

TRANSFORMING HEALTHCARE THROUGH CONTINUOUS INNOVATION

2014 System Report



THE CENTENNIAL CELEBRATION
GEISINGER 100

“Innovation is a way of life here at Geisinger. It drives our delivery of value-driven quality healthcare to every patient we serve.”

—Glenn D. Steele Jr., MD, PhD
President and Chief
Executive Officer



GEISINGER IS TRANSFORMING HEALTHCARE
THROUGH CONTINUOUS INNOVATION

Our Mission

Enhancing quality of life through an integrated health service organization based on a balanced program of patient care, education, research and community service.

Our Vision

To be the health system of choice, advancing care through education and research. Our vision is focused on these strategic priorities:

- **Quality and Innovation**—focused patient-centered care based on a culture of value re-engineering, quality and safety and patient empowerment
- **Market Leadership**—scaling and generalizing the Geisinger brand through a network of local, regional and national collaborations and partnerships
- **The Geisinger Family**—empowering personal and professional well-being

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LEADERSHIP MESSAGE

When Abigail Geisinger opened her hospital a century ago, she had a vision that her hospital would care for the families who lived and worked in her Central Pennsylvania town. “Make my hospital right. Make it the best,” she said, and Geisinger’s quest for excellence was born. When she instructed her first “chief,” Harold Foss, MD, to build a hospital grounded in the concepts of group practice and an interdisciplinary approach to patient care, she planted the seeds for a culture rooted in innovation.

As we recognize our visionary founder, we salute the men and women – board members, employees and volunteers – who have dedicated their lives to achieving Mrs. Geisinger’s vision, to striving for perfection and to advancing health through patient care, education, innovation and service. In so doing, they have impacted how care is provided and financed not only across central and Northeastern Pennsylvania, but far beyond.

Now, as we celebrate Geisinger’s Centennial, we rededicate ourselves to achieving Mrs. Geisinger’s vision to “Make it the best,” and reaffirm our commitment to ongoing innovation.

We look to the future with confidence, knowing that what we do here, today and every day, will have a positive impact on generations of families in the Commonwealth of Pennsylvania and across the United States.



*Glenn D. Steele Jr., MD, PhD
President and Chief
Executive Officer*



*William H. Alexander
Chairman of the Board*

THE GEISINGER JOURNEY: A COMMITMENT TO CONTINUOUS INNOVATION



Geisinger Health System has been on a journey of transformation for nearly 100 years. During that time, the health system has earned a nationwide reputation for quality, innovation and value.

“Innovation is in Geisinger’s genes,” explains William Alexander, chairman of Geisinger’s Board of Directors. “From the day we opened our doors in 1915, Geisinger was not a traditional hospital. Our group practice model, commitment to innovation and our quest for quality have always distinguished us from other organizations.”

The intersection between Geisinger’s clinical enterprise (its physicians and hospitals) and Geisinger Health Plan has been

the platform for innovation and transformation for more than a decade. That collaboration has resulted in Geisinger’s highly lauded ProvenCare® Coronary Bypass program, or, as the New York Times dubbed it: “The Warranty.” Today, ProvenCare® has expanded from the ProvenCare® CABG program to include more than a dozen ProvenCare® programs.

“Geisinger’s journey of transformation started when we brought together clinicians, researchers, business leaders and educators to test ideas and protocols,” says Glenn D. Steele, Jr. MD, PhD, Geisinger president and CEO. “Some of our ideas didn’t work, so we moved on to the next experiment.” What did work, he notes, was carefully tested again

and again throughout the Geisinger system.

According to Dr. Steele, those partnerships are at the core of Geisinger’s ability to innovate, and when paired with the system’s use of data analytics, the results are extraordinary.

“We understand that scientific rigor enables us to use clinical information to leverage evidence-based practices across the care continuum and make the data available and actionable for clinicians, as well as patients,” says David H. Ledbetter, PhD, executive vice president and chief scientific officer.

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“Ours is not a traditional model where research happens in the bubble of a lab,” notes Dr. Ledbetter. “At Geisinger we are striving to go from ‘bedside to bench and back to the bedside,’” he adds. “It’s a process that enables rapid cycle innovation that benefits our patients, and ultimately, patients and their families everywhere.”

“One of the basic tenets of the Accountable Care Act is population health,” explains Dr. Steele. “Geisinger is at the forefront of the population health journey because we are able to get real-time data to physicians that enables them to

apply evidence-based interventions in their clinics. We are also committed to sharing information with patients.”

Those principles have already made a difference in how Geisinger clinicians care for their patients. For example, Geisinger clinicians and researchers have discovered that gene patterns can predict whether obese patients who undergo bariatric surgery will regain weight. This knowledge is helping surgeons tailor treatment to each patient’s genetic makeup.

Geisinger patients are also more engaged in their care because of

OpenNotes. More than 100,000 of its patients have access to their entire clinical notes through the MyGeisinger online patient portal. Used by 35 percent of patients, the portal gets 11,000 hits a day.

“One exploding area of research is genomics and genetics,” says Dr. Ledbetter, “and Geisinger’s stable population and health records that go back several generations are incredibly valuable for genetics and genomic research.” The health system’s robust bio-repository has enabled Geisinger and Regeneron Pharmaceuticals, Inc. (NASDAQ: REGN) to form a major research collaboration focused on studying the genetic determinants of human disease.

“For Geisinger, this relationship is about the potential to improve individualized patient care,” says Dr. Ledbetter. “We expect that many of our patients will directly benefit from their participation in this research because of Geisinger’s ability to validate and return clinically actionable results to them.”

“Meeting that challenge will require discovery of the underlying causes and mechanism of disease,” notes Dr. Ledbetter.

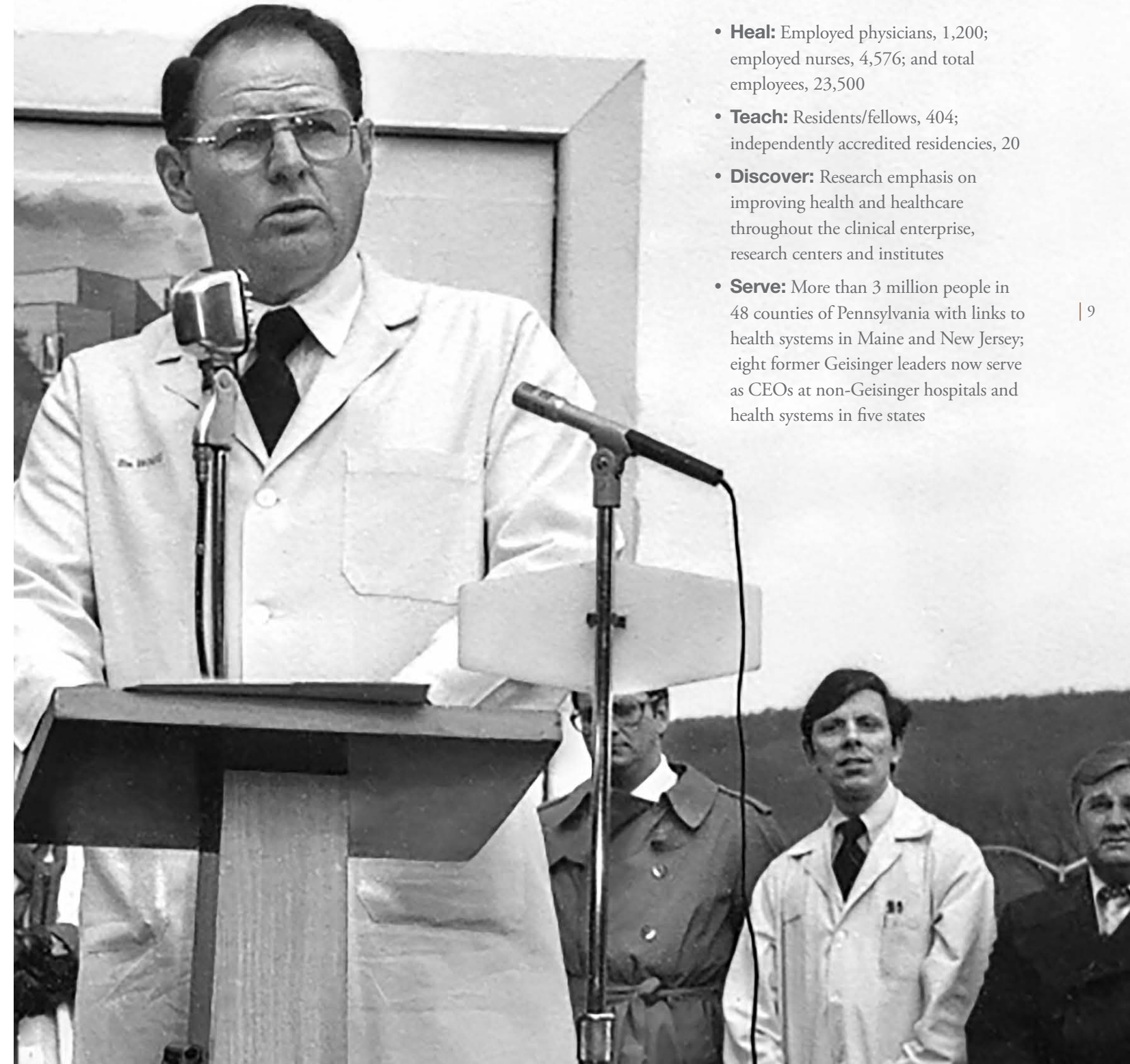
“And to share what we learn here with others,” Dr. Steele adds. “Geisinger has the unique ability to improve the quality of care while enhancing access and affordability – that’s continuous innovation.”



David H. Ledbetter, PhD greets a community member outside the Geisinger–Bucknell Autism & Developmental Medicine Center, Lewisburg, Pa.

“We were committed to positioning ourselves to take responsibility for opportunities we created and opportunities we were presented.”

– Henry Hood, MD Served Geisinger from 1967 to 1992
Chief Executive Officer (1974 to 1992)



- **Heal:** Employed physicians, 1,200; employed nurses, 4,576; and total employees, 23,500
- **Teach:** Residents/fellows, 404; independently accredited residencies, 20
- **Discover:** Research emphasis on improving health and healthcare throughout the clinical enterprise, research centers and institutes
- **Serve:** More than 3 million people in 48 counties of Pennsylvania with links to health systems in Maine and New Jersey; eight former Geisinger leaders now serve as CEOs at non-Geisinger hospitals and health systems in five states

TRANSFORMING HEALTHCARE: QUALITY

“At Geisinger, clinicians and researchers have the same goals: to improve health outcomes and reduce the cost of care.”

– David Ledbetter, PhD
Executive Vice President and Chief Scientific Officer

Geisinger is uniquely positioned—because of its stable population, integrated model and advanced electronic health record—to use genomic medicine, epidemiological and effectiveness studies, clinical trials, e-initiatives and data to improve how care is delivered and financed for generations to come.

A Team Approach Improves Outcomes

Geisinger–Bucknell Autism & Developmental Medicine Institute (ADMI), a system-wide initiative designed to care for patients with autism spectrum and other developmental disorders, has developed a model for integrating early and accurate diagnosis, treatment, support, research and training at its Lewisburg, Pa. headquarters.

Over the past year, ADMI has grown to include 35 professionals, including specialists in neurodevelopmental pediatrics, genomic medicine, psychology, speech-language pathology, radiology and education. In the past year, the Institute’s staff evaluated more than 800 new patients, and conducted nearly 3,000 patient visits.

“We’re bringing two worlds together – the world of behavioral assessments and the world of medical diagnoses,” says Christa Martin, PhD, director and senior investigator. “Many of the studies that we’re involved in are trying to define some of the genetic causes of the developmental disabilities that we see here.”

Utilizing innovative technology to provide insights into treatment protocols and their impact, ADMI augments care with case managers, as well with speech-language, occupational and physical therapists and genetic counselors. The Institute is developing a national model that will enable early screening and early intervention.

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Cullen Weaver, Bloomsburg, Pa.

ADMI care gives family hope

When Cullen Weaver was 18 months old, his mom, Janell, knew something wasn't right. "He wasn't talking like the rest of the kids his age," she explains. "He had words, but only a few, when other kids his age were speaking in phrases or sentences."

When the family relocated to Central Pennsylvania, she connected with Tom Challman, MD at the Geisinger–Bucknell Autism & Developmental Medicine Institute. Through a combination of behavioral and

medical assessments and genetic testing, he diagnosed Cullen with autism spectrum disorder. The specific genetic diagnosis helps the Geisinger team precisely pursue treatment options that address Cullen's specific needs.

Now Cullen's participating in applied behavioral analysis (ABA) therapy, which has dramatically improved his language and social skills. "Cullen has made such strides," says his mom. "The progress he's made is astounding. It gives me hope."

"What we're doing at Geisinger is setting up a clinical research program that can identify these children as early as possible, preferably at birth," says David H. Ledbetter, PhD, executive vice president and chief scientific officer. "Then we are doing longitudinal studies to see when and how we can intervene and what are the most effective intervention and treatment, both medical, behavioral and educational," he adds.

"One in fifteen children is diagnosed with a developmental disorder. We want to be game changers in the lives of our patients and their families by creating a seamless integration of clinical care and innovative research."

– Christa Lese Martin, PhD
Director, Geisinger's Autism and Developmental Medicine Institute (ADMI)



ADMI's goal is to establish a network of regional centers of excellence that will make care for children with special developmental needs as accessible, efficient and effective as possible. ADMI's vision is to expand and seamlessly integrate clinical services, research, education and family support through a multidisciplinary team that includes specialists in neurodevelopment pediatrics, genomics medicine, psychology, speech-language pathology, radiology, and education.

“After changing how we cared for patients with type 2 diabetes, we found a radical decline in the probability of these patients having a heart attack, stroke, or eye disease.”

– Glenn D. Steele, Jr., MD, PhD
President and Chief Executive Officer

ProvenCare® Diabetes Bundle Improves Outcomes

Type 2 diabetes is the seventh leading cause of death in the United States, and one of the most expensive chronic conditions to treat. For this reason, Geisinger experts took the core fundamentals of ProvenCare®, including six care management interventions, and applied them to 25,000 patients with type 2 diabetes. These care

management interventions included pneumococcal vaccination; micro-albumin tests and results; hemoglobin a1c levels brought to individual targets; LDL cholesterol brought to target levels; blood pressure brought to target levels; and documentation of smoking cessation.

The initiative is credited with preventing:

- **305** heart attacks
- **140** strokes
- **166** cases of diabetic retinopathy.

ProvenCare® Launches Three Orthopaedic Initiatives

In 2006, Geisinger began testing and rewarding the way elective cardiac artery bypass graft (CABG) surgery was performed – resulting in a groundbreaking program known as ProvenCare®, or simply “The Warranty.” Today, ProvenCare® has expanded to dozens of medical procedures and services. Three recent additions are ProvenCare® Hip Fracture, ProvenCare® Total Hip and ProvenCare® Total Knee.

The orthopaedic programs apply standardized, evidence-based best practice protocols aimed at improving quality and reducing

costs. ProvenCare® Hip and Knee Arthroscopy programs, for example, both have a 45-point checklist that providers and patients follow from admission, surgery, discharge and follow up.

To date, ProvenCare® orthopaedic protocols have resulted in a 50 percent decrease in readmissions and a 10 percent reduction in length-of-stay when it comes to total hip replacements, according to Michael Suk, MD, chairman of Geisinger’s Department of Orthopaedic Surgery.

“Since Geisinger began the ProvenCare® initiative, our patients have been less likely to return to intensive care, have spent fewer days in the hospital, and are more likely to return directly to their own homes instead of a nursing home,” says Dr. Suk. “By affixing evidence-based protocols to all hip and knee surgeries, we are able to ensure the same high-quality care is delivered to every patient, every time.”

ProvenCare® Total Knee gets her back to the tennis court and dance floor

“People assume that if your knees hurt, resting your legs should help,” says Ginny Kirkwood, owner of Shawnee on the Delaware Golf and Ski Resort. “But for me, this wasn’t the case. Even when lying flat the pain was terrible. I was literally losing sleep over it.”

“Mrs. Kirkwood had severe arthritis in both knees,” explains William Krywicki, MD, Director, Orthopaedics at Geisinger Wyoming Valley. “Her motion was severely limited. And for someone as active as she is, that’s a real challenge.”

Mrs. Kirkwood decided to have both her knees done at the same time, a decision she’d encourage anyone in her position to make. She acknowledges that she wouldn’t have been able to do it without the support of her husband, Charlie, and the help of a very good friend. “I needed a walker for two days following my surgery,” she says. “After that, I was getting around on my own and driving just a few weeks later.”

“Knee replacement surgeries are such high volume procedures,” explains Dr. Krywicki. “We can complete the procedures and the recovery process with very little variation. The improvements in post-operative care and pain management therapy are leading to quicker recoveries and shorter lengths of stay,” he says. “We’re also lessening the risk of complications.”

Mrs. Kirkwood went from limited mobility to playing weekly doubles tennis and dancing with her husband again. “We’ve been married for 48 years,” she says. “And we’ve always loved to jitterbug. I’m grateful to feel like myself again.”



Ginny Kirkwood, patient

Geisinger Research Snapshot

Research that improves how care is delivered is a fundamental and critical aspect of Geisinger’s mission. System-wide, Geisinger clinicians and researchers are active in both investigator-initiated research and third-party trials. Here’s a snapshot:

- **Suture closure of Caesarean section incisions results in 57 percent fewer wound complications** compared with staple closure. With data from multiple sites and multiple patients, Dhanya Mackeen, MD, MPH, and her team conclude that, in cases in which speed is not a serious concern, the Caesarean skin incision should be closed with a suture.
- Research at the **Geisinger Obesity Institute** suggests that how a person views himself/herself prior to bariatric surgery influences weight loss success.
- **A parent’s bariatric surgery could be an opportunity to break the cycle of obesity in an overweight son** according to a Geisinger research study published in the July issue of *Obesity*. The Geisinger study is considered the largest study of the effect of an adult’s Roux-enY (RYGB) gastric bypass surgery on the weight of children in the same household.

- **Living near a farm may put you at risk for a dangerous skin infection**, according to a published study by researchers at Geisinger’s Environmental Health Institute. In a study that linked Geisinger’s electronic medical records with detailed farm data, researchers including Geisinger senior scientist Brian Schwartz, MD, MS, found that people who live near high-density livestock operations and manure-applied crop fields are at greater risk for methicillin-resistant staphylococcus aureus (MRSA) infections.
- **Epidemiologists and clinicians at Geisinger recently joined a national consortium to help advance the understanding of chronic rhinosinusitis** and develop new treatment methods over the next five years. Funded by an \$8.4 million grant from the

National Institutes of Health, the newly formed Chronic Rhinosinusitis Integrative Studies Program (CRISP) is comprised of research groups from Northwestern Medicine, The University of Chicago and Geisinger.

- **Expanding pharmacists’ role within the healthcare team may reduce the rate of 30-day rehospitalizations** is the topic of a joint research study between Wilkes University (Wilkes-Barre, Pa.), Geisinger Health System and participating pharmacies in central and northeast Pennsylvania.
 “Our goal is to significantly reduce the percentage of patients readmitted with high risk conditions, by June 2016,” says Eric Wright, Pharm.D., principal investigator.



Geisinger Orthopaedic Institute researchers, Harish Kempegowda, MD and Elisabeth Graboski, PA consult on a study.



Eric Newman, MD
Director of Rheumatology

Rheumatoid arthritis care model improves care, reduces cost

Geisinger Health System (GHS) rheumatologists have created a new care model for rheumatoid arthritis (RA) patients that has produced significant improvement in quality of care and reduced cost through 22 months of follow up, according to a new Geisinger study.

Rheumatoid arthritis is a chronic disease that causes pain, stiffness, swelling, and limitation in the

motion and function of multiple joints and some organs. An estimated 1.3 million Americans have rheumatoid arthritis, and the disease typically affects women twice as often as men.

AIM FARTHER – or Attribution, Integration, Measurement, Finances, and Reporting of Therapies – is the new value-based, population-care model designed and tested on

2,378 RA patients cared for by 17 Geisinger rheumatologists. The rheumatologists launched AIM FARTHER in August 2012 and reported that cost savings tallied from de-escalating use of costly biologic drugs came to \$720,000 for 2013. They project a savings estimate of \$1.2 million for 2014.

TAVI clinical trial passes the 100 patient mark: Milford Smith, left, first patient in TAVI clinical trial; and Thomas Simrell, right, 100th patient in TAVI clinical trial.



Heart Valve Clinical Trial Passes 100 Patient Mark

Transcatheter aortic valve implantation (TAVI) patients Milford Smith, 89, and Thomas Simrell, 83, both participated in Geisinger's TAVI research study. Milford was patient one and Thomas was patient 100. Both suffered from severe symptomatic aortic stenosis (narrowing of the aortic valve opening) but because of other medical conditions, neither was a candidate for traditional open chest surgery. They had bounced in and out of the hospital before they were referred to Kimberly Skelding, MD, interventional cardiologist and the TAVI clinical trial's principal investigator.

When Dr. Skelding determined that Mr. Smith was a candidate for the TAVI trial — replacing a faulty heart valve without opening the chest — she asked how soon he wanted it done. “I told her I want to be the first patient,” says Mr. Smith. “After the procedure I was out of the hospital in two days and within two weeks I was walking up the hill with my dogs.”

Thomas Simrell is acutely aware that Mr. Smith blazed the TAVI

trail for others. A former Honorary Grand Marshall of Scranton's St. Patrick's Day parade, Mr. Simrell says the decision to participate in the TAVI trial was easy. “It's wonderful what they can do today.”

And, says Mr. Smith, “Without people willing to participate in research, health options like this wouldn't be available. We're all getting older, but thanks to this program, people like me have another chance.”

“We need to continue to make strides in these high-risk groups.”

— Kimberly Skelding, MD
Interventional Cardiologist

Genetic Testing Helps Mother, Daughter Confront Breast Cancer Risk

Gail Bradley and daughter Lori Reese, are local celebrities for their proactive stance and willingness to confront their genetic risk for breast cancer. After losing her mother and two sisters to breast cancer, Gail enrolled in the five-year nationwide STAR trial breast cancer study that compared two drugs for cancer prevention in high-risk women. Not satisfied, she wanted to learn more.

With the help of Dr. James Evans, Gail and Lori pursued genetic testing, only to learn they both had a mutation of the BRCA1 gene. After agonizing over the two choices: watch and wait — with an 85% chance of developing breast cancer — or undergo a double mastectomy, they both opted for surgery. Nearly eight years later, Gail is an active retiree enjoying

time with her granddaughters. Inspired to attend nursing school, Lori is a nurse at Geisinger Women's Health and hopes her actions will inspire her daughters. Gail and Lori want other women facing similar decisions to learn all they can about genetic research.



TRANSFORMING HEALTHCARE: COLLABORATION

“Our ability to use data to inform our healthcare decision-making needs to keep pace with the mountains of data we collect. We want to make applying data to healthcare as easy as getting pictures off your smartphone.”

– Gregory Moore, MD, PhD
Chief Emerging Technology and Informatics Officer
and Director, Geisinger’s Institute of Advanced Application

Geisinger’s use of analytics and technology is driving its transformation from a volume-based care model to a value-based, patient-centric care model.

Collaboration is Key to Innovation

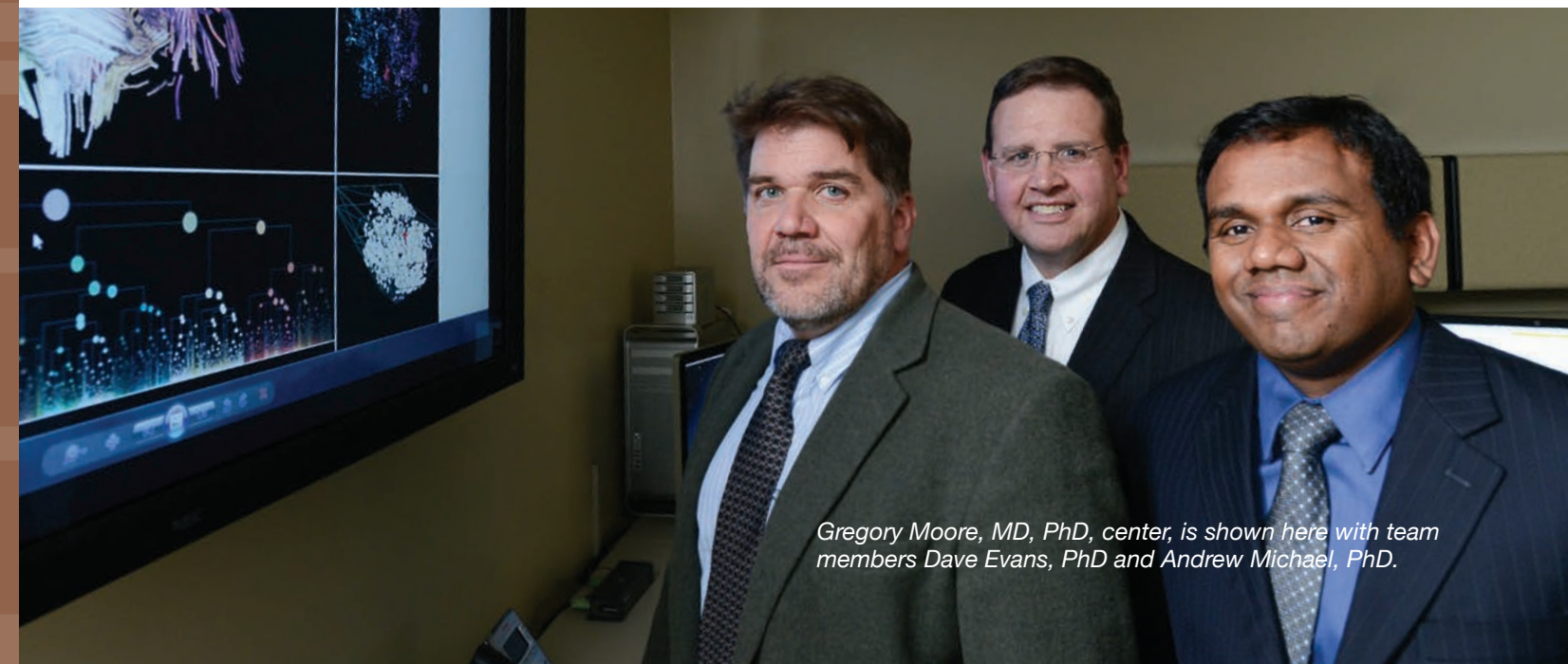
The Institute for Advanced Application (IAA) and the Division of Applied Research and Clinical Informatics (DARCI) collaborate on initiatives designed to improve the quality and value of the healthcare Geisinger delivers. They also collaborate with the Biostatistics and Research Data Cores, System Transformation, Clinical Data Information Systems and the Medical Computational Core to use data to solve complex, high-value problems.

“Geisinger is in a unique position to tackle the dual challenges of cost and quality because it both provides and

pays for care,” says Gregory Moore, MD, PhD, director, IAA. Geisinger also has the advantage of teams of in-house experts in algorithmic development, data visualization, predictive modeling data access and econometrics that come together to look at ways to re-engineer different aspects of healthcare delivery.

“We want to find new and smarter ways that information technology and clinical informatics can be used to advance healthcare,” explains Dr. Moore. “We’ve learned that when we leverage data to improve the quality of care, the cost of care goes down.”

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Gregory Moore, MD, PhD, center, is shown here with team members Dave Evans, PhD and Andrew Michael, PhD.

IAA Serves as a National Laboratory for Healthcare Transformation

The Institute for Advanced Application (IAA) is both a think tank and research laboratory that uses informatics, predictive analytics and emerging technologies to develop breakthrough healthcare process improvements.

“The field of healthcare is about 10 to 15 years behind other industries

in using data and technology to re-engineer traditional approaches to patient care,” says Gregory Moore MD, PhD, director, IAA. “We’re not looking to have an impact just at Geisinger, we are really positioning ourselves as a national laboratory for healthcare innovation.”

The IAA is comprised of three centers of innovation, each aimed at developing a range of solutions to improve clinical care. They include:

- The Center for Emerging Technology and Informatics (Dr. Moore, director), which seeks out the most promising technological and informatics solutions. The Center includes laboratories aimed at developing disruptive technologies, improving human interfaces with technology and targeting the capture and analysis of “Big Data” from multiple sources related to health and healthcare.
- The Center for Healthcare Systems Re-engineering (Kenneth Wood, DO, director), is applying industrial and systems engineering principles to healthcare. The Center includes laboratories focused on improving the flow of patients and supplies through the hospital — a major driver of healthcare efficiency and patient satisfaction.
- The Center for Clinical Innovation (Jonathan Darer, MD, director), addresses the failures and inefficiencies of fragmented systems of care. This Center targets improvements to automate care processes and engage patients in their own care.



Center for Clinical Innovation team members, clockwise from top left: Rebecca Stametz, DEd, MPH; Deserae Clark, MPA; and Jamie Green, MD, MS are shown helping a patient’s caregiver complete a survey to assess the impact of family caregiver involvement and health literacy on patient outcomes.



The Phenomic Analytics and Clinical Data Core of Geisinger’s Biostatistic Core includes, left to right (seated): Brandon Geise, manager, research data; Joe Leader, associate director, Biostatistics Core; Dustin Hartzel, data analyst, Phenomics; (standing) H. Lester Kirchner, PhD, director, Biostatistics Core. The Core focuses on modeling and mining the electronic health record to create clinical phenotypes. Missing from photo are: J. Neil Manus, John Snyder and Lance Adams.

DARCI Helps Operationalize IAA’s Successes

The Division of Applied Research and Clinical Informatics (DARCI) is designed to eliminate waste in the delivery of care, change provider behavior to improve patient outcomes and to engage patients in their own healthcare. DARCI, led by Alistair Erskine, chief clinical informatics officer, works closely with IAA’s Center for Clinical Innovation.

DARCI helps transition IAA’s “successes” into Geisinger operations and facilitates the scaling and generalizing of the resulting intellectual property through xG Health Solutions™.

One example of DARCI’s work is the Geisinger-in-Motion program that aims to untether patients and providers from desktop computers as well as healthcare services from brick and mortar hospitals and clinics. To this end, iPhones® have replaced pagers as a means of providing mobile access to Geisinger’s electronic health record (EHR) as well as facilitating secure texting with the healthcare team.

In addition to operationalizing Geisinger innovations, DARCI also leads clinical staff engagement in the optimization of the Epic EHR. For example, utilizing ID badges to replace usernames and passwords to gain access to clinical systems. New

healthcare “apps,” similar to iPhone apps, work alongside the Epic EHR but also across other EHR systems using interoperable open-source standards. A unified data environment updates legacy data warehouse systems and provides easier access to data through new self-service capabilities.

“Geisinger has an overall culture of being completely unsatisfied with the status quo.” explains Dr. Erskine. “The constant search for ways to improve, to do the right thing for patients, and to engineer out the waste in our systems is clearly embedded in Geisinger’s DNA.”

iPad Anchors Lumbar Spine Surgical Journey

In another DARCI initiative, Geisinger's pre-surgery clinic nurses invite patients scheduled for lumbar spine surgery to use iPads® to help manage the transition between inpatient and ambulatory care. Pre-loaded with videos featuring spine surgery staff sharing valuable information and tips, the iPads replace paper-filled folders. Patients

keep the iPads during their hospital stay to access their own medical records and interact with the acute care team. Upon discharge, patients leave the hospital with the iPads in hand, ready to FaceTime® with their post-acute care team, ensure accurate in-home medication reconciliation and contribute to clinical registry data. Patients return

the iPads by FedEx® or at their next follow-up appointment. DARCI is currently analyzing results of the Lumbar Spine iPad initiative with an eye on broader deployment, if the outcome is favorable.



“Our work is not just about discovering which genomic variants are meaningful, but also developing mechanisms to actually apply that knowledge to clinical practice.”

– Marc Williams, MD, Director
Genomic Medicine Institute

Genomic Medicine Institute's Work Aligns with Broader Geisinger Mission

Geisinger's Genomic Medicine Institute continues to make strides toward understanding how genetics and genomics can be leveraged to enhance patients' quality of life through personalized care and informed decision making. Highlights include:

- Identification of causal mutations in patients (referred to the whole

genome sequencing for undiagnosed intellectual disability program) and returning results to participating families.

- Revision of a patient-facing genomic test report based on feedback from families and focus groups. Project will move into clinical trial in 2015 (see page 32).

- Implementation of two pharmacogenomics interventions for a cholesterol-lowering medication and a medication used to inhibit platelets in order to prevent clotting.

Untethering Provides Better Access to Information

A system-wide emphasis on untethering professionals from fixed computer stations enables the healthcare team access to real-time information when and where it is needed. In the Transfer Center (see photo at right), this information optimizes patient placement decisions by providing valuable insight into incoming patient needs, doctor availability and the actual time and location of bed availability.



Seth Hostetler, process engineer, Supply Chain, exchanges a report with Sharon Kemberling, RN, BSN, MSN, director of Geisinger's Transfer Center.

MyCode® Connects Genomic Research with Geisinger Patients

A key part of Geisinger’s whole genome and exome sequencing research, MyCode® connects the power of genomic research with Geisinger patients. MyCode® has over 50,000 Geisinger patients who have blood and other samples for use by Geisinger researchers and

approved collaborators. By early 2015, patients will be able to enroll at 17 inpatient and outpatient sites throughout the health system.

In addition, an online consent process will launch through the MyGeisinger patient portal.

Ultimately, knowledge gained from these studies allows researchers to pursue innovative approaches to disease prevention, diagnosis and treatment.

Accountability in Research: Bioethics at the Bench and the Bedside

Integrating Bioethics @ Geisinger is an initiative designed to improve the “ethics quality” of the system’s programs for patient care and biomedical research. Led by Daniel Davis, PhD, director, System Bioethics, the bioethics initiative is taking a leadership role in setting ideals and norms for care providers

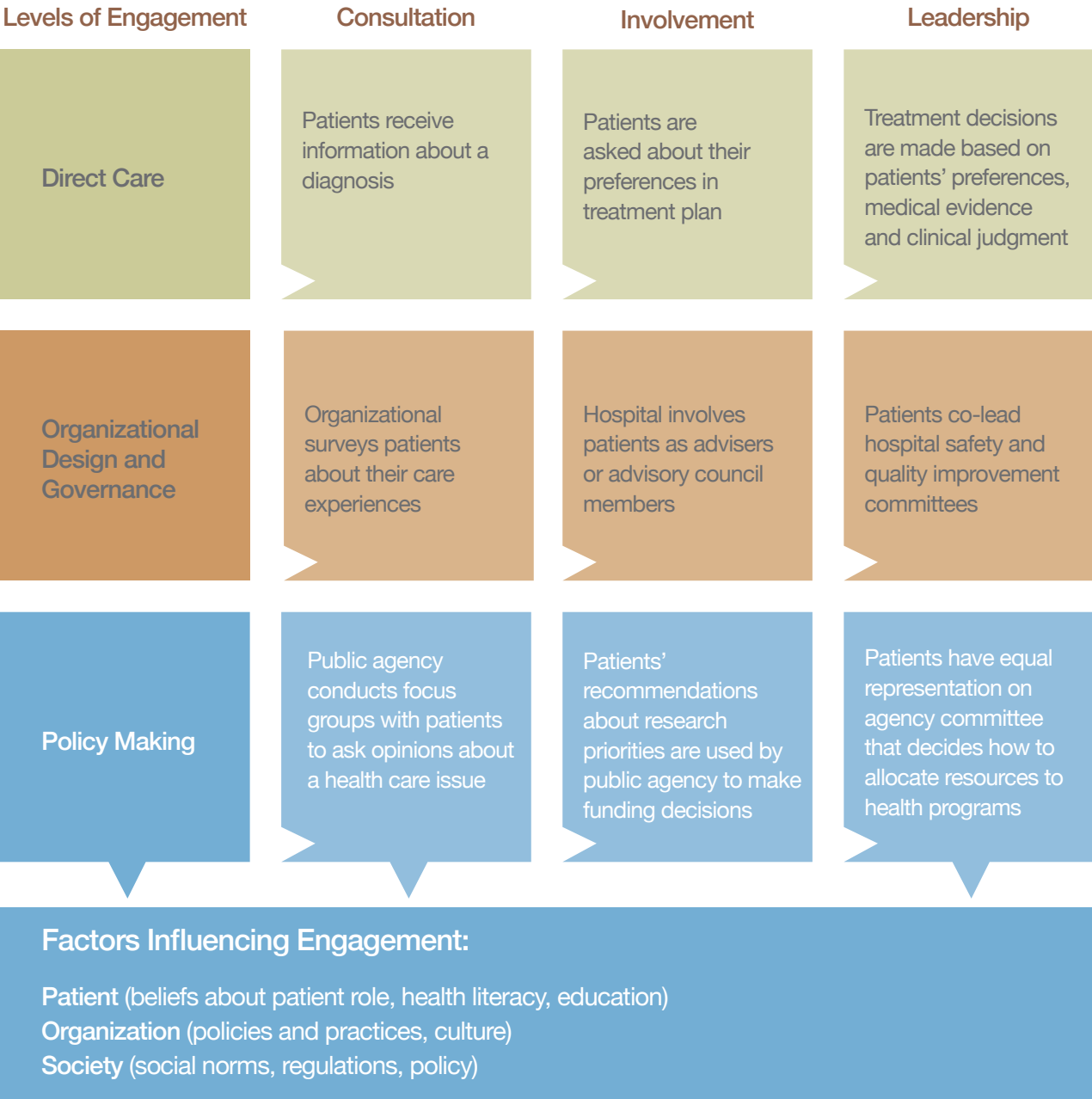
and researchers at every Geisinger hospital and clinic site.

A new 24/7 Ethics Advice and Consultation Service helps patients and providers sort through the ethical challenges inherent in making decisions about diagnosis and treatment, and identify potential resolutions or options for action.

The bioethics team is taking a lead in developing standards for genetic testing, ensuring that patients and providers have equal access to results and that patients are well informed about what the results mean, including access to outside experts, when necessary.

Framework for Ongoing Patient and Family Engagement

Patient engagement is key to most forms of discovery, from quality improvement and comparative effectiveness research to health services research and clinical trials. The engagement framework below, adapted by a team comprised of investigators, bioethicists and community members, is used as a resource for education, communication and planning.



Source: PCORI blog, adapted from Geisinger’s Clinical Framework for Patient and Family Engagement by Mark Williams, MD and Dan Davis, PhD. Note: Movement to the right on the continuum of engagement denotes increasing patient participation and collaboration.



MyCode® Program Director Samantha Fetterolf (at right) explains the MyCode® process to employees and advisory committee members.

Advisory Council Provides Ethics Oversight

The Ethics Advisory Council helps provide independent ethics oversight and advice. Council members are:



Kevin T. FitzGerald, SJ, PhD, chair

Jesuit priest, PhDs in molecular genetics and bioethics, Georgetown faculty in oncology and bioethics, former member of the Secretary’s Advisory Committee on Genetics, Health & Society (SACGHS), National Institutes of Health, Bethesda, Md.



Raven Rudnitsky

Patient/community representative, therapist and educator, Selinsgrove, Pa.



Sylvia Mann, MS, CGC

Certified genetic counselor, State Genetics Coordinator for Hawaii Department of Health, and member of SACGHS, National Institutes of Health, Bethesda, Md.



Mary Louise Schweikert

Patient/community representative, management consultant, Mifflinburg, Pa.



Kyle Brothers, MD, PhD

Pediatrician with research interests in childhood obesity, genomic research and clinical use of genomic data; trained at Vanderbilt, now on faculty at University of Louisville, lead publication of eMERGE paper on consent for children, Louisville, Ky.



Joan A Scott, MS, CGC

Chief, Genetics Service Branch, Division of Children with Special Needs, U.S. Department of Health and Human Services, Rockville, Md.



Sara Kirkland

Patient/community representative; Senior Vice President, Susquehanna University, Selinsgrove, Pa.



Thomas A Shannon, PhD

Patient/community representative-member and liaison to Geisinger Medical Center’s Hospital Ethics Committee, Eagles Mere, Pa.



Weis Center for Research technician Lindsay Dunkle pulls a MyCode® sample from storage.



Left to right, pediatric residents Vaibhav Agrawal, MD, Jessica Nelson, MD, and far right, Joseph Julian, MD review a recent ethical question with Dan Hoegen, clinical ethicist.

Engaging Residents in Bioethics Training

In the area of residency education, Geisinger's first-of-its kind, forward-looking bioethics program is an innovative response to the real-world needs of new physicians and the patients they serve. The program helps prepare resident physicians to engage bioethics experts, the healthcare team, the patient and the patient's family to resolve ethical conflicts and questions in patient care.

Geisinger Lauded for Genetics Program

Geisinger was one of two healthcare systems cited in the June 2014 edition of *Managed Care* magazine for building a strong genetic testing program. The magazine noted the commitment of Geisinger and Partners HealthCare in Boston to perform "large-scale gene sequencing on scores of thousands of patients, then use that information in every aspect of their clinical research and patient care activities."

Collaboration with Regeneron to Improve Care and Accelerate Discovery

As a result of a collaboration with Regeneron Pharmaceuticals, a world-class biopharmaceutical company, Geisinger is a step closer to using genetics to diagnose and cure diseases. "This collaboration has the potential to transform our ability to foresee disease before the onset of symptoms; diagnose chronic and potentially fatal conditions before it's too late to

intervene; and determine how to optimize the health and well-being of our patients," says David H. Ledbetter, PhD, executive vice president and chief scientific officer.

During the study's first five years, Geisinger is collecting samples from a group of 250,000 volunteer participants, and Regeneron will perform sequencing and

genotyping to generate de-identified genomic data. The partnership takes advantage of Geisinger's MyCode® biorepository and extensive electronic medical records, as well as Regeneron's translational research and functional biology capabilities to validate observed human genetic associations.

Indivumed Partnership Provides Access to Advanced Cancer Treatments

Geisinger's partnership with Germany-based Indivumed, a leading provider of services enabling individualized cancer

therapy, will provide Geisinger patients access to the most advanced cancer treatment and clinical trials. The partnership

is designed to translate clinical research into specific knowledge about a cancer that is clinically relevant and enhances patient care.

Using Genetics to Optimize Medications and Dosages

Pharmacogenomics – the use of genetic information to determine the most efficacious medication and dosage for each patient – is already making an impact at Geisinger. For example, by linking EHR data with the genetic information from MyCode® samples, researchers are

able to identify patients at risk for negative side effects from simvastatin, a common generic cholesterol-lowering drug.

A similar project is planned for clopidogrel, a medication used to prevent blood clots, particularly

in patients with cardiac stents or those who have suffered a transient ischemic attack, or "mini-stroke."

Genomics Study: Science-Driven Care Leads to Better Quality at Lower Cost

Geisinger researchers have found genotyping can determine which hepatitis C patients will respond best to anti-viral medication, ensuring that patients receive the most appropriate care, and reduce the chances that patients will progress to end-stage liver disease. Researchers have found that although it is initially more expensive, genotyping reduces overall costs by preventing unnecessary treatments.

ClinGen: Moving Genetic Information to the Community

Geisinger continues to lead the national Clinical Genome (ClinGen) Resource Project, a National Institutes of Health (NIH)-funded initiative aimed at helping the genomics community combine resources and knowledge to make genetic information more commonly available in patient care.

“Geisinger brings a unique perspective to this initiative because patients are central to everything we do,” says David H. Ledbetter, PhD, executive vice president and chief scientific officer. “We keep the consortia focused on the idea

that our work is ultimately about improving patient care,” he adds.

Geisinger, which was among the recipients of \$25 million in NIH grants for the project in 2013, is taking a leadership role in several areas including the:

- Identification and incorporation of clinically relevant variants into patient care.
- Development of a unique, patient-centered registry as a resource for individuals undergoing genetic testing,

and in the interpretation of genomic variants.

- Study of how this resource can interact with electronic health records to make information available to clinicians at the point of care.
- Development of models to evaluate the most effective way to communicate genetic test results, including the ethical, legal and social issues.

GenomeConnect Launches

Geisinger Health System recently launched GenomeConnect, a Geisinger-developed online portal that aligns patient-entered genomic information with patient-entered health information and clinical laboratory data to form a registry.

Use of registries like GenomeConnect make medical discoveries possible by bringing together information from a large number of patients. It also allows patients who have undergone genetic testing to interact with one another in an online community. GenomeConnect also sends the

genomic information to the National Institutes of Health (NIH)-funded Clinical Genome Resource for analysis by experts. GenomeConnect aims to help clinicians and researchers better understand the impact of genetic variations on patients’ health.

Patient Facing Report Provides Genomic Testing Results

The Patient Facing Report, a pilot project funded by the Patient-Centered Outcomes Research Institute’s (PCORI) \$1.4 million research award, provides patients and their clinicians with genomic testing results in a clear, concise manner.

Geisinger Health System’s Genomic Medicine Institute is working with researchers from Pennsylvania State University (University Park, Pa.) and Virginia Polytechnic Institute and State University (Blacksburg, Va.) to study how best to share genomic lab results with patients, as well as clinicians. This knowledge is increasingly important as information from an individual’s genes (genomic information) is more frequently used to diagnose and manage medical conditions.

The patient-facing report provides patients and their clinicians with genomic testing results in a clear, concise manner.



TRANSFORMING HEALTHCARE: MARKET LEADERSHIP

Geisinger's ability to leverage data, analytics, technology and expertise, and to capitalize on the "sweet spot" between its clinical enterprise and health plan has changed the way care is provided and financed in Pennsylvania, and in communities across the country.



Steven R. Youso is the new chief executive officer for Geisinger Health Plan (GHP). He also serves as CEO of Geisinger Indemnity Insurance Company and Geisinger Quality Options, Inc.; and executive vice president, Insurance Operations for Geisinger Health System.

Geisinger Health Plans: By the Numbers*

3,206 primary care physicians	104 hospitals
22,776 specialists and hospital-based providers	43 contiguous counties in central and northeastern Pennsylvania

*as of January 1, 2015

Geisinger Health Plans

Geisinger Health Plans refers collectively to Geisinger Health Plan, Geisinger Quality Options, Inc., and Geisinger Indemnity Insurance Company.

Geisinger Health Plan

- Awarded "Excellent" accreditation by the National Committee for Quality Assurance for its commercial HMO/POS and Medicare Advantage HMO plans
- Commercial HMO/POS has held the highest level of accreditation by the National Committee for Quality Assurance since 1993

- #1 Medicare and Private plans in Pennsylvania. GHP is also ranked #10 in the nation among Medicare HMO plans and #12 in the nation among Private HMO plans according to the National Committee for Quality Assurance's Medicare and Private Health Insurance Plan Rankings 2014-2015

Geisinger Quality Options

- Awarded "Excellent" accreditation by the National Committee for Quality Assurance for its coordinated care PPO product.

Geisinger Indemnity Insurance Company

- Awarded "Excellent" accreditation by the National Committee for Quality Assurance for the Medicare Advantage PPO product
- Geisinger Gold PPO is ranked #28 in the nation among Medicare plans according to the National Committee for Quality Assurance's Medicare Health Insurance Plan Rankings 2014-2015

Geisinger Health Plans Scale Operations for a Growing Marketplace

One of the keys to Geisinger Health System’s success – and a differentiator – is the successful collaboration between the System’s clinical enterprise and insurance business. Through this “sweet spot,” Geisinger Health Plans (Health Plans) is able to channel experience, knowledge and funds to pursue projects with the System’s clinical enterprise. Not only does this relationship allow the Health Plans and the System to work together to develop innovative programs and provide better care, but it also provides an opportunity to pilot and (when applicable) implement these innovations.

No other organization in this region has both payer and provider joining together to create synergies that improve the health of the communities that they serve.

To improve the health of its members, the Health Plans provide health and case management programs to coordinate care for individuals with chronic conditions, such as diabetes, congestive heart failure, osteoporosis and asthma.

In addition to standard HMO and PPO options, Geisinger Health Plans also offers an innovative plan option called “GHP Extra.” GHP Extra is built around Geisinger’s medical home model, ProvenHealth Navigator®. When a member chooses to receive care from a ProvenHealth Navigator® location, they pay a lower office visit co-payment and get an added level of care and service as well.

The Health Plans continue to diversify their product line, participating in Pennsylvania’s Children’s Health Insurance Program (CHIP) and offering products on the Federal Insurance Marketplace.

In fiscal year 2013, Geisinger Health Plans were approved as a payer for the Pennsylvania Medical Assistance managed care program, HealthChoices. The Health Plan product, GHP Family, provides coverage to more than 130,000 individuals in 22 counties in Central and Northeastern Pennsylvania. This is a significant line of business, resulting in \$549 million in revenue for the year ended June 30, 2014.

In addition to local service areas, the Health Plans bring innovation, quality, and better outcomes to businesses and individuals outside of Pennsylvania. These organizations turn to the Health Plans to share knowledge, effectively manage medical costs and improve health. Currently, these locations include West Virginia, Maine, Delaware and New Jersey.

Geisinger Health Plan Membership: By the Numbers*

143,475	135,321
Commercial	Medicaid (including Healthy PA)
117,695	88,067
Third Party Adminstrator	Geisinger Gold and Medicare Advantage
8,274	492,832
CHIP	Total

*as of January 31, 2015

GHP Study: Telemonitoring is an Effective Add-On Tool

A Geisinger Health Plan (GHP) study shows that telemonitoring not only has the potential to create significant reductions in admissions and readmissions across the board, but that it also can impact cost of care, with a cost savings of \$216 (11 percent) per patient per month. In addition, the outcomes prove that telemonitoring is an effective add-on tool, especially for facilities that manage elderly patients.

Implemented in 2008, GHP’s telemonitoring program uses Advanced Monitored Caregiving Bluetooth scales with an interactive voice response (IVR) system to help manage care for members with heart failure. The study assessed the program’s impact on 541 elderly patients with heart failure by measuring all-cause hospital admission rates, readmission rates and total cost of care over 70 months. The study participants were enrolled in the Geisinger Gold Medicare Advantage Plan and had a high prevalence of co-morbid conditions that were expensive to treat.

Population Health Success Depends on Collaboration

Geisinger’s intricate network of partnerships forms the foundation of its population health programs. Partnerships—with other health systems, primary care providers and specialist physicians, pharmacists, as well as with post-acute organizations—coupled with the ability to leverage electric health records, supply chain efficiencies and healthcare technology is helping to realign care from a fee-for-service to a value-oriented model.

Technologies, such as the Keystone Health Information Exchange (KeyHIE), telehealth programs and sophisticated uses of the EHR help providers work across electronic platforms to develop care plans that address problems, engage patients in their care and monitor effectiveness. These methods continue to result in

better outcomes, improved quality and reduced costs. Improving the efficiency and effectiveness of the supply chain operation is critical to producing a higher quality and more responsive healthcare delivery system. And finally, the creation of xG Health Solutions™, the exclusive provider of Geisinger’s methodology, has enabled the health system to share

its knowledge with organizations nationwide. A sampling of Geisinger’s Population Health partnerships include: Proven Health Navigator™, the Keystone ACO and ProvenWellness Neighborhood (covers five counties in Northeast Pa.).



The Way to Wellville celebration at Scranton’s City Hall.



“The Affordable Care Act and CMS have incentivized doctors and healthcare providers to establish ACOs in order to work together to give people with Medicare the high-quality care they expect and deserve.”

– Thomas Graf, MD
CEO, Keystone ACO
CMO, Population Health

Keystone ACO Nets \$1.3 m in Healthcare Savings

The Keystone Accountable Care Organization* (ACO) is a network of doctors, nurses and other healthcare providers working together to provide high-quality, coordinated care for Medicare fee-for-service patients.

“As we move away from payment for volume to a value-based system, we must take the waste out of the system while we improve the care we provide,” says Thomas Graf, MD, CEO, Keystone ACO and chief medical officer, Geisinger’s Population Health. Measurable benefits from the shift away

from volume-based payments included fewer repeated tests and procedures, a smaller number of preventable complications, and a significant expansion of value-based contracting.

“The Keystone ACO is making great progress toward achieving the Triple Aim: Improving the patient experience and the overall health of the population, while decreasing costs,” says Dr. Graf. “The fact that we pulled together six hospitals and four physician groups and achieved \$1.3 million in savings in our first year — that’s terrific.”

**Participating Keystone ACO physician groups include: Brookpark Family Practice, Lewisburg; Highland Physician, Ltd., Honesdale; Wayne Memorial Community Health Centers, Honesdale; and Evangelical Medical Services Organization, Lewisburg. Participating Keystone ACO hospitals include: Evangelical Community Hospital, Lewisburg; Geisinger Medical Center, Danville; Geisinger Wyoming Valley Medical Center, Wilkes-Barre; Geisinger–Community Medical Center, Scranton; and Geisinger–Bloomsburg Hospital, Bloomsburg.*

ProvenHealth Navigator® Utilizes a Team Approach to Closing Care Gaps

ProvenHealth Navigator® (PHN), a collaboration between Geisinger Health Plan and Geisinger’s Clinical Enterprise, is the system’s advanced medical home and one of Geisinger’s greatest market successes.

PHN integrates family medicine, internal medicine, geriatrics and skilled nursing care, and focuses on early detection through better control of risk factors, medication management and procedural intervention. Working closely with physicians, nurse navigators

act as case managers, following up with the sickest patients. The use of physician assistants and nurse practitioners improves access to outpatient care, especially in rural areas. Improved access enables patients to be treated in a cost-effective primary care setting, while decreasing unnecessary use of costly emergency department services.

Currently, PHN is available in 93 Geisinger and non-Geisinger primary care locations; PHN’s skilled nursing facility model has expanded to 23 nursing homes.

PHN often uses electronic means to track the sickest patients. For example, many patients with congestive heart failure use Bluetooth®-enabled scales to transmit their daily body weights to nurse navigators who track fluid retention. For other at-risk patients, an electronic telemonitoring device uses interactive voice response technology to call them at scheduled times and ask questions designed to identify potential issues that might trigger a prompt return phone call from a nurse.

ProvenHealth Navigator® (PHN) Expansion: By the Numbers*

93
Geisinger and non-Geisinger primary care sites

23
nursing homes using PHN’s skilled nursing facility model

9
sites outside of Pennsylvania

387,000
patients enrolled in ProvenHealth Navigator® programs

**Launched in 2006 with three pilot sites and 11,200 enrolled patients*



Geisinger Launches Program for Uninsured / Under-Insured

Geisinger Health System-powered ProvenWellness Neighborhood (PWN) is designed to remove the barriers to basic healthcare for thousands of individuals who are uninsured, underinsured, or have Medicare and Medicaid in Lackawanna, Wayne, Susquehanna, Wyoming, and Pike counties. Built on the success of ProvenHealth Navigator®, PWN connects these individuals with critical healthcare resources in their communities. Launched in spring 2014, the program served more than 1,000 individuals in its first six months of operation.

With two “care pods,” one based at Geisinger–Mount Pleasant, (Scranton), and the other at the

Wayne Memorial Community Health Center’s Honesdale Family Health Center, PWN provides licensed social workers and community health assistants who help individuals make educated decisions about their care and navigate the healthcare system.

“Generous grants from The Harry and Jeanette Weinberg Foundation, Inc. and The Scranton Area Foundation have enabled Geisinger and its partners to provide much-needed care during what is the most transitional time in the history of healthcare,” says Thomas Graf, MD, chief medical officer, Population Health. “ProvenWellness Neighborhood is a pioneering model that enables us to identify,

educate, support, and connect members of our community with vital resources.”

Participating agencies include the American Red Cross-Northeast Pennsylvania Region, Care Net, Friends of the Poor, Maternal and Family Health Services, Inc., Northeast Regional Cancer Institute, Scranton Primary Health Care Center, United Neighborhood Centers of Northeastern Pennsylvania, and The Edward R. Leahy Jr. Center Clinic for the Uninsured.

The MyGeisinger portal has approximately 268,000 active users, about 41 percent of ongoing patients.



Discussing healthcare options within the ProvenWellness Neighborhood (PWN) are, from left, Rochelle McDonough, LSW, field coordinator; Sarah Stavisky, community health assistant; and Julio Montanez, a PWN patient.

PWN links adults with critical healthcare needs to resources in Scranton, Pa., and surrounding communities, to help them lead fuller, healthier lives. Currently this no-cost service is available to residents of five Pennsylvania counties (Lackawanna, Pike Susquehanna, Wayne and Wyoming).

E-Initiatives Reap Success Engaging Patients

Utilizing e-initiatives to engage patients in their care is another key element in better outcomes, improved quality and reduced costs. In addition, Geisinger is actively working with outside organizations to share its e-initiative knowledge to deliver the right care at the right time.

MyGeisinger, the system’s web-based portal allows patients to see test results, make appointments, communicate with their providers, pay bills, and see health reminders at home and on mobile devices. More than 286,000 patients are now enrolled in the service.

Additional e-initiatives include:

- Geisinger’s text message appointment reminder program, which has more than 130,000 patients enrolled.
- A mobile device program that uses iPads® to help patients prepare for and recover from lumbar spine surgery.
- Smartphone mobile apps such as Easy Prep: Colonoscopy and Get2Goal (weight management)

“The most important aspect of engaging patients is to give them a voice and a chance to participate in their own care,” says Chanin Wendling, director eHealth at Geisinger. “With access to their medical data, patients are able to make better, more informed choices.”

**Geisinger is Home to
Pennsylvania’s First Rural
Metabolic Evaluation Center
for Newborns**

Screening for metabolic and endocrine disorders in newborns shifts healthcare from a focus on disease to an emphasis on wellness. Through the efforts of Shibani Kanungo, MD, MPH, Geisinger was recently named one of four metabolic centers of excellence for diagnosis and treatment in Pennsylvania—and the only site in rural Pennsylvania. This designation means that parents seeking follow up for a newborn’s life-threatening metabolic condition no longer need to travel to Philadelphia or Pittsburgh. Instead, newborns with metabolic issues can receive prompt, sophisticated care closer to home.

Shown testing a newborn are, left to right, Shibani Kanungo, MD, MPH, holding Albrina Deitrick; Jocelyn Hepfer, RN, labor and delivery; Denise Hynick, lab medicine; and Erin Ryan, MS, LGC.



Supply Chain Critical to High Quality, Responsive Healthcare

Recognized as one of the nation’s top healthcare supply chain services, Geisinger’s supply chain team leverages technology to manage relationships with hospital suppliers to achieve optimum costs for patients and the health system while meeting the organization’s supply needs and streamlining the ordering, storage and delivery processes. Geisinger’s supply chain team tracks – in real time – the location, status and supply chain process flow of mobile medical equipment throughout the Geisinger system. They also manage patient throughput including current census, pending discharges, new admissions, environmental service operations and future bed availability.



Steve Hlavaty, system analyst (seated), Deb Templeton, chief, Care Support Services, and Kevin Capatch, director, Supply Chain Technology and Process Engineering, review process flow in Geisinger’s TeleTracking™ asset management application.

Supply Chain: By the Numbers

198,000 purchase orders per year	\$500,000,000 in purchases per year
~ 700,000 purchase order lines per year	> 1,200 actively managed supply chain contracts

Education Program Highlights System’s Integrated Delivery Model

During the academic year 2014-2015 Geisinger provided educational opportunities to 34 clinical campus medical students in each of the third and fourth year classes with an additional 330 medical students visiting Geisinger from 55 United States medical schools. The Geisinger Integrated Curriculum provides students with all major specialties and clinical electives, population health, quality improvement, patient communication, elements of the integrated delivery system, and an emphasis on health information technology and innovation.

Geisinger trains over 350 residents in 20 accredited residencies and 70 fellows in 17 independently accredited fellowships at the GMC, GWV, and G-CMC campuses. Of the 118 residents and fellows in Geisinger’s most recent graduating class, 26 continued their medical careers at Geisinger. An additional 40 are continuing their careers at other Pennsylvania health organizations. More than 300 Physician Assistant student rotations and more than 140 Nurse Practitioner student rotations were hosted in 2014.

Geisinger’s Center for Continuing Professional Development is one of an elite nationwide group of Joint Accreditation providers, recognized by the Accreditation Council for Continuing Medical Education, American Nurses Credentialing Center and the Accreditation Council for Pharmacy Education to provide physician, nursing and pharmacy interprofessional team continuing medical education credit. The Center served over 38,317 learners in 228 programs in 2014.

Interoperability is Key to Healthcare Innovation

Geisinger is engaged in a variety of pioneering initiatives designed to seamlessly share information via electronic means between a variety of provider and health plans, and from medical device to medical device. This sharing is critical to improving the delivery of care to individual patients and managing the health of populations. Increased interoperability helps decrease medical errors, increase patient engagement and activation, reduce duplicative tests and services, save time, and eliminate significant waste from the healthcare system.

Connecting Patients to Specialty Care Closer to Home

Geisinger uses telemedicine to bring sophisticated specialty care closer to where patients live. Geisinger offers live audio/video consultations so patients can see and speak directly to a specialist in real time. Also offered are store-and-forward exams that allow photographs, X-rays and other exam information to be sent to a specialist at another location for review and interpretation. As of December 30, 2014, Geisinger provides telemedicine services at 22 Geisinger and 24 non-Geisinger sites in 24 Pennsylvania counties. The telemedicine program is available on both an inpatient and outpatient basis.

Telemedicine services include, but are not limited to:

- ICU
- Psychiatry
- Pulmonology
- Virtual Sleep

- Rheumatology
- Dermatology
- Stroke and neurology

- Nephrology
- Fetal urology
- Thoracic surgery
- Trauma transfer

- Maternal-fetal medicine
- Genomics

Telestroke Program Provides Access to Specialists When Minutes Count

Doctors at Geisinger–Lewistown, Geisinger–Shamokin Area, and Geisinger–Bloomsburg Hospitals are armed with an advantage when it comes to treating stroke patients thanks to a telemedicine program that gives them around-the-clock access to specialists. The telestroke program enables real-time, high-speed communication with neurologists at Geisinger Medical Center in Danville. Secure video monitoring connects these stroke specialists to doctors in the emergency room and intensive care unit. Together they decide when to use TPAs, drugs that dissolve and clear the blood clots that are the root cause of many strokes. Available at 40 sites in the Geisinger footprint, the telestroke program is a prime tool for keeping patients close to home when dealing with a condition that is all too common.



Michael Murray, MD, director of clinical genomics, is shown talking with telecommunications specialist Jeanette Rowello, RN, telemedicine implementation manager, during a routine equipment test.

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Telegenomics Center to Bring Genomics Expertise to Broad Community

Geisinger's new telegenomics clinic in Luzerne County, Pa., slated to open in late spring 2015, recently received an additional \$100,000 investment from the "Discovered in Pennsylvania, Developed in Pennsylvania" (D2PA) program to complement its initial grant.

First of its kind in the nation, the telegenomics program will allow Geisinger specialists and visiting experts to consult with patients and physicians via specialized video-conferencing software, according to Michael Murray, MD, director, clinical genomics, Genomic Medicine Institute. Patients will be able to have their genomic sequencing completed, interpreted, and applied to their care by a team of physician geneticists, genetic counselors and other specialists.

Geisinger will also engage other providers and researchers and act as a resource to other institutions, providers and patients who seek a second opinion.

Geisinger's telegenomics clinic will be housed in a new Center in Luzerne County that is the northeast hub for clinical genomics, the Autism and Developmental Medicine Institute (ADMI), and clinical research.



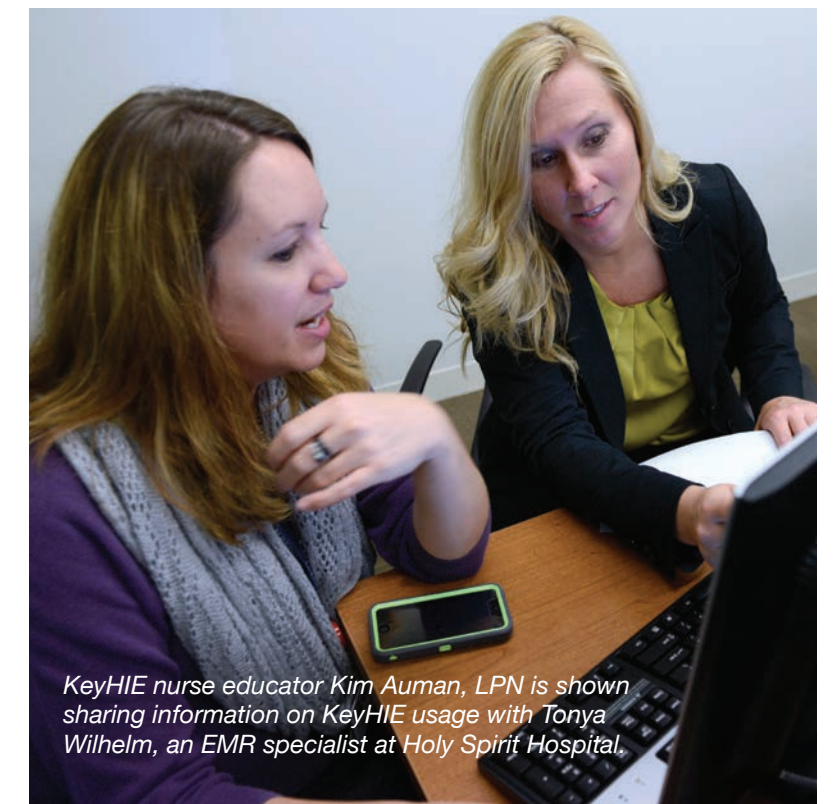
Former Gov. Thomas Corbett traveled to Geisinger Medical Center (Danville, Pa.) to announce an additional \$100,000 investment in telegenomics by the "Discovered in Pennsylvania, Developed in Pennsylvania" (D2PA) program.

Advancing the KeyHIE Information Superhighway

The Geisinger-led Keystone Health Information Exchange (KeyHIE) is one of the nation's largest and most advanced health information exchanges. Linking hospitals, long-term care facilities, community health clinics, and healthcare professionals in more than 53 Pennsylvania counties, KeyHIE enables health information to follow patients across the continuum of care.

Access to KeyHIE provides:

- Emergency departments, care managers, and home health nurses the ability to access critical information such as medical histories, allergies, and a variety of test results, including results from ECGs, Holter monitoring, and stress tests.
- Physicians with their patients' hospital discharge summaries.
- Hospitals with patient information when a patient is admitted or treated in an outpatient setting.
- Patients with the ability to interact with all their KeyHIE-participating physicians and nurses—regardless of facility affiliation—and view their clinical information from participating healthcare organizations through the KeyHIE patient portal, MyKeyCare.



KeyHIE nurse educator Kim Auman, LPN is shown sharing information on KeyHIE usage with Tonya Wilhelm, an EMR specialist at Holy Spirit Hospital.

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KeyHIE connects*:

- 3.7 million unique patients with health records in KeyHIE
- 13 diverse electronic health record systems
- > 1,500 healthcare providers
- 20 hospitals
- 28 home health locations
- 61 long-term care facilities
- 7,982 active MyKeyCare users

*as of October, 2014

"By facilitating the secure exchange of health information when and where it is needed, KeyHIE enables improved healthcare decision-making."

— Jim Younkin
Director, KeyHIE

KeyHIE Proves Valuable in Home Health and Extended Care Settings

Long-term and post-acute care providers say that KeyHIE brings value because it increases their ability to exchange information with participating providers and to electronically exchange standardized data between care settings. These two achievements are key to improving outcomes and holding down costs.

SUN Home Health’s (Northumberland, Pa.) referral nurses say they frequently check KeyHIE for notifications that alert them to significant patient

condition changes. “That’s often how we learn one of our patients is in the hospital or moved to a nursing home,” says Cindy Metzger, RN.

“Patients arrive at our door with very little information – sometimes we have little more than a name and address,” says Metzger. “We immediately turn to KeyHIE to view the patient’s continuity of care document (CCD) which lists medications, test results, diagnosis, and so on.”

Tiffany Tanner, admissions coordinator at Emmanuel Center for Nursing and Rehabilitation, part of Maria Joseph Manor’s Continuing Care Community (Danville, Pa.), also sees the value: “Nearly 100 percent of our patients and families opt to enroll in KeyHIE’s patient portal, MyKeyCare, and see it as an asset,” she says.



xG Health Solutions™ seminars have attracted more than 1,000 healthcare professionals from over 25 countries to Danville, Pa. xG Health Solutions™ has proven that Geisinger’s methods work outside of Geisinger as well as at Geisinger.

xG Health Solutions™ Works to Disseminate Geisinger’s Quality and Value Initiatives

The mission of xG Health Solutions™ is to help health systems and others committed to high-quality, value-based care succeed under risk-based payment arrangements. Its population health management solutions are powered by Geisinger Health System’s methods that have been proven to achieve best-in-class outcomes.

xG Health Solutions™ provides access to Geisinger-developed healthcare performance improvement intellectual property (IP) to other healthcare organizations. In addition, xG Health Solutions™ provides experienced professionals to partner in developing and implementing strategies focused on improving

quality and reducing cost of care over the long haul.

At West Virginia University Healthcare, for example, xG Health Solutions’ actions decreased admissions and readmissions by 16 percent and reduced total cost of care to deliver a positive ROI.

Geisinger and xG Health Solutions™ Team on Software Development

Geisinger Health System and xG Health Solutions™, are working together to connect a Geisinger-developed software application (app) to an electronic health record (EHR). Leveraging draft international standards, the rheumatology app, which was developed to interact with the Epic EHR, now exchanges real-time clinical data with other prominent EHR products.

The goal is to develop a wide variety of apps that will augment EHR functionality to give providers access to information that resides outside and/or inside the EHR, as well as decision support, regardless of the underlying EHR platform. Geisinger expects to make apps like these available to other healthcare systems through xG Health Solutions™, which commercializes Geisinger innovations.

Until now, Geisinger EHR-related innovations that improve quality, increase efficiency and reduce the cost of care have not been available to other healthcare delivery systems.



Tiffany Tanner, admissions coordinator at Maria Joseph Manor's Continuing Care Community, Danville reviews MyKeyCare benefits with Debbie Hults, the daughter of a patient.

Clinical Partnerships Provide Platform for Scaling Innovation

To strengthen its clinically integrated network, Geisinger engages in partnerships that provide a strong cultural fit and create a strategic synergy that increases healthcare quality and value. Partnerships also provide a platform in which to scale healthcare innovation.

The affiliation of Geisinger and **Holy Spirit Hospital** (Camp Hill, Pa.) became official in 2014.

“Our affiliation with Geisinger is tremendous news not only for Holy Spirit, but more importantly for the people in our community who will benefit from our efforts to provide innovative and collaborative medical services,” said Sister Romaine Niemeyer, SCC, FACHE, chief

administrative officer, Holy Spirit Hospital.

Geisinger has also partnered with **Viewmont Medical Services**, a multidisciplinary, multisite ancillary care system and **PrimeMed**, a 24-physician primary care group in 12 locations throughout Lackawanna County. These two partnerships enable Geisinger to provide additional services in the Greater Scranton, Pa. area.

SUN Home Health, Northumberland, Pa., providing home health and hospice services in 13 counties throughout Central Pennsylvania, joined Geisinger in June 2014.

In addition, Geisinger has signed a letter of intent with **AtlantiCare Health System** in Atlantic City, N.J., to explore ways to improve care and serve their communities. The merger is awaiting regulatory approval.



Growth across the health system

Reinvesting in facilities, technology, people and services to scale innovation to improve quality and value is one of the pillars of Geisinger’s strategic mission. Some key projects in 2014 include:

- Gray’s Woods, State College, Pa., added a 39,000 square-foot addition to house an ambulatory surgical center.
- Geisinger–Mt. Pleasant, Scranton, Pa., provides 45,000 square-feet for primary care practices, along with pediatric specialties and specialists, radiology services, such as mammography and ultrasound.
- Geisinger Community Medical Center (GCMC), Scranton, Pa., added new eICU® capabilities, making it the first ICU in the Scranton region to have that advanced capability. GCMC is in the midst of a \$97.1 million expansion project, which is scheduled to be complete in the summer of 2015.
- Geisinger–Bloomsburg Hospital added 2,700 square feet to its emergency department and renovated a variety of other hospital areas.
- Cancer Care Centers of Central Pa. were acquired by Geisinger on December 1, 2014; Lewisburg (6,100 square feet), Elysburg (3,500 square feet), Selinsgrove (3,800 square feet) and Lock Haven (2,500 square feet).



Over \$5 million has been invested in Geisinger–Bloomsburg programs, staff and people since the 2012 merger.

Marworth Provides the Road to Recovery

Marworth, situated on the former estate of Gov. William and Mrs. Mary Scranton in Waverly, Pa., is a proven leader in its specialized programs for treatment of alcohol or chemical dependency. These programs incorporate a person’s unique lifestyle, values and medical circumstances as well as specific obstacles to recovery and include trauma and PTSD, eating disorders and specific issues related to healthcare and uniformed professionals.

Marworth: By the Numbers

32
years in operation

>40,000
individuals treated

91
beds

27
acre campus
with 36,000-square
feet of buildings



FINANCIAL SUMMARY AND SYSTEM STATISTICS

Community Benefit

As we near our 100th anniversary, Geisinger’s commitment to serving our community and providing high-quality, compassionate care to all who need it has never been stronger. The health system’s \$414.1 million in community support during fiscal year 2013 represents 14.97 percent of Geisinger’s operating expenses, nearly three times what is required to meet Pennsylvania’s standards as a charitable mission. Since fiscal year 2001, Geisinger has invested nearly \$2.6 billion in community benefit and is making a positive difference in the health of Central and Northeast Pennsylvania.

“We take our patient care, education, research, and community service responsibility seriously, and are pleased that we benefit our community so significantly,” says Glenn D. Steele, Jr., MD, Geisinger president and CEO. “Our growth and positive performance enable us to enhance services, grow jobs, positively impact the economy, and make our region a better place to live, work, and have a family.”

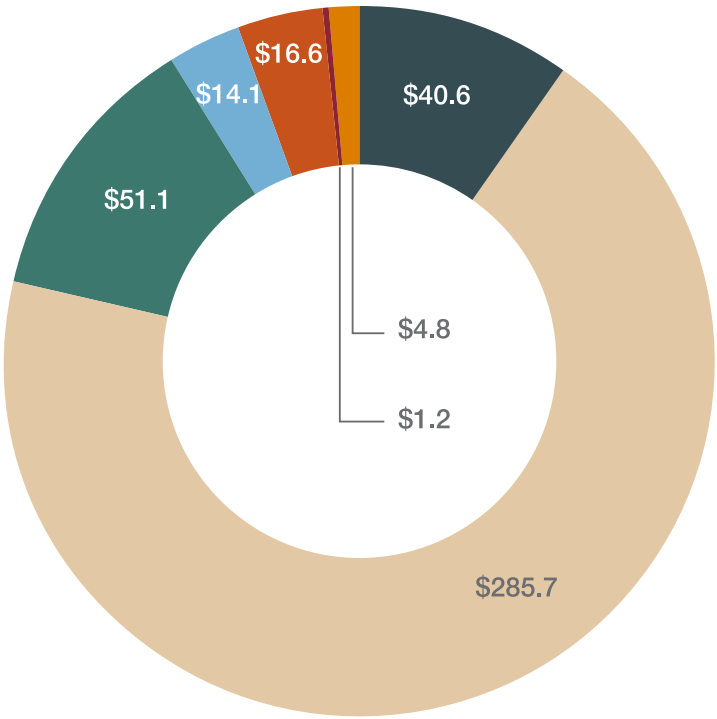
Geisinger employs approximately 23,500 people and serves as a major driver of the economy. The Hospital and HealthSystem Association of Pennsylvania (HAP)

recently reported that Geisinger Health System has an annual positive impact of \$7.7 billion on the local, regional, and state economy. In addition to nearly \$1.6 billion in annual salaries and benefits, Geisinger has also invested more than \$1.7 billion in capital expenditures since 2001.

“We continue to do what is right and best for patients, preserving jobs, benefiting the community and the economy, and ensuring that quality, not-for-profit health care is available in the communities we serve,” says Dr. Steele.

FY 13 Community Benefit

- Uncompensated Care
- Cost to provide care to Medicare and Medicaid patients not covered by government
- Health Professions Education
- Health Research Support
- Community Health Education & Outreach
- Community Assistance
- Volunteer Services



Total: \$414.1 million

FY 13 Community Benefit data in millions

Financial Summary

Geisinger ended fiscal year (FY) 2014 (July 1, 2013 through June 30, 2014) with an operating income, excluding interest expense, of \$136.8 million, a 3.4% return on revenue of \$4.0 billion. The economic benefit to Pennsylvania (from direct spending and an indirect ripple effect of spending) totaled approximately \$7.7 billion.

Even with reimbursement shortfalls, economic challenges and the uncertainty of healthcare reform, Geisinger provided \$414.1 million (approximately 15.0% of operating expenses) in community benefits, including uncompensated care and care provided under government programs at less than cost. Revenue grew by 18.6% over FY13, once again an incredible achievement in the current environment and the highly regulated, competitive healthcare industry. In addition, Geisinger invested \$272.2 million in capital projects.

	FY13 (in millions)	FY14 (in millions)
Geisinger earned		
Customer premiums, services to patients and general services	\$8,744.3	\$9,750.2
Geisinger did not receive full payments from		
Medicare and medical assistance	3,420.5	3,506.7
Charity to patients	139.1	178.9
Bad Debt	59.1	53.7
Other patients receiving services under contractual arrangements or due to administrative allowances	1,770.5	2,033.0
Total amount received	3,355.1	3,977.9
Geisinger spent		
Salaries and benefits	1,420.9	1,598.1
Contracted services	1,055.9	1,394.3
Supplies, utilities and other expenses	602.8	726.1
Depreciation	112.2	122.6
Total costs for patient treatment and rendering care to beneficiaries	3,191.8	3,841.1
Geisinger assets and liabilities		
Operating income	163.3	136.8
Interest on debt, earnings on investments, and non-operating gains (losses)	138.6	291.7
Excess of revenue and gains over expenses and losses	301.9	428.5
Operating margin	4.9%	3.4%
Total assets	3,913.3	4,634.6
Total liabilities	1,869.6	2,113.8
Accumulation of net worth from prior earnings	2,043.7	2,520.8

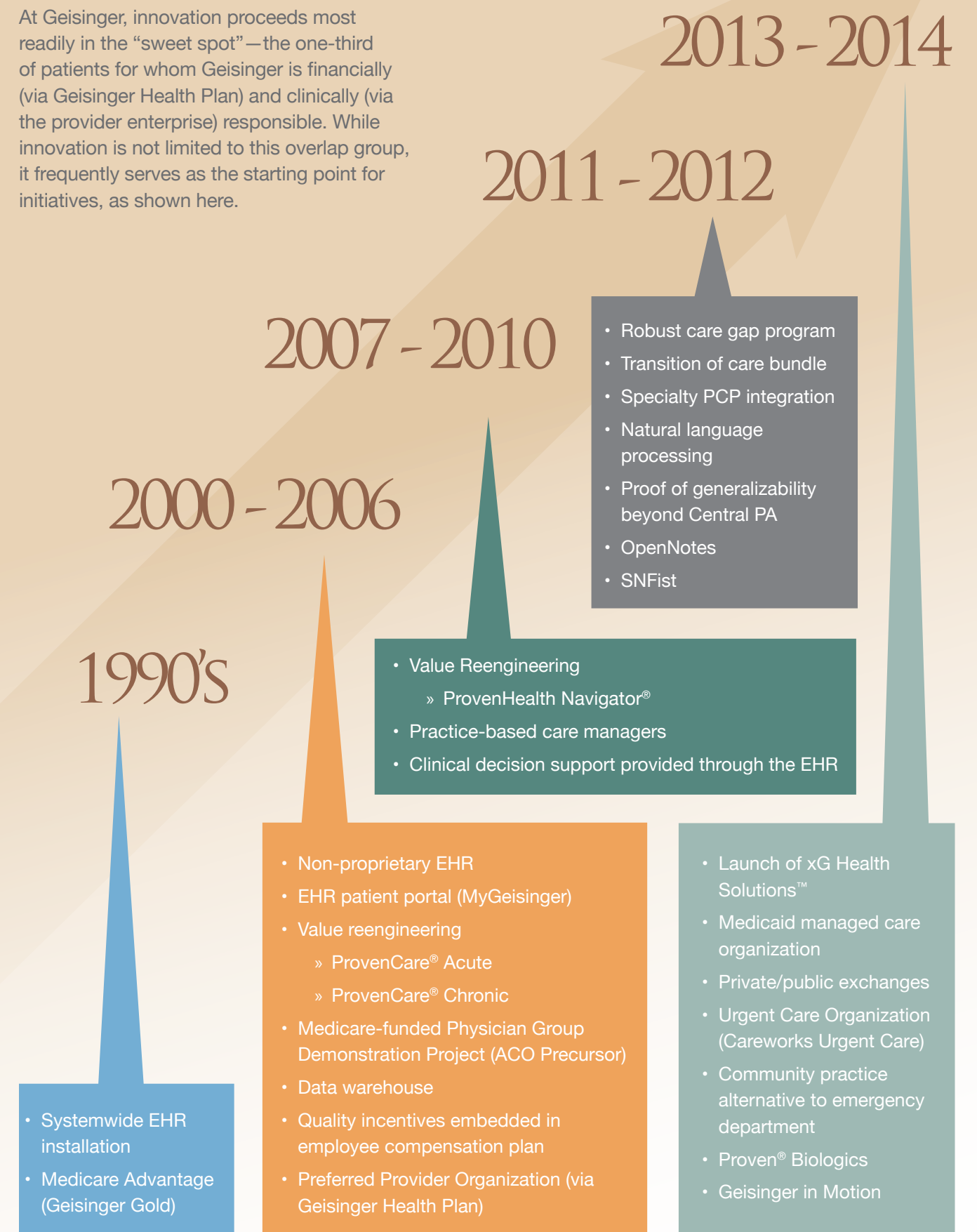
Geisinger Statistics

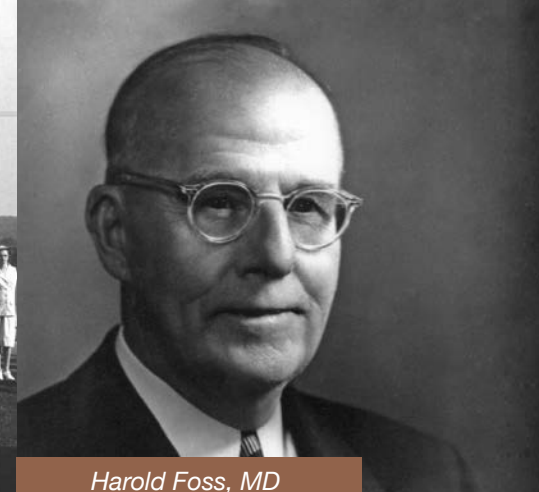
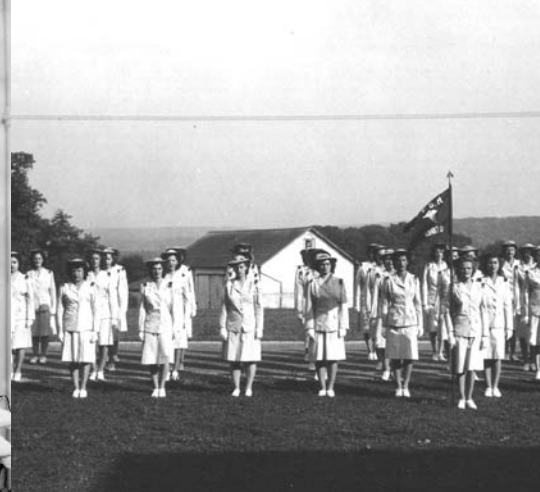
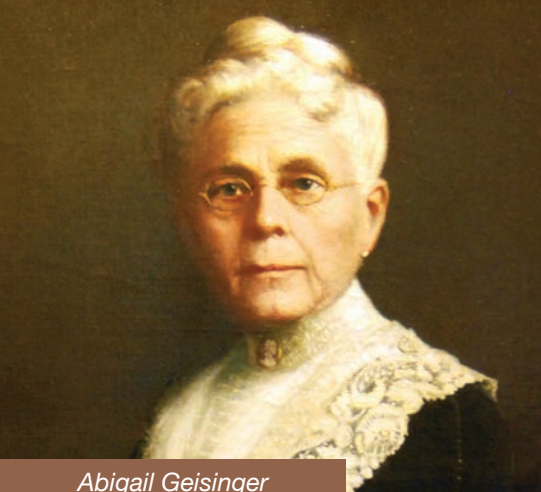
Geisinger Health System is an integrated health services organization widely recognized for its innovative use of the electronic health record, and the development of innovative care models such as ProvenHealth Navigator® and ProvenCare®. As one of the nation’s largest rural health services organizations, Geisinger serves more than 3 million residents throughout 48 counties in central, south-central and northeast Pennsylvania. Unless otherwise noted, statistics are for fiscal year 2014 (July 1, 2013 through June 30, 2014 and do not include data from Holy Spirit Hospital).	
Primary and specialty care sites..... 83	Resident Education
Employees23,500	Residents in training.....339
Clinical staff (included in total employee head count):	Independently accredited residencies20
Physicians 1,200	Fellows in training.....65
Residents/fellows.....404	Finances
Nurses (included in total employee headcount) 4,576*	Revenue.....4 billion
Registered nurses.....3,702	Current capital investments.....\$272.2 million
*as of December 17, 2014	Admissions.....62,871
Licensed inpatient beds 1,742*	Geisinger–Bloomsburg Hospital2,042
Geisinger–Bloomsburg Hospital72 beds (52 acute beds and 20 psychiatric beds)	Geisinger–Community Medical Center11,695
Geisinger–Community Medical Center297	Geisinger–Lewistown Hospital4,943 (based on 8 months of data)
Geisinger–Lewistown Hospital137 (includes 123 acute care and 14 psychiatric beds)	Geisinger Medical Center28,721
Geisinger Medical Center560 (includes 55 inpatient beds and 15 skilled nursing beds at G-SACH, 60 at the Hospital for Advanced Medicine, and 89 (41 NICU) at the Janet Weis Children’s Hospital)	Geisinger Wyoming Valley Medical Center15,470
Geisinger Wyoming Valley Medical Center274 beds	Life Flight®
Holy Spirit* A Geisinger Affiliate311	Air ambulances.....5
Marworth91 beds	Locations Danville, Scranton/ Wilkes-Barre, State College, Minersville, Williamsport
*includes 344 skilled nursing facility beds, 91 chemical dependency beds and 311 Holy Spirit Hospital beds.	Flights2,195
	Emergency department visits185,790
	Geisinger–Bloomsburg Hospital14,304
	Geisinger–Community Medical Center37,920
	Geisinger–Lewistown Hospital27,459 (based on 8 months of data)
	Geisinger Medical Center47,334
	Geisinger Wyoming Valley Medical Center58,773
	Outpatient Visits (includes ED visits)1,959,332
	Geisinger–Bloomsburg Hospital33,254
	Geisinger–Community Medical Center106,892
	Geisinger–Lewistown Hospital157,650 (8 months of data)
	Geisinger Medical Center948,192
	Geisinger Wyoming Valley Medical Center713,344
	Surgery cases (inpatient and outpatient)49,907
	Geisinger–Bloomsburg Hospital2,650
	Geisinger–Community Medical Center7,220
	Geisinger–Lewistown Hospital (8 months of data).....5,410
	Geisinger Medical Center27,235
	Geisinger Wyoming Valley Medical Center7,392 (includes 2,959 outpatient procedures performed at Geisinger South Wilkes-Barre)
	Average length of stay4.7 days
	Average occupancy rate (based on staffed beds)72 percent
	Geisinger Health Plan membership*492,832
	Commercial143,475
	TPA117,695
	CHIP8,274
	Medicaid (including Healthy Pa.)135,321
	Geisinger Gold and Medicare Advantage88,067
	*as of January 31, 2015

100 YEARS OF TRANSFORMATIVE INNOVATION AT GEISINGER

Sweet Spot Innovations

At Geisinger, innovation proceeds most readily in the “sweet spot”—the one-third of patients for whom Geisinger is financially (via Geisinger Health Plan) and clinically (via the provider enterprise) responsible. While innovation is not limited to this overlap group, it frequently serves as the starting point for initiatives, as shown here.





Abigail Geisinger

Harold Foss, MD

Emma Jean Knapper, RN

1915 - 1920

- George F. Geisinger Memorial Hospital opens in Danville, Pa. with 70 beds (1915)
- Harold L. Foss is the hospital's Superintendent and Surgeon-in-Chief (1915)
- First class of nurses graduates from the George F. Geisinger Memorial Hospital School of Nursing (1918)

1921 - 1930

- Cancer Clinic, Dept. of Internal Medicine created (1921)
- Surgical Pavilion opens (1928)
- Training School of Laboratory Technicians opens (1929)

1931 - 1940

- Affiliation with Bucknell University for training of Laboratory Technicians at undergraduate and graduate level (1935)
- First female physician on staff (1936)
- X-ray Deep Therapy Machine installed (1938)

1941 - 1950

- U.S. Cadet Nurse Corps instituted (1944)
- Term "Mayo Clinic of Eastern America" coined to describe Geisinger (1945)
- Polio Center and Foss Clinic open (1950)

1951 - 1960

- Harold Foss, MD retires as first CEO (served Geisinger 1915-1958)
- Leonard Bush, MD becomes Geisinger's Chief of Staff (1958)
- The Geisinger Memorial School of Nursing became a charter member of The Council of Diploma Programs (1952) with full accreditation in 1958

1961 - 1970

- George F. Geisinger Memorial Hospital reorganizes and incorporates into Geisinger Medical Center (1961)
- Emma Jean Knapper, RN appointed Director, Geisinger School of Nursing (1965-1980) and first VP of Nursing (1981-1988)



1971 - 1980

- Geisinger Health Plan launches as a joint venture with Capital Blue Cross and Pennsylvania Blue Shield (1972)
- Henry Hood, MD becomes Geisinger's Executive Director (1974)

1981 - 1990

- Geisinger Medical Center and its affiliated companies are restructured into a regional health system (1981)
- Geisinger Wyoming Valley (originally known as NPW Medical Center of Northeastern Pennsylvania) opens in Wilkes-Barre, Pa. (1981)
- Marworth Alcohol & Chemical Dependency Treatment Center opens in Waverly, Pa. (1982)
- Sigfried and Janet Weis Center for Research is dedicated (1987)

1991 - 2000

- Janet Weis Children's Hospital opens (1995)
- Stuart Heydt, MD becomes Geisinger President (1991)
- Frank M and Dorothea Henry Cancer Center opens (1992)
- Geisinger begins using an electronic medical record system (1995)

2001 - 2010

- Glenn D. Steele Jr., MD, PhD becomes Geisinger President and CEO (2001-2015)
- Richard and Marion Pearsall Heart Hospital (originally known as The Heart Hospital) opens (2005)
- ProvenCare® and ProvenHealth Navigator® launch (2006)
- Henry Hood Center for Health Research opens (2007)

2010 - 2012

- Hospital for Advanced Medicine (HfAM) opens (2010)
- Geisinger launches eICU program (2010)
- Shamokin Area Community Hospital (Shamokin, Pa), Community Medical Center (Scranton, Pa) and Bloomsburg Health System (Bloomsburg, Pa) become part of Geisinger Health System (2012)
- Geisinger Health Plan expands service outside of Pennsylvania (2012)

2013 - 2014

- Geisinger-Lewistown Hospital (originally Lewistown Hospital) joins Geisinger (2013)
- Geisinger and Regeneron Pharmaceuticals announce human genetics research collaboration
- Holy Spirit Hospital in Camp Hill, Pa. becomes a Geisinger Affiliate (2014)
- Atlanticare (Atlantic City, NJ) signs a definitive agreement to become a member of Geisinger Health System (2014)

“Never...disregard the importance of vigilance in continuing progress here through individual initiative and original and constructive thinking and writing aimed at more effective care of our patients.”

– Harold L. Foss, MD
Served Geisinger 1915 to 1958
First President and CEO

The Centennial Campaign: Redefining Boundaries

Throughout 2015, Geisinger is celebrating its 100th anniversary. One element of the celebration will be the successful completion of its \$150 million Centennial Campaign. To date, we are about 90 percent of the way to achieving our goal and we are counting on the support of our family and friends to help us raise the funds needed to make the dream – a reality.

The campaign’s call to action is bold: invest in redefining patient care through innovation, research, education, and healthcare environments for the 21st century.

We invite you to invest in research and discovery to enable the acceleration of the understanding of chronic and life-threatening diseases. Invest in Geisinger’s commitment to education so we can continue to disseminate Geisinger quality and value by teaching and training tomorrow’s healthcare professionals. Invest in the Geisinger family through a robust, lifelong learning program. Invest in creating sustainable environments that foster patient engagement, partnerships, and innovation.

Remember, Geisinger’s legacy began with one woman’s vision to: “Make my hospital right. Make it the best.” Your philanthropic support will ensure Geisinger will continue to positively impact the lives of millions of people and help mold healthcare in the Commonwealth of Pennsylvania and across the United States for years to come.

100
THE CENTENNIAL CAMPAIGN
GEISINGER
REDEFINING BOUNDARIES®



“Make my hospital right. Make it the best.”

– Abigail Geisinger, 1915

geisinger.org

THE CENTENNIAL CELEBRATION
GEISINGER 100