Pharmacy hosted their first-ever open house in November to give pharmacy residency candidates an opportunity to get an early look at the residency programs as well as the facilities at GMC and GWV. It was a new phase in recruiting efforts for Geisinger residencies with hopes of contacting more learners and potential candidates.
- With the Eastern States Conference canceled due to statewide restrictions on in-person gatherings, the residency programs took their residency research projects to the American College of Clinical Pharmacy's Virtual Poster Symposium in May. Their poster presentation titles can be found in the research and published abstracts section of this annual report.

2019-2020 Residency Team at ASHP in Anaheim, CA

Angela Cindric. Laura Brickett (Preceptor of the year),
Sara Gaines

Ben Andrick, Amy Ellenburg (Preceptor of the Year)

Krushna Shah, Jamie Kerestes, Kayla Kotch [preceptor of the year],
and Jennifer Yannuzzi.

Informatics and Data

The Pharmacy Informatics team serves to support all the software- and technology-related functions within the Pharmacy Department. As the responsibility and scope of Enterprise pharmacy continues to develop and grow, so does the scope and responsibility of the Pharmacy Informatics team. The team consists of 2 pharmacist informaticians, 5 informatics pharmacists and 4 informatics analysts and is led by the AVP of Clinical Informatics. Although involved in and responsible for a number of different software and automation systems, the key areas of responsibility and development of the team over the last year have focused on the support and development of the electronic health record (EHR) and the support and expansion of the automated dispensing cabinets (ADCs), including the installation of new anesthesia cabinets at each of the hospitals across the system. Other key areas of focus included supporting two upgrades to the Epic EHR during the course of the year, the implementation of Real Time Pharmacy Benefit (RTPB) within the Epic EHR and supporting the upgrading of a number of systems as they move from the Windows 7 to the Windows 10 platform, in order to prepare for Microsoft's sunsetting of the Windows 7 product. This project will include the need to upgrade the hardware for the entire fleet of automated dispensing cabinets across the organization. The Informatics team is also responsible for the IV pumps databases and software. Three of the pump software systems were upgraded over the past year, and standardization and expansion of the drug library was a key accomplishment during this time — and necessary, as we prepare for the integration of the pumps with the EHR.

Key to the plan and functionality of the Informatics team is an ongoing emphasis on patient safety and workflow. Over the last year, the addition of the 2 informatics analysts allowed the team to increase support of the automated dispensing cabinets and other systems used in the pharmacy and to initiate a process of regular optimization of the cabinets to maximize their benefits while appropriately managing the inventory. Informatics analysts have worked with each of the hospitals to standardize the processes for managing and optimizing the cabinets. There are regular monthly meetings of the analysts with the key contacts at each of the hospitals to create open lines of communication and talk through processes, changes and problems that may be encountered at a site. From the informatics pharmacist perspective, ongoing weekly meetings to review and optimize order sets continue, with the goals of eliminating duplicate order sets, standardizing key areas of the order sets through the use of "Best of Breed" medication groups and ensuring that the order sets align with the most current clinical guidelines.

FY20 highlights/accomplishments

Tools to support the Meds to Beds program

A key area of focus was developing tools to support the Meds to Beds program, providing medications to patients prior to discharge. This type of program has shown to significantly improve patients' medication compliance and decrease their risk of readmission. Tools have been built within the Epic environment to facilitate enrolling and monitoring of patients who are eligible for the Meds to Beds program.

Reworking the state's Prescription Drug Monitoring Program

A new project that was initiated near the end of the fiscal year was the rework of the integration related to the state Prescription Drug Monitoring Program (PDMP). The state made the decision to not continue with the current integration agreement, and to modify the way that this data is received and available to providers in the EHR. A team was pulled together, composed of various members of the Geisinger Epic team and representatives from the state PDMP program, to determine the best method of adapting our processes to the new system. It is expected that changes that came with our Epic upgrade in September 2020 will help adapt the process to allow providers and their delegates to review the information from the PDMP database without having to leave the EHR or deviate from their normal workflow.

Implementation of Real Time Pharmacy Benefits

The third key informatics project carried out during the year was the implementation of software that provides for Real Time Pharmacy Benefits (RTPB) within the EHR. This process provides a method to understand the patient's true out-of-pocket expense for the medications being ordered and also suggests more cost-effective, therapeutic alternatives where appropriate. Historically this process has been carried out either on the phone or outside the EHR via the internet. RTPB offers the advantage of carrying out the entire transaction within the EHR and facilitating changes to the prescribed medications where appropriate. It also allows the ordering provider to have a conversation with the patient about out-of-pocket costs and potential therapeutic alternatives, thereby allowing the patient to more effectively participate in their care decisions. The system is only limited by the information available from the insurance provider or pharmacy benefit manager. Currently approximately 83% of our patients have RTPB information being returned when new prescriptions are being ordered for the patient.

Moving forward

- Completion of the upgrade of all automated dispensing cabinet to Windows 10 compatible hardware.
- Completion of the electronic (ePA) project to cover all service lines.
- Implementation of additional software to support the pharmacist managed prescription refill project.
- Implementation of software to support the shortage management process.
- Support the conversion of Evangelical Hospital to the Epic EHR.
- Implement decision support, within the EHR, to address all the FDA REMS requirements
- Working through the process of pump integration with the Epic EHR.
- Analysis and planning for implementation of Willow Ambulatory Pharmacy support for our retail pharmacies.

Managed Care

Under a separate entity from Geisinger's Clinical Enterprise, key functions of the Geisinger Health Plan (GHP) Pharmacy Services Department include operational oversight of our claims processor and setup of prescription drug benefits, formulary development, a P&T Committee consisting of internal and external members, prior authorization and reporting. The department consists of over 60 employees and includes pharmacists, nurses, pharmacy technicians, data analysts, benefit analysts, operations coordinators, prior authorization representatives and others. GHP offers nearly every type of medical and prescription drug insurance including commercial risk, ACA Marketplace, self-insured, self-insured Rx-only, Medicare Advantage Part D, Pennsylvania Medicaid and Pennsylvania CHIP. GHP has prescription benefit clients in Pennsylvania, New Jersey and Maine.

Services

- Claims processing
- Benefit design/configuration
- Formulary design
- Prior authorization
- STAR and HEDIS/Adherence Programs: Currently GHP Pharmacy Services has 2 full-time pharmacists as well as 1 pharmacy technician working on our STAR and HEDIS programs. Member telephonic outreach and sending of letters to members as well as to providers of non-adherent members are current initiatives utilized to increase the rates.
- Opioid monitoring

FY20 highlights/accomplishments

RFP for PBM Services: An RFP for Pharmacy Benefit Manager Services was successfully completed. GHP has used our current vendor, MedImpact, for 9 years. At the completion of the RFP, a decision was made to transition to a new vendor, Perform RX, effective Jan. 1, 2020. Implementation of a new PBM is a 12-month endeavor. GHP is currently halfway through the implementation and is looking forward to a smooth transition to the new vendor on Jan. 1.

Integration of CenterX: CenterX was integrated into Epic to help streamline the pharmacy prior authorization process. When a prescriber is in Epic and the medication requires a prior authorization, they are able to see the criteria for that member and medication when the payer has the necessary information to display. CenterX is not just a GHP initiative as CenterX helps with all payer submissions. If the payer is not integrated with CenterX, a fax will be generated to the payer for the prior authorization.

Site of Care: Site of Care is an initiative to move infusions to lower-cost settings and out of the high-cost inpatient facilities. This in turn helps to open up infusion chairs for those that need them. Currently this is only applicable to certain Commercial and Exchange members for a handful of medications. The goal is to continue to build out the medication list to further enhance the savings and efficiencies gained from this process.

RTBC: Real Time Benefit Check is a real time check of a GHP member's pharmacy benefit. This displays the member's cost share for the prescribed medication, if the medication needs a prior authorization, and any alternatives available. This process helps to cut down on prior authorization when an alternative is appropriate as well as getting the member on the right and most cost-efficient medication as soon as possible.

Rx Savings Solutions: RxSavings Solutions (RxSS) is a vendor that GHP Pharmacy Services is contracted with to help identify members that may have potential medication cost savings, whether that be a lower-cost alternative or a savings by switching to mail-order. This is best described as a conversation starter between the member and provider to get them on a cheaper alternative or lower-cost avenue when deemed appropriate by the prescriber. RxSS sends out the member communications and has an integrated platform, through single sign-on, with the Geisinger member portal to enhance the member experience.

Via Oncology Integration: The integration with Via Oncology helps standardize the prescribing of oncology medications, when appropriate, as well as align the GHP formulary with the "on pathway" recommendations. We continue to work on making the process even more efficient for medications that require a prior authorization but are deemed to be on pathway, thus eliminating the prior authorization process for those scenarios.

Increasing mail-order capture rates: Currently, mail-order is explained and suggested during adherence outreach attempts, when a member isn't filling their maintenance medications through mail-order. The goal is to help get the medications to the member in the most cost-efficient manner and in turn increase adherence rates as well as mail-order rates.

RxAnte: RxAnte is a vendor that GHP Pharmacy Services is contracted with to identify the most impactful Medicare members who are non-adherent to their cholesterol, diabetes and/or hypertension medications. This helps disperse our limited resources to the members where we can have the biggest impact. They also supply an outreach tracking tool to help streamline the process.

Center for Pharmacy Innovation and Outcomes (CPIO)

CPIO FY20 by the numbers

- 14 faculty, practitioners and staff
- 45 peer-reviewed publications and other scholarly works
- Over $1.1 million in project revenue from research grants

In FY20, the Center for Pharmacy Innovation and Outcomes (CPIO) continued to work on relevant research and innovations. The CPIO is a dedicated pharmacy research unit embedded within Enterprise Pharmacy and fully supported by Geisinger Research. This unit's mission is to care for our patients and optimize medication use through careful design and evaluation of pharmacy services and medication use within our system. We are composed of a dedicated team of full-time and clinician faculty (assistant, associate and full professors), program manager, project manager, research coordinator and assistants, and an investigational drug pharmacist.

Leveraging Geisinger's rich culture of innovation, fully integrated and archived electronic health record, large genomic database, long-term patient cohorts, integrated system-level pharmacy services and embedded pharmacy researchers, we study real-world problems and develop and test innovative solutions. Our vision is to be a world leader in pharmacy research through the evaluation, implementation and dissemination of safe, responsible, sustainable and patient-centric use of medications. Our goal is to rigorously test innovations in the real world to improve the medication use system. We focus our efforts on integrating investigational drug services, acting as a principal research resource to pharmacists and residents, developing and conducting real-world medication-focused outcomes studies, demonstrating effectiveness of pharmacy programs, developing and testing innovative solutions to medication-related problems, and assisting the clinical enterprise in translating research learnings into practice.

The CPIO intersects with Enterprise Pharmacy across all pillars coordinating research, implementation and evaluation projects in a multitude of health conditions including oncology/hematology, addiction medicine, pain, diabetes, depression, hyperlipidemia and cardiovascular disease, among others. For example, in our Geisinger at Home program, the CPIO partnered with this new team to implement and evaluate comprehensive medication management services provided remotely by pharmacists. An excerpt of this is included in this report. Also continuing, now through the first year of the "Improving Medication Reconciliation Processes through Observation and Evaluation: IMPROVE" project, Michael Gionfriddo, PharmD, PhD, is using expertise in mixed methods, surveys, ethnography and systematic reviews to address accurate medication lists in our EHR. Other studies include outcome assessment of patients with osteoarthritis, linking unique identifiers for devices to medical claims, medication disposal within primary care, evaluation of behavioral prompts in the EHR for opioid prescribing, and the implementation of an EHR-embedded web application to identify and treat patients with opioid use disorder in primary care. Now in its second full year, we oversee the coordination of pharmacy residency research projects through the systemwide residency research committee. Benjamin Andrick, PharmD, BCOP, is also finishing up his research on implementing a bone marrow transplant pharmacy service (excerpt later in the report). In addition, the CPIO has been active in evaluating and administering research studies for COVID-19 (excerpt in this annual report). Enterprise Pharmacy and the CPIO are also pleased to kick off in June 2020 a partnership with EQRx, a new biopharmaceutical company, in a 5-year collaboration. Details to be explained in next year's report. Stay tuned!

Major accomplishments in the year

Scholarly activity

The CPIO has authored 25 peer-reviewed publications on topics such as medication prior authorization, opioid prescribing, and transitions of care among others, and authored 20 peer-reviewed abstracts on topics such as medication reconciliation, medical device identifiers, and comprehensive medication management, among others. We also shared our successes in various venues including national meetings, continuing education, radio and other media (follow @GeisingerRsrch #GeisingerCPIO)

Grants

Eric Wright, PharmD, MPH, was awarded a 5-year grant funded by the National institute of Health (NIH), National Institute on Drug Abuse (NIDA) as a sub-recipient to Hennepin Healthcare Research to implement an opioid use disorder clinical decision support system into primary care clinics. "I am pleased to kick off this collaboration and am particularly hopeful that this effort will identify and help get treatments to those with opioid use disorder." The project includes clinical implementation of the tool and evaluating effectiveness through a pragmatic multi-site clinic-randomized controlled trial. Dr. Gionfriddo will be leading the qualitative analysis largely focused on implementation barriers and facilitators, scalability and dissemination. The project kicked off in February 2020 and will continue through 2024.

Jove Graham, PhD, and Eric Wright, PharmD, MPH, were awarded a grant from Pfizer Inc. to describe the general characteristics and prevalence of patients at Geisinger with osteoarthritis (OA); describe the course of care of patients with OA at various stages of severity; and determine the annual healthcare utilization and total cost of care of patients at an institution who have diagnoses of comorbid OA. The project kicked off in October 2019 and will run through January 2021.

FY20 highlights/accomplishments

- Over $1.8 million awarded in new grants and contracts
- 25 peer-reviewed publications and 20 published abstracts
- Landmark publications in AJHP and JAPhA
- Presented at national meetings (e.g., PQA, ACCP)
- >24,000 investigational drug doses facilitated
- Mentored 11 medical and pharmacy students and 7 medical and pharmacy residents. Faculty also taught classes at Wilkes University, Bucknell University and Geisinger Commonwealth School of Medicine.
- Along with others in Enterprise Pharmacy and Research, established a 5-year collaboration with EQRx
- Along with others in Research, formed and led the Geisinger COVID-19 Research Oversight Committee and the Clinical Trials Workgroup.

Highlighted programs and initiatives

USP 800

The Hematology/Oncology (Hem/Onc) pharmacy practice successfully met the goal that all hazardous drug (HD) buffer rooms would be certified under USP 800 standards. In order to meet additional requirements for USP 800 adoption, extensive work was accomplished this year by way of systemwide collaboration and engagement with various disciplines, including (but not limited to) nursing, environmental services and courier services. Extensive collaborative efforts were made in the risk assessment of drugs, development of the hazardous drug list, categorization of such list with appropriate PPE requirements, adoption of CSTD in antineoplastic preparations, policy development, updating of standard practices and development of education modules.

As we expand upon last year's compliance initiatives, we will continue the implementation and optimization of various workflow requirements of USP 800. These systemwide workflow integrations include but are not limited to the expanded use of Closed System Transfer Devices (CSTD) in the preparation of hazardous drugs, appropriate storage and transport of hazardous medications, compounding of hazardous non-sterile products, and an updated NIOSH list. Additionally, we will move forward with system wide adoption of the next phase of Epic Dispense Prep with technology that capture images throughout the compounding process. This gives staff the ability to see images of the volume drawn up in a syringe, thereby providing a greater degree of accuracy and safety for our patients.

Central Medication Hub

Pharmaceuticals have undergone a shift over the last decade as the development of specialty biologic therapies used to treat complex diseases such as multiple sclerosis, rheumatoid arthritis, hepatitis C and cancer have become more commonplace. These newer specialty medications are frequently used as first- or second-line therapies and come at a significantly higher cost than traditional regimens. To further feed their utilization, the same specialty medications that are considered best practice by clinicians are also sought-after treatments by patients who are being bombarded with drug manufacturer marketing campaigns.

In response to the increasing use and skyrocketing costs of specialty medications, insurance companies have turned to requiring prior authorizations, mandating usage of specialty pharmacy networks and implementing site of care policies. As a result, navigating the complexity of payor policies in order to ensure patient access to potentially lifesaving therapy has significantly burdened a multitude of resources across Geisinger. Additionally, many payors now require the use of an external specialty pharmacy to source the medication directly to the patient for administration at a Geisinger facility or physician office. This process, which is commonly referred to as "white bagging," introduces an extra layer of complexity and liability into the process, while also eliminating reimbursement for the medication being administered and opening an opportunity for billing errors.

In addition to the complexities listed above, high patient out-of-pocket costs for specialty medications can, without the utilization of Patient Assistance Programs (PAPs), be a significant barrier to access for patients. PAPs include nonprofit organizations and drug manufacturer programs that assist uninsured and under-insured patients with out-of-pocket costs. Identifying available programs and patient eligibility for these programs can be complicated yet is vital for patients' access.

The utilization of Geisinger's Specialty Pharmacy to fulfill these prescriptions is key to coordination of patient care. Their URAC-accredited specialty pharmacy provides exceptional patient management services and through its EHR documentation processes, allows Geisinger providers 100% visibility into the medication distribution side of patient care — a level of service that external pharmacies can't provide. In addition, internal communication within the EHR allows for quick resolution to patient and prescription issues. Alternatively, we jeopardize this "one Geisinger" approach to patient care and potentially lose revenue when patients use an external pharmacy.

To better serve our patients and providers, the processes around specialty medication prior authorization, patient financial assistance, and specialty medication distribution were centralized within Geisinger's Specialty Pharmacy in February 2020 with the creation of a new program, the Central Medication Hub (CMH). Efficiencies around the streamlining of work and minimization of handoffs were developed through Lean process improvements and are being piloted in the CMH this summer. Workflows have been developed to ensure the patient gets the appropriate medication in a timely and affordable way, and where able, procured and provided through Geisinger. In addition, CMH staff will be working in close collaboration with ambulatory pharmacists across the Medication Therapy Disease Management and Telepharmacy platforms, allowing for wraparound clinical management without increasing the burden on medicine providers. And finally, centralizing the ordering and storage of "white bag" drugs, will create visibility throughout the process, alert end users and ultimately relieve the clinic staff of responsibility to manage the "patient own med" process.

Note: Expansion of CMH services systemwide is expected to occur throughout 2021.

Implementing pharmacy services in Geisinger at Home

High utilizers of healthcare make up around 5% of patients but are responsible for 50% of the cost. In 2018 Geisinger started a team-based at-home care program called Geisinger at Home to help care for these vulnerable, high-risk patients and keep them out of the hospital by surrounding these patients with a primary care team to manage their acute medical needs in the comfort of their own home. Pharmacists are a key member of the Geisinger at Home team and provide a variety of services including acute co-management in high-acuity conditions, antibiotic selection, medication and disease monitoring, and acting as the teams' medication information expert. In addition, through support by a Quality Fund grant from the Geisinger Health Plan, the pharmacists piloted implementing comprehensive medication management (CMM) within the Geisinger at Home program. Over the course of 2 years, the pharmacists provided CMM to over 300 unique patients, making over 1,000 unique recommendations. During interviews, team members reflected on the value of the pharmacists within Geisinger at Home, with one of the nurse managers stating, "The information, the knowledge and the implementation and the teamwork from all the pharmacists has been rated well over 100 because they are right at our fingertips, they immediately help us problem-solve, give advice, instruct patients…and make sure that we're getting the best for the patient…." Findings from this research project have been presented at several conferences and several manuscripts are being prepared to submit to journals.

Pharmacy Procurement and COVID-19 planning and response

COVID-19 has seemed to monopolize the past year, so it comes as no surprise that Pharmacy Procurement was actively engaged in COVID-19 planning and response. Pharmacy Procurement, along with the rest of Enterprise Pharmacy, had been monitoring COVID-19 data as it became available. In early March 2020, Pharmacy Procurement proactively purchased a 6-week medication inventory for all Geisinger acute care hospitals, clinics and retail pharmacies prior to feeling the impact of COVID-19 to assist with limiting disruption to patient care. During COVID-19, the Pharmacy Procurement Team evaluated medication inventory across the enterprise to maintain stock on hand for moderate surge planning, while also working closely with the Pennsylvania Department of Health to communicate remdesivir, a nucleoside analogue prodrug, allocation and shipment information to acute care sites. Pharmacy Procurement served as a resource and support to Geisinger's Enterprise Supply Chain and coordinated weekly evaluation and reporting of COVID-19 medication inventory list, Braun IV Solutions, dialysate solutions, and personal protective equipment.

COVID planning and implementation: Collaboration, standardization

First, I would like to say that I think we have a great pharmacy team here at Geisinger, and we pride ourselves on our collaborative and standardized system approach and integrated Rx leadership team across not only all of our hospital campuses, but all the different pillars of EP. Over the past few years, we have worked hard to integrate our teams to be able to work through challenges together as a group and COVID-19 was definitely one of those times. One of my mantras, as my team would tell you, is "standardization and collaboration." We encourage our teams to think as a whole — and as we say, "one Geisinger" approach — and not in individual silos.

As the situation with COVID-19 began to unfold, we immediately realized the need to bring this team together — which consisted of directors, managers and coordinators from all campuses, other pharmacy pillar leads and key people — for regular meetings so we could tackle the issues together with a cohesive approach. I would say because of this approach, though we did have a lot of meetings, we saved time and effort in resources and rework, and we prevented confusion that would arise from having everyone in each area working on the same things separately. We also used smaller groups, with representatives from each campus working on procedures and protocols, which they would bring back to the larger group to review for feedback, approval and then implementation, or for moving forward to other system leadership groups.

One of the first issues we encountered were issues with medication supply even before our first patient hit our doors, so obviously our Pharmacy Procurement and Formulary team was essential to our success, and has done a phenomenal job. Our Procurement team manages our medication inventories for all of our acute care hospitals, infusion centers and clinics. All of the hospital campuses have their own individual inventories, and we also have a centralized medication inventory warehouse. We have a centralized buying team with a supervisor that oversees the system. So we look at our inventory from an individual campus need and perspective as well as our overall needs as a system. We track availability of items from our individual campus-specific wholesaler and manufacturer accounts, which we leverage to supply campuses that stock out and are unable to obtain from their own individual account. So we immediately developed what ended up being a very long list of key medications that we then tracked on a daily basis and added to as necessary. By doing that we were able to move inventory when needed from our centralized warehouse or from campus to campus where the needs were greatest at a given time. The timing was really the key, given the influx of patients that we saw earlier on in our Northeast Region hospitals vs. the hospitals in our Central and

Western Regions, so the geographic spread of our hospital campuses is definitely advantageous in this particular situation.

As far as the medications that we had issues with, these were and are similar to those that I have heard discussed in several other webinars, listservs as well as on our PSHP calls with other hospital pharmacy directors/system directors in Pennsylvania, such as NMBs — specifically cisatracurium, which we continue to have issues with — albuterol MDI, ketamine, fentanyl, propofol, dexmedetomidine and newer issues such as IV famotidine. We also had limited supply of tocilizumab earlier on and have also been keeping tabs on anticoagulant medications, since this has become a hot topic for COVID patient management. But because of the proactive efforts of our centralized procurement team and team strategy, we have really not stocked out of any medications thus far (knock on wood).

As far as keeping up with and planning for inventory needs based on the anticipated surge of patients, our Informatics team and Data Analytics team developed a predictive modeling calculator for medication needs based on global patient projections and the actual numbers of patients in our health system. Daily utilization in our COVID patient population was monitored and our projections were adjusted. We then were able to provide weekly projections in terms of a week's supply for our inventory levels for leadership.

Another key issue with inventory management was, along with knowing which medications were currently in short supply (the Procurement team is expert at this), we also needed to know which meds would potentially be in short supply, which meds were anticipated to be used for treatment, and what caveats were foreseen with caring for the COVID patients. We worked together with our physician colleagues and leadership on multiple levels to proactively address any shortage issues — for example, developing a strategy for utilization of albuterol MDIs to conserve some supply and getting agreement from key physician

stakeholders and leaders. Early on, our critical care pharmacist coordinator group and some of our leadership worked with CCM to develop treatment algorithms for paralytics to conserve our supply of cisatracurium for only those patients who truly needed it, and they did the same for pathways for sedatives and analgesics to be able to conserve supply for certain medications. These guidelines, along with others, were then taken to system CCM leadership and embedded in the overall CCM COVID patient treatment guideline, which detailed out recommendations for each organ system. Also, a key group of our Rx leadership team (acute care, informatics, research) was involved in development of Geisinger's inpatient and outpatient treatment protocol, which was updated on a weekly basis, so we could proactively address any medication-related issues as well as anticipate demand for certain therapies based on the protocol.

Surge planning

Similar to our approach with other issues and inventory needs, we used a system team strategy for our surge planning in pharmacy. Earlier on, we employed a segregated pharmacist staffing model using both onsite and virtual support, and would rotate so that we would keep one group out of the hospital in a completely "cold zone" in case staff starting getting sick. We met as a group and discussed what could be done remotely for things like order verification, consults and patient education. We even put in place virtual rounding for the pharmacists as well.

Once individual hospital campuses and regions developed surge plans for extending bed capacity in each of the areas, we looked at the increase in the bed numbers, the stepwise approach that would be taken to open up more and more areas, and then planned our strategy to have enough staff — both pharmacists and technicians — based on those numbers. We used a patient-to-pharmacist ratio for both unit-based "on the ground" needs and virtual support. We did this for critical care patients and then also for med-surg patients. For technicians, we used an incremental increase based

on an estimated incremental increase in workload with increase in bed capacity.

We then assessed potential gaps that would occur in staffing at each stage. To address the gaps, we anticipated moving resources, both onsite and virtual, to campuses as the needs arose, since the peak surge time frames were estimated to be weeks apart across our regions. We worked with our ambulatory care team to come up with a tiered approach where we used previous inpatient experience for pharmacists and previous sterile prep experience for technicians to triage who could be the first to be deployed from ambulatory care to inpatient care to help out if the surge numbers reached a point where we couldn't fill the gaps with other staff.

Hematopoietic cellular therapies Medication Therapy Disease Management

The hematopoietic cellular therapies (HCT) medication therapy & disease management (MTDM) program had another successful year in improving patient care and innovating practice. We successfully implemented the medication-related problem pharmacist intervention tracking tool. This SDE-based intervention tracker allows quantification and qualification of ambulatory pharmacist interactions with patients. During FY20, approximately 900 distinct encounters were captured with an average of 1.5 medication interventions per encounter. Additionally, HCT MTDM supported the longitudinal care of 74 stem cell transplant patients across the health system.

Based on the success with HCT MTDM, the hematology/oncology program piloted the pharmacist intervention tool mentioned above. The intervention tool went live with full implementation in February 2020. After 5 months, approximately 8,800 distinct patient encounters were captured across over 1,400 individual patients. Future steps include analysis to better describe how pharmacist interventions impact the care of patients with cancer.

Analysis of immunosuppression management by HCT MTDM demonstrated a time in therapeutic range of approximately 70%. Furthermore, a patient satisfaction survey was disseminated to patients and their caregivers to assess the qualitative nature of the program. To date, the survey has been distributed to more than 30 people, and analysis is underway.

The HCT MTDM program piloted and launched the HCT MTDM smartnote. This smartnote combines functions of a flowsheet and freetext components to allow users the versatility to discreetly and comprehensively detail patient care encounters. Furthermore, the program facilitated two resident research projects evaluating the impact of prophylactic rolapitant for CINV in autologous stem cell transplant and the epidemiology of infections following post-transplant cyclophosphamide graft versus host disease prophylaxis in patients undergoing matched related and unrelated allogenic transplants. The findings of these studies where shared with the BMT program and have led to quality/practices changes. Lastly, the HCT MTDM program continues to collaborate with the BMT program at Geisinger in preparation of policies, protocols and guidelines as the program prepares for the FACT accreditation and CAR-T implementation on the horizon.

How COVID changed retail medication distribution

When the Geisinger service area began to see an impact from COVID-19, Enterprise Pharmacy's retail medication distribution platforms quickly realized the need to solidify its distribution channels. And even more importantly, it realized the need to develop and implement new ways to serve our patients from the safety and comfort of their home.

Utilization of Geisinger's Mail-Order Pharmacy has been a key strategic focus for Geisinger over the last year and as COVID-19 took hold, it was apparent that an additional pandemic-related drive for mailed prescriptions would take our

program to the next level. In response, Enterprise Pharmacy worked as one, collaborating our core Mail-Order team with MTDM clinical pharmacists, our pharmacy partners at the Refill Call Center, our retail staff for remote support, our IT partners and finally, onboarding displaced staff throughout the system. Virtually overnight, we grew from a staff of 23 employees to 48 employees, rapidly responding to patient needs and prescription fills. Mail-Order filled over 50,000 prescriptions in April 2020 — an all-time high.

Simultaneously, we recognized the need to offer alternative service options at our retail locations. In April 2020, we launched contactless delivery across our delivery platforms, and for those patients who still wanted to come into our stores, we installed plexiglass barriers at registers and modified our waiting areas. In-person home delivery was replaced with UPS Ship to Home. Bedside delivery provided post-discharge billing in place of point-of-sale collection. And finally, we introduced curbside delivery, where patients could arrive at the pharmacy and have their order brought to the car. From April 1 to June 30, our retail sites collectively provided 3,650 curbside deliveries and shipped nearly 3,200 packages across the system.

COVID-19 presented an opportunity for medication distribution to broaden its scope and capabilities to meet the demand of the times, but ultimately it created a change in our program that will enhance services for years to come.

Learning in a pandemic

The first full year of the Knowledge Management pillar saw a continuation of many of the quality programs Geisinger offered to pharmacists, clinical staff and patients. Clinical and leadership retreats in the fall brought together pharmacists in the ambulatory and acute care realms to review the care opportunities for a single patient as he transitioned across the care continuum from an ambulatory setting to the acute care setting

following a disease exacerbation, and then back to ambulatory life. Clinical leaders in pharmacy developed competency exams for staff engaged in collaborative practice agreements with physicians to ensure patients were receiving care based on the best available information. Collaborations were forged with pharmacy technician training programs to bring Enterprise Pharmacy to the forefront as a training ground for those pursuing a pharmacy technician diploma. Over 200 student rotations with students from 11 different schools of pharmacy were scheduled, and students were commonplace in clinical pharmacy services.

The first three quarters of the fiscal year were what would be expected, showing educational growth at individual, team and organizational levels. However, it was the final quarter of the year that would require learning and education in Geisinger's Enterprise Pharmacy to pivot and take on a new approach. With the cancelation of professional conferences, clinical meetings and traditional experiential learning due to the emergence of COVID-19, education in Enterprise Pharmacy had to find some new paths to meeting learner needs.

Resident learning

A group significantly affected by the COVID-19 outbreak and pandemic was the pharmacy residents in the system. Six residents in Danville and two residents in Wilkes-Barre saw their rotation plans update to account for a new clinical practice model for pharmacy. The opportunity to be part of traditional rounding services and care for patients at the bedside was replaced by a need to position pharmacy as best as possible to care for a potential rapid influx of patients who would require above-average levels of care. Always seeing an opportunity and not a limitation, the residency program directors quickly identified this is a unique opportunity for residents to learn how to practice clinical pharmacy during a pandemic. The program director team quickly created a pandemic pharmacy learning experience, which provided a framework for residents to be engaged in patient care, engaged with their preceptors, and receiving

feedback as fluid as any clinical protocol. Their forward thinking put this new learning experience in place quickly and well ahead of conversations that took place at the national level through online residency programming discussions.

Resident participation in the Eastern States Conference for Pharmacy Residents and Preceptors or the Hematology/Oncology Pharmacy Association to present their research was also affected as each conference canceled its annual meetings. To preserve the opportunity for residents to share their research, the residency programs paired up with Beth Israel Deaconess and Hunterdon Medical Center to present through a virtual mini-conference in June.

Student learning

Advanced and introductory pharmacy practice experiences were halted in the middle of March with several students at risk because they were no longer able to report to their clinical practice site, having already completed more than half of their time on rotation. Luckily, their preceptors with Geisinger Health Plan, the acute care facilities and ambulatory practices continued the students' clinical learning through projects and discussions. As a result, video presentations on several ambulatory care acute care topics related to the annual competency exams were produced and will be available to pharmacists practicing in the acute and ambulatory clinical care settings. As the suspension of on-site student learning extends into the next fiscal year, Enterprise Pharmacy and Geisinger's Health Professions Education Committee are working on plans to allow for students to safely return to the clinical environment and support remote experiential learning, where possible.

Professional development

Like every elementary, middle, high school and college student in Pennsylvania, learning for pharmacists and technicians had to shift to an online format. Luckily, the programming developed through Pharmacy Lunch and Learns with the

Center for Pharmacy Innovation and Outcomes established a precedent for engagement in online learning. With the cancellation of the Medication Safety Conference, the Hematology/Oncology Meeting, Fresh Pharm, and the spring clinical pharmacy retreat, pharmacists and technicians were offered some new virtual learning opportunities.

A virtual pharmacy retreat week was hosted in May where pharmacists and technicians could engage in recorded programs on different ambulatory, acute care, medication safety, research and education-based topics. The retreat week saw presentations from:

- Jessica Curtis – "Pediatric Nausea & Vomiting"
- Sarah Krahe-Dombrowski – "SGLT-2 Inhibitors"
- Christopher Defrancesco – "COVID-19 Case Studies"
- Angela Slampak-Cindric – "Toxicology"
- Tristan Maiers – "Oral Chemotherapy"
- Laura Heart – "USP-797 Overview"
- Sara Gaines – "Hepatitis B"
- Jove Graham – "Visual Displays of Data"
- Kayla Kotch and Vanessa Markle – "Delerium"
- Diane Polombo – "Medication Safety"

The week was capped off with an online quiz competition, in which Kimberly Limouze and Casey Trombley took home the gold with the highest scores in the system.

Moving forward

The success of the first 9 months and the exceptional adaptation by all in the last 3 months puts Knowledge Management in a great place headed into the next fiscal year. A lot has been learned as education takes a more distanced and virtual approach over the next 12 months, but the efforts of everyone involved with student, pharmacist, technician, clinical staff and patient education have provided evidence that the best is yet to come.

Site of care transition

Discussions about site of care became a hot topic in the last quarter of the 2020 fiscal year as COVID-19 disrupted normal operations. A site of care is the location at which a patient receives their care. In the case of infusion services, this could be during a hospitalization, at an outpatient infusion center or in a patient's home with the help of a home infusion service. Well before these discussions became relevant on a national scale because of a global pandemic, Geisinger Health Plan was enacting a plan to change site of care as a way to benefit patients.

In November 2019, Geisinger Health Plan implemented an alternative site of care program for provider administered medications. Well-developed site of care programs offer several benefits, including increasing access to needed infusion services, increasing patient satisfaction and moving patients to lower-cost sites of service, such as non-hospital-based physician's offices or home infusion.

Home infusion provides safe and clinically appropriate care, improves patients' quality of life and reduces healthcare costs. For patients, home infusion means less time traveling to and from an infusion center, less time off work, and in most cases, less cost. Overall, it causes less disruption to a patient's personal and family life.

At the start, Geisinger Health Plan piloted the program by targeting only two drugs for the site of care program. Those drugs were infliximab (Remicade, including the biosimilars of Inflectra and Renflexis) and IVIG products. With the success of the site of care program with these two agents, the health plan moved on to a broader scope of medication in phase II. As part of phase II, the program was expanded to include tocilizumab (Actemra), belimumab (Benlysta), vedolizumab (Entyvio), abatacept (Orencia), and golimumab (Simponi Aria). In the latest expansion with phase III, the health plan added densoumab (Prolia and Xgeva) to the qualifying medications. Several other phases are planned in the future.

The site of care program has crossed over multiple Enterprise Pharmacy platforms and has been a true "one Geisinger" initiative. And as mentioned, it also became an invaluable tool during the recent COVID-19 pandemic. Patients could safely receive their infusions in their homes rather than having to enter hospitals or infusion centers for the same services. Geisinger Health Plan worked closely with VitaLINE as well as the acute care platform to make this program successful. To date, the site of care program has saved $2.3 million — which will further develop programs that will benefit Geisinger Health Plan members and Geisinger patients.

Teamwork and collaboration in time of crisis

Headlines like "Health System Furloughs 10,000 Employees" seemed to be commonplace as COVID-19 took hold across America. The finances of every health system, large and small, were feeling the effects of the pandemic — and Geisinger was no different. However, in lieu of making large-scale changes to staffing, Geisinger Enterprise Pharmacy chose to redefine patient care models and use existing personnel to support departments whose roles were expanding due to the COVID-19 pandemic.

Enterprise Pharmacy leadership quickly performed an in-depth and honest assessment of current staffing levels, criticality of roles during COVID-19, and projected needs across the pharmacy pillars. This concerted and proactive effort enabled them to redeploy pharmacists across the system to the areas of greatest need within just a few days. Specifically, in order to prevent non-acute patient visit exposure to COVID-19, a large volume of ambulatory staff began working from home and were trained to support the Telepharmacy refill call center. Others were also identified to cross-train and work in pharmacy pillars that were projected to need additional support, including the mail-order, retail pharmacy and inpatient platforms.

As the saying goes, "Teamwork makes the dream work" — and this alignment of resources is a perfect example. All told, 26.1 MTDM and 4

Telepharmacy FTEs were redeployed, essentially becoming their own temporary staffing model. They redeployed 11.0 to mail-order; 3.9 to Geisinger retail; 14.7 to Telepharmacy, and 0.5 to Inpatient. In addition, 12 ambulatory pharmacists and pharmacy techs were identified to be cross-trained in inpatient pharmacy to serve as backup staff during any COVID-19 surges.

MTDM: The accelerated path to telemedicine

The novel coronavirus (COVID-19) pandemic has forced healthcare systems and clinicians across the country to adapt to new ways of providing care to their patients. Geisinger's Medication Therapy Disease Management (MTDM) program was no different. Traditionally, MTDM's practice model has been built on a strong foundation of comprehensive and high-value office-based visits. However, when the potential for population spread of COVID-19 caused everyone involved in community medicine to limit the amount of traffic flowing in and out of the clinics, the need arose to develop a new model of care for non-acute chronic disease management visits. This model would need to achieve the same quality of care that the patient is accustomed to receiving while at the same time limiting their risk of exposure to COVID-19. This resulted in MTDM adding an innovative new option for patients to receive care for chronic disease, without even leaving the comfort of their own home: Telehealth.

In parallel to the discussions going on within the MTDM platform around this new practice model, similar conversations were being had across the country in clinical practices as well as within insurers and regulatory bodies. One of the key things that came out of these discussions and an impetus to aggressively move Telehealth forward, was that CMS broadened their beneficiaries' access to Telehealth services, allowing pharmacists to provide care and bill for these visits during the pandemic. Historically, "patient home" was not a reimbursable location for pharmacists to deliver care, so the ability for pharmacists to provide care via Telehealth and get paid for it put wind back into MTDM's sails, and they quickly acted to put a Telehealth workflow into place.

Hesitant to launch Telehealth in all 70 primary care and specialty sites all at once, MTDM leadership chose 12 sites to serve as that proof of concept: four sites within each of its three regions. The sites chosen were based on a careful consideration of which patient populations and disease states were likely to gain the most benefit from the service. The chronic disease states included in the initial pilot were chronic pain, addiction, diabetes, chronic obstructive pulmonary disease and behavioral health. These conditions, if left unchecked or care was delayed, could result in a second wave of poorly controlled chronic disease patients transitioning over from routine care to a more urgent need.

The initial step in establishing this service was to create the billing and documentation process in the EHR to ensure all the criteria for Telehealth delivery was being met. Next, the Telehealth virtual waiting rooms for the pilot sites needed to be created, pharmacists had to be added to the Telehealth InTouch Platform as new users and each pharmacist needed to be attached as a provider to the virtual waiting rooms that they would be using to care for the patients. Then, orders were placed for equipment such as iPads and headsets; however, due to the overwhelming demand as a large portion of Geisinger's workforce moved to work from home, staff were temporarily required to use their own personal iPads and laptops. Finally, the MTDM team needed to be trained on the workflow and regulatory requirements, which was accomplished through Skype meetings and detailed PowerPoint slides.

Historically a process as described above has a lot of barriers and takes several weeks to implement, but due to the high level of teamwork, compromise and communication, the process was completed within 3 days. MTDM pharmacists at the pilot sites began Telehealth visits the week of April 13, and within 2 weeks, all 70 MTDM sites could provide Telehealth services to their patients. Astonishing!

MTDM's Telehealth visits have grown from 158 visits in the last 2 weeks of April to 521 in May and 635 in June. Although Telehealth may not yet be MTDM's primary method of providing care to their patients, the option of using Telehealth in lieu of an in-person office visit has become a welcome option. This model of care has really demonstrated a high level of patient satisfaction and improved patient engagement for patients with limited mobility, transportation issues, an inability to take time off from work or issues with pain management and behavioral health.

Without a doubt, the COVID-19 pandemic has presented an unprecedented challenge, but it has also forced everyone, including the MTDM program, to think differently about how we offer care. It opened a door to an opportunity to incorporate a new and innovative level of patient cares; an opportunity that will most certainly benefit both the patients and the MTDM program in the long run.

The 340B Drug Pricing Program at Geisinger

340B in action

The 340B Drug Pricing Program was created to financially supplement hospitals that provide a high level of care and services to low-income people or those in isolated rural communities. This program allows safety-net providers to support critical health services for our communities. The program provides for the purchase of ambulatory medications at discounted prices, the savings from the program helps us maximize scarce federal resources and meet the healthcare needs of the community's most underserved patients. It is important for Congress to preserve and protect the 340B program, as it does not rely on taxpayer dollars and is an essential component of the safety net.

340B program overview

During 2020 fiscal year, Geisinger Medical Center, Geisinger Wyoming Valley Medical Center, Geisinger Community Medical Center, Geisinger

Lewistown Hospital and Geisinger Jersey Shore hospital all participated in the 340B program. The program is managed by HRSA and has significant requirements for the ongoing monitoring, management and auditing of the program. The 340B team currently consists of five full-time members plus support from analytics, purchasing and pharmacy informatics to maintain the program and ensure compliance with appropriate HRSA regulations. With the expansion of the program to a total of five hospitals, the program continues to analyze opportunities to partner with pharmacies that fill sustention numbers of prescriptions from the covered hospitals, to expand the impact of the program as it contributes to the amount of community support provided to Geisinger patients.

340B's impact in our community

Healthcare is really people caring for people. Geisinger has earned a national reputation for quality, value, innovation, education, research and compassionate care. Here are just some ways the 340B program helps Geisinger care for our vulnerable patient population, increase services and stretch federal resources.

- Medication Therapy Disease Management Program – Our internationally recognized initiative connects pharmacists to patients who need personal guidance about medications for conditions including anticoagulation, hypertension, diabetes, cancer and chronic pain, empowering patients to meet treatment goals more easily.

- Fresh Food Farmacy® – Partnering with the community, we are improving the health of adults with diabetes by providing them with free, nutritious food and comprehensive medical, dietetic, social and environmental services. Our Fresh Food Farmacy has had clinical impacts greater than those of expensive medications at a significantly lower cost.

- MyCode® Community Health Initiative – With more than 200,000 patient-participants, MyCode is delivering medically relevant results to participants and their primary care doctors.

More than 500 people have received clinical reports telling them they have a genomic variant that increases their risk of early cancers or heart disease, so their doctors can detect and treat these conditions before symptoms arise. This important initiative helps us keep our patients well.

- Geisinger 65 Forward Health Center opens in Scranton – Created to meet the needs of people age 65 and older. The clinic offers seniors more time with doctors, more access to wellness activities and highly personalized care in a relaxing environment.

- Senior transportation project – We are conducting a pilot program in Danville that provides transportation for seniors to and from their medical appointments. The goal is to improve access to care, making patient follow-up easier and improving health outcomes.

- Diabetes Prevention Program – The National Diabetes Prevention Program meets about once a week for the first 6 months, followed by six monthly sessions. Trained lifestyle coaches help participants lose weight, increase physical activity and learn how to make healthy choices. Participants are given support to reduce their risk or delay the onset of Type 2 diabetes.

- Better Breathers Club – The Better Breathers Club meets monthly with guest speakers and educational sessions. Those with chronic lung disease, such as COPD, asthma or pulmonary fibrosis, benefit from free education, resources and group support to learn to better manage their disease.

- LIFE Geisinger – This unique and innovative program is designed specifically for older adults who would like to live at home. The LIFE Geisinger program can help people continue to live independently, while taking advantage of comprehensive daily living and health services. The coordination of care for patients is provided by the Geisinger team with no gap in services.

340B by the numbers

- In fiscal year 2018, we had $83.3 million in 340B savings, which contributed greatly to our ability to provide uncompensated care for people in need. This number has risen to over $151 million in fiscal year 2020.

- Geisinger provided $856.7 million in community support in fiscal year 2017 in the form of:

  » Free, uncompensated care to patients who could not afford to pay

  » Care provided to the elderly and the poor not paid by Medicare or Medicaid

  » Allied health, medical education, medical residency and fellowship programs

  » Healthcare research

  » Community health, education and outreach programs

Responding to the pandemic through integrated COVID-19 Research

When our first COVID-19 patient came to Geisinger in March 2020, no FDA-approved products or effective treatments were available. In rapid-response fashion, leaders in Enterprise Pharmacy procured medications thought to be helpful and multidisciplinary personnel formed systemwide committees to oversee inpatient and outpatient management and treatment approaches. Evidence available at the time was not high-quality, consisting of case reports, case series and observational outputs from limited number of patients treated in Wuhan, China, and in Europe. The fear at the time was that we didn't know what would work to lessen the expected surge that would exceed our ability to care for COVID-19 patients, or how to prevent complications including an expected high death rate. A quick understanding of what worked and did not work in our populations was needed.

Simultaneously, Geisinger was fielding requests for participation in COVID-19–related clinical trials and research projects from multiple pharmaceutical companies, academic centers and internal investigators. Routine clinical care was postponed and many research projects that weren't COVID-related were paused. All staff were on hand to support the crisis. In a way, the convergence of all minds focused on one problem — in a system of >33,000 people — was uniting. Everyone was doing what needed to be done to address the impending crisis. In another way, organizing and managing seemingly limitless ideas and requests was an impossible task. What we did know was that all of us needed to be part of the solution. We also agreed that as an institution, we needed to contribute to the growing evidence for the most promising treatments in the most carefully constructed studies.

While the inpatient COVID-19 treatment algorithms were being established within our

hospitals, we approved our first clinical trial for hospitalized severe and critically ill patients with a drug that was thought to limit the development of cytokine storm and the subsequent severe immune response to COVID-19 responsible for pulmonary and multi-organ failure. The results of the approval were immediately inserted into the clinical treatment algorithm for hospitalized patients. Eric Wright, PharmD, MPH, of the CPIO recalls, "We were rapidly integrating information from the clinical literature, but the evidence that formed a basis for treatment approach was of low quality. Ethically, we were compelled in the clinical environment to position available clinical trials over use of similar off-the-shelf drugs to learn more as quickly as possible — and with credit to our multidisciplinary team, that is what was done." Five days from our first solicitation, and 10 days after this, Geisinger recruited its first patient into the clinical trial. "This was a testament to the high degree of coordination: making consents available for the first time using remote telecommunication and bedside iPads; emergency IRB review and approval; our investigational drug service; and pharmacists at three hospital platforms all being prepared with training and drugs on hand for this placebo-controlled trial. It was truly a valiant team effort completed in record time!"

This clinical trial was only one of many. What was clear was that we could not field all, nor was all research created equal. From this early moment we knew that we needed to be deliberate in which trials we would agree to move forward due to the limited number of patients, the limited support staff and the careful selection of well-constructed studies that are deemed to meet targeted enrollment. A clear centralized and coordinated effort was needed.
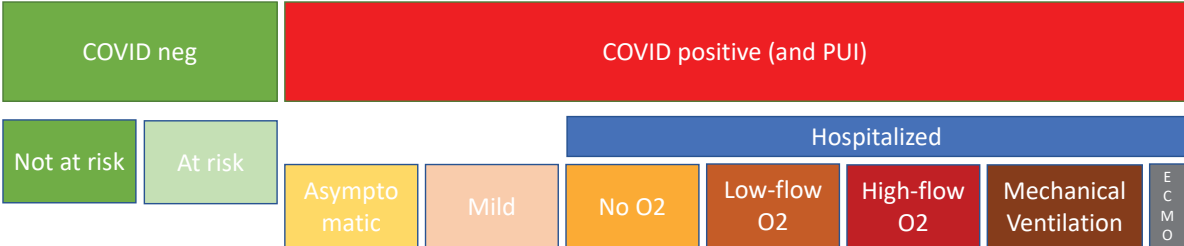
With the support of administrative leadership, including Executive Vice President and Chief Scientific Officer David Ledbetter, PhD, clinical leads in Infectious Diseases and Critical Care Medicine, and blessings from President and CEO Jaewon Ryu, MD, JD, Geisinger formed the COVID

Research Oversight Committee in late March 2020. Co-chaired by Dr. Eric Wright, director and professor in the CPIO, and Michelle Meyer, PhD, JD, of the Center for Translational Bioethics and Health Care Policy, and supported administratively by Candice Laubach, MBA, associate vice president in Research, the committee was charged with overseeing all COVID-related research activities. The committee includes representation from research, pharmacy, medicine, critical care, infectious diseases, emergency medicine, laboratory, bioethics, population health, nursing and innovation. Key principles of the committee are to balance scarce resources (including patients, personnel and physical resources like space and personal protective equipment) with the potential gains of answering research questions. By and large, the process helps to consolidate research ideas, transparently share projects and foster the learning healthcare system. As of July 2020, concept sheets submitted to the committee exceeded 60 for research projects. Many of these were clinical trials overseen by the clinical trials workgroup co-chaired by Dr. Wright and Paul Simonelli, MD, PhD, chair of Critical Care

and Pulmonary Medicine. As noted, to ensure ideal allocation of notable scarce resources, this workgroup prioritized high-quality studies likely to reach clinical endpoints and those studies that can be offered at multiple Geisinger locations (i.e., increasing access and equity) and studies that span the spectrum of disease from prevention to critically ill hospitalized patients (see Figure).

"When I think about the process that we set up for the review of clinical trials and other related COVID research, it established an approach where all of us are aware of the research being done and interested in the results" notes Dr. Wright. "We wanted to establish a plan where we can foster projects that have direct impact on our patients and that could inform their clinical care. I consider this a win for patients and for our system. We continue to learn more about COVID, and know the research is directly impacting the clinical care we are providing."

Figure. COVID-19 clinical trial submissions by infection status, hospitalization and severity

	COVID neg		COVID positive (and PUI)							
	Not at risk	At risk				Hospitalized				
			Asymptomatic	Mild	No O2	Low-flow O2	High-flow O2	Mechanical Ventilation	ECMO
Studies reviewed		XX		X	X	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXX	X
Studies approved		X		X	X	XXX	XX	XX	X

X equals one study. Same study may span across severity designations

Publications, presentations and posters

Peer-reviewed publications

Articles

1. Buchanan AH, Kirchner HL, Schwartz MLB, Kelly MA, Schmidlen T, Jones LK, Hallquist G, Rocha H, Betts M, Schwiter R, Butry L, Lazzeri AL, Frisbie LR, Rahm AK, Hao J, Willard HF, Martin CL, Ledbetter DH, Williams MS, Sturm AC. (2020 Jun). Clinical outcomes of a genomic screening program for actionable genetic conditions. *Genet Med*, online ahead of print. DOI: 10.1038/s41436-020-0876-4

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Non-peer-reviewed publications/commentaries

1. Tyrell R. (**Greskovic G** contributing author for Geisinger section). Six Ways Pharmacy Can Elevate Population Health Efforts, Infographic. Advisory Board. December 30, 2019. Available at https://www.advisory.com/research/pharmacy-executive-forum/multimedia/infographics/2020/six-ways-pharmacy-can-elevate-population-health-efforts

2. **Kachmarsky M**, **Longyhore DS**. Addressing the Adherence Problem: Do Med Sync Programs Really Work? iForumrx, September 26, 2019. Available at https://iforumrx.org/commentary/addressing-adherence-problem-do-med-sync-programs-really-work

Presentations

Invited

1. Evans M, Greskovic G, Guza K. Integrated Care Delivery Response to COVID-19 in Enterprise Pharmacy at Geisinger. America Society of Health-System Pharmacists (ASHP) Live Webinar. (May 2020)

2. Gionfriddo MR. Medication Therapy Problems Identified Through Comprehensive Medication Management by Pharmacists in a Team-Based at Home Care Program. 2020 Pharmacy Quality Alliance (PQA) Annual Meeting, Baltimore, MD. (May 2020)

3. Greskovic, G, Webster L. Ambulatory Care and COVID19. Pennsylvania Society of Health-System Pharmacists (PSHP) Hosted Clinical Specialist Call. (May 2020)

4. Yannuzzi J, Douthit S, Popko A, Kachmarsky M. Impact of Pharmacist Intervention Post Discharge in Patients with Chronic Obstructive Pulmonary Disease and/or Heart Failure. American College of Clinical Pharmacy (ACCP) Virtual Symposium. (May 2020)

5. Andrick B. Development of an Electronic Intervention Tool in Epic for the Ambulatory Stem Cell Transplant Pharmacist. Presentation was to be given at 26th annual Health Care Systems Research Network Conference (HCSRN), Philadelphia, PA. (April 2020)

6. Gionfriddo M. Patient Perceptions of a Web-Based Medication Reconciliation Tool. Presentation was to be given at 26th annual Health Care Systems Research Network Conference (HCSRN), Philadelphia, PA. (April 2020)

7. Gionfriddo M. Adherence to Best Practices for Medication Reconciliation Identified Through Observations in Primary Care Practices. Presentation was to be given at 26th annual Health Care Systems Research Network Conference (HCSRN), Philadelphia, PA. (April 2020)

8. Graham J. Adding Unique Device Identifiers to Claims at Two Health Systems: 2-Year Results. Presentation was to be given at 26th annual Health Care Systems Research Network Conference (HCSRN), Philadelphia, PA. (April 2020)

9. Graham J. Building Medical Device Identifiers Into Longitudinal Data: The BUILD Distributed Data Network. Presentation was to be given at 26th annual Health Care Systems Research Network Conference (HCSRN), Philadelphia, PA. (April 2020)

10. Graybill M. Medication Therapy Problems Identified Through Comprehensive Medication Management by Pharmacists in a Team-Based At-Home Care Program. Presentation was to be given at 26th annual Health Care Systems Research Network Conference (HCSRN), Philadelphia, PA. (April 2020)

11. Hao J, Chen N, Hassen D, Klinger T, McMinn M, Hartzel DN, Veenstra D, Spencer S, Williams M, Snyder S, Peterson J, Schlieder V, Jones L. Providers' Prescribing Behavior for Lipid-lowering Therapy after Receiving Patients' Positive Genetic Test for Familial Hypercholesterolemia. Presentation was to be given at 26th annual Health Care Systems Research Network Conference (HCSRN), Philadelphia, PA. (April 2020)

12. Greskovic G. Get the Medications Right: Innovations in Team-Based Care. GTMRx Institute, Bipartisan Policy Center, Washington, DC. (February 2020)

13. Jones LK. Multi-Disciplinary Perspectives in Lipid Management. American Medical Group Association Diabetes Bundle Webinar. (December 2019)

14. Gionfriddo MR. Big Data in Healthcare: Opportunities and Challenges. 2019 American College of Clinical Pharmacy (ACCP) Annual Meeting, New York, NY. (October 2019)

15. Greskovic G. Ambulatory Clinical Pharmacy: Evolution of a Successful Program and Valuable Lessons Learned Along the Way. PSHP Annual Conference, Valley Forge, PA. (October 2019)

16. Jones LK. Where on the Genome are You? Discussing the Clinical and Economic Utility of Whole Genome Sequencing. AMCP Nexus, National Harbor, MD. (October 2019)

17. Parry DT. Pharmacy Informatics Impaction the Quality of Patient Care. Pennsylvania Society of Health-System Pharmacists (PSHP) Annual Meeting, Valley Forge, PA. (October 2019)

18. Greskovic G. Geisinger's Journey: Navigating the Complex Landscape of Ambulatory Care. Pennsylvania Pharmacist Association (PPA) Annual Conference, Champion, PA. (September 2019)

19. Webster L. Opioid Use Disorder and Pain Management: How Pharmacists Can Help. 4th Annual National Opioid Crisis Management Congress, Scottsdale, AZ. (September 2019)

Didactic lectures

1. Gionfriddo MR. Writing for Publication. Geisinger Commonwealth School of Medicine Center of Excellence Program, Scranton, PA. (June 2020)

2. Gionfriddo MR. Literature Search Workshop. Geisinger Commonwealth School of Medicine Center of Excellence Program, Scranton, PA. (June 2020)

3. Longyhore DS. Exam Item Analysis: Improving the Reliability of Your Testing. American College of Clinical Pharmacy, Webinar. (April 2020)

4. Gionfriddo MR. Other Study Designs: Systematic Reviews and Qualitative Research. Wilkes University Clinical Research Design course, Wilkes-Barre, PA (March 2020)

5. Slampak-Cindric A. Antiemetic, Antianxiety, and Antidepressant Agents Oh My! Geisinger Medical Center School of Radiologic Technology, Danville, PA. (February 2020)

6. Slampak-Cindric A. Pharmacotherapy of Gastrointestinal and Sleep Disorders. Geisinger Medical Center School of Radiologic Technology, Danville, PA. (February 2020)

7. Gionfriddo MR. Qualitative Data Collection: Interviews/Focus Groups. Wilkes University Pharmacy Practice Faculty, Wilkes-Barre, PA. (January 2020)

8. Slampak-Cindric A. Pharmacotherapy of Analgesia. Geisinger Medical Center School of Radiologic Technology, Danville, PA. (January 2020)

9. Slampak-Cindric A. Pharmacology 101: Introduction to Pharmacology. Geisinger Medical Center School of Radiologic Technology, Danville, PA. (January 2020)

10. Longyhore DS. Establishing Outcomes. American College of Clinical Pharmacy Teaching & Learning Certificate Program Academy, New York, NY. (October 2019)

11. Longyhore DS. Implementing Effective Teaching Strategies. American College of Clinical Pharmacy Teaching & Learning Certificate Program Academy, New York, NY (October 2019)

12. Slampak-Cindric A. Nursing Considerations for Geriatric Care: Pharmacy Edition. Bloomsburg University School of Nursing Pharmacology Course, Bloomsburg, PA. (October 2019)

13. Gionfriddo MR. Introduction to Qualitative Research. Wilkes University Pharmacy Practice Faculty, Wilkes-Barre, PA. (September 2019)

Internal presentations

1. Gionfriddo MR. Shared Decision Making in the Elderly. Pharmacy Lunch and Learn, Virtual. (June 2020)

2. Heffelfinger A. Managing Stroke, Anticoagulation, and Cardiovascular Primary Prevention: Guideline Review and Updates for Patient Care. Pharmacy Lunch and Learn, Virtual. (June 2020)

3. Kachmarsky M, Krahe-Dombrowski S, Kempa K. Geisinger PGY-1 Pharmacy Residencies: Movement into Ambulatory Care; SGLT-2 Inhibitors: Perioperative Management. Pharmacy Lunch and Learn, Virtual. (June 2020)

4. McGowan M. 2019 New Drug Update. Pharmacy Lunch and Learn, Virtual. (June 2020)

5. Yannuzzi J, Douthit S, Popko A, Kachmarsky M. Impact of Pharmacist Intervention Post Discharge in Patients with Chronic Obstructive Pulmonary Disease and/or Heart Failure. Wilkes-Barre, PA. (June 2020)

6. Gaines S. Hepatitis B Refresher. Pharmacy Retreat Week, Danville, PA. (May 2020)

7. Rampulla R. Are New ID Guidelines and Antimicrobials Bugging You Out? Updates in Infectious Disease Management. Pharmacy Lunch and Learn, Virtual. (May 2020)

8. Shah K. Venous Thromboembolism: Update on DOACs. Pharmacy Lunch and Learn, Virtual. (May 2020)

9. Slampak-Cindric A. Poisonings and Overdoses: Pharmacology of Toxicology. Pharmacy Retreat Week, Danville, PA. (May 2020).

10. Slampak-Cindric, A. Patient Safety; Medication Safety, Geisinger Medical Center Pulmonary and Critical Care Medicine Fellowship ACPE Accredited Lecture Series. Danville, PA. (May 2020)

11. Yannuzzi J. Infertility Management. Pharmacy Lunch and Learn, Virtual. (May 2020)

12. Andrick B. Clinical Predictive Models: VTE in Cancer Patients. Pharmacy Lunch and Learn, Virtual. (April 2020)

13. Brickett L, Limouze K. Literature Analysis: Beyond the Randomized Controlled Trial. Pharmacy Lunch and Learn, Virtual. (April 2020)

14. Mathur A, Andrick B. Building a New Practice Site Clinical Pearl- VTE in Patients with Cancer. Pharmacy Lunch and Learn, Virtual. (April 2020)

15. Graham J. How NOT to ask Somebody a Question: Tips and Tricks for Designing Surveys 101. Pharmacy Lunch and Learn, Virtual. (March 2020)

16. Gionfriddo MR. Mentorship. Pharmacy Resident Leadership Development Topic Series, Danville, PA. (February 2020)

17. Gionfriddo MR. Utilizing Participant Observation to Improve the Delivery of Health Services. Pharmacy Lunch and Learn, Virtual. (February 2020)

18. Kerestes J, Budzyn M, Shah K. Resident Interview Strategies & Critical Care Updates. Pharmacy Lunch and Learn, Virtual. (February 2020)

19. Gionfriddo MR. Biostatistical Concepts. Addiction Medicine Fellows, Danville, PA. (January 2020)

20. Grassi DM, Thomas S. Medication Updates in the World of Rheumatology. Rheumatology, Danville, PA. (January 2020)

21. Longyhore D. Current Issues in Undergraduate and Graduate Pharmacy Education. Pharmacy Lunch and Learn, Virtual. (January 2020)

22. Lussier M. An Impact of Epidemic Proportions: How Pharmacists Can Help Decrease Opioid Misuse, Abuse, and Death. Pharmacy Lunch and Learn, Virtual. (January 2020)

23. Gionfriddo MR. Systematic Reviews. Addiction Medicine Fellows, Danville, PA. (December 2019)

24. Gionfriddo MR. Critical Appraisal. Addiction Medicine Fellows, Danville, PA. (November 2019)

25. Gionfriddo MR. Introduction to Research. Psychiatry Residents, Danville, PA. (November 2019)

26. Slampak-Cindric A. Sepsis, Pain, Sedation and Delirium: An ICU Extravaganza. Pharmacy Lunch and Learn, Virtual. (November 2019)

27. Wright E. How to Move from Research to Paper. Pharmacy Lunch and Learn, Virtual. (November 2019)

28. Andrick B. Cytotoxic chemotherapy 101. Geisinger Cancer Institute Fellow Lecture Series, Danville, PA. (October 2019)

29. Gionfriddo MR. Developing Research Questions and Searching the Literature. Addiction Medicine Fellows, Danville, PA. (October 2019)

30. Lee G. Oncology Biostatistics. Pharmacy Lunch and Learn, Virtual. (October 2019)

31. Slampak-Cindric A. Pharmacotherapy of Anticoagulation Reversal. Geisinger Medical Center Pulmonary and Critical Care Medicine Fellowship ACPE Accredited Lecture Series, Danville, PA. (October 2019)

32. Kotch K, Lopatofsky K. Insulin Bolus in Diabetic Ketoacidosis: Should We, or Shouldn't We? Pharmacy Lunch and Learn, Virtual. (September 2019)

33. Slampak-Cindric A. Patient Safety Solutions: Meeting Trainees' Needs and ACGME Requirements Geisinger Medical Center Graduate Medical Education Community Retreat, Danville, PA. (September 2019)

34. Evans M, Webster L, Wright E. Opioid Initiatives Within Geisinger. Geisinger's Human Resources Annual Retreat, Danville, PA. (August 2019)

35. Gionfriddo MR. Communication Skills for Diabetes Educators. Diabetes Educator Meeting, Danville, PA. (August 2019)

36. Andrick B. Vaccines for HCT: An Update on Varicella Zoster & Influenza Vaccines. Pharmacy Lunch and Learn, Virtual. (July 2019)

37. Gionfriddo MR. Residency Research Orientation. Pharmacy Residents, Wilkes-Barre, PA. (July 2019)

38. Slampak-Cindric, A. Anticoagulation Reversal. Internal Medicine Survival Series ACPE Accredited Presentation, Danville, PA. (July 2019)

Posters

1. Graybill, M, **Duboski V**, **Wright E**, **Kern M**, Blanchard C, **Webster L**, **Gionfriddo MR**. (2020, May). Medication Therapy Problems Identified Through Comprehensive Medication Management by Pharmacists in a Team-Based at Home Care Program. Poster presented at PQA 2020 Annual Meeting, Virtual.

2. Marvin M, **Gaines S**, Mohan P, Kotru A, Koo C, Addissie B, Unzueta A, Khurana S. (2020, May). Utilization of organs from donors exposed to hepatitis C: standard of care? Poster presented at 2020 American Transplant Congress Virtual Meeting.

3. **Heffelfinger A**, **Brickett L**, **Farnham K**, **Slampak-Cindric A**. (2020, May). Safety and effectiveness of fixed-dose 4FPCC versus weight-based dosing for the reversal of warfarin. Poster presented at American College of Clinical Pharmacy (ACCP) Virtual Poster Symposium.

4. **Gaines S**, **McGowan M**. (2020, May). Pharmacist impact on hepatitis C treatment post transplantation and patient outcomes. Poster presented at American College of Clinical Pharmacy (ACCP) Virtual Poster Symposium.

5. Harple K, **Haupt C**, Maphis L, **Grassi S**, **Greskovic G**, & Rolston D. (2020, April). Enhancing Mental Health Care in Primary Care: Adding a Clinical Pharmacist to the Embedded Behavioral Health & Primary Care Team. Poster presented at the Society of Behavioral Medicine's Annual Meeting & Scientific Sessions, San Francisco, CA.

6. **Andrick B**, Manikowski J, **Baughman A**. (2020, April). Development of a Venous Thromboembolism (VTE) Data Phenotype to Retrospectively Identify Cancer Patients With VTE. Poster was to be presented at 26th annual Health Care Systems Research Network Conference (HCSRN), Philadelphia, PA.

7. Eidbo S, Mathew V, Kaufman D, Nichols S, McCall K, **Piper B**. (2020, April). Agent-Specific Analysis of Opioid Distribution Trends in U.S. Hospitals From 2000 to 2018. Poster was to be presented at 26th annual Health Care Systems Research Network Conference (HCSRN), Philadelphia, PA.

8. **Gionfriddo M**, **Duboski V**, **Kern M**, Maddineni B, Hu Y, **Wright E**. (2020, April). A Web-Based Medication Reconciliation Tool Reduced Medication Discrepancies in a Primary Care Population. Poster was to be presented at 26th annual Health Care Systems Research Network Conference (HCSRN), Philadelphia, PA.

9. Lopez AK, Nichols S, Chung D, McCall K, **Piper B**. (2020, April). Prescription Opioid Distribution Trends After the Legalization of Recreational Marijuana in Colorado, 2007–2017. Poster was to be presented at 26th annual Health Care Systems Research Network Conference (HCSRN), Philadelphia, PA.

10. **Tusing L**, **Graham J**, Rahm AK, **Wright E**. (2020, April). Approaches Used to Develop a Clinic-Based Medication Disposal Program Targeting Opioid-Naïve Patients. Poster was to be presented at 26th annual Health Care Systems Research Network Conference (HCSRN), Philadelphia, PA.

11. Vaddadi S, Czelatka N, Gutierrez B, Torres-Teran C, Tron D, Funk H, Pitt S, Varano A, Boyle J, Maddineni B, Kaufman D, Ogden C, McCall K, **Piper B**. (2020, April). Rise and Regional Variance of Schedule II Stimulant Use in the United States. Poster was to be presented at 26th annual Health Care Systems Research Network Conference (HCSRN), Philadelphia, PA.

12. Voyce S, Roman P, **Chronowski J**, **Wright E**, **Gionfriddo M**, **Kowalek E**, **Kuhn D**, **Boyer A**. (2020, April). Direct Oral Anticoagulant Use in Patients With Atrial Fibrillation at Extreme Body Weight: What Is the Scope of the Problem? Poster was to be presented at 26th annual Health Care Systems Research Network Conference (HCSRN), Philadelphia, PA.

13. **Brokenshire AL**, McCoy J, Shultz J. (2020, March). Prescribing trends of angiotensin converting enzyme inhibitors/receptor blockers and aldosterone antagonists after myocardial infarction with reduced ejection fraction. Poster was to be presented at 10th Annual Medication Safety Conference, Wilkes Barre, PA.

14. **Tice S**, **Naessig C,** Sommers D, Tiene D. (2020, March). Lean leads to improved patient safety in Geisinger infusion center. Poster was to be presented at 10th Annual Medication Safety Conference, Wilkes-Barre, PA.

15. Kim S, Mohrien K, **Harris K**, Beard J, Dauer E, Goldberg A, Maher Z, Mason L, Santora T, Sjoholm LO, Pathak A. (2020, February). Incidence and risk factors for MDR infection in traumatic penetrating abdominal injuries. Research Snapshot Theater presentation at the 49th Annual Society of Critical Care Medicine Congress, Orlando, FL.

16. Vizzi C, **Harris K**, Mohrien K, Lucero R, King N, Pathak A. (2020, February). Interventions for hyperglycemia in the medical and surgical intensive care unit. Research Snapshot Theater presentation at the 49th Annual Society of Critical Care Medicine Congress, Orlando, FL.

17. Blanchard C, **Webster L**, **Wright E**, **Dombrowski S**, **Gionfriddo M**. (2019, December). Implementation Strategies to Ensure Consistent Delivery of a Pharmacy Service Within an At-Home Patient Population. Poster presented at 12th Annual Conference on the Science of Dissemination and Implementation, Arlington, VA.

18. **Jones LK**, Tilberry S, Frisbie L, **Gregor C**, **Gionfriddo MR**, Gidding SS, Waltz T, Seaton TL, Williams MS. (2019, December). Utilization of implementation strategies to improve statin adherence and prescribing and LDL-c reduction in individuals with hypercholesterolemia. Poster presented at 12th Annual Conference on the Science of Dissemination and Implementation, Arlington, VA.

19. Edwards S, Umbaugh M, **Hale SF**, Boyer A. (2019, December). Evaluation of Parenteral Iron Utilization Practices Within Two Acute Care Hospitals. Poster presented at 2019 American Society of Health-System Pharmacists (ASHP) Midyear Clinical Meeting, Las Vegas, NV.

20. **Heffelfinger A**, **Brickett L**, **Farnham K**, **Slampak-Cindric A**. (2019, December). Effectiveness of an Adjusted Body Weight Heparin Nomogram for Deep Vein Thrombosis and Pulmonary Embolism in Obese Patients. Poster presented at 2019 American Society of Health-System Pharmacists (ASHP) Midyear Clinical Meeting, Las Vegas, NV.

21. **McGowan M**, **Slampak-Cindric A**, **Brickett L**. (2019, December). Vitamin C, hydrocortisone, and thiamine for the treatment of severe sepsis and septic shock; A medication utilization evaluation. Poster presented at 2019 American Society of Health-System Pharmacists (ASHP) Midyear Clinical Meeting, Las Vegas, NV.

22. Nguyen K, **Seidel R**, **Hale SF**, **Slampak-Cindric A**. (2019, December). Evaluation of Bivalirudin Anticoagulation in Patients Undergoing Extracorporeal Membrane Oxygenation. Poster presented at 2019 American Society of Health-System Pharmacists (ASHP) Midyear Clinical Meeting, Las Vegas, NV.

23. **Yannuzzi J, Miller R**. (2019, December). Efficacy of Pharmacy Managed Warfarin in Maintaining a Therapeutic International Normalized Ration throughout Inpatient Admission and at First Medication Therapy Disease Management visit. Poster presented at 2019 American Society of Health-System Pharmacists (ASHP) Midyear Clinical Meeting, Las Vegas, NV.

24. Eslami A, **Lauver B.** (2019, October). Utilization of epoprostenol in the management of severe frostbite. Poster presented at 2019 CHEST Annual Meeting, New Orleans, LA.

25. **Jones LK**, G**ionfriddo MR**, Tilberry S, Frisbie L, **Gregor C**, Gidding S, Williams MS, Seaton TL. (2019, October). Implementation strategies to improve statin utilization in individuals with hypercholesterolemia: a systematic review. Poster presented at American College of Clinical Pharmacy (ACCP) Annual Meeting, New York City, NY.

26. Spencer S, Guzauskas G, Williams M, Snyder S, **Jones L**, Hao J, Hassen D, Peterson J, Veenstra D. (2019, October). Cost Effectiveness of Population-Wide Genomic Screening of Familial Hypercholesterolemia: Importance of FH Patient Statin Uptake and Achieving Target LDL Levels. Poster presented at 41st Annual Meeting of the Society of Medical Decision Making, Portland, OR.

27. **Webster L**, **Wright E**, **Dombrowski S**, **Gionfriddo M**, Blanchard C. (2019, October) Strategies to Ensure Consistent Delivery of Comprehensive Medication Management within an At-Home Patient Population. Poster presented at American College of Clinical Pharmacy (ACCP) Annual Meeting, New York City, NY.

GCMC Inpatient Pharmacy Team

28. Grandizio LC, **Graham J**, Klena J. (2019, September). Current trends in WALANT surgery: a survey of ASSH members. Poster presented at 74th Annual Meeting of The Hand Society, Las Vegas, NV.

29. Shoemaker P, Thompson M, Woll N, **Slampak-Cindric A**. (2019, September). Achieving Patient Safety Expectations During Residency Training by Implementation of a Patient Safety Curricular Resource. Poster presented at American Board of Medical Specialties Annual Conference, Chicago, IL.

Awards & recognitions

Great Catch Award, Geisinger Medical Center

Angela Slampak-Cindric, PharmD, BCPS, BCCCP (May 2020)

Susan Butler, PharmD, BCPPS (January, April 2020)

Certifications and advanced degrees

Beyond licensure, pharmacists can earn additional credentials to recognize their achievement through training, knowledge, and skills in different practice areas. The Board of Pharmacy Specialties (BPS) is the largest organization dedicated to the certification of pharmacists in specialty areas of practice. BPS offers certification to pharmacists in thirteen different practice areas and is continually expanding. In addition to BPS, several interdisciplinary organizations offer certification which pharmacists may earn. Examples include Certified Anticoagulation Care Providers (CACP),

Board Certified – Advanced Diabetes Management (BC-ADM), Certified Diabetes Care and Education Specialist (CDCES).

Board certification through any organization is a voluntary process and upon initial certification, pharmacists are required to participate in additional continuing education and practice experience to maintain the certification.

Below are members of the Geisinger Pharmacy team who have achieved and maintain board certification.

Board-certified pharmacotherapy specialists (BCPS)

Kelly Bolesta	Danielle Kuhn	Kelsey Siebold
Michelle Budzyn	Frederick Leri	Sarah Siemion
Adam Castro	Sara Maiers	Brian Simpkins
Cara Ciamacco	Meghan Martin	Angela Slampak-Cindric
Domonique Dobson	Andrea Mayer	Jennifer Smith
Laura Eap	Eryn Milius	Sarah Tanner
Alyssa Falkowski	Rachel Miller	Troy Tanner
Sara Gaines	Jordan Moore	Sally A. Tice
Dante Grassi	John Nahas	Constance Topolewski
Arthur Jankowski	Shea Payne	Keturah Weaver
Danielle Karaffa	Ricky Rampulla	Nicole Williams
Sarah Knauer	Amanda Sharry-Rogers	
Eric Kowalek	Jamie Shepherd	

Board-certified pediatric pharmacotherapy specialists (BCPPS)

Kelly Bolesta	Eric Kowalek	Amanda Sharry-Rogers
Michelle Budzyn	Danielle Kuhn	Jamie Shepherd
Adam Castro	Frederick Leri	Kelsey Siebold
Cara Ciamacco	Sara Maiers	Sarah Siemion
Domonique Dobson	Meghan Martin	Brian Simpkins
Laura Eap	Andrea Mayer	Jennifer Smith
Alyssa Falkowski	Eryn Milius	Sarah Tanner
Sara Gaines	Rachel Miller	Troy Tanner
Dante Grassi	Jordan Moore	Constance Topolewski
Arthur Jankowski	John Nahas	Keturah Weaver
Danielle Karaffa	Shea Payne	Nicole Williams
Sarah Knauer	Ricky Rampulla	

Board-certified pediatric pharmacotherapy specialists (BCPPS)

Susan Butler	Sarah Hale	Kimberly Nissen
Shannon Draus	Joan Keehan	Bryan Snook
Kelly Guza	Michelle Ligotski	

Board-certified oncology pharmacists (BCOP)

Benjamin Andrick	Tristan Maiers	Rachel Sneidman
Amy Ellenburg	Anupama Mathur	
Stephen Farley	Anna Mcdermott	

Board-certified nutrition support pharmacists (BCNSP)

Stephen Adams	Carl Naessig
Mariya Monfette	Nermeen Yousef

Board-certified infectious disease pharmacist (BCIDP)

Bradley Lauver

Board-certified geriatric pharmacists (BCGP)

Binal Patel	Jessica Roth

Board-certified cardiology pharmacists (BCCP)

Michael Barrese

Amy Brokenshire

Samuel Eckel

Board-certified critical care pharmacists (BCCCP)

Anthony Alu

Laura Brickett

Allison Cebulko

Darlene Chaykosky

Kimberly Farnham

Jamie Kerestes

Kayla Kotch

Kimberley Limouze

Kristen Lopatofsky

Lindsey Schneider

Angela Slampak-Cindric

Board-certified ambulatory care pharmacists (BCACP)

Brian Bedwick

Emily Black

Kimberly Carozzoni

Catherine Haupt

Michael Kachmarsky

Michael Kessock

Daniel Longyhore

Amanda Popko

Ivan Puskovic

Julia Swigart

James Taleroski

Theron Ward

Ariana Wendoloski

Certified anticoagulation care provider (CACP)

Amy Brokenshire

Certificates

ASHP Nutrition Support Certificate

Dan Tiene

ASHP Compounded Sterile Preparations Certificate

Alysha Lopez

Advanced degrees

Master of Business Administration in Healthcare Management, Western Governors University

Susanne Burns

Master of Business Administration in Healthcare Management, New England College

Holly Bones

Master of Business Administration in Healthcare Management, The University of Scranton, Kania School of Management

Leeann Webster

Doctorate of Education in Curriculum and Instruction, Wilkes University School of Education

Daniel Longyhore

Pharmacy leadership

Mike Evans
Vice President of
Enterprise Pharmacy and
Chief Pharmacy Officer

Holly Bones
System Director
Contracting and
Procurement

Seth Gazes
System Director
Planning, Strategy and
Analysis

Gerard Greskovic
System Director
Ambulatory Programs

Kelly Guza
System Director
Acute Programs

Dave Klinger
System Director
Operations and Compliance

Daniel Longyhore
System Director
Knowledge Management

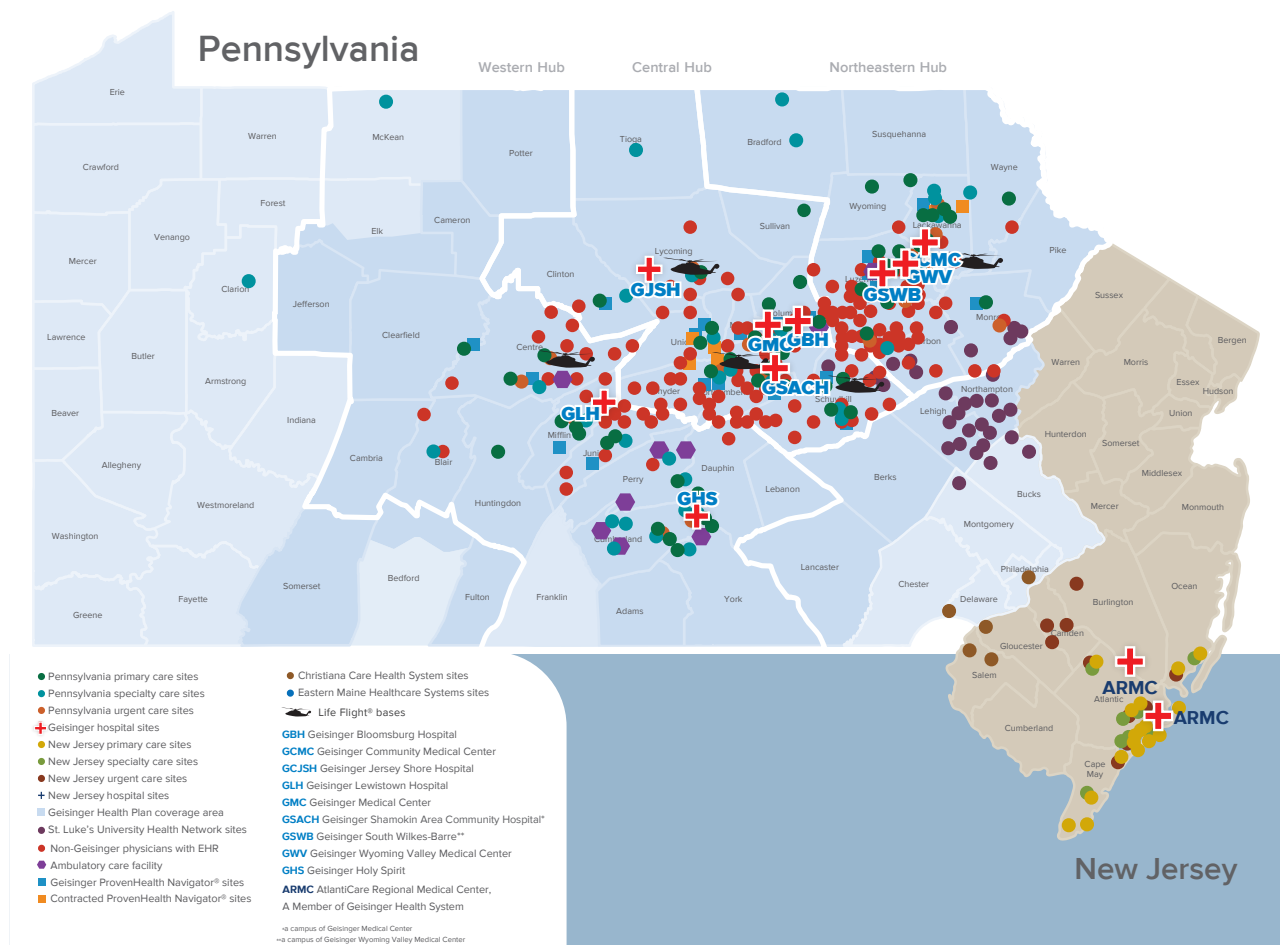**Jamie Miller**
System Director
Managed Care Pharmacy

Dean Parry
Associate Vice President
Clinical Informatics

Eric Wright
System Director, Center
for Pharmacy Innovation
and Outcomes

About Geisinger

One of the nation's most innovative health services organizations, Geisinger serves more than 1 million patients in Pennsylvania. The system includes nine hospital campuses, a nearly 550,000-member health plan, two research centers and the Geisinger Commonwealth School of Medicine. A physician-led organization, with nearly 24,000 employees and more than 1,600 employed physicians, Geisinger leverages an estimated $7 billion positive annual impact on the Pennsylvania economy. Repeatedly recognized nationally for integration, quality and service, Geisinger has a long-standing commitment to patient care, medical education, research and community service. For more information, visit geisinger.org or connect with us on Facebook, Instagram, LinkedIn and Twitter.

Pennsylvania

Western Hub   Central Hub   Northeastern Hub

New Jersey

- Pennsylvania primary care sites
- Pennsylvania specialty care sites
- Pennsylvania urgent care sites
- Geisinger hospital sites
- New Jersey primary care sites
- New Jersey specialty care sites
- New Jersey urgent care sites
- New Jersey hospital sites
- Geisinger Health Plan coverage area
- St. Luke's University Health Network sites
- Non-Geisinger physicians with EHR
- Ambulatory care facility
- Geisinger ProvenHealth Navigator® sites
- Contracted ProvenHealth Navigator® sites
- Christiana Care Health System sites
- Eastern Maine Healthcare Systems sites
- Life Flight® bases

GBH Geisinger Bloomsburg Hospital
GCMC Geisinger Community Medical Center
GCJSH Geisinger Jersey Shore Hospital
GLH Geisinger Lewistown Hospital
GMC Geisinger Medical Center
GSACH Geisinger Shamokin Area Community Hospital*
GSWB Geisinger South Wilkes-Barre**
GWV Geisinger Wyoming Valley Medical Center
GHS Geisinger Holy Spirit
ARMC AtlantiCare Regional Medical Center,
A Member of Geisinger Health System

*a campus of Geisinger Medical Center
**a campus of Geisinger Wyoming Valley Medical Center

The system is composed of the following entities:

Geisinger Clinic is widely regarded as a national model of healthcare delivery centered around a cutting-edge multispecialty group practice of more than 1,600 primary and specialty physicians who practice at Geisinger hospitals and non-Geisinger hospitals throughout the region.

Geisinger Medical Center (GMC) – Danville, Pa. The largest tertiary/quaternary care teaching hospital in central and northeast Pennsylvania, GMC has earned a reputation for providing leading-edge medicine and treating the most critically ill patients. GMC is licensed for 524 beds, including 91 pediatric beds in the Geisinger Janet Weis Children's Hospital. GMC maintains the region's only Level I regional resource trauma center with additional qualifications in pediatrics. GMC offers a comprehensive array of highly specialized medical and surgical services, including neurosciences, cardiovascular services, transplantation, women's health, pediatrics, orthopaedics and oncology.

Outpatient services, including endoscopy and same-day surgery, are available on GMC's main campus, as well as at the Outpatient Surgery Center, located at the Geisinger Woodbine Lane campus.

GMC's Hospital for Advanced Medicine serves as an integrated center for the most critically ill patients. This 308,000-square-foot "hospital within a hospital" houses nine stories of patient-focused space, including acuity adaptable beds that can convert from intensive care to recovery as the patient progresses. The hospital offers state-of-the-art inpatient and physician office facilities with cardiovascular services residing within the building, a 32,000-square-foot surgical suite equipped with sophisticated robotic and interventional medical equipment, and shell space for future growth. This hospital is LEED certified silver (Leadership in Energy and Environmental Design), with environmentally friendly designs, recycled materials used in its construction and increased energy efficiency achieved by maximizing natural window light in patient rooms and offices.

Geisinger Shamokin Area Community Hospital (GSACH) – Coal Township, Pa. This hospital merged into Geisinger Medical Center on Jan. 1, 2012. A campus of Geisinger Medical Center, GSACH has a total of 48 beds, including 30 Med/Surg beds, 10 Post-Surgical Unit beds, 7 Special Care Unit beds and 1 bed in the Biocontainment Unit. GSACH also has cardiac and pulmonary rehabilitation departments, and the Ressler Center offers specialty outpatient clinic appointments on campus.

Geisinger Wyoming Valley Medical Center (GWV) – Wilkes-Barre, Pa. Located in Plains Township, GWV is an acute tertiary care center that brings advanced clinical services to northeast Pennsylvania. Licensed for 272 beds, GWV's state-of-the-art Critical Care Building houses the only Level II trauma center in Luzerne County. The GWV campus includes the Frank M. and Dorothea Henry Cancer Center, the Richard and Marion Pearsall Heart Hospital (an accredited Chest Pain Center), the Tambur Neonatal Intensive Care Unit, the Geisinger Janet Weis Children's Unit, a transplant program, the Brain & Spine Tumor Institute and more. GWV's Women's Health Program and various specialty clinics are offered at facilities in close proximity to the main campus.

Geisinger South Wilkes-Barre (GSWB) – Wilkes-Barre, Pa. GSWB is GWV's ambulatory campus. It offers an array of same-day health services, including adult and pediatric urgent care centers, inpatient and outpatient rehabilitation, same-day surgery, pain and sleep centers and an Emergency Department.

Geisinger Community Medical Center (GCMC) – Scranton, Pa. GCMC is a leading provider of quality healthcare services in northeast Pennsylvania. Home to Scranton's only Level II trauma center, GCMC also has an adult inpatient behavioral health unit. It is licensed for 304 beds and features an array of clinical programs including orthopaedic services and a broad range of other specialized surgical and radiologic services.

Geisinger Bloomsburg Hospital (GBH) – Bloomsburg, Pa. GBH is licensed for 72 beds and is an acute-care hospital offering patients a variety of primary and specialty care services, a broad spectrum of surgical services, including in-and-out surgery, obstetrics/maternity, behavioral health and a progressive emergency medicine and hospitalist program. Its Emergency Department is ranked in the top 5 percent in the state.

Geisinger Lewistown Hospital (GLH) – Lewistown, Pa. GLH is licensed for 124 beds and serves the residents of rural Mifflin, Juniata, Perry, Snyder and Huntingdon counties. It is an open-staff, acute-care community hospital that partners with Primary Health Network FQHC to provide services in the new Primary Health Network facility in the Lewistown area. GLH offers emergency, imaging, endoscopy, urgent care, orthopaedics and cardiology services, among others.

Geisinger Jersey Shore Hospital (GJSH) – Jersey Shore, Pa. Licensed for 25 beds, GJSH joined Geisinger in 2017, though it opened as a private hospital in the early 1900s. It serves the residents of Clinton and western Lycoming counties, and is designated as Geisinger's only critical access hospital by the Commonwealth of Pennsylvania and the Medicare Program. GJSH is accredited by The Joint Commission, and offers inpatient, acute, emergency, outpatient and sub-acute care.

Geisinger Health Plan (GHP) is the not-for-profit health insurance component of Geisinger. GHP provides high-quality, affordable healthcare benefits for businesses of all sizes, individuals, families, Medicare beneficiaries and Medicaid recipients. GHP serves about 550,000 members in 43 counties throughout central, south-central and northeast Pennsylvania, as well as members in New Jersey and Maine. The provider network includes 45,000 participating providers and 100+ participating hospitals. Additionally, GHP has partnered with Centers for Medicare & Medicaid Services (CMS) to provide Medicare benefits to 95,000 beneficiaries in the state. GHP also provides coverage to 184,000 Medicaid recipients in the Commonwealth.

Research at Geisinger has been a key element of Geisinger's mission since the beginning. The current phase of research began in 2009, when we began a comprehensive Research Strategic Planning process which confirmed and elevated the role of research in Geisinger's mission. It emphasized research that improves health and healthcare — not only for our own patients, but also for patients nationally and globally through scholarly publications and presentations. Our board and leadership challenged us to conduct research that can be uniquely done at Geisinger, leveraging our high-quality patient care; our fully integrated healthcare system; our large, stable patient population; our advanced electronic health record; and our clinical data warehouse. Research is key to the development and implementation of the next generation of best practices with the goal of disease prevention as well as improved outcomes across a broad spectrum of clinical areas.

Dedicated research facilities include the Sigfried and Janet Weis Center for Research and the Henry Hood Center for Health Research, located in Danville, Pa.; the Susquehanna Valley Imaging Center, located in Lewisburg, Pa.; and the Geisinger Precision Health Center, located in Forty Fort, Pa.

Geisinger Commonwealth School of Medicine (GCSOM) – Scranton, Pa. GCSOM joined the Geisinger family in January 2017. Formerly The Commonwealth Medical College, GCSOM has campuses in Scranton, Wilkes-Barre, Williamsport and Sayre, Pa. The school is accredited by the Pennsylvania Department of Education to accept students for Master of Biomedical Sciences and Doctor of Medicine degree programs.

Geisinger Community Health Services (GCHS) is a not-for-profit organization that annually provides healthcare services to nearly 40,000 patients in the communities in which they live and work. GCHS is committed to advocacy, excellence and innovation in the provision of services that complement and

expand the continuum of care provided by the health system. Its programs include:

- Geisinger Convenient Care, which provides walk-in urgent healthcare services in the evening and on weekends when physician offices are closed
- Health Care Quality Unit nurses who educate community members and caregivers of intellectually disabled individuals
- LIFE Geisinger, which provides a comprehensive program of health and social services to the frail elderly

International Shared Services Inc. is a wholly owned, for-profit subsidiary of Geisinger Medical Management Corporation. It provides comprehensive clinical engineering and computer technical services to providers both within and outside Geisinger.

Geisinger Marworth Alcohol & Chemical Dependency Treatment Center, located in Waverly, Pa., is recognized as a national leader in the treatment of alcohol and chemical addiction.

Geisinger Marworth has 91 beds and provides 3 levels of treatment: outpatient, intensive outpatient with partial hospitalization, and inpatient detoxification and rehabilitation.

Geisinger Life Flight® is a component of the system's response to critical care transport needs, with 9 air ambulances and 1 ground ambulance operating 24 hours a day, 7 days a week from the following locations:

- Geisinger Medical Center, Danville
- Wilkes-Barre/Scranton International Airport, Avoca
- University Park Airport, State College
- Williamsport Regional Airport, Montoursville
- Good Will Fire Department, Minersville
- Jake Arner Memorial Airport, Lehighton

Life Flight transported nearly 2,800 patients to the nearest qualified trauma center in FY18.

Contact Geisinger Enterprise Pharmacy:

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