

Geisinger Enterprise Pharmacy

2021–2022 Year in Review

Geisinger

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Mission

To work collaboratively with healthcare professionals across Geisinger and the community it serves; to provide safe, cost-effective, evidence-based medication therapy management; to enhance the lives and health of our patients, system and region

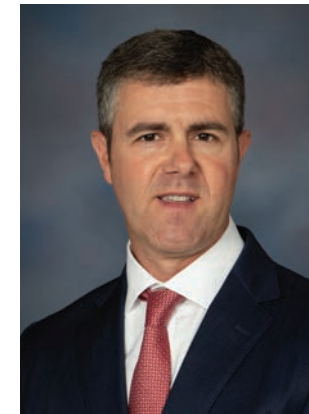


Vision

- To be the premier steward for all medication-related needs across Geisinger
- To be recognized as a national model for medication management, pharmacy management and leading innovative and evidence-based programs of care delivery, research and education



Message from the chief pharmacy officer



It is my pleasure to present the 2022–2023 Annual Report for Geisinger Enterprise Pharmacy. The last 12 months have certainly been challenging, with the continued global pandemic, supply shortages, manpower shortages and consumerism driving patients' decisions in healthcare, to name a few. This report highlights the incredible work completed daily by the pharmacists, pharmacy technicians,

finance and staff to continually evolve our delivery of pharmaceutical care for our patients and communities. Here, we'll detail some of the exceptional accomplishments of the 10 pillars of Geisinger Enterprise Pharmacy.

While continuing to navigate the challenges of COVID-19, Geisinger Enterprise Pharmacy stayed true to our mission and continued to build existing programs and implement new programs that support high-quality, safe, compliant and effective care. I'd like to highlight a few accomplishments, but it's worth reading through the entire report for all the details.

We've opened a new hospital, Geisinger Medical Center Muncy, that offers inpatient, cancer, infusion and retail pharmacy services. We've expanded our pharmacy services with the accreditation of Geisinger Medical Center, Geisinger Wyoming Valley Medical Center and Geisinger Community Medical Center retail and specialty pharmacy services. Geisinger Home Infusion Pharmacy services has also expanded, with the opening of a second ACH-accredited location in State College. Telepharmacy has grown as well, and now manages most of the phone calls and Epic in-basket messages related to medications. The system medication prior authorization services have been centralized in pharmacy, which now handles all patient claims and requests. Finally, staffing increased based on the needs of our key pillars, which include acute, ambulatory, operations and compliance, strategy and planning, formulary and procurement, knowledge management, managed care, pharmacy innovation alliance, center for pharmacy innovation and outcomes, and pharmacy benefit management services.

Many programs in each of these pillars directly support our mission and vision for pharmacy services at Geisinger, and it certainly would not be possible without the dedication and commitment of our Geisinger Pharmacy leadership team. I'd like to thank each member of our staff for their commitment to the pharmacy profession and to the care of the Geisinger patients and communities we serve.

Michael A. Evans, RPh, MBA, FASHP

Chief Pharmacy Officer
Geisinger

Enterprise Pharmacy pillars



Acute Programs

- Medication optimization
- Multidisciplinary team rounds
- Emergency bedside response
- Antimicrobial stewardship
- Anticoagulation management
- Pharmacokinetics
- Medication reconciliation
- Specialty services (e.g., Hem/Onc, Peds)
- IV infusion
- OR



Planning, Strategy & Analysis

- Innovation
- Project management
- CarePaths
- Population health
- EP program analysis and evaluation
- Automation/technology
- Data informatics



Operations & Compliance

- Medication safety
- Corporate compliance
- Policies and procedures
- 340B



Ambulatory Programs

- Specialty care
- Primary care chronic disease management
- Pharmacy call center
- Retail
- Mail-order
- Specialty
- Home infusion
- Pharmaceutical patient assistance
- Geisinger at Home



Contracting & Procurement

- IDN contracting
- IDN procurement
- IDN formulary



Knowledge Management

- Pharmacy residencies
- Student coordination
- Staff training programs
- Competency development
- Patient education materials/programs
- Collaborative practice



Managed Care

- Drug benefit management
- Design management utilization
- Medication adherence
- Treat-to-target HEDIS metrics



Center for Pharmacy Innovation & Outcomes

- Investigational drug services
- Pharmacy research support
- Pharmacy outcome studies
- Demonstrating effectiveness of pharmacy programs
- Research grants
- Translating research into practice



Pharmacy Innovation Alliance

- Building and strengthening industry relationships
- Access to and sharing of Pharmacy Enterprise knowledge
- Promoting value leadership
- Driving market competitiveness

Pharmacy Care Coordination & Enterprise EHR

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





Acute Pharmacy Services

Our Acute Care Program provides services to hospitals, ambulatory infusion centers, ambulatory surgery centers, hospital-based clinics and the Hematology/Oncology Pharmacy service.

In 2021 we continued to persevere through the demands and challenges of the pandemic. But as things finally began to normalize, we also took the opportunity to get back to basics while continuing to expand and innovate.

Continued pandemic perseverance

- Managed another COVID surge at end of 2021 into 2022 – capacities exceeded previous surge at end of 2020, with almost every hospital campus continuing to run at or above capacity
- Continued support for large COVID vaccine clinics, with pharmacy drawing up all doses
- Continued to provide input for ever-changing inpatient and outpatient COVID treatment guidelines
- Supported implementation and operations of pediatric COVID vaccine clinics
- At end of 2021, developed plan to sunset large COVID Vaccine Community Clinics and transition all COVID vaccines for those age 12 and older to our retail pharmacy network
- Continued implementing strategies for shortages and backorders with the formulary and procurement team
- Partnered to lead the rollout of Evusheld™
- Worsening staffing challenges
 - Technician compensation initiatives
 - Salary adjustments
 - New retention bonuses
 - Premiums for advanced skill sets

Back to basics

System standardization:

- Standardized Diversion Investigation Intake Form
- Controlled substance liquid dispensing
- Assessment and learned process for procedural batched syringes
- System Policy and Procedures revamp and consolidation
- Standardized system anaphylaxis kits
- Standardized RSI kits
- Standard titration parameters for critical care continuous infusions

New guidelines or significant updates:

- Adult Antimicrobial Dosing Guideline
- Enoxaparin guideline
- Heparin nomogram
- CAP Guideline/Clinical Pathway

Ongoing expansion:

Completed construction projects:

- Geisinger Medical Center Muncy inpatient pharmacy opened in first quarter 2022
- Geisinger Wyoming Valley's Henry Cancer Center pharmacy opened in first quarter 2022
- Geisinger Healthplex CenterPoint ambulatory surgery pharmacy opened in third quarter 2022

Construction projects underway:

- Orthopaedic Center Pennsylvania
- Dickson City Cancer Center
- Geisinger Behavioral Health Center Northeast (Geisinger/Acadia joint venture)
- Geisinger Behavioral Health Center Central (Geisinger/Acadia joint venture)

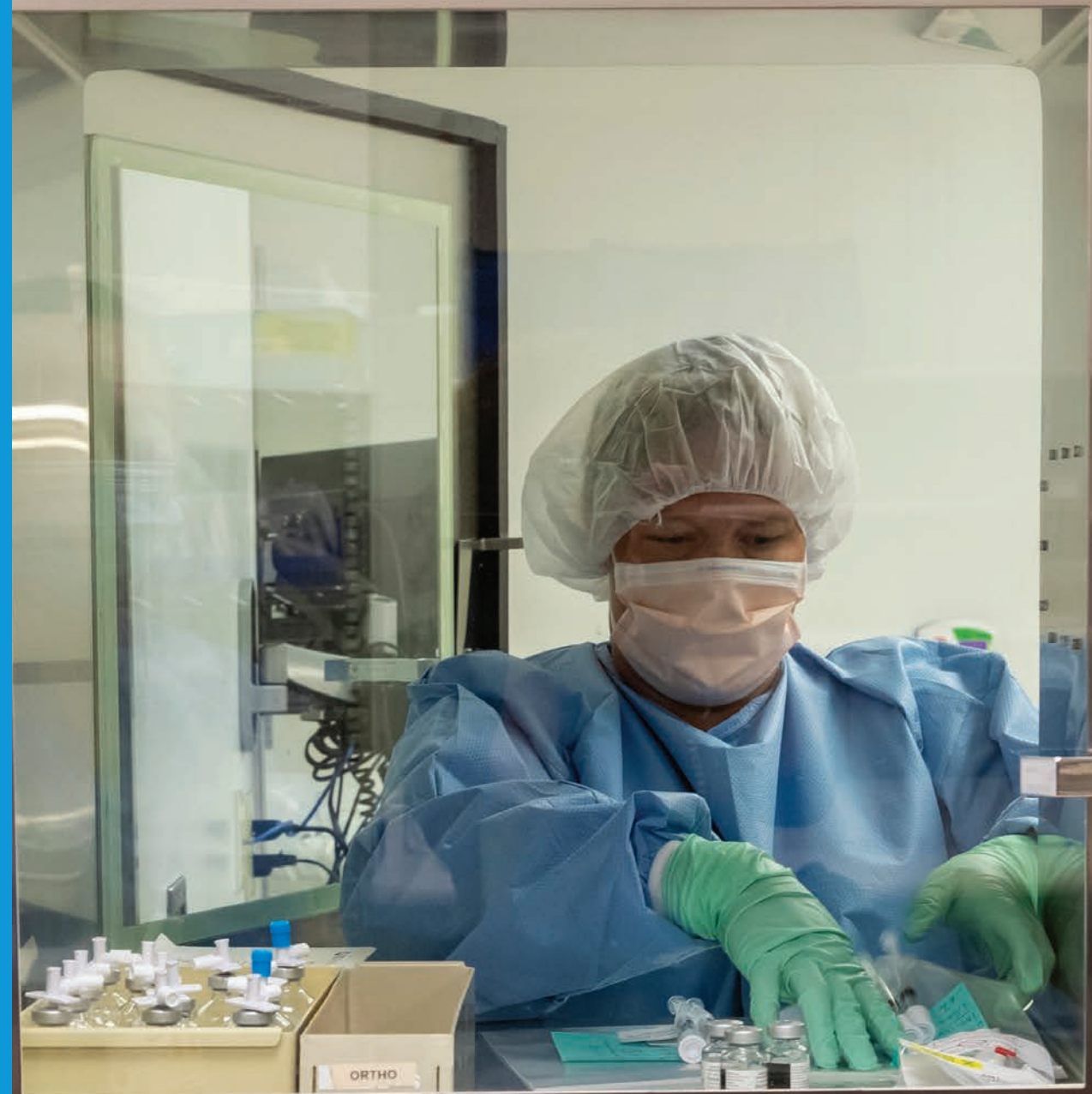
Construction projects in the pipeline:

- Geisinger Wyoming Valley Critical Care Tower

Continued innovation:

- Conversion to Tenecteplase from Alteplase for Acute Ischemic Stroke
- Hem/Onc Epic Beacon precertification “fast pass” for Geisinger Health Plan patients
- Systemwide implementation of discharge prescription verification and medication reconciliation
- Epic Bugsy module implementation
- Epic Anticoagulation Navigator launch

Hematology- Oncology



Gary Lewis celebrates 50th anniversary at Geisinger

In June 2022, we celebrated a milestone — the 50th work anniversary of Gary Lewis, a hematology/oncology clinical pharmacist at Geisinger Medical Center in Danville. Gary, originally from the Danville area, graduated from the pharmacy school at the Philadelphia College of Pharmacy and Science in 1971. He joined the pharmacy department at Geisinger Medical Center in 1972, which then had just three pharmacist staff members. He became an inpatient pharmacy supervisor in 1974 and spearheaded efforts to transition the hospital to medication unit dose preparation and dispensing.

In the mid-80s, two physicians arrived at Geisinger to lay the groundwork for what would become the Cancer Institute. They insisted they'd need a clinical pharmacist to support patient care — and in 1981, Gary accepted the first clinical pharmacist position. His work in hematology/oncology became the foundation from which our current pharmacy department and practice model arose.

In his clinical practice, Gary was responsible for reviewing patient profiles, answering medication questions and dispensing chemotherapy products, which were predominantly investigational medications as part of oncology clinical trials. Over the course of his career, Gary witnessed the transformation of pharmacotherapy management for cancer as these products became standard of care best practices.

In 1986, Gary was approached by a hematology provider to create a pharmacist-driven anticoagulation clinic (Coumadin clinic) to manage their patients on warfarin. He collaborated with the physician to develop Geisinger's first collaborative practice agreement between a physician and pharmacist, launching the first anticoagulation clinic at Geisinger. Though originally built to manage hematology/oncology patients, the clinic soon received requests from providers in other departments. This success burgeoned into a systemwide anticoagulation clinic, which became the framework and foundation for our entire Ambulatory Pharmacy Medication Therapy Disease Management (MTDM) Program as it exists

today — now composed of 85 pharmacists practicing across 13 specialties. Our MTDM pharmacists average 17,500 encounters per month, and the program is a cornerstone of patient care at Geisinger.

In the early '90s, Gary began to develop a focused practice in hematology and stem cell transplant. Many pharmacists, residents and student learners benefited from his training and many of his current pharmacy team members remember the experience fondly.

Gary was also deeply involved with setting up the autologous stem cell transplant program in 1998, and helped with the first allogeneic stem cell transplant in 2008. Such efforts laid the institutional groundwork for the BMT program at Geisinger, which subsequently received autologous and allogeneic FACT (Foundations for Accreditation in Cellular Therapies) accreditation. Additionally, Gary sat for and passed the first offering of the Board of Pharmacotherapy Specialties (BPS) certification for oncology (BCOP).

In addition to pharmacy, hematology/oncology and patient care, Gary is passionate about medical mission trips. During his time at Geisinger, he has gone on over 30 — his list of mission site work includes Costa Rica, the Dominican Republic and Haiti. He not only attended as a pharmacist team member, but also led and coordinated efforts to procure medications and supplies for people in need.

Family is important to Gary. He raised two children and is a proud grandfather of three. At work, our team affectionately calls him the grandfather of hematology/oncology pharmacy practice at Geisinger, but his legacy shows that he truly is a founding member of our cancer care efforts, as well as our overall integrated pharmacy practice model throughout the system.

Gary continues to work at the Knapper Infusion Clinic and round with the hematology/stem cell transplant team at Geisinger Medical Center. Why does he continue to come to work every day after all these years with a smile on this face? His unending passion for and dedication to patient care.

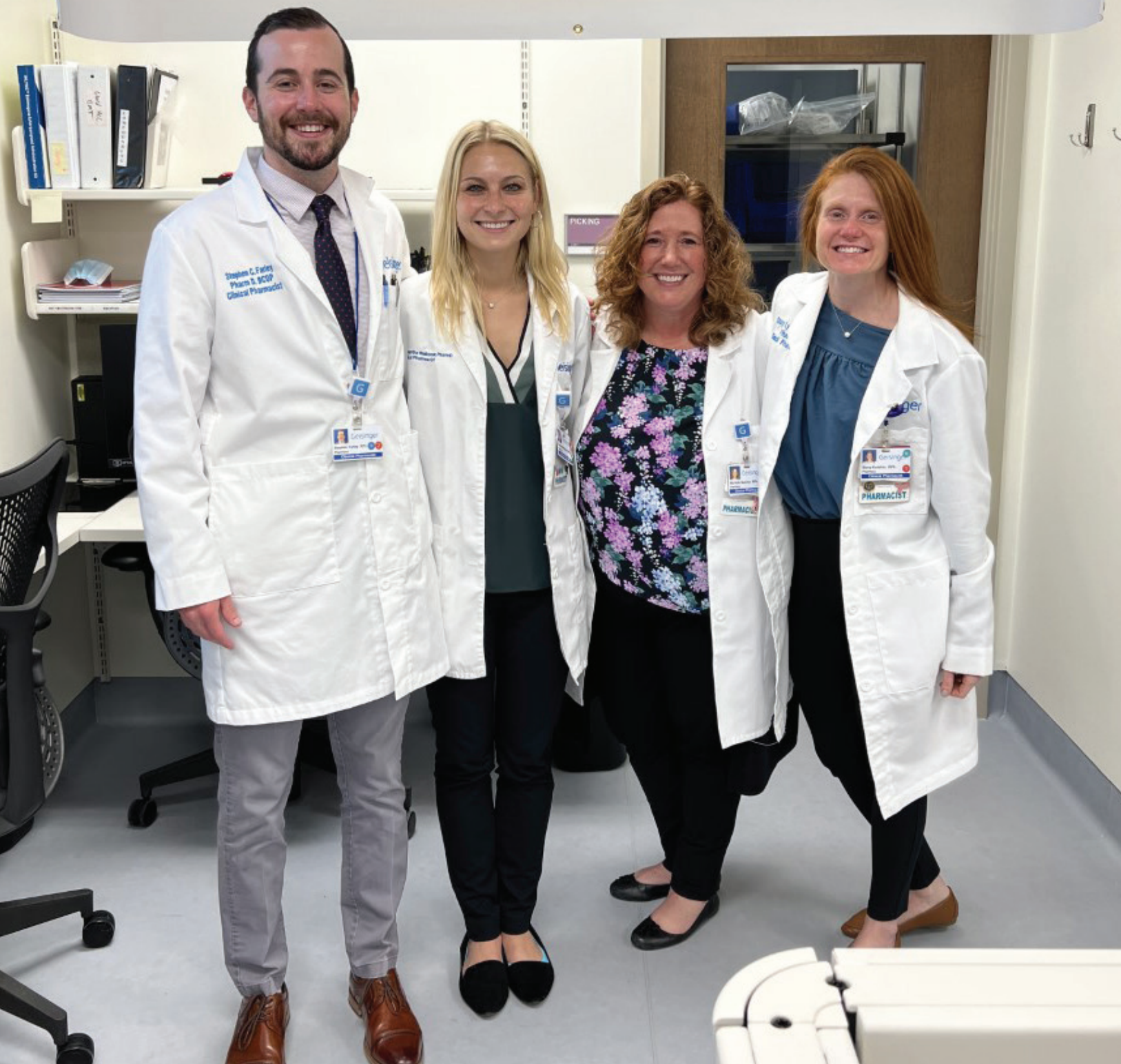
Congratulations, Gary, on your 50 years of service. Your kindness, experience, dedication and knowledge have benefited generations of pharmacists and providers — who've all been fortunate to work with you.



We get to do this.

Go Hem/Onc Pharmacy team!

Geisinger



Henry Cancer Center opening

Opening of the new Henry Cancer Center Pharmacy at GWV

The hematology/oncology pharmacy team was extremely excited to open the new, state of the art, pharmacy space at the Geisinger Wyoming Valley Medical Center Henry Cancer Center. This new pharmacy space allows the team to streamline resources and better treat cancer patients, both outpatient and inpatient. With improvements in both space and processes, the team looks forward to cutting down wait times while maintaining the highest standard for accuracy. They've adopted the slogan "We get to do this!" — a daily reminder of the privilege of serving our patients with cancer along their path to better health.

Ambulatory Care



Geisinger Ambulatory Pharmacy Team continues its strong performance in 2021–22

Geisinger's Ambulatory Pharmacy pillar is composed of seven large, diverse and highly integrated programs: MTDM (Medication Therapy Disease Management), Telepharmacy (or Pharmacy Call Center), Retail Pharmacy, Mail-Order Pharmacy, Specialty Pharmacy, Geisinger Home Infusion Services and the Central Medication Hub. Over the past 12 months, these teams have continued to expand services (e.g., COVID vaccines, adherence packaging), extend their geographic reach through the opening of new sites, and of course, for the retail programs, grow in volume and revenue. Some specific high-level highlights of the programs are noted below:

The **Medication Therapy Disease Management (MTDM) Program** now includes 82 clinical pharmacists embedded into 71 sites within the clinical enterprise. The sheer size of this team, as well as its diversity, prompted a restructure of the oversight model in early 2022 from a regional-based model to a functionality-based model, creating a Primary Care pillar, a Specialty MTDM pillar and a Non-Traditional pillar (65 Forward, LIFE Geisinger, Keystone ACO, pain, Geisinger at Home). MTDM has continued to grow within primary care, adding six clinical pharmacists to new 65 Forward sites and two clinical pharmacists for expansion outside of the clinical enterprise within our Keystone ACO (KACO) partner sites. However, the largest expansion of late has been in the Specialty arena, adding multiple pharmacists in dermatology, pulmonology, gastroenterology and endocrinology. Overall, MTDM receives an average of 2,000 new patient referrals per month and closes 22,000 encounters per month, which includes an average of 10,000 billable in-person visits and 700 televideo visits.

Figure 1. MTDM outcomes

MTDM Outcomes Overview



Operational

18%

Reduction in all diabetes-related primary visits year two¹

36%

Reduction in acute diabetes-related primary visits year one¹

>600

Video visits per month, increasing appointment access²

17,500/1100

Average MTDM primary care patient encounters and referrals per month respectively²



Clinical

35%

Reduction in risk of 1-year mortality in diabetes patients⁸

22%

Reduction in all diabetes-related ED utilization year one¹

82.6%

DM patients on mod/high intensity statins (vs 72.9% system average)⁹

2.4 points

Average HgA1C improvement per patient⁸



Financial

65%

GHP Mail-Order Rx capture³

23%

Reduction in total cost of care for anticoagulation patients⁵

\$163

Reduction in total PMPM for DM patients in MTDM⁷

~10,000

Average billable visits in primary care per month²

Telepharmacy Outcomes Overview



Operational

89,000

Average medication renewal orders managed by TeleRx per month¹

1.07 mil annually

39,000

Average inbound calls handled per month²

468,000 annually

28,000

Average outbound calls made per month³

336,000 annually

2,770

Office visit care gaps identified per month⁴

33,000 annually

5,800

Anticoagulation encounters managed per month by TeleRx team⁷

70,000 annually



Clinical

15,535

Number of lab care gaps identified by telepharmacist per month

186,000 annually

3,627*

Uncomplicated UTIs managed for PCP patients⁵

606*

Number of UTI cultures managed for Emergency Department⁶

11%

Amount of UTI antibiotic therapy de-escalated by Telepharmacy⁹

16%

Amount of UTI antibiotic therapy changed by TeleRx based on culture review⁹

72%

Lab care gaps closure rate by Telepharmacy



Financial

3,342

of MTM-CMR completed for GHP 5-Star initiative¹¹

35%

Reduction in PCP acute office visits for uncomplicated UTI issues⁸

1097

New patients captured to Geisinger Mail-Order services each year¹⁰

*New program

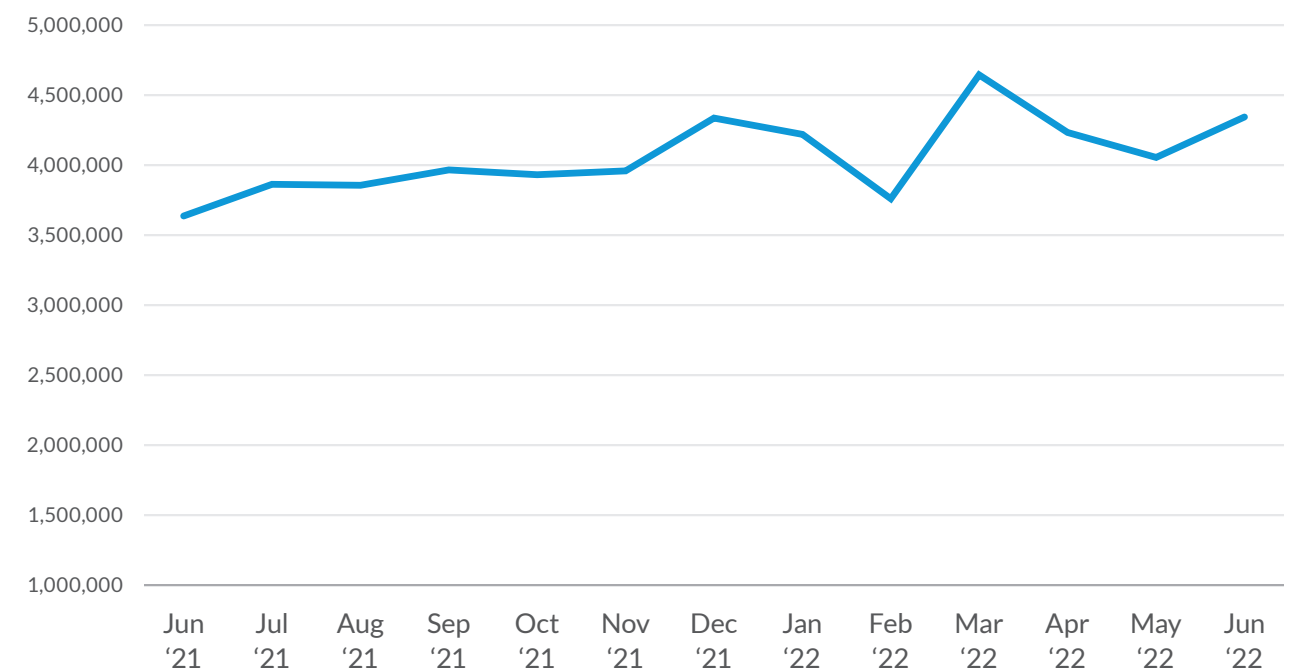
Telepharmacy has expanded its clinical service programs this year to include the Call First program for UTI management of complex patients >18 years old, UTI ED management expansion to GSACH, GLH and GMC, Transitions of Care and MTM part D Comprehensive Med Reviews (CMR), a new program brought inside the clinical enterprise this year with the goal of obtaining a CMS 5-Star rating for Geisinger Health Plan. Telepharmacy has 33 pharmacists and 62 technicians, and next year they will consolidate 15 technicians from the mail-order call center into their team. In June 2022, Telepharmacy managed 96,553 prescription refill approvals, fielded approximately 42,000 inbound calls and made an average of 25,000 outbound calls.

Figure 2. Telepharmacy outcomes

Geisinger Home Infusion Pharmacy Services (GHIS) has been hit with several challenges over the past 12 months, most notably a nationwide shortage of enterals, home infusion pump tubing and nurses. Despite this, the team persevered — and through partnerships and collaborations across the system, they were able to reach a >20% growth in revenue YOY. One very successful example of this collaboration is the close partnership between GHIS, Specialty MTDM and GHP, whereby patients are proactively identified and seamlessly transitioned to home infusion therapy with little to no impact on physician and clinic staff workload. In addition, GHIS opened its first satellite pharmacy in State College (in May 2022) at the Windmere Pharmacy site, added new medications to its “home infusion eligible” medication list (e.g., Evkeeza, Vyepti, Ocrevus, Cabenuva, Krystexxa and Tysabri) and is planning to open the doors to its first home infusion suite in Danville in October 2023.

Figure 3. GHIS YOY revenue

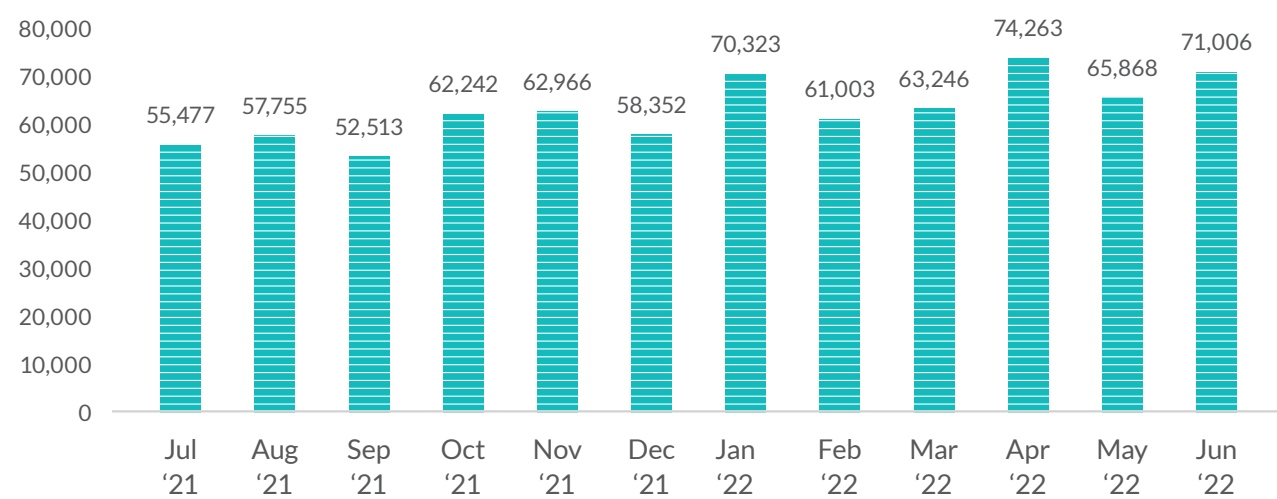
Monthly revenue



Geisinger Pharmacy collectively filled 1.3 million prescriptions from July 2021 to June 2022. Of that total, **Geisinger Mail-Order** filled over 760,000 prescriptions from our centralized location in Elysburg and the **Geisinger Retail Pharmacy** team provided the balance of 540,000 scripts — inclusive of vaccines, LIFE Geisinger and Meds to Beds services. Mail-Order currently ships approximately 3,400 prescriptions per day and triages about 650 to 800 calls per day — more than double our volumes from FY19. In addition, our Mail-Order facility expanded its pharmacy delivery radius by obtaining non-residential licenses in six new states over the last script year, which brings the total number of states where we practice up to 15: PA, DE, NJ, NY, OH, FL, IN, WI, ME, AZ, VT, CT, NH, GA and SC. The retail pharmacy footprint remained stable from July 2021 to June 2022, with 14 locations between State College and Mount Pocono. We will be expanding our footprint to include three new locations before the end of 2022: Muncy, Mifflintown and Buckhorn. Some notable highlights and accomplishments over the past year include: (a) the installation, implementation and pilot rollout of the Synmed Adherence Packager at CLAM, servicing LIFE Geisinger (April/May 2022); (b) COVID vaccine distribution at eight retail pharmacy locations and COVID test distribution at all retail sites; (c) the relocation of GWV retail pharmacy to Henry Cancer Center; (d) the expansion of bedside medication delivery services at GMC, GWV, GCMC, GLH, Healthplex State College, Healthplex Woodbine Surgery Center and GSWB, and the newest addition, remote services to Geisinger Jersey Shore Hospital; (e) launch of Centralized Vaccine Stock Replacement across Community Medicine; and (f) the close partnership with marketing to create a campaign that promoted our retail and mail-order services via flyers, posters, coupons and social media to increase awareness.

Figure 4. Geisinger Mail-Order prescription volumes

Mail-order prescriptions filled



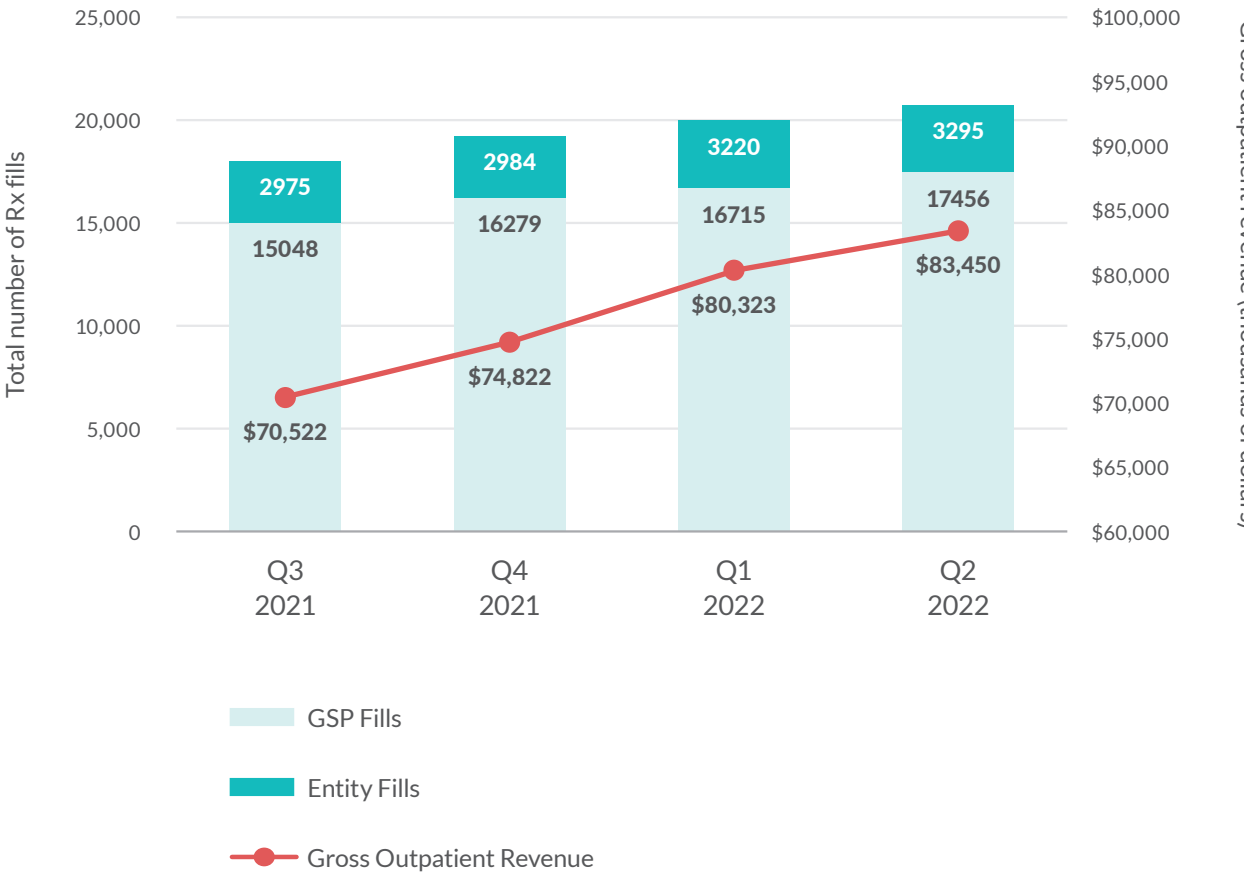


Geisinger Specialty Pharmacy (GSP) prescription volumes have increased 18.4% over the prior year due to several initiatives. For example, enrollment in Accelerate Specialty PSAO has provided access to 15+ (and growing) additional specialty pharmacy networks. Working closely with the Pharmacy Procurement and Strategy teams has opened the way to obtaining access to 12 additional limited distribution drugs. And, in early 2022, the Specialty Pharmacy team collaborated with a group of Geisinger specialists to develop and implement a fertility patient management program. GSP is now licensed and providing services in 15 states: Pennsylvania, Arizona, Connecticut, Delaware, Florida, Georgia, Indiana, Maine, New Hampshire, New Jersey, New York, Ohio, South Carolina, Vermont and Wisconsin. It has expanded its Managed Medicaid Fills Program, which enables our entity-owned pharmacies to provide the equivalent specialty clinical delivery model at hospital-owned pharmacies and to enable 340B savings opportunities to be passed onto Geisinger patients. And in alignment with these efforts at the hospital owned pharmacies, GSP is in the process of obtaining specialty pharmacy accreditation through URAC/ACHC for all entity-owned Geisinger pharmacies.

Figure 5. Geisinger Specialty Pharmacy prescription volumes

Rx fills & revenue

Jul 2021 – June 2022



Geisinger's Central Medication Hub (CMH) continued its aggressive expansion plan in 2021-22. CMH obtained \$23.8 million in medical benefit assistance, supporting 2,743 patients and \$4.8 million in pharmacy benefit assistance, supporting 1,363 patients during this time. Key highlights and accomplishments include the implementation of Epic's standard white bagging module and expansion into several additional specialty clinics, with the goal of supporting all specialty departments by the end of 2022 (see Figure 6). Moving forward, two large strategic initiatives include expanding support to discharge and community medicine clinics and automating medication assistance tracking through Epic's standard module.

Visual 1. Central Medication Hub expansion, past 12 months

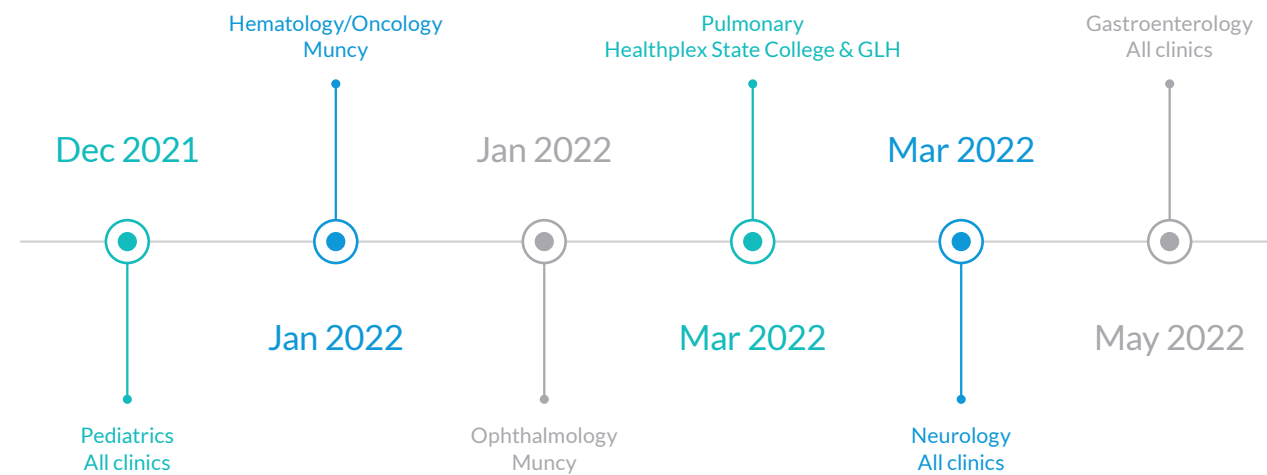
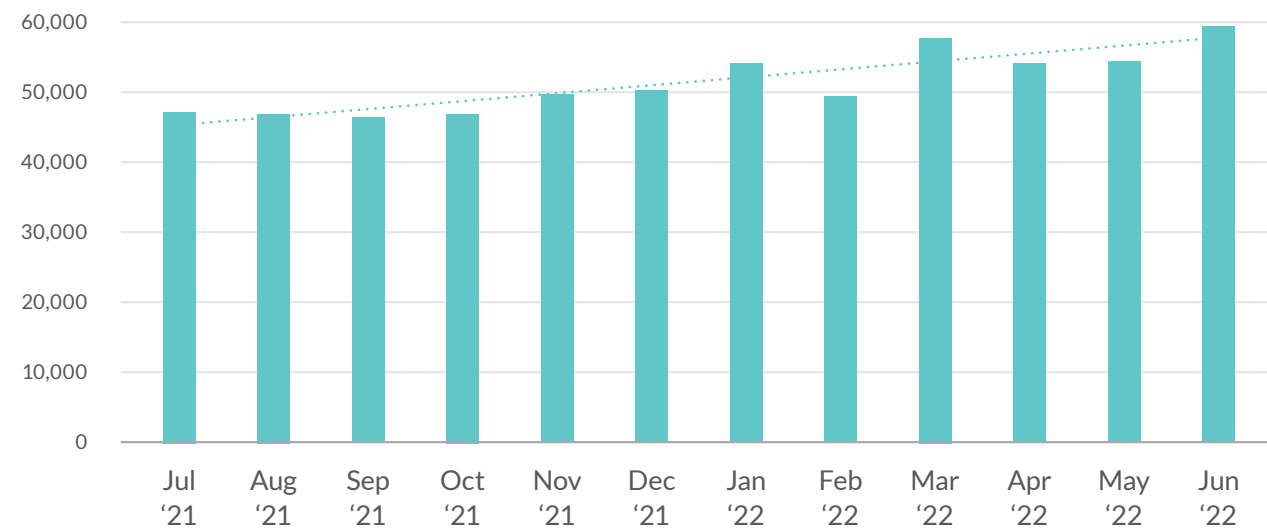


Figure 6. Geisinger Ambulatory Pharmacy Retail Program operating revenue \$ in 000s (Home Infusion, Specialty, Retail, Mail-Order)



Geisinger Home Infusion Services West

In May 2022, Geisinger Home Infusion opened a satellite location in State College at the Windmere Pharmacy site. Previously, the Windmere site primarily serviced the Healthplex State College Surgery Center, the Scenery Park Infusion Center, and some smaller clinics across Geisinger's Western Region. After repurposing the site and updating its licensing, the site will now also be able to serve home infusion patients out of that location. The primary advantages to this move are that it will allow GHIS to expand its coverage and service area farther west/southwest, apply for additional payor contracts, provide a more reliable real-time acute discharge service to hospitals in those regions, optimize pharmacy staffing at the Windmere site, and more efficiently manage patients in that region. It will do all this while continuing to service the chronic and non-acute needs out of the main GHIS location in Danville, thereby maintaining the efficiencies gained from a centralized infusion distribution hub.

Introduction of adherence packaging at Geisinger Mail-Order Pharmacy

Geisinger Mail-Order Pharmacy has been a key driver in bringing care and prescription delivery service directly to the consumer since its implementation in 2017. As the operation has developed and grown, so has the vision of Enterprise Pharmacy to serve as many patients as possible from our centralized medication distribution platform. In spring 2022, we introduced a Synmed Ultra Adherence Packager, with the intention of better servicing patients who would benefit from compliance packaging. Our working relationship with LIFE Geisinger presented the perfect primary audience to benefit from this system and provided the additional benefit of creating efficiencies for both the LIFE Geisinger facility teams and the retail pharmacies, which were tied to a very manual and inefficient operation before implementation. The addition of support from the

MTDM pharmacists, who will clinically review and prioritize orders, further



amplifies these efforts by bringing a large portion of the LIFE Geisinger population under the pharmacy umbrella, giving time back to the on-site clinical teams to focus on the participants clinical and social care. In May 2022, we piloted the centralized fulfillment program with the LIFE Geisinger in Burnham. We have navigated through the hurdles of patient buy-in and obstacles that come with any process change to successfully transition over 90 participants to be serviced via centralized distribution, decreasing labor and inventory costs overall. As a result, the program is successfully moving forward to onboard the remaining four LIFE Geisinger sites and participants by end of summer 2022, and anticipating offering compliance packaging to our Geisinger Health Plan members in the future.

Visual 2. Geisinger Mail-Order Pharmacy adherence packager automation

How Geisinger leveraged Retail Pharmacy for COVID support

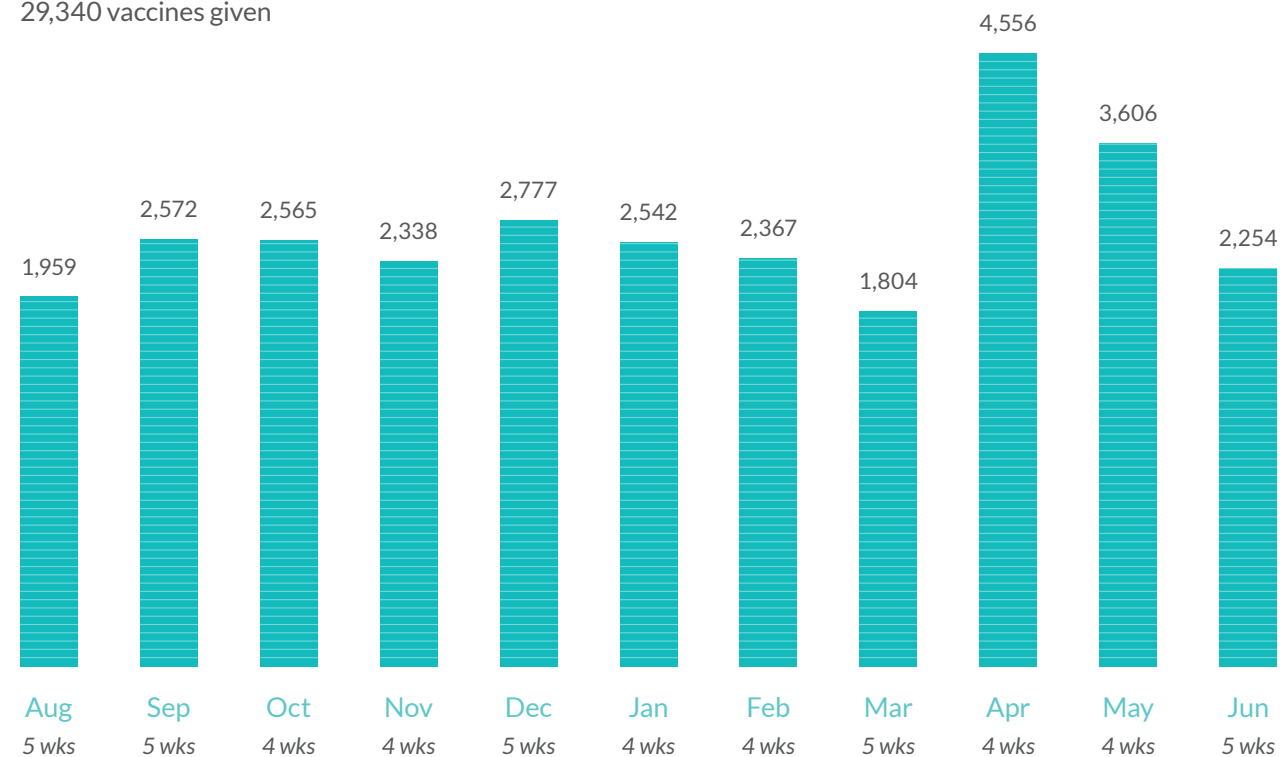
In June 2021, Geisinger continued its quest to reach a level of post-COVID normalcy by beginning to pull clinical staff out of its large, centralized vaccine clinics and back into clinics, hospitals and surgery centers. Unfortunately, the demand for COVID vaccines did not diminish. It quickly became apparent that the system needed to implement a different approach — one that was more geographically supported and convenient for patients and caregivers. This approach was the Geisinger retail pharmacies. Starting July 26, 2021, eight retail pharmacies were identified to begin supporting on-site administration of COVID vaccines, with appointments available for scheduling during the retail business day. Soon the large vaccine sites were closed completely and volumes at the retail pharmacies grew exponentially. In response, vaccinators were brought on site to increase the daily administration volume and to help decompress schedules and wait lists, which immediately met the demand of the population needing to be served. Since that initial week through end of June 2022, the retail pharmacy team has collectively administered nearly 30,000 adult vaccines to patients — both the Pfizer and Moderna series. Alongside pharmacists in inpatient and MTDM, the retail pharmacists also helped support pediatrics with mass vaccine preparation for their pediatric clinics and vaccine services. In addition to vaccine administration support, the retail team has also served as a hub for the sale, third-party processing and distribution of COVID tests to GHP and non-GHP patients alike. In the end, the retail footprint served as a harmonious extension to the system's COVID response and was able to help serve the adult vaccine needs within their respective communities.

Figure 7. Geisinger Retail Pharmacy COVID vaccines administered

Geisinger Outpatient Pharmacy COVID-19 vaccines administered

Aug 2021 – June 2022

29,340 vaccines given



Geisinger's collaborative approach to Medicare Part D Medication Therapy Management

Medicare Part D health plans, such as those offered by Geisinger Health Plan (GHP), are required by CMS to offer Medication Therapy Management (MTM) services to patients who meet criteria such as multiple chronic disease states (CHF, DM, HTN, COPD, dyslipidemia), take at least eight chronic medications and exceed the predetermined annual medication spend. For a health plan to achieve a 5-Star rating, approximately 90% of the eligible members must have a comprehensive medication review (CMR) completed by a pharmacist to ensure all medications are being used appropriately.

Historically, GHP had used a 100% telephonic third-party vendor for MTM part D services, but in mid-2021, after insufficient progress by the vendor, it was decided to bring the process completely in house beginning in January 2022. And, although the primary impetus behind this transition was to help earn a CMS 5-Star rating for GHP, there was also a realization that the management of these patients by Geisinger's own pharmacy team would also result in an optimization of clinical interventions, improved patient outcomes, accurate medication records and a direct connection to additional Geisinger pharmacy resources, such as Mail-Order and Medication Therapy Disease Management (MTDM).

Pharmacy leadership and staff from GHP, Telepharmacy, MTDM and 65 Forward came together and collaboratively built a new team approach to managing this patient population, separating them into different buckets based on specific patient criteria. In addition, new staff were onboarded at GHP and Telepharmacy to complete telephonic CMRs, whereas MTDM and 65 Forward used clinical pharmacists already embedded in most Geisinger primary care sites across the system to perform these CMR visits in person and as part of their routine clinical care.

Telepharmacy's UTI program expansion

Telepharmacy's UTI program began with a small pilot in 2019 that targeted female patients over the age of 65 who called their primary care office with symptoms of uncomplicated UTI. Under a CPA, pharmacists will order and review urinalysis and culture results for patients referred to the program. If signs of infection are present, the pharmacist will recommend appropriate therapy based on lab results, call to educate the patient on the therapy and follow up if needed. The goals were simple, yet impactful: to help ensure that these patients received the care they needed efficiently and effectively, to prevent emergency department visits, to minimize UTI-related primary care office visits – and most importantly, to eliminate complications secondary to ineffective or inappropriate treatment. Over time, this initiative became known as the “Call First” initiative and extended to additional patient populations. In March 2022, Telepharmacy expanded UTI services to include “complex” patients previously managed by their provider. This includes patients with uncontrolled diabetes, pregnancy, indwelling catheters, history of UTI and immunocompromised/suppressed patients. As of June 2022, Telepharmacy has managed over 4,400 patients for uncomplicated UTI symptoms, resulting in a 35% reduction in acute UTI PCP office visits, improving patient access and reduced in-basket burden for clinic providers.

Built off the success and provider engagement from the “Call First” initiative, Telepharmacy began another UTI pilot program in the emergency departments of two hospital campuses in northeastern Pennsylvania. The program focused on patients treated in the ED for suspected UTI, empirically treated based on UA results, then discharged home. The telepharmacist reviews the resulted culture and de-escalates or changes therapy as appropriate, based on treatment guidelines and protocols. In early 2022, Telepharmacy's ED urine culture management program was expanded to three other hospital campuses, with the final two campuses on the roadmap for late 2022. Since its inception in November 2020, telepharmacists have managed over 1,350 abnormal cultures, which has improved patient turnaround time from visit to treatment and promoted antimicrobial stewardship by de-escalating 20% of therapy while changing 16% of the therapy based on culture results.

Figure 8. Geisinger Telepharmacy “Call First” impact on primary care visits

CMH “easy button” and Specialty growth

Central Medication Hub (CMH) provides prior authorization support and patient assistance services for all medications prescribed from Geisinger specialty clinics. Using the expertise of embedded MTDM and Geisinger Specialty pharmacists, CMH creates value by facilitating high-margin Rx capture at Geisinger Specialty Pharmacy for all payers while reducing administrative burden on clinic staff and optimizing patient affordability. Services include proactive determination of benefits and formulary review; liaison between prescriber and payer, thus relieving administrative burden on clinic staff; test claim processing confirms ability to fill and obtain copay estimate for patient; proactive screening for medication affordability concerns; and support through the entire enrollment process for copay cards, foundation assistance, manufacturer free drug or Geisinger Charity Care.

Projected impact on office visits

PCP office visit impact: Attempted to minimize COVID impact on data by removing 2019-2020 data where several CMSL clinics were closed for a period of time (compared 8/2018–8/2019 to 8/2020–8/2021).

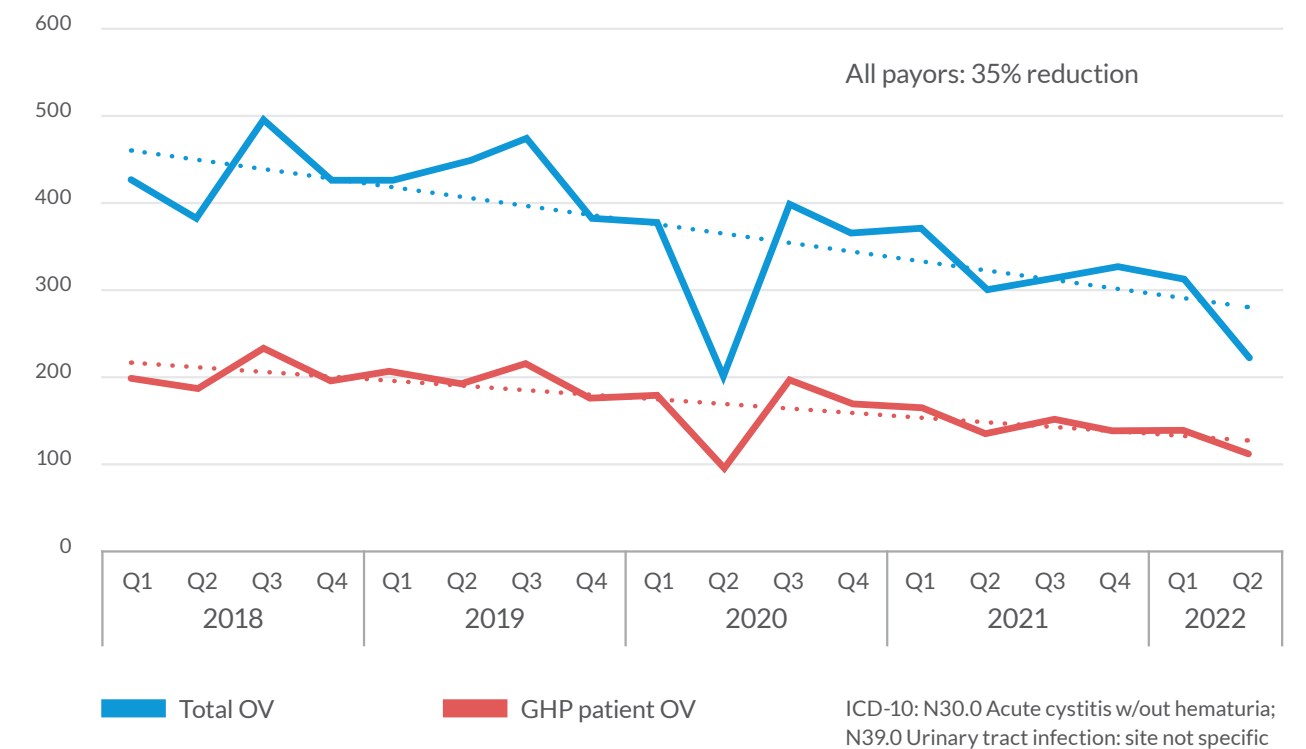
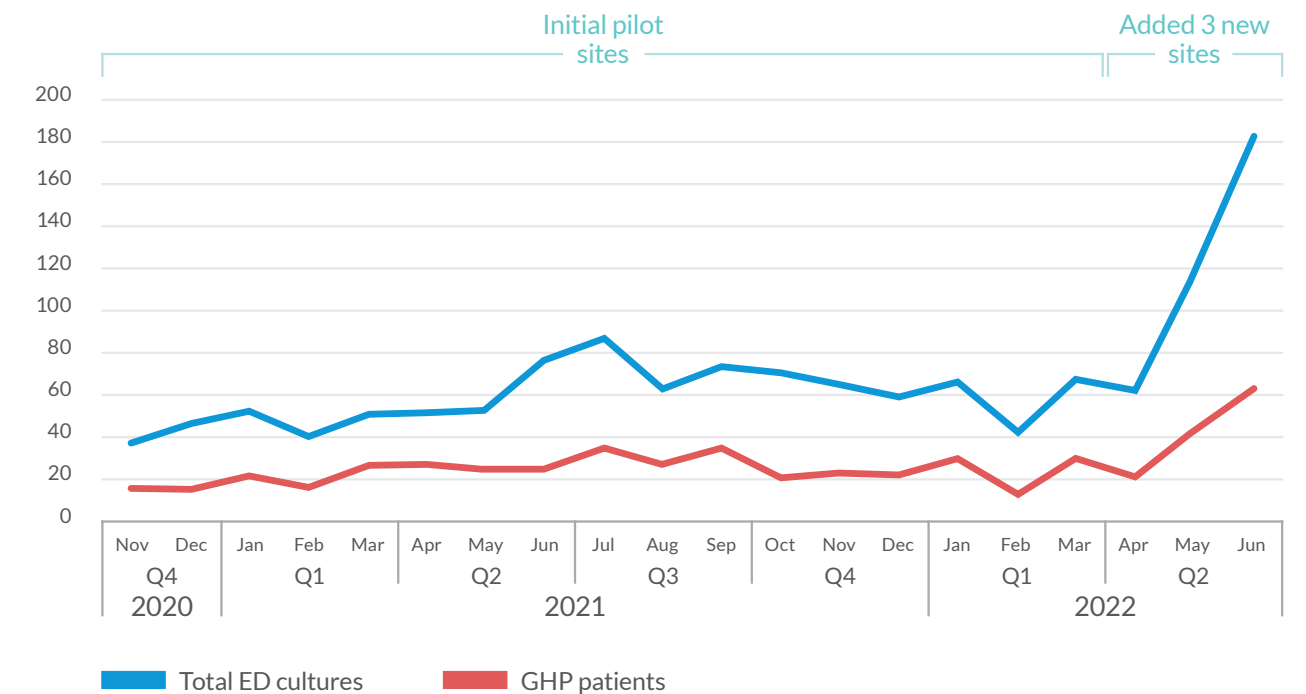
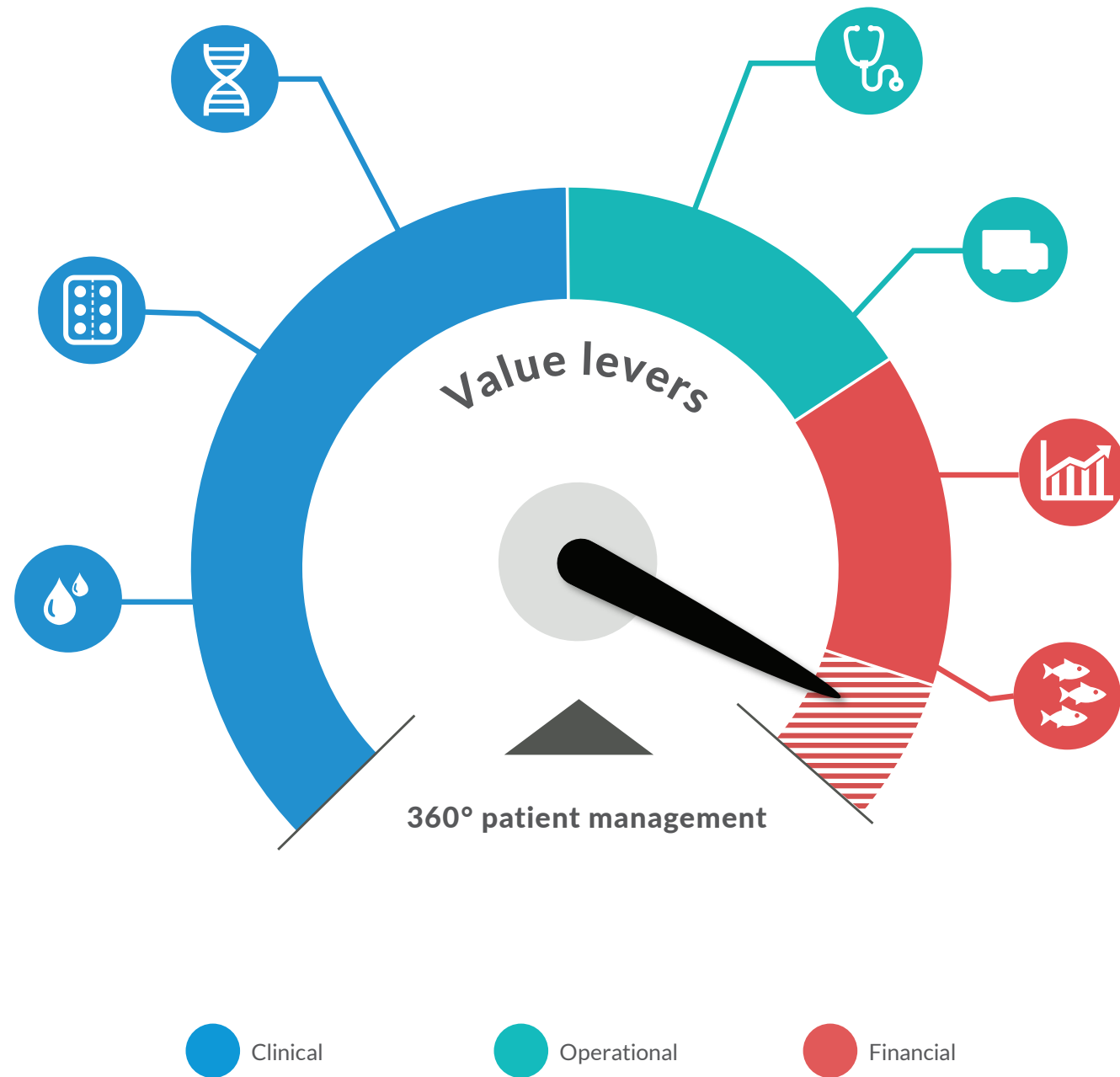


Figure 9. Volumes of ED cultures managed by Telepharmacy

Patient volumes

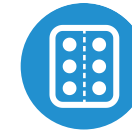


Where does Geisinger pharmacy drive clinical, operational and financial value?



2.1 pt reduction in A1c

When enrolled in MTDM program with an A1c>9, average 2.1 point reduction at 24 months.



55% reduction dangerous combination of opioids

30% reduction in number of patients on any opioids with a 55% reduction in patients on the high-risk combo of opioid + benzodiazepine use post 12 months of program enrollment.



99% SVR for HepC

Through 100% pharmacist management post initial visit with hepatology provider.



18% increase in primary care access

Through reduced acute and regular provider visits when diabetics are managed by Geisinger Pharmacy. Less acute visits and diabetic follow-up visits.



25% increase in Mail-Order Pharmacy capture

Cross-trained and operationally aligned pharmacy can provide "easy button" to mail-order enrollment and clearly define benefits for patients when in clinic.



50% Home Infusion revenue growth rate

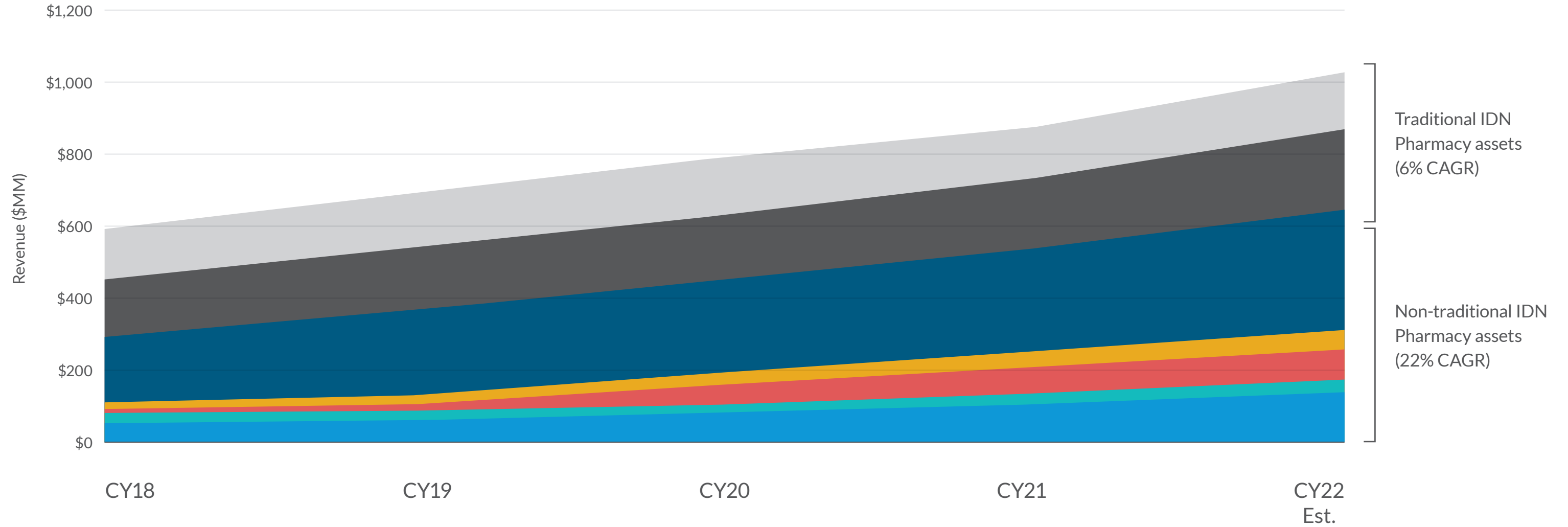
Growth rate of ~50% year over year between 2019 and 2021 driven by centralized medication authorization capability + site of care + embedded specialty process to create "easy button" for ordering providers.



+\$600M net patient service revenue

Across Geisinger Pharmacy distribution channels (Retail, Mail-Order, Home Infusion and Specialty) in CY22 est., with 25% year over year growth rate 2019-21.

Geisinger Pharmacy growth has been driven by non-traditional channels



- Mail-order
- Traditional retail
- Hospital retail
- Home infusion
- Specialty
- Outpatient infusion
- Inpatient



Center for Pharmacy Innovation and Outcomes

The CPIO is a dedicated pharmacy research unit embedded in Enterprise Pharmacy and supported by Geisinger's Research Institute. This unit's mission is to optimize medication use through careful design and evaluation of pharmacy services. We are composed of a dedicated team of full-time and clinician faculty (assistant, associate and full professors), a program manager, a project manager and coordinator, research assistants, a postdoctoral fellow 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 health-system-based unit is one of few pharmacy-based research units in the nation, making us leaders in embedded pharmacy research. Our team deploys the scientific method, performing both quantitative and qualitative research to rigorously implement and evaluate medication-focused innovations in the real world. Our focused efforts include 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 also supports the clinical pharmacy enterprise in the support of research initiatives led by others in pharmacy or outside of pharmacy including support for residency research projects. Investigators practice and/or research in the spaces of substance use disorder, medical devices, cardiometabolic disease, pharmacogenomics, hematology, oncology, geriatrics, managed care and pediatrics.

Completed research and findings

Building Unique Device Identifiers Into Longitudinal Data (BUILD)

Principal investigator: Jove Graham, PhD

Funding provided by: FDA, Medtronic Inc., Johnson and Johnson Inc.

Teams of researchers at three health systems (Geisinger, Mercy and Intermountain Health) developed a data network for using electronic health record and other data to evaluate the real-world safety and effectiveness of medical devices, including those that involve pharmaceutical products such as drug-eluting stents. Prior to unique device identification (UDI) numbers being introduced by the FDA just a few years ago, it has been very difficult for researchers to know the specific brands, models and characteristics of devices and drugs used during procedures, because only procedure codes are typically visible in billing and claims records. Our objective was to support FDA's efforts to build a system to study the outcomes of these medical products while protecting patient privacy, and so the three health systems designed and created data standards for a distributed network of patient data that would remain behind health system firewalls but be used in distributed analyses. We compared two types of drug-eluting coronary stents and found no significant differences in safety, which supported the results previously shown in clinical trials. In 2022, this work resulted in a manuscript that marks the first report of such a data network being established for this express purpose of evaluating medical devices across multiple health systems.

Publication: Drozda JP, **Graham J**, Muhlestein JB, TchengJE, RoachJ, Forsyth T, Knight S, McKinnon A, May H, Wilson NA, Berlin JA, Simard EP. Multi-institutional distributed data networks for real world evidence about medical devices: Building Unique device identifiers Into Longitudinal Data (BUILD). *JAMIA Open*. 2022 May 25;5(2):1-11. doi: 10.1093/jamiaopen/ooac035.

Applying Heart Failure Phenotypes within Common Data Models

Principal investigator: Jove Graham, PhD

Funding provided by: Medtronic Inc.

CPIO associate professor Jove Graham led the Geisinger study where patients enrolled in an implantable cardiac device registry had data, which had manually been collected by clinic staff for registry purposes, compared with data that had been extracted more automatically from the electronic health record using a common data model called PCORnet, commonly used in multi-site research. Seven different algorithms ("phenotypes") were used to determine whether each patient had the comorbidity of heart failure (HF), and the purpose was to examine if the more automated, generalizable approach to collecting patient information was more or less accurate than manual extraction. Sensitivity, specificity, predictive value and congruence were calculated for each phenotype. In the registry, 55% patients had shown evidence of a history of HF, compared with different automated approaches estimating between 30% and 59%. Our research showed that the most open-ended phenotypes had high sensitivity and specificity (90%/80%), with some more restrictive phenotypes having even higher specificity (e.g., code present in problem list, 94%). These results were published in the *Int J Cardiol Heart Vasc* and are encouraging, since they suggest we could use standard algorithms and generalizable data formats to collect accurate info for product registries, though results may differ depending on the medical condition of interest.

Publication: **Graham J**, Iverson A, Monteiro J, Weiner K, Southall K, Schiller K, Gupta M, Simard EP. Applying computable phenotypes within a common data model to identify heart failure patients for an implantable cardiac device registry. *Int J Cardiol Heart Vasc*. 2022 Apr;39:100974. doi: 10.1016/j.ijcha.2022.100974



Pharmacogenomics Program update

In the past year, the Geisinger Pharmacogenomics Program has made progress on implementing pharmacogenomics testing and results return, bringing relevant prescribing support closer to providers and patients.

- Consults from the pharmacogenomics service may be requested through the Ask-A-Doc category (Pharmacy – Drug/Gene interactions).
- The Electronic Health Record build has begun with both a genomic indicator organizational infrastructure and clinical decision support.
- Pharmacogenomics multigene testing is now an orderable test in Epic.
- Pharmacogenomics patient education was developed and approved and is available via Krames and MyChart.

EQRx collaboration update

- Five-year multimillion-dollar collaboration began June 2020
- Collaboration seeks to drive down spending associated with high-cost drugs in various spaces including oncology and immunotherapy.
- Second year achievements:
 - Developed economic models demonstrating the one-Geisinger impact of lower-cost medical benefit drug implementation
 - Engaged stake holders across enterprise to explore commercialization/contracting options to drive adoption of lower-cost drugs both within the system and externally
 - Ongoing analysis of potential therapeutic areas for collaboration based on projected clinical utilization and expenditures for high-cost therapies in psoriasis, irritable bowel disease, ulcerative colitis, Crohn's and other inflammatory diseases.
 - Kicked off efforts for development of joint strategic publications across a multitude of areas including, business, health economics, clinical outcomes, and health policy.
 - Publicly announced Geisinger-EQRx partnership
 - Signed a memorandum of understanding for two EQRx biopharmaceuticals.
 - Signed master clinical trial agreement and budget to streamline EQRx trial implementation across Geisinger

Incoming grants for 2021–2022

Marijuana Reporting Among Geisinger Patients

Principal investigators: Eric Wright, PharmD, MPH and Brian Piper, PhD

Funding provided by: Geisinger Academic Clinical Research Center

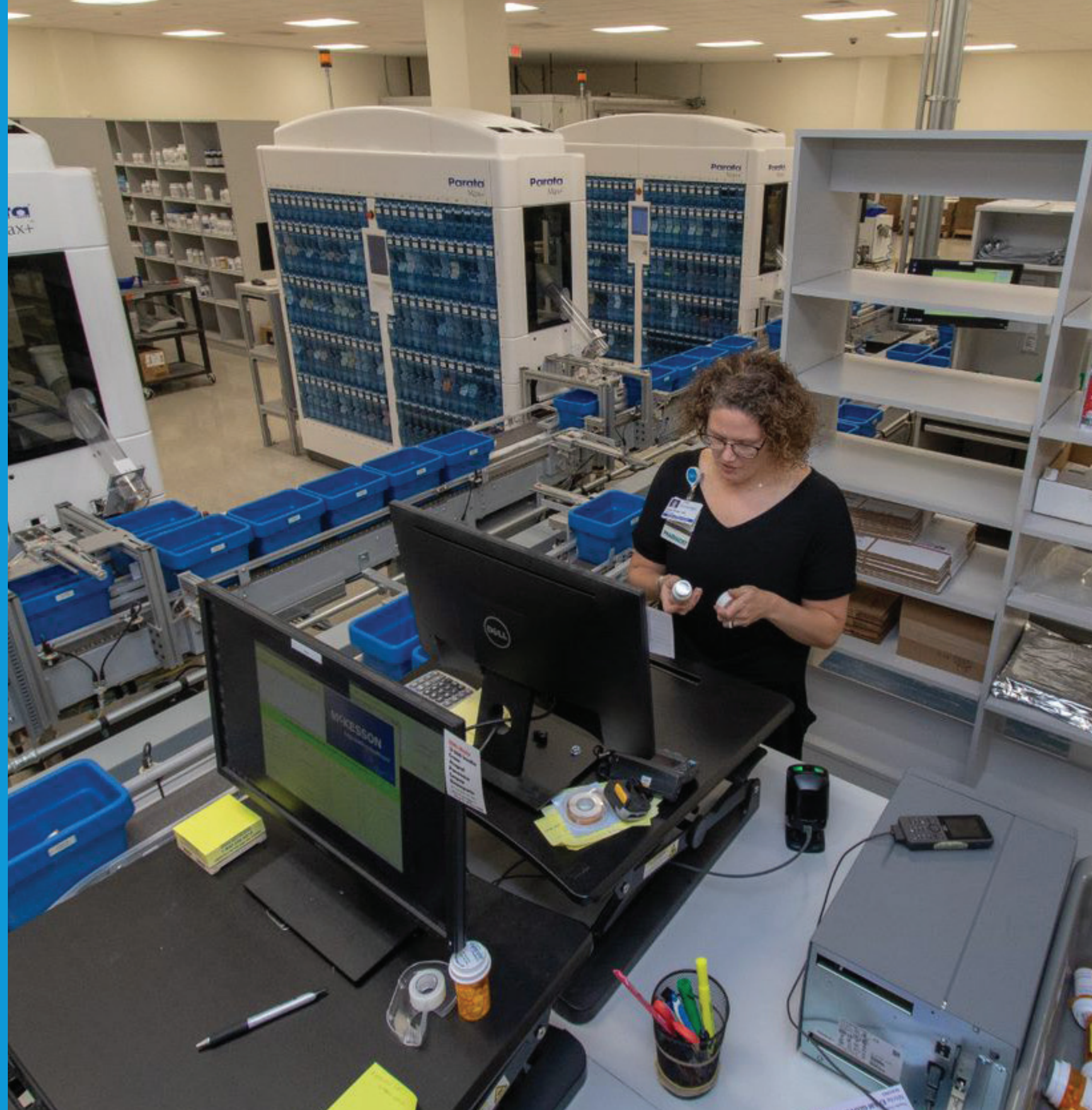
Marijuana use has increased in the past decade to levels comparable to the late '60s, spurred on by laws allowing for medical and/or recreational use of marijuana and reduced criminalization. Despite increased use, reporting of marijuana use to healthcare professionals is low. Available research supports incomplete and unreliable reporting of marijuana (medical and recreational) within healthcare, which could have implications on overall health.

With the limited data available about the documentation of marijuana use in health records, particularly in states like Pennsylvania that have more recently approved medical marijuana, our team of researchers will characterize the spectrum of marijuana use and its documentation among patients at Geisinger.

Eric Wright, co-principal investigator on the study, said, "We are honored to receive the first award of the newly formed Geisinger Academic Clinical Research Center. We hope to establish the quantity and quality of marijuana use presently captured within our electronic records. Our goal is to use the information to build mechanisms to improve and guide relevant capture of marijuana use within our system, which will enable better overall assessment of patient care and also enable researchers to better associate use with outcomes."

This infrastructure grant will provide the foundational understanding of the current state of marijuana data capture in the electronic health record in various settings and identify barriers and facilitators influencing data capture. The grant will continue through August 2023.

Formulary & Procurement



Pharmacy inventory is a significant financial asset to the organization, with a value of approximately \$63 million. Total pharmaceutical purchases for the health system are approximately \$500 million per year, with \$130 million purchased at the acute care platforms. Inventory is currently located at each of the seven acute care platforms using a non-perpetual inventory management strategy that has limited visibility to what is in stock, without significant manual intervention to confirm stock on hand and subsequent valuation. When the on-hand inventory quantity or value of pharmacy items is needed, a manual reporting of inventory levels takes place across the organization from the multiple different inventory control systems used for storage and medication management. These reports do not contain standardized information. Some reporting will contain levels in the Omnicell cabinets, while some reporting will only include what is in the pharmacy without specific details of exactly what is on hand by location. During COVID-19, supply disruption led to the need to manually track over 50 medication inventory levels daily to ensure adequate stock on hand for crisis response. Given the non-perpetual inventory strategy, a daily on-hand count was required, resulting in an extremely time-consuming process to gather inventory of an individual medication, which diverted resources away from other critical tasks.

After a review of pharmacy-specific inventory software, Epic Willow Inpatient Inventory was selected as the pharmacy inventory software. In November 2021, Geisinger Enterprise Pharmacy kicked off the inventory management project, entitled Epic Willow Inpatient Inventory. Willow Inventory provides an integrated and streamlined process for managing medication inventory. It includes the following key features:



Purchasing

Identify items below PAR
Automate purchase requests



Integration

Real-time inventory data available to pharmacy staff



Trends

Integrated reporting



Receiving

Inventory scanning



Inventory

Cycle counts
Inventory safeguards & adjustments

On July 1, 2021, infliximab-axxq became the new system formulary preferred agent for all infliximab orders. Infliximab-axxq has the same FDA-approved indications as the infliximab reference product while offering significant cost savings. With the support of senior leadership, the Geisinger system has been successfully using biosimilars for the past few years, starting with Infliximab several years back and then followed by various other conversions in calendar year 2020 (e.g., epoetin-alfa, pegfilgrastim, rituximab, trastuzumab and bevacizumab). Using a “one Geisinger” approach, Geisinger Health Plan is working through formulary changes to align with this recent system formulary transition. Additionally, for 2021 the Pennsylvania Preferred Drug List (PDL), which manages all Pennsylvania Medicaid plans, has elected infliximab-axxq as their preferred infliximab agent, which aligns with the recent Geisinger system formulary transition. The estimated cost savings associated with this change is approximately \$700,000 annually.

In April 2022, Geisinger Enterprise Pharmacy successfully transitioned group purchasing organizations. For background, a group purchasing organization, also known as a GPO, is an entity that assists healthcare organizations realize savings and competencies by aggregating purchasing volume across members and using that leverage to negotiate discounts with manufacturers, distributors, and other vendors (Healthcare Supply Chain Association, ND). With this transition, Geisinger Enterprise Pharmacy became a member of Vizient’s strategic health sourcing team, Excelerate. Geisinger has partnered with Excelerate to use evidence-based results to drive pharmacy savings. To date, Geisinger Enterprise Pharmacy is estimating approximately \$300,000 annual savings with the transition.

To standardize the medications and simplify the ordering process across the system, Pharmacy Procurement has implemented shared Lawson templates to make ordering needs easier. The below templates are now in use. We have added multiple requesting locations to each template to avoid having multiple templates with the same items on them.

Shared templates

RX STK Share Non 340B (EVC01)

RX STK Shared Non 340B Control (BRX01)

RX NON Stock GWV 340B

RX Stock GWV 340B (WRX01)

RX Stock Contrast (GSS01)

RX Stock Feeds (GSS01)

RX Non STK Shared C3 to C5

RX Non Stock Pharm Narcotics

RX Non Stk Shared Hem Onc

RX NS Orwigsburg MOV Shared

RX NS Shared Retina Besse Spec



Knowledge Management

The Knowledge Management pillar of Enterprise Pharmacy supports the education of pharmacy students, residents, technicians and pharmacists at Geisinger. The pillar collaborates with other departments and professions across the system to bring patient and provider education resources to Geisinger's providers, patients and members through both the health system and the school of medicine. One of the key features of Enterprise Pharmacy is its collaborative practice agreements between pharmacists and physicians, allowing pharmacists expansive opportunities to provide direct patient care in collaboration with their prescribing partners. The Knowledge Management pillar is in place to help ensure each pharmacist and pharmacy technician is prepared to engage in patient care and pharmacy practice at the peak of their license.



Pharmacy residency graduates

Geisinger Clinics

Samantha Matchock
 Post-residency plans: Medication Therapy Disease Management Pharmacist, Geisinger

MeiLing Montross
 Post-residency plans: Medication Therapy Disease Management Pharmacist, Geisinger

Nicole Hughes
 Post-residency plans: Medication Therapy Disease Management Pharmacist, Geisinger

Alison Walck
 Post-residency plans: Medication Therapy Disease Management Pharmacist, Geisinger

Geisinger Community Medical Center

Briannan Budzak
 Post-residency plans: Acute Care Clinical Pharmacist, Geisinger Community Medical Center

Geisinger Lewistown Hospital

Scott Alexander
 Post-residency plans: Clinical Pharmacist, Allegheny Health Network

Trisha Patel
 Post-residency plans: Clinical Pharmacist, California

Geisinger Medical Center

Michael Hardler
 Post-residency plans: Oncology Clinical Pharmacist, Mayo Clinic

Gwen Hua
 Post-residency plans: Oncology Clinical Pharmacy, Geisinger Medical Center

Mustafa Hussain
 Post-residency plans: Clinical Pharmacist, Billings Clinic

Katelin Ivey
 Post-residency plans: PGY2 Health System Pharmacy Administration & Leadership, Geisinger Medical Center

Sarah Jallen
 Post-residency plans: PGY2 Health System Pharmacy Administration & Leadership, Geisinger Medical Center

Rachel Seidel
 Post-residency plans: Acute Care Clinical Pharmacist, Geisinger Medical Center

Haley Van Ness
 Post-residency plans: Clinical Pharmacist, Mayo Clinic

Geisinger Wyoming Valley Medical Center

Alysa Adams

Post-residency plans: Acute Care Clinical Pharmacist, Geisinger Community Medical Center

Sydney Estock

Post-residency plans: Acute Care Clinical Pharmacist, Geisinger Wyoming Valley Medical Center

Megan Neville

Post-residency plans: Acute Care Clinical Pharmacist, Geisinger Wyoming Valley Medical Center

Center for Pharmacist Innovation & Outcomes

Mia Lussier

Post-Fellowship Plans: Assistant Professor, Binghamton University School of Pharmacy

Residency Preceptors of the Year

Laura Brickett

Geisinger Medical Center Critical Care PGY2

Christopher DeFrancesco

Geisinger Community Medical Center PGY1

Laura Hart

Geisinger Medical Center Oncology PGY2

Bradly Lauver

Geisinger Medical Center PGY1

Leonard Learn

Geisinger Clinics Northeast PGY1

Jarret Lebeau

Geisinger Clinics West PGY1

Sarah Siemion

Geisinger Wyoming Valley PGY1

System Residency Preceptor of the Year

At the end of the residency year, the residency program directors came together to review the nominations and select one systemwide residency preceptor of the year. The first recipient of this award is Miranda Graham for her work with the Geisinger Lewistown Hospital PGY1 residency program.



"Miranda has been a vital part of Geisinger Lewistown Hospital's residency program. She goes above and beyond to ensure residents have an excellent experience. To this point, Miranda has created and precepted multiple learning experiences for the residents. She has also served as a resident mentor and has headed the wellness program. Miranda has been heavily involved in preceptor development and has been role model for others. Additionally, Miranda helped to spear head a mock code program based on resident feedback. Finally, Miranda stepped into the assistant RPD role and has helped excel the residency program forward. Congratulations Miranda, on the Preceptor of the Year Award!"

— Keturah Weaver,
PGY1 RPD

Student rotations/affiliations

Schools: 7
APPE rotations: 196 APPEs for 79 unique students

IPPE rotations: 288 IPPEs
GCSOM IPE: 16

Geisinger Pharmacy Scholars Program

In January of 2022, Geisinger Enterprise Pharmacy partnered with the Wilkes University Nesbitt School of Pharmacy to create the Geisinger Pharmacy Scholars Program. The purpose of the program is to provide mentoring and financial support to students enrolled at Wilkes University and pursuing their Doctor of Pharmacy Degree.

The School of Pharmacy at Wilkes offers students entering their first year of college studies the opportunity to apply for an early admission to the school of pharmacy. As high school seniors, students apply to be part of this early acceptance pathway when enrolling at Wilkes. Students accepted into the pathway can then apply to be part of the Geisinger Pharmacy Scholars Program. In its inaugural year, five incoming first-year students were accepted into the scholars program.

As incoming first-year students, each of the Geisinger Pharmacy Scholars will be paired with a pharmacist at Geisinger to be their mentor and their source of continued contact with Geisinger and Enterprise Pharmacy throughout their academic career. In addition to their academic advisor at the University, the program goal is to support the student to achieve the personal and professional success they hope to achieve.

When students enter their third professional year of pharmacy school, the Geisinger Pharmacy Scholars Program offers the opportunity to receive financial assistance through an employment loan. The assistance may be used to help cover costs of tuition or other related expenses. Upon graduation, students will join the Enterprise Pharmacy team to care for Geisinger patients and repay the financial assistance received during their schooling. Students may elect to pursue pharmacy residency training after receiving their degree and agree to return to Geisinger following the completion of their residency program(s).

Pharmacy technician advancement

In the first half of 2022, Enterprise Pharmacy expanded access for pharmacy technicians to pursue certification and certificate programming beyond the required Certified Pharmacy Technician (CPhT) credential from the Pharmacy Technician Certification Board (PTCB) or National Healthcareer Association (NHA). As the scope of responsibilities grow for pharmacy technicians, professional organizations have attempted to keep pace with training programs to help develop and maintain professional skills. To date, Enterprise Pharmacy recognizes and supports pharmacy technicians whose roles would benefit from these additional certifications and certificates:

Certification programs

- PTCB Certified Compounded Sterile Preparation Technician (CSPT)
- PTCB Advanced Certified Pharmacy Technician (CPhT-Adv)

Certificate programs

- Pharmacy Technician Certification Board
 - Medication History Certificate
 - Technician Product Verification Certificate
 - Hazardous Drug Management Certificate
 - Billing and Reimbursement Certificate
 - Controlled Substance Diversion Prevention Certificate
- American Society of Health System Pharmacists (ASHP)
 - Medication Reconciliation Certificate
 - Medication Safety Certificate
 - Sterile Product Preparation Certificate
 - Informatics Certificate

Collaborative practice agreements

Enterprise Pharmacy participates in an extensive collaborative practice agreement with our physician partners in the health system. The agreement, given Geisinger's current workforce, has the potential to create a formal collaborative relationship between the nearly 400 pharmacists and 1,700 physicians in the system. The agreements span the ambulatory, acute care, and hematology-oncology spaces and have a dramatic impact on how Geisinger patients receive care.

In January of 2022, the process for physicians and pharmacists to engage the collaborative practice agreement was updated to allow for easier tracking and sharing of the agreement with all involved. In collaboration with Geisinger's Credentialing Office, complete reports were made available of staff who elect to participate in the agreement. Pharmacists and physicians receive reminders to sign and update their agreements on a scheduled basis through Geisinger's GOALS courses and now have additional pathways using direct links through Adobe Sign. Creating simpler pathways to participate in the agreement not only benefits staff, but also grows the resources available to care for patients across the system.

For pharmacists to participate in the Collaborative Practice Agreement in the system, there are three required elements.

1. Sign the Institutional and/or Non-Institutional Collaborative Practice Agreement, depending on your practice location.
2. Sign the Institutional or Non-Institutional Certification of Liability Insurance Document.
3. Complete the required annual certifying processes required by your practice area. This may require one or several activities which may include examination, demonstration, advanced certification or continuing education.



Managed Care

Geisinger Health Plan has partnered with Rx Savings Solutions to identify opportunities for GHP members to save on the cost of prescription medications. The program was first rolled out to members with Medicare and commercial insurance, but was extended to Geisinger employees in May 2022 at no additional cost.

Geisinger Health Plan savings



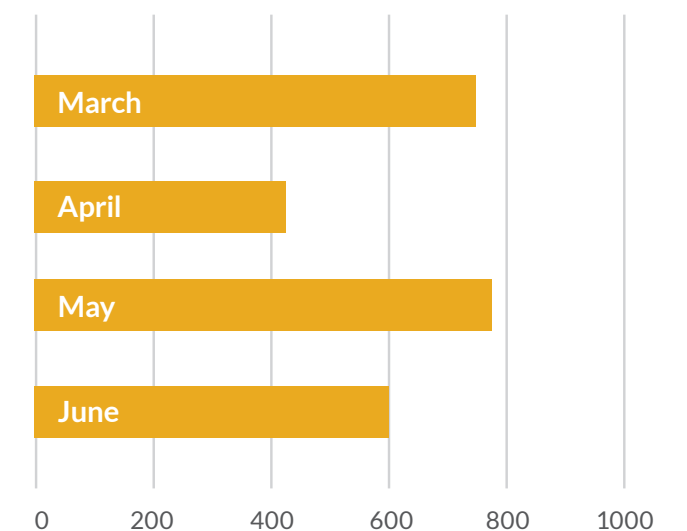
Geisinger Health Plan member savings



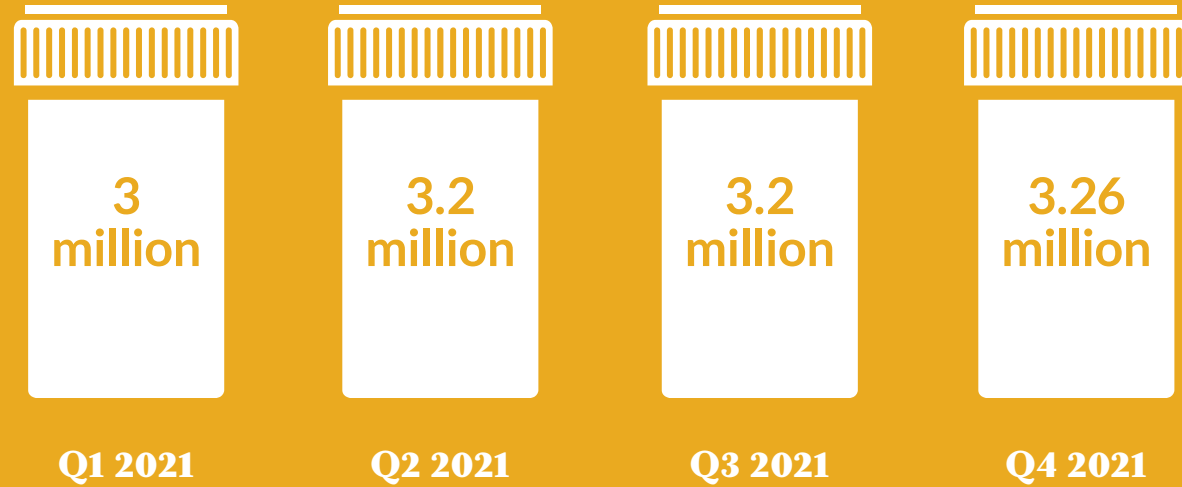
Geisinger Health Plan (GHP) began offering coverage of over-the-counter (OTC) COVID-19 test kits for Commercial, GHP Family, and GHP Kids members effective Jan. 15, 2022. Members have several options to obtain test kits, which includes ordering home delivery through Geisinger Mail-Order Pharmacy.

Employees from GHP collaborated with Supply Chain Services to develop a process that allows members to request kits using an online order form, then have those kits processed through their insurance and mailed by employees at CLAM. The kits are mailed to members' homes with a quick turnaround and no up-front out-of-pocket costs.

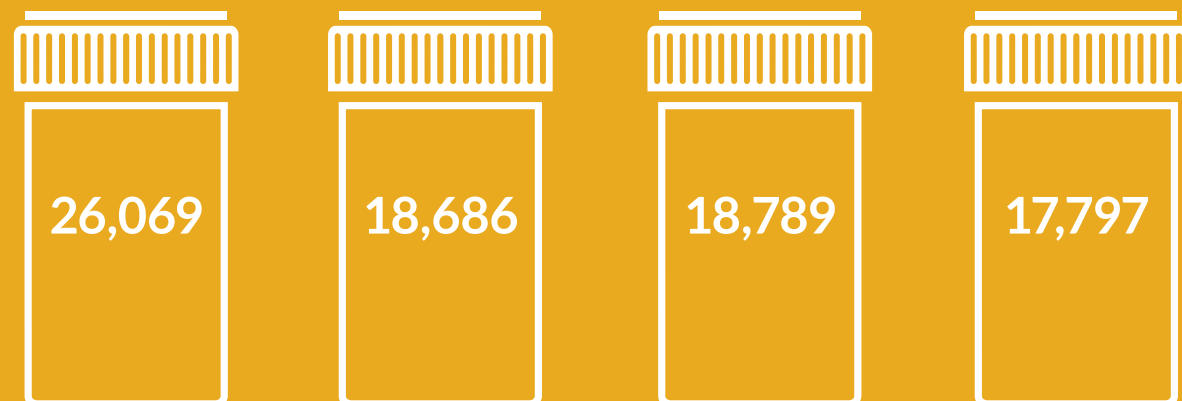
OTC COVID-19 tests dispensed by month



Prescriptions processed



Prior authorizations



When the Prior Authorization team began using PAHub in 2015, it improved the prior authorization process tremendously. Previously, PAHub was used in Internet Explorer through Citrix which was required in order to edit approval and denial letters. With that browser's obsolescence, an alternative was required, so in May of 2022, PAHub transitioned to Google Chrome. The switch has prevented issues that may have occurred with Internet Explorer and has improved the hub's efficiency. Since Jan. 1, 2022, the Prior Authorization team has processed 46,263 prior authorization requests for pharmacy benefit drugs and medical outpatient drugs. Using Google Chrome will ensure the stability of PAHub, allowing the team to continue the timely processing of requests.

Medicaid expansion

- Geisinger Health Plan Medicaid coverage became available to Medicaid-eligible recipients statewide as of Sept. 1, 2022, as part of an expansion of HealthChoices, Pennsylvania's Medical Assistance managed care program.
- Geisinger was one of only three managed care organizations to be awarded all five HealthChoices Zones.
- Geisinger Health Plan Family (GHP Family) began offering Medicaid benefits in 2013 and now serves more than 200,000 Medicaid members in the Northeast HealthChoices Zone.
- GHP Family membership is expected to increase by more than 35%.
- All GHP Family members have access to Geisinger Mail-Order Pharmacy and Geisinger Specialty Pharmacy.

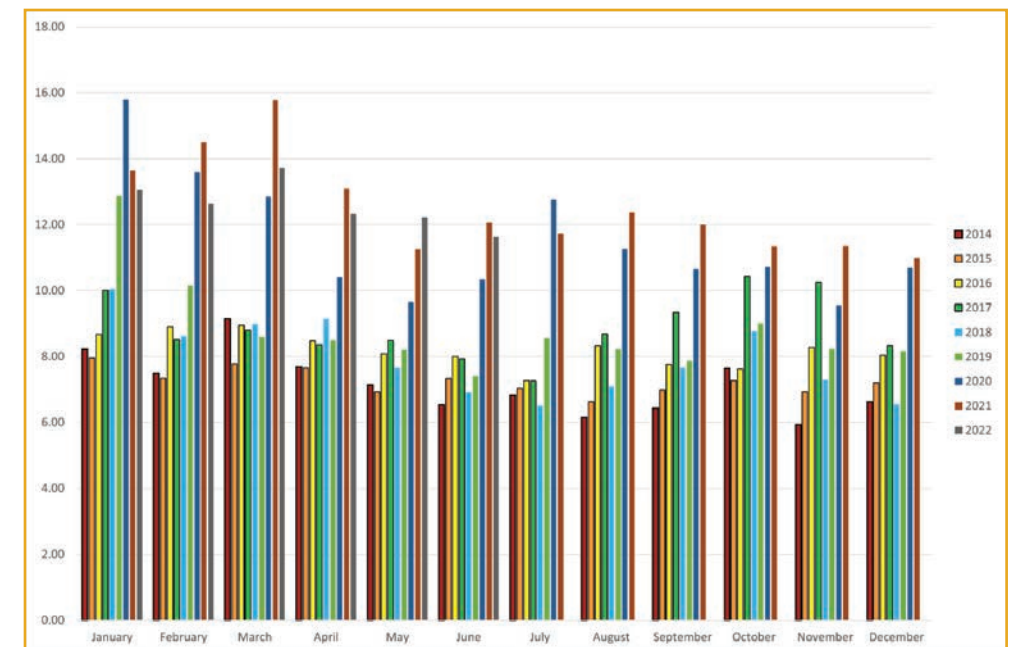
Beginning in 2014, Geisinger Health Plan (GHP) had been outsourcing the Comprehensive Medication Review (CMR) for its identified eligible Medicare members, most recently to OutcomesMTM. After a continued lack of success, it was decided in October 2021 that the CMR process would be insourced to gain greater control over the Centers for Medicare & Medicaid Services (CMS) Star ratings for the HMO and PPO contracts in this measure. Meetings began immediately thereafter to develop an efficient process that would get GHP to 5 Stars in the MTM CMR measure.

Kristen Scheib, PharmD, was promoted to pharmacist coordinator and took the lead on the Star MTM CMR initiative. In collaboration with other areas within the Enterprise Pharmacy realm, she developed a multipronged approach that included dividing members among Telepharmacy, MTDM, 65 Forward and the newly created MTM CMR team, consisting of four RPHs and four certified pharmacy technicians.

A successful insourcing wouldn't be possible without the initial and continued collaboration with Amber Connelly, Anvi Patel, Dan Longyshore, Hank Aftewicz, Jerry Greskovic, Jordyn Rickrode, Leeann Webster and Lenny Learn, as well as the efforts of all who are doing the work to complete the CMRs.

To date, this approach has already seen approximately 1,200 more completed CMRs compared to the same time frame in 2021 and is on track for hitting the goal of 5 Stars.

Figure 10. Prior authorization volumes.

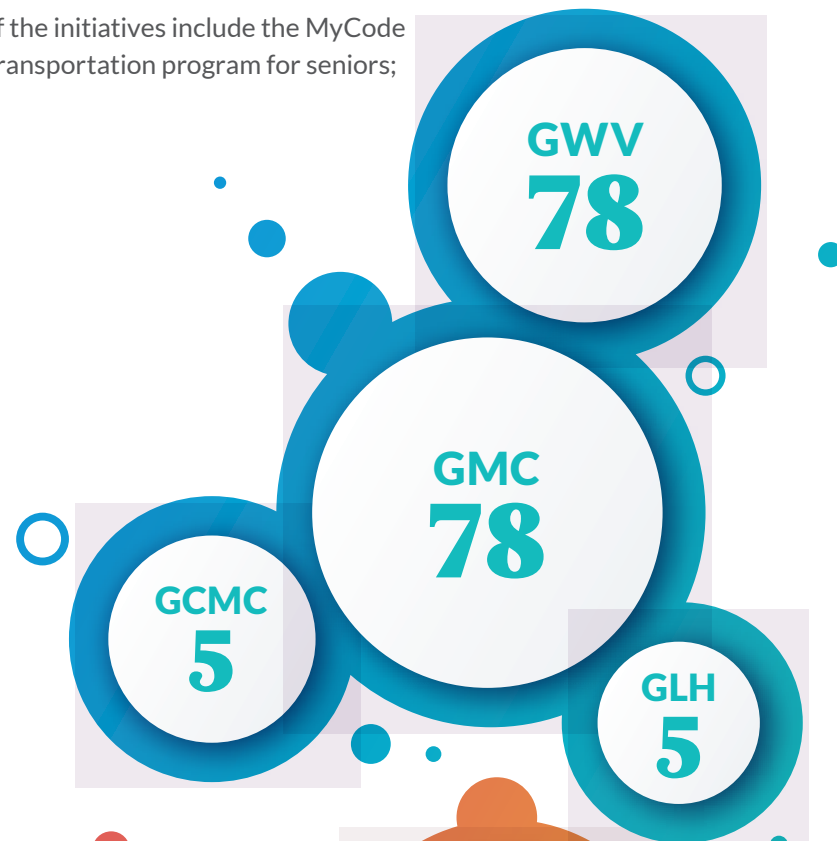


Operations & Compliance



Geisinger uses the 340B Drug Pricing Program to financially supplement our hospitals to provide a high level of care and services to low-income people or those in isolated rural communities. This program allows Geisinger to support critical health services for our communities. Savings from the program help us maximize scarce federal resources and meet the healthcare needs of the Geisinger service region. Some of the initiatives include the MyCode Community Health Initiative; 4Ride, a transportation program for seniors; and 65 Forward.

Hospitals & associated sites

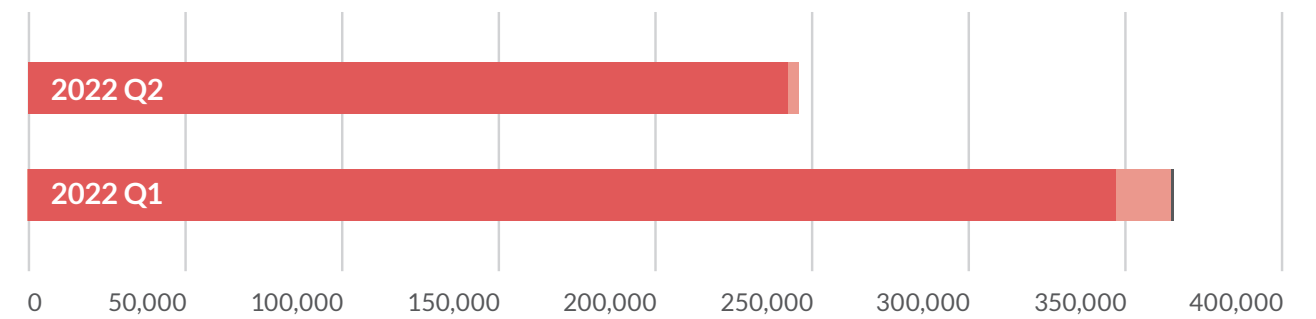


Contract pharmacies

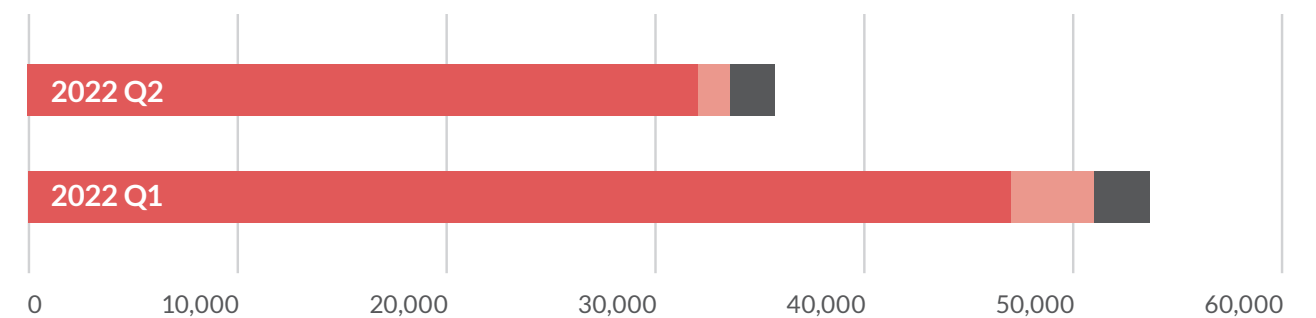


Collaboration with the Innovation team has created a bot that can independently audit both hospital and contract pharmacy claims. The use of the bot has increased the audit capacity of hospital claims to close to 100% and retail claims to greater than 50% since its implementation in January. The bot has been able to save the organization over 23,000 hours in the manpower needed to do these audits manually. This equates to over \$800,000 in realized benefits. Some future enhancements will include bot audits of all external contract pharmacies and the assessment of non-qualified claims.

Hospital bot audits



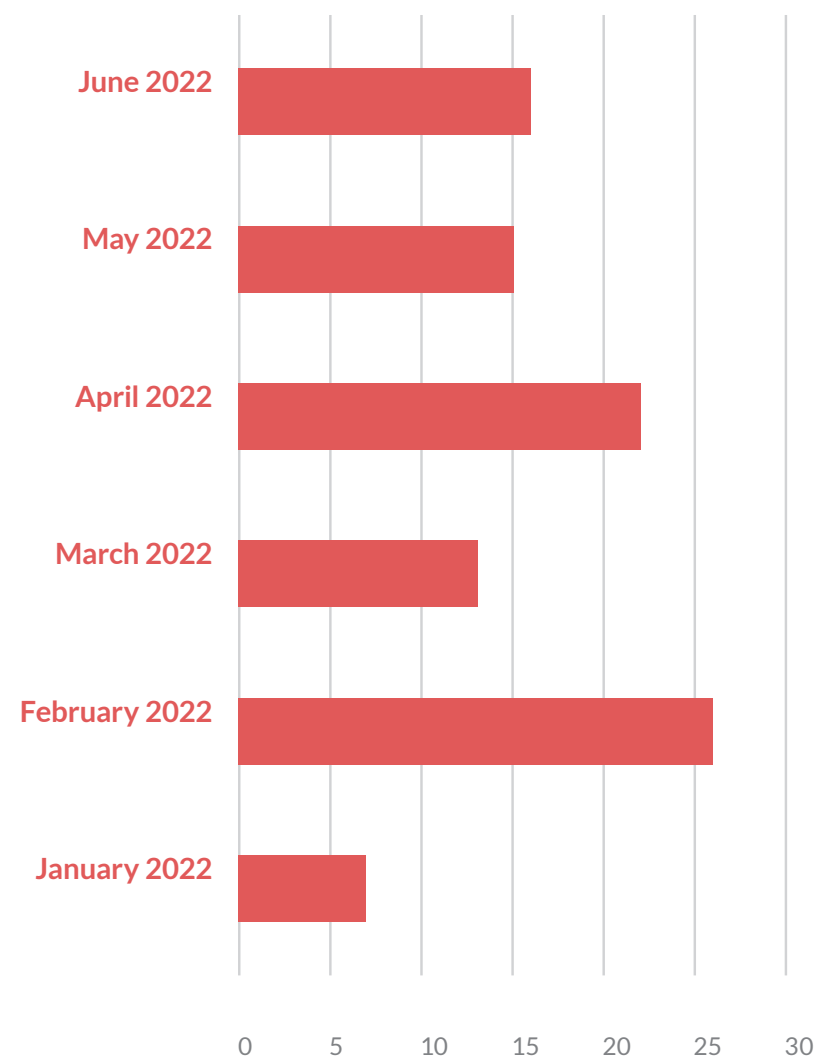
Retail bot audits



- None
- Business exception
- Application exception

Geisinger’s controlled substance management team is responsible for the oversight of all reporting, auditing and investigational activities related to medication practices within the organization. The team is also responsible for education and awareness of how controlled substances should be managed. The team works closely with nursing and other institutes to determine the root cause of the mismanagement of controlled substances. These may include true diversion, policy variances and other opportunities. The team develops corrective actions that incorporate education, practice alterations or other disciplinary actions. The controlled substance management team oversees all hospital and clinic locations including outpatient service areas (i.e., surgery centers and pain clinics) and utilizes automation and data analytics that provide real-time monitoring.

This is a representation of some of the data analytics indicating the number of investigations identified by the tool per month.



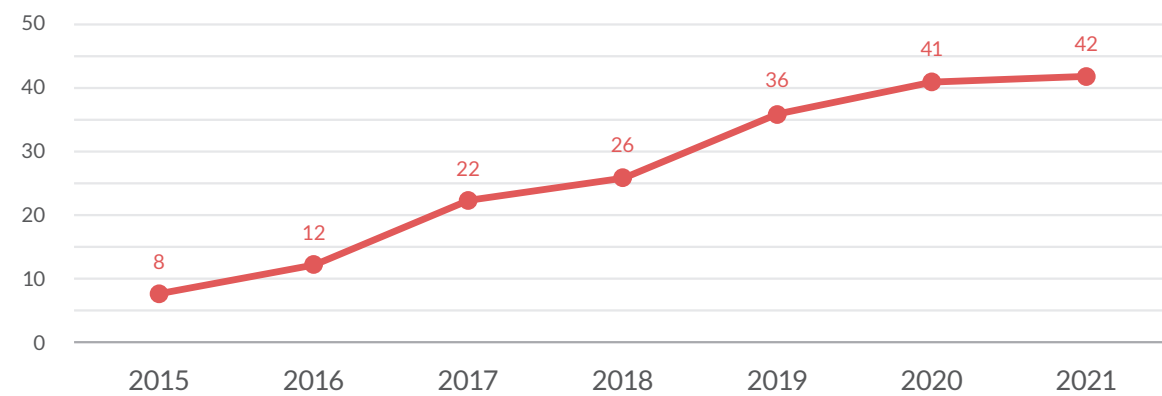
The medication safety program oversees the safe use of medication throughout Geisinger. The program consists of numerous localized medication safety committees within both inpatient and ambulatory locations. These committees monitor medication incidents and analyze adverse event data to identify potential trends to create improvements to the medication use processes. The program reviews current national safety recommendations to provide Geisinger with a proactive approach to medication incident prevention. This program has also helped lead a “Just Culture” initiative, which included systemwide education and implementation. The program’s diligent assessment of medication safety has led to the development of over 65 medication safety-related enhancements to the medication-use system.

The Corporate Compliance team is responsible for the oversight of regulatory and compliance activities. This team oversees over two dozen compliance activities, which include narcotic waste in the operating rooms, home infusion pharmacy activities, billing compliance and the monitoring of the impact of medication shortages, just to name a few. The compliance team also oversees policy and procedure management, which includes over 250 active policies and procedures.

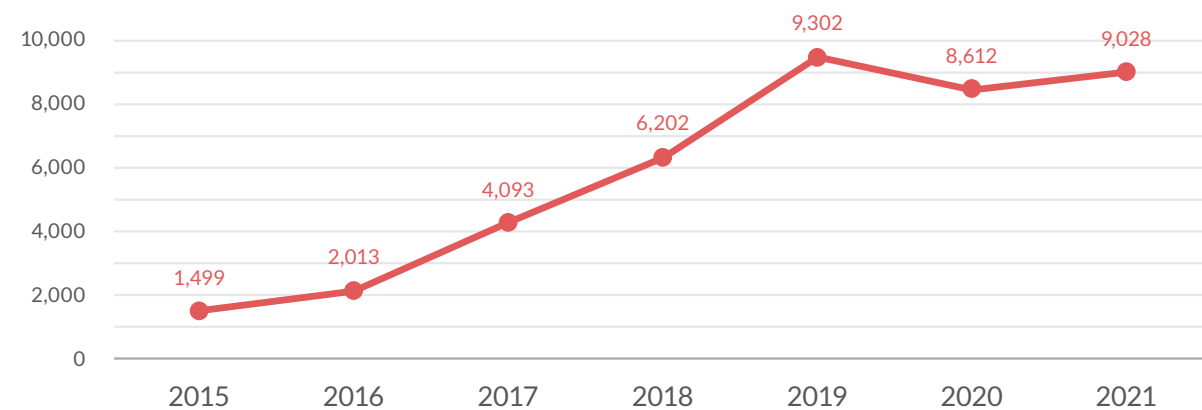
Medication Take Back

Geisinger's Medication Take Back (MTB) Program is designed to provide the community with a place to dispose of unwanted/unneeded medications. Geisinger's program includes medication take-back boxes at all its Geisinger Retail Pharmacy locations, many of the Geisinger hospitals and partner locations including Weis Markets, several independent pharmacies and law enforcement agencies.

Medication take back boxes



Pounds of medication taken back

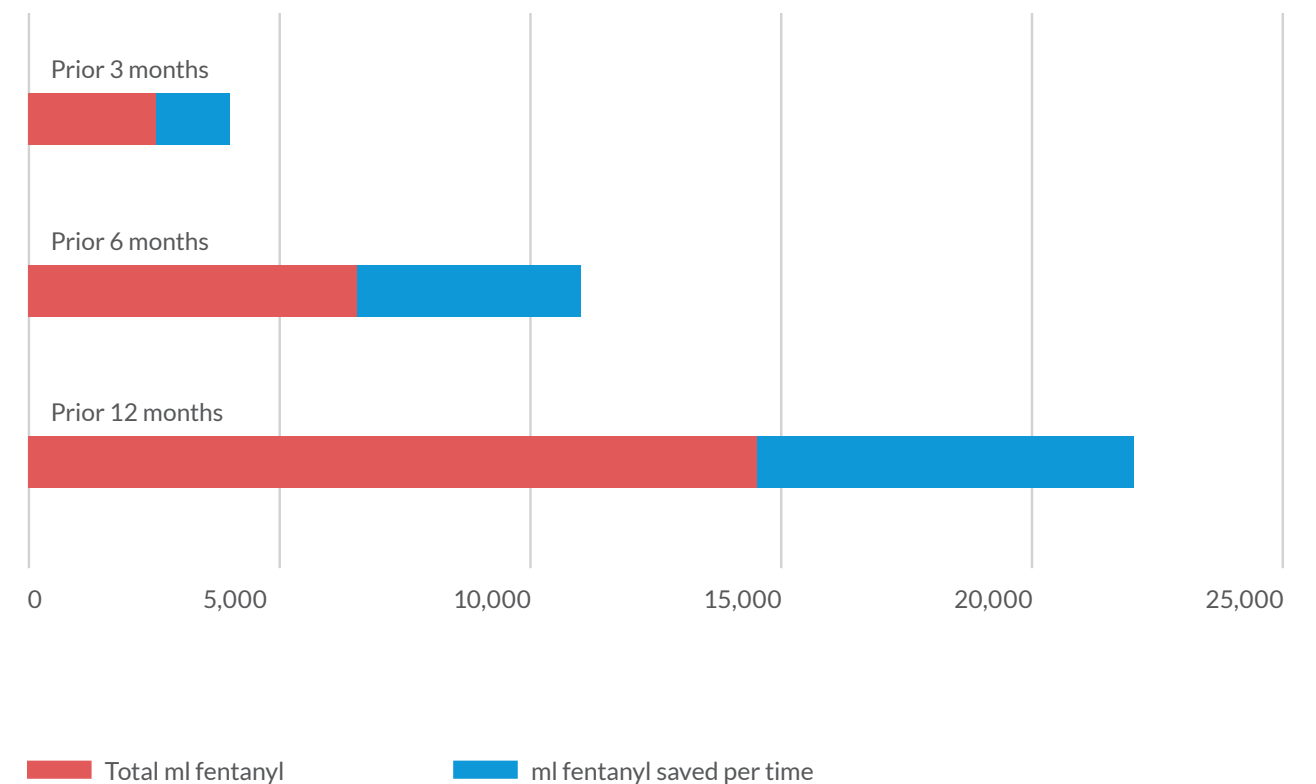


The Omnicell Team is responsible for maintaining 350+ automated dispensing cabinets across the system. These include dispensing cabinets in patient care areas, anesthesia workstations in procedural areas and controlled substance management systems located in inpatient pharmacies. These dispensing cabinets allow Enterprise Pharmacy to provide medications that are readily available for administration to patients as well as provide a secure storage solution for controlled substances and other medications. In 2021, the dispensing cabinets dispensed over 1.5 million patient doses to nursing for safe and timely administration to patients.

Over the past year, the team has completed the implementation of dispensing cabinets at two new facilities, developed a process for allocation of cabinets in response to the pandemic and created medication safety enhancements that include medication scanning upon restock and a three-character medication search that is required before any medication can be withdrawn from the dispensing machines.

Anesthesia Medication Reconciliation (AMR) – Over the last year, our team has implemented AMR in all operating room (OR) locations across the health system. AMR is designed to enhance the ability to maintain the chain of custody of controlled substances and reduce controlled substance waste in the OR setting. Since the implementation of AMR at the Geisinger Medical Center campus, over 1,368 mLs of fentanyl have been saved in two months. We estimate that by using AMR, GMC will save over 10,000 mLs of fentanyl in 2022.

Milliliters of fentanyl saved



Pharmacy Innovation Alliance

Geisinger's pharmacy team is recognized for leading innovative and evidence-based programs of care delivery, research and education. As part of the systematic innovation supported throughout Geisinger Enterprise Pharmacy, the Enterprise Pharmacy pillar known as the Pharmacy Innovation Alliance (PIA) has entered its second year.



The PIA is composed of contemporary and progressive health-system (HS) participants who have the capabilities to innovate in the integrated delivery network (IDN) pharmacy enterprise value market space. The collective capabilities of the PIA aim to achieve the scale and synergies needed to create industry leading innovation within today's healthcare environment, seeking to develop solutions that address the challenges of IDN and HS Enterprise Pharmacy.

As we move forward, our mission to continue building and strengthening relationships with transformative IDNs, HS and industry partners. Our goal is to create innovative aggregation models; aggregate disparate pharmacy, pharmaceutical and ancillary support contracts; and cross-share rich strategic and market competitive pharmacy enterprise knowledge. We aim to drive market competitiveness and capture new value for HS while enhancing care delivery.

PIA CY 2021 – 2022 highlights

- I'd like to introduce Austin C. Gardner, PharmD, MHA, MS, to the team. Austin is a graduate from the UNC Eshelman School of Pharmacy's two-year Health-System Pharmacy Administration and Leadership Program, earning an MS in Pharmaceutical Sciences. Austin, we are thrilled to welcome you to the team.
- Launching of the PIA website, pharmacyia.com, marketing materials and deliverables.
- We continue to develop our market and messaging plan and have presented the PIA offering to numerous potential member partners across the US.
- We have met with several industry partners across the continuum and are working through active contract negotiations for freight and parcel management, clean room construction, secondary wholesaler relationships, and direct relationships with other industry partners.
- Development and execution of the PIA Operating Agreement
- Achieved alignment on PSAO across the specialty pharmacy space

As we look ahead, the PIA remains focused on driving value back through the PIA membership with a focus on contract optimization, innovative supply chain management solutions, pharmacy accreditation, revenue optimization and packaging solutions. We look forward to sharing our results and savings with you next year.

Strategy & Innovation

Infusion Site of Care Transformation Services

Geisinger Home Infusion Services has been caring for patients in their homes for over 30 years. Following the same trajectory as specialty pharmacy over the past five years, many health systems are now looking at home infusion to:

1. Meet the growing market need of home-based care through home infusion (\$20 billion), that has only been accelerated by COVID -19, and is now growing at a 5-7% compounded annual growth rate
2. Address payer site of care strategies that are driving infusions outside of the hospital to home infusion ambulatory infusion centers, causing loss in continuity of care
3. Compete with the many private equity back (IVX Health, Vivo Infusion, et al.) and PBM/Payer (Coram, Optum, et al.) aligned ambulatory and home infusion providers

To help health systems meet this growing market and enable patient care closer to home, Geisinger is partnering with Amerisource Bergen to identify opportunities for health systems to develop home infusion services and partner with them to design, implement and operate those services. Geisinger and Amerisource Bergen are working with 10 health systems across the country.

Revenue growth continues

Geisinger Pharmacy continues robust revenue growth across non-traditional IDN Pharmacy assets (Mail-Order, Traditional Retail, Hospital Retail, Specialty and Home Infusion) which is estimated to grow 25% to \$650+ million in CY2022. When combined with outpatient infusion and inpatient drug revenue, overall Geisinger pharmacy will surpass \$1 billion in CY2022. Key drivers of growth and transformation include 40% year-over-year growth at Mail-Order due to systemwide Rx capture initiatives, in addition to benefit design and adherence activities.

Discharge prescription verification

One of the riskiest places in a hospital or healthcare institution is the front door. Medication review and reconciliation at the time of discharge can be cumbersome – therapeutic interchanges, formulary restrictions and medication changes can result in up to 40% of our patients leaving with a medication list with clinically significant errors.

Geisinger Enterprise Pharmacy has implemented a systemwide process to decrease medication errors at the time of discharge. This process was developed to streamline and focus pharmacists' efforts on the patients who need us the most while minimizing wasted time and the need for rework.

Leveraging tools in Epic, all new or edited prescriptions flow into the inpatient pharmacists' work queue to be reviewed. A hard stop prevents new prescriptions from being transmitted to an outpatient pharmacy until they are reviewed by the pharmacist team. This triggers the pharmacist to provide a comprehensive clinical review of a patient's discharge medication list prior to verifying the new prescription(s). Additionally, the pharmacist team strives to make better health easier for our patients by engaging with the MyBedsideRx program, which provides bedside delivery of discharge prescriptions and uses Geisinger resources to help patients more readily afford their medications.

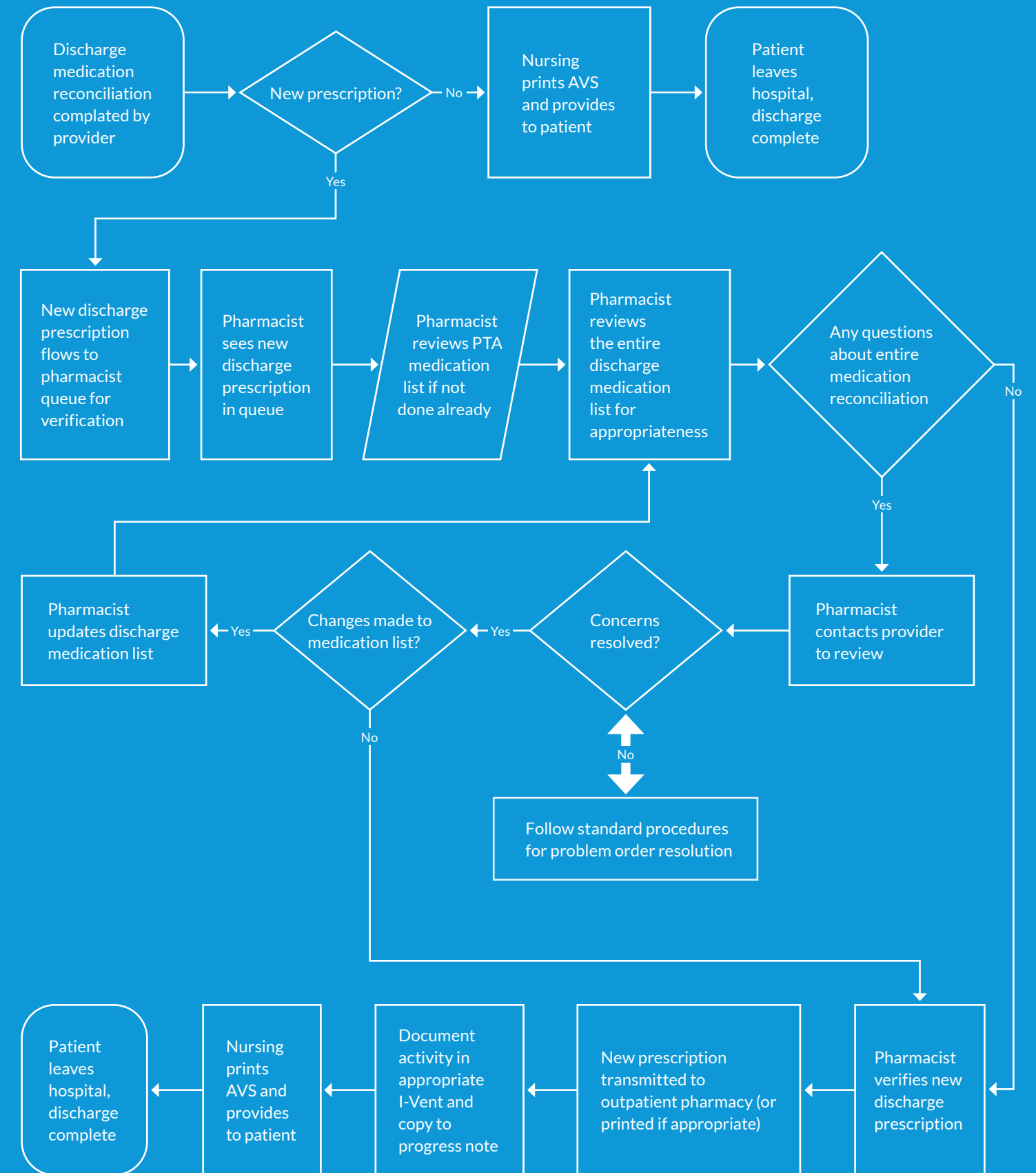
The effects of this program were noted almost immediately. At Geisinger Wyoming Valley, within the first minutes of implementation, three

medication misadventures that may have resulted in patient harm were prevented. The number of prescriptions verified by our pharmacist team is staggering: From July 1, 2021, through Dec. 31, 2021, the Geisinger Enterprise Pharmacy team verified 190,393 discharge prescriptions. The majority (87.4%) of these prescriptions did not require pharmacist intervention. However, 12.6% of the discharge prescriptions did.

The Geisinger Enterprise Pharmacy team intervened on almost 24,000 prescriptions from July through December 2021, making sure their patients received appropriate anticoagulation, doses and duration of antimicrobials, preventing harm by avoiding inappropriate prescribing and ensuring that medications were available for patients after they left the hospital.

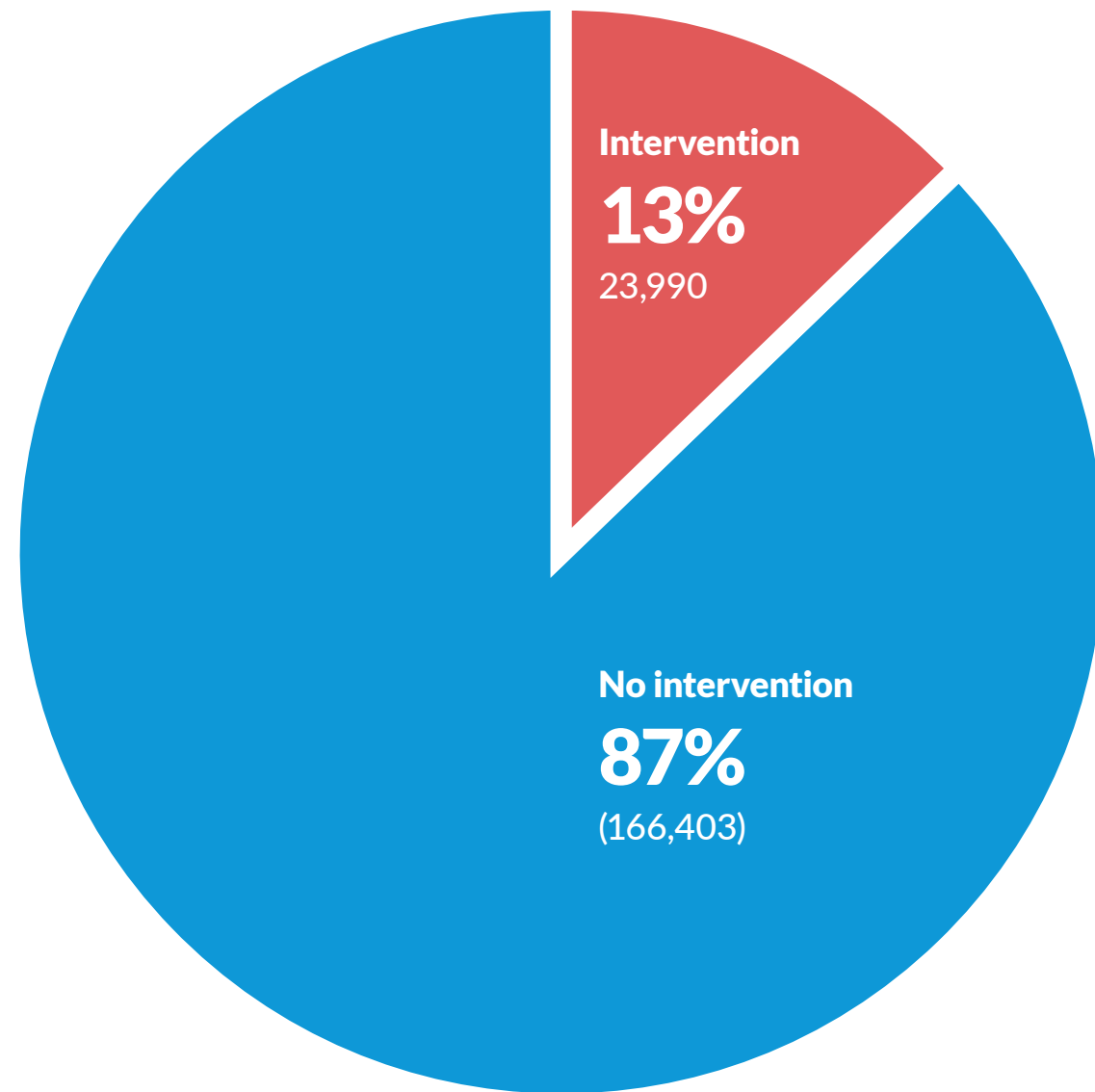
In September, a pharmacist received several discharge prescriptions. Upon review, they noted a duplication of loop diuretics, an incorrect dosage form of metoprolol and a dose of enoxaparin that was too low. They also saw that the dose of IV antimicrobials was not what had been recommended. This intervention resulted in a referral to GHIS for their IV antimicrobials.

The impact of these interventions cannot be overstated. Geisinger pharmacists are proactively reviewing discharge medication lists with the same attention to detail that are afforded inpatients, catching errors that could have most certainly led to patient harm.

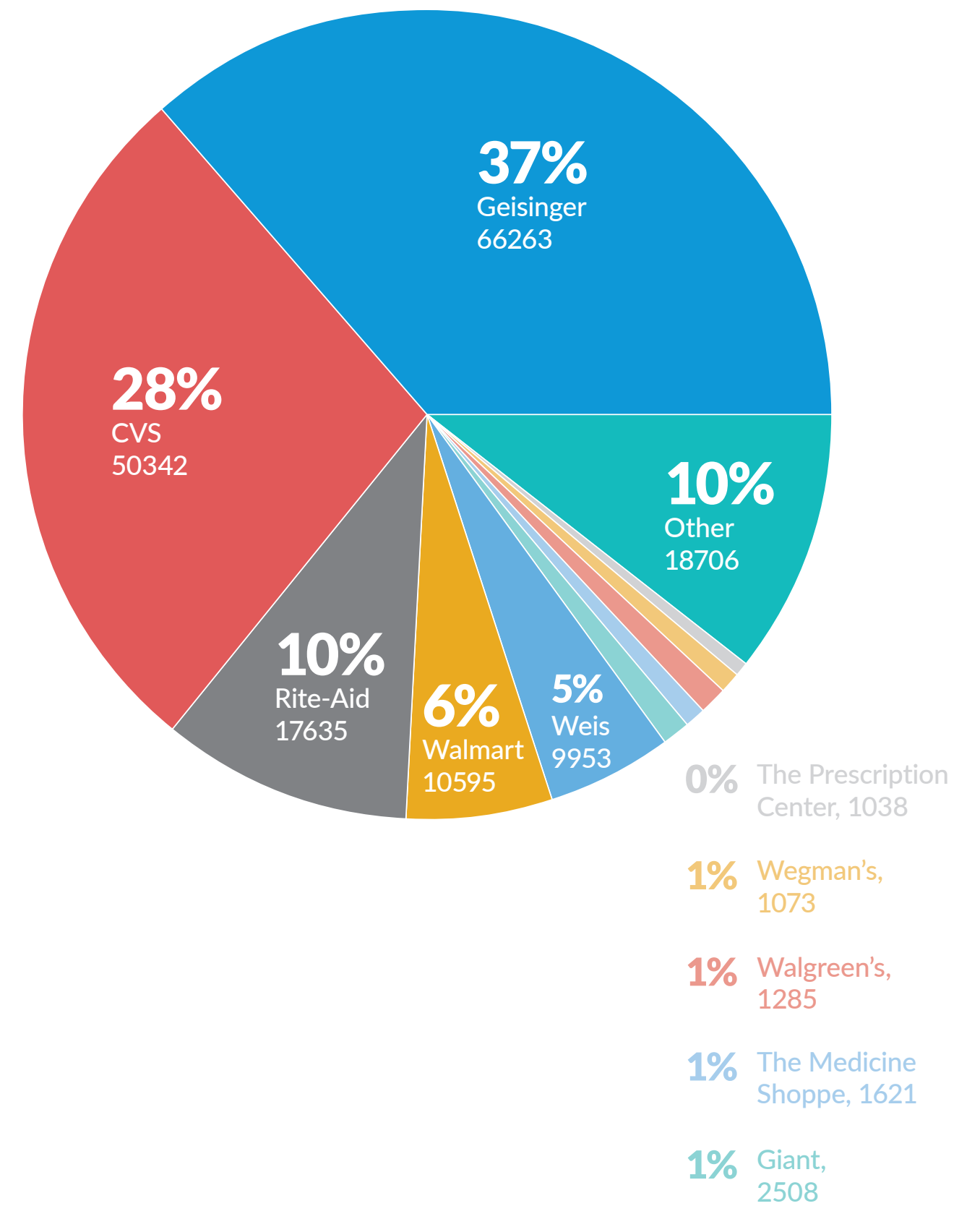


Discharge prescription verification

(July – Dec 2021)



Dispensing pharmacy



Publications, presentations and posters

Peer-reviewed articles

1. **Adams SC**, Gura KM, Seres DS, Kovacevich D, Maguire A, Herlitz J, Canada TW, Nishikawa R, Boullata J; and the ASPEN Parenteral Nutrition Safety Committee. Safe care transitions for patients receiving parenteral nutrition. *Nutr Clin Pract*. 2022 Jun;37(3):493-508. doi:10.1002/ncp.10861.
2. **Andrick B, Tusing L**, Jones LK, Hu Y, **Sneidman R, Gregor C**, Basu S, Lynch JP, Vadakara J. The impact of a hematopoietic cellular therapy pharmacist on clinical and humanistic outcomes: A RE-AIM framework analysis. *Transplant Cell Ther*. 2022 Jun;28(6):334.e1-334.e9. doi:10.1016/j.jtct.2022.02.015. Epub 2022 Feb 18.
3. Anyaehie MN, Pardo C, Kaufman DE, **Piper BJ**. Opioid distribution trends in California following recreational cannabis legalization. *The Guthrie Journal*. 2022 May 13;74(1). doi:10.53481/001c.35533
4. Armbuster YC, Banas BN, Feickert KD, England SE, Moyer EJ, Christie EL, Chughtai S, Giuliani TJ, Halden RU, **Graham JH**, McCall KL, **Piper BJ**. Decline and pronounced regional disparities in medical cocaine usage in the United States. *J Pharm Technol*. 2021 Dec;37(6):278-285. doi:10.1177/87551225211035563
5. Baraldi JH, Picozzo SA, Arnold JC, Volarich K, Gionfriddo MR, **Piper BJ**. A cross-sectional examination of conflict-of-interest disclosures of physician-authors publishing in high-impact US medical journals. *BMJ Open*. 2022;12:e057598. doi:10.1136/bmjopen-2021-057598
6. Bolesta S, Berger A, Black E, **Greskovic G**, Davis T. Disease and medication burden of medically complex adolescents seen in an interdisciplinary transitional care clinic. *J Pediatr Rehabil Med*. 2021;14(4):605-612. doi:10.3233/PRM-200705
7. Chen S, Roberts AL, Zhao K, Burke AC, Ritter JE, Musto KM, **Piper BJ**. Conflict of Interest Disclosure Disparities Among Male and Female Physician Authors of High Impact Cancer Research Journals. *The Guthrie Journal*. 2022 Apr 22;74(1). doi:10.53481/001c.33790
8. Cloyd C, **Wysocki EL**, Johnson H, Miller JC, Davis J, Galantowicz M, Yates AR. Post-operative Anticoagulation Strategy Following Comprehensive Stage 2 Procedure for Single Ventricle Physiology. *Pediatr Cardiol*. 2022 Mar 26. doi:10.1007/s00246-022-02877-1. Online ahead of print.
9. Connolly E, McCall KL 3rd, Couture S, Felton M, **Piper BJ**, Bratberg JP, Tu C. Analysis of naloxone access and primary medication nonadherence in a community pharmacy setting. *J Am Pharm Assoc (2003)*. 2022 Jan-Feb;62(1):49-54. doi:10.1016/j.japh.2021.10.011. Epub 2021 Oct 21.
10. Drozda JP, **Graham J**, Muhlestein JB, Tcheng JE, Roach J, Forsyth T, Knight S, McKinnon A, May H, Wilson NA, Berlin JA, Simard EP. Multi-institutional distributed data networks for real world evidence about medical devices: Building Unique device identifiers Into Longitudinal Data (BUILD). *JAMIA Open*. 2022 May 25;5(2):1-11. doi:10.1093/jamiaopen/ooac035\
11. Gionfriddo MR, **Duboski V**, Middernacht A, **Kern MS, Graham J, Wright EA**. A mixed methods evaluation of medication reconciliation in the primary care setting. *PLoS One*. 2021 Dec 2; 16(12):e0260882. doi:10.1371/journal.pone.0260882

12. Gionfriddo MR, Hu Y, Maddineni B, Kern M, Duboski V, Kaledas W, Elder N, Border J, Frusciante K, Kobylinski M, Wright E. Evaluation of a Web-Based Medication Reconciliation Application Within a Primary Care Setting: Cluster-Randomized Controlled Trial. *JMIR Form Res*. 2022 Mar;6(3):e33488. doi:10.2196/33488
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14. Graham J, Novosat T, Sun H, Piper BJ, Boscarino JA, Kern MS, Hayduk VA, Beck C, Robinson RL, Casey E, Hall J, Dorling P, Wright EA. Associations of healthcare utilization and costs with increasing pain and treatment intensity levels in osteoarthritis patients: an 18-year retrospective study. *Rheumatol Ther*. 2022 May 10. doi:10.1007/s40744-022-00448-7
15. Graybill M, Gionfriddo M, Graham J, Webster L, Duboski V, Kern M, Wright E. Medication therapy problems identified by pharmacists conducting telephonic comprehensive medication management within a team-based at-home care program. *J Am Coll Clin Pharm*. 2021 Jul;4(7):801-807. doi:10.1002/jac5.1466
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18. Jones LK, Ladd IG, Gregor C, Evans MA, Graham J, Gionfriddo MR. Evaluating implementation outcomes (acceptability, adoption, and feasibility) of two initiatives to improve the medication prior authorization process. *BMC Health Serv Res*. 2021 Nov 20; 21(1):1259. doi:10.1186/s12913-021-07287-2
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21. Lussier ME, Pradhan AM, Wright EA. Guideline-concordant prescribing or medication adherence: A Medicare Part D predicament. *J Am Geriatr Soc*. 2022; 70(7):2176-2179. doi:10.1111/jgs.17775.
22. Mathur AD, Maiers TA, Andrick BJ. Impact of a pharmacist-led telehealth oral chemotherapy clinic. *Am J Health Syst Pharm*. 2022 May 4;79(11):896-903. doi:10.1093/ajhp/zxac038
23. Okubo L, Andrick B, Rampulla R, Leri F. Smaller but more frequent dosing of cefepime in the treatment of febrile neutropenia. *J Oncol Pharm Pract*. 2022 Jun;28(4):898-903. doi:10.1177/10781552221080078. Epub 2022 Feb 14.
24. Piper BJ, Daily SM, Martin SL, Martin MW. Evaluation of a Brief Intervention to Reduce Mobile Phone Use in College Students. *The Guthrie Journal*. 2022 May 13;74(1). doi:10.53481/001c.35547
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27. Siddiqui MZ, Piserchio JP, Patel M, Park J, Foster ML, Desrosiers CE, Herbert J, Nichols SD, McCall KL, Piper BJ. Examination of multiple drug arrests reported to the Maine Diversion Alert Program. *Forensic Sci Med Pathol*. 2022 Jan 30. doi:10.1007/s12024-021-00454-1. Epub 2022 Jan 30.
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Non-peer reviewed articles

1. Aguilar AG, Canals PC, Miller KA, **Piper BJ**. Geographic Variability in Antibiotic Prescribing Rates in Medicaid. *Scholarly Research In Progress*. 2021 Nov;5:5-9.
2. Funk HE, Pitt SE, Varano AT, **Piper BJ**. Trends and Regional Differences in the Diversion of Stimulants in the United States, 2015-2019. *Scholarly Research In Progress*. 2021 Nov;5:53-58.
3. Kennalley AL, Boureghda YA, Ganesh JG, Watkins AM, McCall KL, **Piper BJ**. Declining National Codeine Distribution in United States Hospitals and Pharmacies. *Scholarly Research In Progress*. 2021 Nov;5:10-15.
4. Petlansky RL, Bekoe-Tabiri AD, Bueno VN, Onwuka AN, Gionfriddo MR, **Piper BJ**. Conflicts of Interest Differ Among Male and Female Pediatric Journal Authors. *Scholarly Research In Progress*. 2021 Nov;5:33-36.
5. **Tice SA**. Medication Management in the OR. *Pharmacy Purchasing & Products*. 2022 May;19(5):20.

Published abstracts

1. **Anderson H**, Olson A, **Kern M**, **Wright E**. Prevalence of Medication- or Pharmacy-Related Abstracts at the Health Care Systems Research Network's Annual Conference Over Three Years. Abstracts from the 2022 Health Care Systems Research Network (HCSRN) annual conference. *J Patient Cent Res Rev*. 2022;9(3):196-245. doi:10.17294/2330-0698.1997
2. **Brickett L**, **Andrick B**. Tumor lysis syndrome in critically ill patients receiving flat-dose allopurinol prophylaxis. 2022 Critical Care Congress Abstracts. *Critical Care Medicine*. January 2022;50(1):1-879. doi:10.1097/01.ccm.0000808884.23790.c3
3. **Graham J**. Can We Use Machine Learning to Remove Outdated Medications From a Patient's Medication List? Abstracts from the 2022 Health Care Systems Research Network (HCSRN) annual conference. *J Patient Cent Res Rev*. 2022;9(3):196-245. doi:10.17294/2330-0698.1997
4. **Graham J**, Novosat T, Sun H, **Piper B**, Boscarino J, **Kern M**, **Duboski V**, **Wright E**, Beck C, Robinson R, Casey E, Hall J, Schepman P. Association of Healthcare Costs and Utilization with Increasing Severity of Pain in Osteoarthritis Patients: An 18-Year Retrospective Study. Abstract Supplement ACR Convergence 2021. *Arthritis Rheumatol*. 2021;73(suppl 10). doi:10.1002/art.41966
5. **Graham J**, Novosat T, Sun H, **Piper B**, Boscarino J, **Kern M**, **Duboski V**, **Wright E**, Robinson R, Casey E, Beck C, Hall J, Schepman P. Comparing Healthcare Costs and Utilization in Osteoarthritis Patients With Different Levels of Treatment-Based Severity: An 18-Year Retrospective Study. *Value in Health*. 2022;25(suppl 1). doi:10.1016/j.jval.2021.11.364

6. **Longyhore DS**, **Scheib K**, **Webster L**, **Aftewicz H**, **Learn L**, **Connelly A**. Applying the Consolidated Framework for Implementation Research to a New Medication Therapy Management Program in an Integrated Care Delivery Network. Abstracts from the 2022 Health Care Systems Research Network (HCSRN) annual conference. *J Patient Cent Res Rev*. 2022;9(3):196-245. doi:10.17294/2330-0698.1997
7. **Lussier M**, Gionfriddo M, **Graham J**, **Wright E**. Trends in Second-Line Diabetes Medication Prescribing in Older Adults from 2018 to 2020. Abstracts from the 2022 Health Care Systems Research Network (HCSRN) annual conference. *J Patient Cent Res Rev*. 2022;9(3):196-245. doi:10.17294/2330-0698.1997
8. **Lussier M**, **Tusing L**, **Gregor C**, **Graham J**, **Wright E**. Efforts to Improve Medication Storage and Disposal Practices for Opioid Naïve Patients in Primary Care. 2021 ACCP VIRTUAL Annual Meeting October 19 - 20, 2021. *J Am Coll Clin Pharm*. 2021 Dec;4(12):1631-1755. doi:10.1002/jac5.1561
9. **Lussier M**, **Wright E**. Use of a Best Practice Alert to Convey Education on Safe Opioid Storage and Disposal Within Primary Care. Abstracts from the 2022 Health Care Systems Research Network (HCSRN) annual conference. *J Patient Cent Res Rev*. 2022;9(3):196-245. doi:10.17294/2330-0698.1997
10. Patel A, Friedenber S, Dinko J, Seely B, Sponenberg M, **Webster L**, Stefanowicz E, Cole S. Implementation of a best practice alert in the electronic health record reduced neurology referrals and magnetic resonance imaging for headache: A pilot program of 1860 patients. *Headache*. 2022;62(suppl 1):1-170. doi:10.1111/head.14331.
11. **Phang K**, **Anderson H**, Vodzak J, Moin A, Walck A, **Wright E**, **Graham J**. Pediatric Cefdinir Use in an Integrated Health System Serving Predominantly Rural and Suburban Pediatric Patients. Abstracts from the 2022 Health Care Systems Research Network (HCSRN) annual conference. *J Patient Cent Res Rev*. 2022;9(3):196-245. doi:10.17294/2330-0698.1997
12. Romagnoli K, **Bucaloiu A**, **Tusing L**, **Gregor C**, Kobylnski MS, **Wright E**. Patients' Self-Perception of Opioid Use and Associated Communication Preferences in Primary Care. Abstracts from the 2022 Health Care Systems Research Network (HCSRN) annual conference. *J Patient Cent Res Rev*. 2022;9(3):196-245. doi:10.17294/2330-0698.1997
13. Thompson RZ, **Wysocki E**. POPULATION PHARMACOKINETICS OF HIGH-DOSE, EXTENDED-INTERVAL AMIKACIN IN CRITICALLY ILL CHILDREN. *Crit Care Med*. 2022 Jan;50(suppl 1):430. doi:10.1097/01.ccm.0000809804.02198.3b
14. VanDeMark S, Woloszyn M, **Piper B**, Christman L, Gatusky M, Lam W, Tilberry S. Quantitative Research on the Potential Conflicts of Interest of Popular Point-of-Care, Evidence-Based Websites: UpToDate and DynaMed. Abstracts from the 2022 Health Care Systems Research Network (HCSRN) annual conference. *J Patient Cent Res Rev*. 2022;9(3):196-245. doi:10.17294/2330-0698.1997

15. Voyce S, **Graham J**, Hayden J, Eslami A, Agarwal S, **Grassi S**, **Zook A**, Singh Natasha, **Lauver B**, **Eckel S**, **Chopra A**, **Tinsley J**, **Kern M**, **Duboski V**, DeRita R, Belletti D, Pitcavage J, **Wright E**. A MULTIMODALITY SYSTEM-OF-CARE PROGRAM FOR ACUTE CORONARY SYNDROME IMPROVES GUIDELINE-DIRECTED MEDICAL THERAPY, OUTPATIENT FOLLOW-UP, 30-DAY READMISSIONS AND EMERGENCY DEPARTMENT VISITS: THE ACS ADVOCATE PROJECT. American College of Cardiology's Annual Scientific Session & Expo 2022. *J Am Coll Cardiol*. 2022 Mar;79(9):974. doi:10.1016/S0735-1097(22)01965-9

Invited presentations

1. **Adams A**, **Kerestes J**. The Impact of Bedside Medication Delivery Before Emergency Department Discharge on Antibiotic Compliance. Eastern States Conference for Pharmacy Residents and Preceptors, Virtual, May 2022.
2. **Andrick B**. Research Grant Award: Machine Learning Approach to Venous Thromboembolism Prediction in Newly Diagnosed Patients with Cancer Receiving Chemotherapy. Hematology/Oncology Pharmacy Association Annual Conference 2022, Boston, MA, March 2022.
3. **Bedwick B**. Self-Care Safety: Reviewing Hot Topics Related to Appropriate OTC Medication Use. Geisinger 12th Annual Current Concepts in Medication Safety Conference, Virtual, March 2022.
4. Binswanger I, Lapham G, **Wright E**. Methods, Degree and Implications of Capturing Medical Marijuana Use within Electronic Records. 2022 Health Care Systems Research Network (HCSRN) Conference, Pasadena, CA, April 2022.
5. **Brickett L**, **Andrick B**. Tumor lysis syndrome in critically ill patients receiving flat-dose allopurinol prophylaxis. Society of Critical Care Medicine 51st Critical Care Congress, Virtual, April 2022.
6. **Brokenshire A**. The Sweet Side of Cardiology. Geisinger Fresh Pharm...A Medication Update Conference, Virtual, April 2022.
7. **Butler SM**, **Nissen KL**. Improving Antimicrobial Delivery for Pediatric Patients in ED: Focus on Pharmacy Workflow. Children's Hospital Association Improving Pediatric Sepsis Outcomes (IPSO) Workshop, Virtual, June 2022.
8. Gionfriddo MR, **Duboski V**, **Kern M**, Maddineni B, Hu Y, **Wright E**. Effect of a Web-Based Medication Reconciliation Tool on Medication Discrepancies in a Primary Care Population. Health Care Systems Research Network (HCSRN) Scientific Data Resources Forum, Virtual, November 2021.
9. **Greskovic G**. Medication Challenges: Geisinger Pharmacy Solutions. Pennsylvania Society of Health-System Pharmacy (PSHP) Ambulatory Care Summit, Virtual, September 2021.
10. Hayes D, **Graham J**, Rudararaju R, Kolessar D. Robotic assisted technology in knee arthroplasty: healthcare costs and utilization. Pennsylvania Orthopaedic Society Annual Meeting, Virtual, October 2021.
11. **Lauver B**. Fundamentals of Sedation in Extracorporeal Membrane Oxygenation. 4th Annual Geisinger ECMO Conference, Danville, PA, March 2022.
12. **Longyhore DS**, Barnes K, Stacey Z. Assessment in Teaching & Learning. American College of Clinical Pharmacy (ACCP) Spring Academy Meeting, Virtual, April 2022.
13. **Longyhore DS**, Bingham A, Stamm P. Establishing Outcomes. American College of Clinical Pharmacy (ACCP) Fall Academy Meeting, Virtual, October 2021.
14. **Longyhore DS**, Kelley K. Implementing Teaching & Learning Strategies. American College of Clinical Pharmacy (ACCP) Fall Academy Meeting, Virtual, October 2021.
15. **Lussier M**. Geriatric Primary Care Pharmacist Services. Pennsylvania Pharmacists Association (PPA) Mid-Year Conference 2022, Harrisburg, PA, January 2022.
16. **Lussier M**, Gionfriddo M, **Graham J**, **Wright E**. Trends in Second-Line Diabetes Medication Prescribing in Older Adults from 2018 to 2020. 2022 Health Care Systems Research Network (HCSRN) Conference, Pasadena, CA, April 2022.
17. **Matchock S**, **Ward T**, **Dombrowski S**. Comparison of Effectiveness and Safety Outcomes in Patients with Dose Escalation of Empagliflozin in Practice. Eastern States Conference for Pharmacy Residents and Preceptors, Virtual, May 2022.
18. **Mathur A**, Segal E, Tamer D, Maiers T. Best Practices in Hematology/Oncology Telepharmacy. Hematology/Oncology Pharmacy Association (HOPA) Annual Conference, Boston, MA, April 2022.
19. **Montross M**, **Douthit S**, **Learn L**, **Gruver B**, **Dombrowski S**, **Hanna C**. Impact of Interdisciplinary Case Management and Pharmacist Transitions of Care Interventions on High Risk 30-Day Readmissions. Eastern States Conference for Pharmacy Residents and Preceptors, Virtual, May 2022.
20. **Neville M**. Assessment of Sotalol Utilization in Patients with Renal Impairment at Geisinger. American Society of Health System Pharmacists (ASHP) Midyear Clinical Meeting, Virtual, December 2021.
21. **Neville M**. Impact of Obesity on Hemodynamics in Critically Ill Patients Receiving Propofol. Eastern States Conference for Pharmacy Residents and Preceptors, Virtual, May 2022.
22. **Parry D**. Smart Pumps and Patient Safety – Smarter but not Smart Enough? Geisinger 12th Annual Current Concepts in Medication Safety Conference, Virtual, March 2022.

23. Patel A, FriedenberG S, Dinko J, Seely B, Sponenberg M, **Webster L**, Stefanowicz E, Cole S. Implementation of a best practice alert in the electronic health record reduced neurology referrals and magnetic resonance imaging for headache: A pilot program of 1860 patients. American Headache Society 64th Annual Scientific Meeting, Denver, CO, June 2022.
24. **Phang K, Anderson H**, Vodzak J, Moin A, Walck A, **Wright E, Graham J**. Pediatric Cefdinir Use. Pediatric Academic Societies (PAS) 2022 Meeting, Denver, CO, April 2022.
25. **Phang K, Anderson H**, Vodzak J, Moin A, Walck A, **Wright E, Graham J**. Pediatric Cefdinir Use in an Integrated Healthcare System Serving Predominantly Rural and Suburban Pediatric Patients. 2022 Health Care Systems Research Network (HCSRN) Conference, Pasadena, CA, April 2022.
26. **Polombo D**. Medication Errors: What Has Occurred and How Do We Minimize Future Events? Geisinger 12th Annual Current Concepts in Medication Safety Conference, Virtual, March 2022.
27. **Puskovic I**. Continuous Glucose Monitors. Geisinger Update in Internal Medicine, Virtual, March 2022.
28. **Slampak-Cindric A**. From Manic to Manual: The Standard is the Key. Unlocking the Secret to Successful, Sustainable Residency Manuals. Eastern States Conference for Pharmacy Residents and Preceptors, Virtual, May 2022.
29. **Slampak-Cindric A**. The Polarizing Effect of Neuromuscular Blockers on Intubation Analgesation. American Society of Health System Pharmacists (ASHP) Midyear Clinical Meeting, Virtual, December 2021.
30. **Slampak-Cindric A**. Working with Different Personalities. Society of Critical Care Medicine (SCCM) Leadership, Empowerment and Development (LEAD) Program, Virtual, 2022.
31. Thompson RZ, **Wysocki E**. Population Pharmacokinetics of High-Dose, Extended-Interval Amikacin in Critically Ill Children. Society of Critical Care Medicine (SCCM) 2022 Critical Care Congress, Virtual, April 2022.
32. Torino D, Damsgaard C, **Graham J**, Foster BK, Constantino J, Hayes D, Kolessar D. Tibial Baseplate-Cement Interface Debonding in the ATTUNE Total Knee Arthroplasty System. Pennsylvania Orthopaedic Society Annual Meeting, Virtual, October 2021.
33. **Van Ness H, Slampak-Cindric A**, Stamm J. Systemic Thrombolysis versus Catheter Directed Thrombolysis in Acute Pulmonary Embolism. Eastern States Conference for Pharmacy Residents and Preceptors, Virtual, May 2022.
34. **Walck A, Hughes N, Montross M, Matchock S**. What's the diabeTEA? 2022 American Diabetes Association Guideline Updates. Geisinger Fresh Pharm...A Medication Update Conference, Virtual, April 2022.

35. **Webster L**. Clinical Pharmacists Scorecards in an Ambulatory Care Setting. Pennsylvania Society of Health-System Pharmacists (PSHP) Technology/Analytics/Clinical Informatics Summit, Hershey, PA, May 2022.
36. **Webster L, Lussier M**. Pharmacy Services Within a Concierge-Like Geriatric Primary Care Clinic. Pennsylvania Pharmacists Association CE Webinar, Virtual, April 2022.
37. **Webster L**. Pharmacist Practice Models Providing Team Based Care: A Panel Discussion. Pennsylvania Society of Health-System Pharmacists (PSHP) Ambulatory Care Summit: Impacting Patient Care Outcomes Through Pharmacist Collaboration and Team Based Care, Virtual, September 2021.

Internal seminars

1. **Grassi DM**. To Treat with EVUSHELD or Recommend the COVID-19 Vaccine, for the Immunocompromised Patient in Rheumatology. Clinical Pharmacy Retreat, Virtual, March 2022.
2. **Neville M**. Occurrence of Invasive Aspergillosis in Patients with Severe COVID-19. Geisinger Advanced Practice Nursing Conference, Geisinger, Danville, PA, May 2022.
3. **Tice S**. To Stimulate or Not to Stimulate. Geisinger Obesity and Malnutrition Summit, Virtual, September 2021.
4. **Tice S, Pickle B**. Medication Management in the OR. Pharmacy Purchasing & Product Reviews, May 2022.

Poster presentations

1. **Adamchick Z**, Warner T, **Hale S, Slampak-Cindric A**. Evaluation of Therapies for Acetaminophen Overdose in Pediatric Patients. American Society of Health System Pharmacists (ASHP) Midyear Clinical Meeting, Virtual, December 2021.
2. **Adams A, Estock S, Neville M**. Ensuring Appropriate Ordering Processes of Titratable Medications. Geisinger 12th Annual Current Concepts in Medication Safety Conference, Virtual, March 2022.
3. **Adams A, Kotch K**. Evaluation of Antimicrobial Prescribing Practices in the Setting of Facial Fractures. American Society of Health System Pharmacists (ASHP) Midyear Clinical Meeting, Virtual, December 2021.
4. **Adams A, Kotch K**. Evaluation of Antimicrobial Prescribing Practices in the Setting of Facial Fractures. Society for Academic Emergency Medicine Annual Meeting, New Orleans, May 2022.

5. **Anderson H, Olson A, Kern M, Wright E.** Prevalence of Medications- or Pharmacy-Related HCSRN Abstracts Over Three Years. 2022 Health Care Systems Research Network (HCSRN) Conference, Pasadena, CA, April 2022.
6. Aufiero K, Burgess M, **Limouze K, Slampak-Cindric A.** Peripheral Administration of Vasopressors: Description of Current Practice at an Academic Medical Center. American Society of Health System Pharmacists (ASHP) Midyear Clinical Meeting, Virtual, December 2021.
7. **Budzak B, Graham M.** Evaluation of the Incidence of Hypoglycemia in Non-critically Ill Adult Patients Administered Scheduled Premixed Insulin 70/30 and Rapid acting Insulin Via Sliding Scale in the Inpatient Setting. Geisinger 12th Annual Current Concepts in Medication Safety Conference, Virtual, March 2022.
8. **Butler SM, Broscious K.** Assessment of Initial Dosing and Time to Achieve Therapeutic Anti-factor Xa Levels in Neonatal Intensive Care Unit Patients Starting Enoxaparin for Treatment of Thrombus. Geisinger 12th Annual Current Concepts in Medication Safety Conference, Virtual, March 2022.
9. **Butler S, Draus S, Nissen K, Snook B, Studebaker J.** Pharmacy Workflow Changes for Pediatric Medication Orders in the Emergency Department – Impact on Turnaround and Administration Times for Intravenous Antimicrobials and Anticonvulsants. Geisinger 12th Annual Current Concepts in Medication Safety Conference, Virtual, March 2022.
10. **Graham J.** Can We Use Machine Learning to Remove Outdated Medications from the Patient's Medication List?. 2022 Health Care Systems Research Network (HCSRN) Conference, Pasadena, CA, April 2022.
11. **Graham J,** Novosat T, Sun H, **Piper B,** Boscarino J, **Kern M, Duboski V, Wright E,** Robinson R, Casey E, Beck C, Hall J, Schepman P. Association of Healthcare Costs and Utilization with Increasing Severity of Pain in Osteoarthritis Patients: An 18-Year Retrospective Study. American College of Rheumatology (ACR) Convergence 2021 Annual Meeting, Virtual, November 2021.
12. **Graham J,** Novosat T, Sun H, **Piper B,** Boscarino J, **Kern M, Duboski V, Wright E,** Robinson R, Casey E, Beck C, Hall J, Schepman P. Comparing Healthcare Costs and Utilization in Osteoarthritis Patients With Different Levels of Treatment-Based Severity: An 18-Year Retrospective Study. Virtual ISPOR Europe 2021, Virtual, November 2021.
13. **Hardler M.** Evaluation of the adjuvanted recombinant herpes zoster vaccine (Shingrix) in patients following autologous stem cell transplant. Hematology Oncology Pharmacy Association (HOPA) Annual Meeting, Boston, MA, March 2022.
14. **Hua G, Hart K, and Mathur AD.** Comparison of the incidence of *Pneumocystis jirovecii* pneumonia infection with or without antipneumocystis prophylaxis in neuro-oncology patients receiving temozolomide. Hematology Oncology Pharmacy Association (HOPA) Annual Meeting, Boston, MA, March 2022.
15. **Ivey K, Butler SM.** Implementation of a decision tree algorithm for pediatric vancomycin trough levels at Geisinger Janet Weis Children's Hospital. American Society of Health System Pharmacists (ASHP) Midyear Clinical Meeting, Virtual, December 2021.
16. **Jallen SM, Brickett LM.** Evaluation of Diabetic Ketoacidosis Management. American Society of Health-System Pharmacists (ASHP) Midyear Clinical Meeting, Virtual, December 2021.
17. Jones L, **Duboski V,** Romagnoli K, **Flango A, Graham J,** Gionfriddo M. Evaluation of an educational strategy to improve medication reconciliation in ambulatory care. 14th Annual Conference on the Science of Dissemination and Implementation in Health, Virtual, December 2021.
18. Kolk K, Kowalsky K, **Hale S, Slampak-Cindric A.** Evaluation of Parenteral Haloperidol Utilization at an Academic Medical Center. American Society of Health-System Pharmacists (ASHP) Midyear Clinical Meeting, Virtual, December 2021.
19. **Longyhore DS, Scheib K, Webster L, Aftewicz H, Learn L, Connelly A.** Applying the Consolidated Framework for Implementation Research to a New Medication Therapy Management Program in an Integrated Care Delivery Network. 2022 Health Care Systems Research Network (HCSRN) Meeting, Pasadena, CA, April 2022.
20. **Lussier M,** Morland T, **Pradhan A,** Gionfriddo M, **Wright E.** Evaluation of Guideline-Concordant Second-Line Diabetes Therapy in Older Adults. Academy Health Annual Research Meeting, Washington, DC, June 2022.
21. **Lussier M, Tusing L, Gregor C, Graham J, Wright E.** Efforts to Improve Medication Storage and Disposal Practices for Opioid Naïve Patients in Primary Care. 2021 ACCP Virtual Annual Meeting, Virtual, October 2021.
22. **Lussier M, Wright E.** Use of a Best Practice Alert to Convey Education on Safe Opioid Storage and Disposal Within Primary Care. 2022 Health Care Systems Research Network (HCSRN) Meeting, Pasadena, CA, April 2022.
23. **Matchock S, Weaver K, Denger E, Dombrowski S.** Appropriate Duration of Direct-Acting Oral Anticoagulant Therapy Interruption for Colonoscopy Procedures within Geisinger. American Society of Health-System Pharmacists (ASHP) Midyear Clinical Meeting, Virtual, December 2021.
24. **Montross M, Pheasant L, Dombrowski S, Kline K.** Impact of Dulaglutide Dose Escalation Great Than 1.5 mg Weekly on Patient Glucose Control and Weight in Practice. American Society of Health-System Pharmacists (ASHP) Midyear Clinical Meeting, Virtual, December 2021.
25. Nicholas PD, Cote J, **Grassi DM, Thomas S, Chronowski J,** Pugliese D, Newman E. Improving Safety in Rheumatology Patients by Closing Pre-screening Laboratory Care Gaps. American College of Rheumatology (ACR) Convergence 2021 Annual Meeting, Virtual, November 2021.

26. Nicholas PD, Cote J, **Grassi DM, Thomas S, Chronowski J**, Pugliese D, Newman E. Improving Safety in Rheumatology Patients by Closing Pre-screening Laboratory Care Gaps. Geisinger Research Day, Danville, PA, May 2022.
27. Romagnoli K, **Bucaloiu A, Tusing L, Gregor C**, Kobylinski MS, **Wright E**. Patients' Self-Perception of Opioid Use and Associated Communication Preferences in Primary Care. 2022 Health Care Systems Research Network (HCSRN) Conference, Pasadena, CA, April 2022.
28. **Slampak-Cindric A**. Critical Care and Emergency Medicine Pharmacy Practice: A Curriculum for Student Pharmacists. 27th Annual Geisinger Scholarship Days Conference, May 2022.
29. Torino D, Constantino J, Kolessar DJ, Damsgaard C, Foster BK, Hayes D, **Graham JH**. Tibial baseplate-cement interface debonding in the ATTUNE Total Knee Arthroplasty System. 2021 American Association of Hip and Knee Surgeons Annual Meeting, Dallas, TX, November 2021.
30. VanDeMark S, Woloszyn M, **Piper B**, Christman L, Gatusky M, Lam W, Tilberry S. Quantitative Research on the Potential Conflicts of Interest of Popular Point-of-Care, Evidence-Based Websites: UpToDate and DynaMed. 2022 Health Care Systems Research Network (HCSRN) Conference, Pasadena, CA, April 2022.
31. Voyce S, **Graham J**, Hayden J, Eslami A, Agarwal S, **Grassi S, Zook A**, Singh Natasha, **Lauver B, Eckel S, Chopra A, Tinsley J, Kern M, Duboski V**, DeRita R, Belletti D, Pitcavage J, **Wright E**. A MULTIMODALITY SYSTEM-OF-CARE PROGRAM FOR ACUTE CORONARY SYNDROME IMPROVES GUIDELINE-DIRECTED MEDICAL THERAPY, OUTPATIENT FOLLOW-UP, 30-DAY READMISSIONS AND EMERGENCY DEPARTMENT VISITS: THE ACS ADVOCATE PROJECT. American College of Cardiology (ACC) Annual Scientific Session & Expo 2022, Washington, DC, April 2022.





Board certifications and certificates

Board certifications

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) and 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 Ambulatory Care Pharmacist (BCACP)

Brian Bedwick	Michael Kessock	Julia Swigart
Kimberly Carozzoni	Kayla Kline	James Taleroski
Sarah Dombrowski	Samantha Kunkel	Ariana Wendoloski
Jennifer Fever	Daniel Longyhore	Krista Wetzel
Catherine Haupt	Amanda Popko	
Michael Kachmarsky	Ivan Puskovic	

Board Certified Critical Care Pharmacist (BCCCP)

Anthony Alu	Darlene Chaykosky	Kristen Lopatofsky
Anna Baughman	Kimberly Farnham	Lindsey Schneider
Laura Brickett	Jamie Kerestes	Laurie Sherrick
Amy Brokenshire	Kayla Kotch	Angela Slampak-Cindric
Allison Cebulko	Kimberley Limouze	

Board Certified Cardiology Pharmacist (BCCP)

Amy Brokenshire	Liam Callejas	Samuel Eckel
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Board Certified Geriatrics Pharmacist (BCGP)

Kimberly Carozzoni	Jessica Roth
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Board Certified Infectious Diseases Pharmacist (BCIDP)

Benjamin Heikkinen
Bradley Lauver
Marisa Perrella
Ricky Rampulla

Board Certified Nutrition Support Pharmacist (BCNSP)

Stephen Adams	Mariya Monfette	Nermeen Yousef
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Board Certified Oncology Pharmacist (BCOP)

Benjamin Andrick	Kayla Hart	Anna McDermott
Jei Won Eckel	Tristan Maiers	Rachel Sneiderman
Stephen Farley	Anupama Mathur	

Board Certified Pediatric Pharmacy Specialist (BCPPS)

Susan Butler	Joan Keehan	Bryan Snook
Shannon Draus	Michelle Ligotski	Leslie Taleroski
Kelly Guza	Sara Maiers	Emma Wysocki
Sarah Hale	Kimberly Nissen	

Board Certified Pharmacotherapy Specialist (BCPS)

Anna Baughman	Amber Heffelfinger	Jordan Moore
Kelly Bolesta	Arthur Jankowski	Nicholas Preston
Amanda Boyer	Danielle Karaffa	Ivan Puskovic
Amy Brokenshire	Joan Keehan	Ricky Rampulla
Michelle Budzyn	Sarah Knauer	Jessica Roth
Darlene Chaykosky	Eric Kowalek	William Samselski
Cara Ciamacco	Danielle Kuhn	Melissa Sartori
Stephanie Cybulski	Bradley Lauver	Amanda Sharry-Rogers
Alyssa Falkowski	Staley Lawes	Sarah Siemion
Sara Gaines	Frederick Leri	Angela Slampak-Cindric
Miranda Graham	Kimberley Limouze	Rachel Taylor
Dante Grassi	Sara Maiers	Sally Tice
Kelly Guza	Eryn Milius	Keturah Weaver

Certified Anticoagulation Care Provider, National Certification Board for Anticoagulation Providers (CACP)

Amy Brokenshire

Samuel Eckel

Certified Diabetes Care and Educator Specialist (CDCES)

Hillary Harris

Kelly Kempa

Awards and recognitions

Second place for best Quality Improvement Poster at Geisinger's Research Day.

Nicholas PD, Cote J, Grassi D, Thomas S, Chronowski J, Pugliese D, Newman E (2022, May). *Improving Safety in Rheumatology Patients by Closing Pre-screening Laboratory Care Gaps*. Poster Presented at Geisinger Research Day May 2022.

Laura Brickett, PharmD, BCCCP

Society of Critical Care Medicine Presidential Citation, April 2022

Pharmacy leadership



Mike Evans
Vice President
of Enterprise Pharmacy and
Chief Pharmacy Officer



Holly Bones
System Director
Contracting and Procurement



Gerard Greskovic
System Director
Ambulatory Programs



Daniel Longyhore
System Director
Knowledge Management



Kelly Guza
System Director
Acute Programs



Dave Klinger
System Director
Operations and Compliance



Jamie Miller
System Director
Managed Care Pharmacy



Robert Granko
System Director
Pharmacy Innovation Alliance



Eric Wright
System Director
Center for Pharmacy Innovation
and Outcomes



Seth Gazes
System Director
Planning, Strategy and Analysis

About Geisinger

One of the nation's most innovative health services organizations, Geisinger serves more than 1 million patients in Pennsylvania. The system includes 10 hospital campuses, a health plan with more than half a million members, two research centers and the Geisinger Commonwealth School of Medicine. A physician-led organization, with nearly 24,000 employees and more than 1,700 employed physicians, Geisinger leverages an estimated \$8 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.



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 1,700 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 northeastern Pennsylvania, GMC has earned a reputation for providing leading-edge medicine and treating the most critically ill patients. GMC is licensed for 505 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 Healthplex Woodbine campus.

GMC’s Hospital for Advanced Medicine serves as an integrated center for the most critically ill patients. This “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 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 in 2012. A campus of

Geisinger Medical Center, GSACH has a total of 48 beds, including 30 med/surg beds, 10 Post-Surgical Unit beds, seven Special Care Unit beds and one 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 northeastern Pennsylvania. Licensed for 272 beds, GWV’s state-of-the-art Critical Care Building houses the only Level I 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 northeastern 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 60 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.

Geisinger Lewistown Hospital (GLH) – Lewistown, Pa. GLH is licensed for 133 beds and serves the residents of rural Centre, Mifflin, Juniata, Perry, Snyder and Huntingdon counties. It is an open-staff, acute-care community hospital that offers emergency, surgery, imaging, endoscopy, 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 Medical Center Muncy (GMCM) – Muncy, Pa. This full-service hospital opened in 2022 as part of a clinical joint venture between Geisinger and Highmark Health that expands access to care for those who need it most in Clinton, Lycoming, Sullivan and Tioga counties. The hospital is licensed for 20 inpatient beds and 10 ED beds. For routine care, the facility includes a multispecialty clinic with adult and pediatric primary care, orthopaedics, cardiology, ophthalmology and women’s health services. Specialty outreach services, imaging, lab, medical oncology services, chemotherapy preparation and general surgery are also offered.

Geisinger St. Luke’s Hospital (GSL) – Orwigsburg, Pa. GSL is a joint venture hospital between Geisinger and St. Luke’s University Health Network serving Schuylkill County, Pennsylvania. Licensed for 80 beds, GSL is an accredited Primary Stroke Center and also provides specialized emergency medical services. It offers low-dose CT scanners and 3D mammography, as well as surgical, radiology and multiple specialty services.

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 more than half a million members in 44 counties throughout central, south-central and northeastern Pennsylvania. The provider network includes nearly 30,000 participating providers and 100+ participating hospitals. Additionally, GHP has partnered with Centers for Medicare & Medicaid Services (CMS) to provide Medicare benefits to 90,000 beneficiaries in the state. GHP also provides coverage to over 200,000 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 in Danville, Pa.; the Susquehanna Valley Imaging Center in Lewisburg, Pa.; and the Geisinger Precision Health Center in Forty Fort, Pa.

Geisinger College of Health Sciences – Established as the umbrella entity uniting Geisinger’s schools of medicine, nursing and graduate education, the College of Health Sciences leverages the system’s



unique approach to value- and team-based care for all learners. The medical school has campuses in Atlantic City, Danville, Lewiston, Scranton, Wilkes-Barre and Sayre. The School of Nursing is based in Lewistown, and the School of Graduate Education is both virtual and in-person on the Scranton campus. Both the medical and graduate schools are accredited by the Middle States Commission on Higher Education, while the Liaison Committee on Medical Education also accredits the medical school. Graduate medical education is accredited by the Accreditation Council for Graduate Medical Education. The School of Nursing holds accreditation from the Accreditation Commission for Education in Nursing.

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:

- ConvenientCare, 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 Treatment Center, located in Waverly, Pa., is recognized as a national leader in the treatment of alcohol and chemical dependency. Geisinger Marworth has over 90 beds and offers personalized residential and outpatient programs as well as specialized programs for healthcare and uniformed professionals.

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

- Penn Valley Airport, Selinsgrove
- 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 averages 3,600 patient transports a year.

Geisinger

Contact Geisinger Enterprise Pharmacy:
570-271-6192

[geisinger.org/pharmacy](https://www.geisinger.org/pharmacy)