

## Training for Tomorrow: A Century of GME at ChristianaCare

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Medical education is an intense developmental process for students, residents and fellows – and it's this training that supports the health and wellness of the nation. Through more than 100 years of providing post-graduate medical education, ChristianaCare has trained thousands of physicians who now serve the Delaware Valley and beyond. The experience they gain through ChristianaCare's nationally recognized network of urban and suburban, academic and community hospitals prepares them to meet America's health care needs now and in the future.

In accordance with its mission and commitment of the Board of Directors, ChristianaCare is dedicated to providing excellent graduate medical education (GME) for physicians and dentists in training. Instruction is designed to offer opportunities for research and scholarly activity in an environment conducive to becoming well-trained physicians and dentists who will provide high-quality, state-of-the-art patient care.

### Ambitious Beginnings

Medical education has changed quite a bit since the first three physicians were offered an internship at Wilmington's Homeopathic Hospital in 1910 (renamed the Memorial Hospital in 1940). The focus of GME at ChristianaCare has historically focused on primary care specialties, however there are currently over 30 training programs with almost 300 physicians in training (see Table 1) in a variety of specialties. Each program has rigorous oversight, with many governed by the Accreditation Council for Graduate Medical Education (ACGME). The ACGME is a private organization that sets standards in the United States for GME residency and fellowship programs and the institutions that sponsor them. The ACGME renders accreditation decisions based on compliance with these standards.

Table 1. Residency and Fellowships that spend most of their clinical time at ChristianaCare in 2020 (does not include all joint sponsored programs)

<b>Program Name</b>	<b>Program Type</b>	<b>Program Length (years)</b>	<b>Total # of Residents /Fellows 2019-2020</b>
Cardiovascular Disease Fellowship	Fellowship	3	10
Interventional Cardiology	Fellowship	1	1
Advanced Heart Failure	Fellowship	1	0
Diagnostic Radiology	Residency	4	19
Integrated Radiology	Residency	6	2
Emergency Medicine	Residency	3	39
Emergency Medicine - Family Medicine	Residency	5	10
Emergency Medicine - Internal Medicine	Residency	5	15
Family Medicine	Residency	3	23
General Practice Dentistry	Residency	1	8

General Surgery	Residency	5	29
Breast Surgical Oncology Fellowship	Fellowship	1	1
Surgical Critical Care Fellowship	Fellowship	1	2
Internal Medicine	Residency	3	37
Medical Physics	Residency	2	2
Medicine-Pediatrics	Residency	4	16
Obstetrics/Gynecology	Residency	4	26
Minimally Invasive Gynecologic Surgery	Fellowship	2	1
Oral Maxillofacial Surgery Residency	Residency	4	9
Pharmacy	Residency	1	8
Pharmacy Ambulatory Care	Residency	1	1
Pharmacy Critical Care	Residency	1	1
Podiatric Medicine	Residency	3	3
Psychiatry	Residency	4	9
Sports Medicine	Fellowship	1	2
Transitional Year	Residency	1	4
Vascular Interventional Radiology	Fellowship	1	1
Otolaryngology	Fellowship	1	1
Hospice and Palliative Care	Fellowship	1	1
Clinical Informatics	Fellowship	2	0
Vascular Interventional Radiology Independent	Residency	1-2	0
Total			281

As the only level 1 trauma center and major tertiary care teaching institution between Baltimore and Philadelphia, physicians in training at ChristianaCare care for a diverse, high volume and high acuity patient population. Without its own medical school, Delaware and ChristianaCare has benefited from a strong relationship with two Philadelphia medical schools (Sidney Kimmel Medical College (SKMC) at Thomas Jefferson University and the Philadelphia College of Osteopathic Medicine (PCOM)). More than 700 medical students rotate through ChristianaCare hospitals and facilities annually. The ultimate goal is to train Delaware residents who will eventually practice and care for the patients of our state.

Let's take a journey through the history and current state of the larger training programs at ChristianaCare that have graduated more than 3000 residents and fellows since 1902.

## Internal Medicine

The Internal Medicine (IM) residency was established in the mid-1940s<sup>1</sup> and has grown since that time to include a complement of 36 IM categorical residents and 31 combined residents (Medicine-Pediatrics and Emergency Medicine-IM). IM residents provide patient care across the spectrum of illness. The residents currently staff inpatient services at both Wilmington and Christiana hospitals; this includes providing emergency coverage to rescue and resuscitate patients throughout the hospital setting as well as providing 24-hour coverage of four floor services and two ICU services at Christiana Hospital. Each year, nearly 3000 rapid responses and

500 code blues are handled by the IM residents between the two hospitals. The IM residency provides high quality care to our patients and immediate access to a physician during an emergency. In the outpatient setting, IM residents provide a large portion of the primary care services for the Wilmington Adult Medicine Office embedded in Wilmington Hospital. The clinic serves nearly 9,000 patients, many of whom come from underserved populations in the city of Wilmington, and averages more than 14,000 primary care encounters per year.

The IM residents and faculty are also very involved in scholarly activity, including both original research and quality improvement projects. In academic year 2018-2019, this resulted in seven publications, seven published abstracts, 20 national presentations, and 48 regional/state presentations at scientific meetings across all IM programs. Each year, the Internal Medicine residency graduates 12 board-eligible internists. Over the past five years, approximately 50% of graduates have gone on to fellowship training and approximately 50% to careers in general medicine. In recent years, approximately 40% of residents have been recruited to work within the ChristianaCare system. Recent initiatives have focused on enhancing primary care training, with the goal of addressing the primary care shortage both within the state of Delaware as well as nationwide; this has resulted in an increased interest in primary care careers among graduating and current residents, with 25% of the class of 2020 pursuing full or part-time careers in this field.

## **Family Medicine**

Over the past 50 years of the Family Medicine (FM) residency program, there have been only five program directors-- an enviable record for any program. The original family medicine outpatient offices were housed on Jefferson Street, but the program rapidly outgrew the space. Offices were established on the third floor of the old nursing school at the Delaware Division (now Wilmington Hospital) and were used until 1992, when the department moved to more spacious quarters on Foulk Road, where they remain today. In addition to these offices, FM residents also see patients in the primary care offices in Wilmington Hospital and in a 6-resident track located at the 4th Street location of Westside Family Health Care. An inpatient Family Medicine unit was established in 1974 at Wilmington Hospital, and this continues with the residents largely based out of the 4th floor.

In 2010, the FM Program was accepted as one of the 14 programs to participate in P4 – “Preparing the Personal Physician for Practice.” An innovative, longitudinal, ambulatory focused curriculum was unveiled and is still in practice today.

The FM residency provides vital care to the underserved in the community. They are considered a safety net practice with a large patient population of Medicaid/Medicare, uninsured, underinsured, and those with poor health literacy. A broad range of services encompass the FM residency, including comprehensive chronic disease management, prenatal care, gender affirming care, addiction medicine in primary care, and routine outpatient procedures.

Many of these services are provided during evening and weekend hours. The residents rotate through school-based health centers, the HIV/Holloway clinic, juvenile detention centers and on the addiction medicine service. Continuity of care is stressed throughout the program on both the inpatient and outpatient sides, and the academic setting provides a unique opportunity to care for patients at all levels of acuity.

The program has maintained a strong focus on osteopathic education. In 2000, the allopathic and osteopathic Family Medicine residencies at Riverside Hospital merged, and the education of both allopathic and osteopathic residents continues today. In 2017, the program received ACGME Osteopathic Recognition.

The program is accredited for a total of eight residents per year and continues to graduate high-quality family physicians Delaware, and the surrounding region. One primary focus of the FM residency is retention of these much-needed graduates in the community. ChristianaCare is committed to expanding primary care and realigning models to value primary care.

## **General Surgery**

The General Surgery residency program began accepting residents in 1938.<sup>1</sup> Currently, the program graduates six surgeons per year. A high volume of surgical procedures and the diverse pathology ensures exposure to the entire spectrum of surgical practice.

Surgical residents are integral to the care of our patients in this community. While receiving exceptional training and developing their skills, the surgical residents provide a key service to the institution and our patients. Christiana and Wilmington Hospitals have surgical residents and staff around the clock. There is also a surgical outpatient clinic at Wilmington Hospital that cares for the underserved of our community. Surgical residents work long, but fulfilling hours, doing the work of several Full-Time-Equivalents (FTE) if they were to be compared with more traditional employees. Most years, more than half of the graduating residents enter competitive subspecialty fellowships throughout the country. Many graduates of the general surgery residency ultimately establish practice in the area, giving back to the community and expanding access to care.

## **Obstetrics and Gynecology**

The residency in Obstetrics and Gynecology has been active since the late 1950s. In 1986, the entire inpatient Obstetric and Gynecologic program moved fifteen miles south from the city of Wilmington to the newly built Christiana Hospital in Newark (see Figure 1). As a center with a very large clinical volume and active maternal-fetal research, the program has developed into one of the strongest in the Northeast, with an exceptional volume and diversity of cases. The program graduates seven residents per year.

Figure 1. Christiana Hospital, Opening Day, 1985



There is a strong emphasis on serving all women in our community. The OB/GYN residents care for women in federally funded clinics on a regular basis. Furthermore, their continuity clinics are located in Wilmington, in order to provide care to an underserved community. Residents are constantly learning and tend to be guideline-driven, leading to a consistent standard of care that is not always found in communities without a residency program. That consistent adherence to standards, in turn, improves the quality of care for the entire community.

## Emergency Medicine

Through the 1970s, the emergency departments (EDs) in Delaware were staffed by attending physicians from many different specialties because emergency medicine was not recognized as a unique specialty. Both the severity of cases and the need for 24-hour coverage, 7 days a week made it difficult to get physician coverage. Dr. Ben Corballis, a local surgeon, took up the challenge and offered the hospital a plan. The physician organization he developed eventually became Doctors for Emergency Services (DFES), which continues to serve ChristianaCare today and is one of the longest running private emergency groups in the country. Dr. Corballis advocated for the development of a residency program in emergency medicine, even though it was not yet a nationally recognized specialty, but the Wilmington Medical Center Education Committee rejected his requests.

However, in 1979, emergency medicine became the 23<sup>rd</sup> specialty recognized by the American Board of Medical Specialties,<sup>2</sup> and the Wilmington Medical Center Education Committee approved Dr. Corballis' request. It took considerable political effort by Dr. Corballis and others to receive approval for a community (not university) based program. Provisional approval was received in November 1981, and the program began with six residents per year.

In 2020, the Emergency Medicine residency enjoys a strong national reputation, with 12 categorical residents per year. The Department of Emergency Medicine also has expanded its residency spots and with the combined Emergency Medicine-Internal Medicine residency

(founded in 1991) with an additional three residents per year, and the Emergency Medicine-Family Medicine program (founded in 2007) with 2 residents per year.

The emergency department is an essential part of the safety net of health care. Care is provided to anyone 24 hours a day, 7 days a week, regardless of insurance, ability to pay, or immigration status. We have 62 supervised residents working around the clock in more than 500 shifts per month to provide essential and emergency care to the population of Delaware and the surrounding areas. More than 50% of our graduates stay in our region to practice emergency medicine.

There is no doubt that emergency care in our state would suffer if the training program did not exist. Through resident education, we can provide our patients with cutting-edge emergency care. These residents then transition into supervising roles at area hospitals to continue to provide care. The residents care deeply about the medical issues and health care delivery challenges that we face in our everyday world.

## **Combined Programs**

ChristianaCare is unique nationally in that it has three combined programs – an important achievement that embodies the spirit of flexibility and creativity needed for the future of healthcare. These programs are instrumental in blurring traditional lines between departments and in thinking holistically as a system of care beyond departmentalized silos. Combined residents are ambassadors from one department to the other, softening the edges of traditional territorial lines and promoting greater understanding between disciplines. As this happens, patients benefit from that broader perspective, better communication and coordination and a wider range of possible medical and social system interventions. These programs produce a different kind of physician that many consider more versatile and agile for a changing health care landscape.

## **Emergency Medicine/Internal Medicine Combined Program**

In 1990, it was recognized that it would not be possible to increase the size of the Internal Medicine residency program; however, the recent development of combined residency programs had been increasing in popularity. The development of a combined Emergency Medicine-Internal Medicine program that would be five years in length and would allow residents to sit for the boards of both specialties was proposed and initiated. As the popularity of Emergency Medicine increased, so has the interest in EM-IM; the program now routinely recruits three high-quality residents per year. Residents uniquely trained in both EM and IM bridge the gap of both specialties to provide high-quality care across the healthcare continuum. Residents gain experience in general emergency care, hospital medicine, primary care, observation medicine, intensive care and/or subspecialty care.

Having the experience described above allows EM/IM trained physicians to make the whole health care team stronger. Physicians in the emergency department, in the office, and on the inpatient units all benefit from the comprehensive experience of these providers. This has allowed many of the graduates to take on important leadership and administrative roles within ChristianaCare and the community.

## **Emergency Medicine/Family Medicine**

ChristianaCare offers a trail-blazing opportunity for residents who want to pursue dual training and dual board eligibility in Emergency Medicine (EM) and Family Medicine (FM). The five-year EM-FM residency program was the first allopathic program of its kind in the country. The curriculum builds a solid foundation of knowledge and experiences to create physicians who are innovative, passionate leaders in both fields, possessing a unique understanding of health care systems and delivery. Our graduates are capable of providing top-notch care in any clinical setting upon graduation, from rural to international to academics, and beyond.

ChristianaCare EM-FM residents experience a broad array of clinical disciplines not only through training in both departments, but also through clinical rotations in OB-GYN, pediatrics, surgical subspecialties, emergency medical services, anesthesia, orthopedics/sports medicine, radiology, women's health, trauma/surgical critical care, and medical, cardiac and pediatric intensive care units.

## **Internal Medicine-Pediatrics (Med-Peds)**

This four-year program was initiated at the Medical Center of Delaware in 1989 and in conjunction with A.I. duPont Hospital for Children. The "Med-Peds" program is currently sponsored by the Sidney Kimmel Medical College at Thomas Jefferson Medical University, with all clinical rotations at ChristianaCare, Nemours/duPont Hospital for Children, and in the Delaware community. The program graduates four residents per year, each eligible to become board-certified in both Internal Medicine and Pediatrics. Dr. Allen Friedland was named the program director in 1999, and he remains the longest-running program director at ChristianaCare.

The Med-Peds Residency Program attracts candidates from across the country who value the challenging academic curriculum within multiple clinical settings. The diverse patient population offers residents exceptional opportunities to diagnose and treat a broad spectrum of primary-care diseases, as well as tertiary-care medical conditions not routinely encountered in smaller hospital settings.

Since the beginning, the Med-Peds Residency Program has trained physicians for careers in primary care, hospitalist work and in the subspecialties in both academic and non-academic settings. Residents develop competence and excellence in both specialties alongside our large Med-Peds faculty of the community and hospital-based Med-Peds Section that consists of over 54 attending physicians. Our residents treat patients with both acute care and chronic care needs, as well as with preventive medicine and health promotion across the entire age spectrum. Many have attained a leadership role, and this program has developed one of the strongest national reputations for combined programs. There is an overall >33% local retention rate of graduates since its inception – with more than 50% retention in the past five years. The program is a strong provider of physicians for the local community and attracts Med-Peds physicians from across the country to serve as primary care physicians, hospitalists and specialists at ChristianaCare, Nemours, Westside HealthCare and private practices.

## **Radiology**

The Wilmington Medical Center established a Radiology residency in the 1950s<sup>1</sup>; however, the Diagnostic Radiology Residency Program at ChristianaCare was initially accredited in 1977 and

has trained generations of radiologists who now practice locally and regionally, as well as nationally. In the past five years, 70% of our graduates have remained in the DE/PA/MD/NJ/NY region. Without our program, that local and regional presence would not be as robust. As value-based and patient-centered, our radiologists practice in multiple specialties. Having Christiana-trained radiologists who have known and worked with others on the caregiver team for many years positively impacts the care of our patients.

The focus of the diagnostic radiology residency program at ChristianaCare has always included training competent radiologists for community practice. The large volume and complexity of cases has ensured this; ChristianaCare's Department of Radiology currently performs and interprets approximately 500,000 imaging studies annually.

Our radiology residents are frontline caregivers 24/7. In addition, they participate in educating other departments through multidisciplinary conferences and projects. Radiologists (faculty and residents) are integral team members. Currently, the program graduates four diagnostic radiology residents each year.

## **Psychiatry**

Recognizing the urgent need for psychiatrists in our community, in 2018, ChristianaCare started a psychiatry residency program. The program utilizes ChristianaCare's ample resources and resident training infrastructure to treat a variety of mental illnesses and substance abuse disorders while simultaneously educating Delaware's psychiatrists of the future. The psychiatry residents rotate through many different services throughout the institution during their training.

Psychiatry residents provide inpatient psychiatric services at Wilmington Hospital's newly opened inpatient unit, consult services at both Wilmington Hospital and ChristianaCare's Newark Campus, and will also provide care in outpatient clinics at both locations. Additionally, our residents work collaboratively in the community providing services at Nemours / A.I DuPont Hospital for Children, Recovery Innovations Crisis Response Center, and Delaware Psychiatric Center.

The broad array of rotations allows our residents to gain experience and develop proficiency in psychopharmacology, psychotherapy, neuromodulation (i.e. Electroconvulsive therapy (ECT) / Transcranial Magnetic Stimulation (TMS)), emergency psychiatric assessment, and substance abuse treatment.

The psychiatry residency program accepts four residents per year and will graduate its first class in 2022. The goal is to provide more psychiatrists to the patients in our region, filling a critical need.

## **Other Programs**

Over the years, ChristianaCare has continued to foster other residencies, fellowships, and allied health programs (see Table 1). All these programs are integral to the care of the patients in our community and enhance the system. Pharmacy, podiatry and dentistry (including oral maxillofacial surgery) have had long running programs with excellent reputations for providing vital services to those in need. These residents often rotate through many departments during their training. In addition, allied health professional programs including medical physics and psychology graduate several trainees annually. Fellowships in cardiovascular disease, hospice



and palliative care, minimally invasive gynecologic surgery, sports medicine, otolaryngology, surgical breast oncology, surgical critical care, and vascular interventional radiology receive the benefit of high-quality training due to the volume and acuity of our patient population. Several medical centers in Philadelphia send their residents and/or fellows to train at ChristianaCare as well: we have rotators in trauma surgery from Inspira Health System, urogynecology from Drexel University, ophthalmology from Temple, and a joint program with SKMC in neonatology, to name a few.

## **The Future**

The Graduate Medical Education (GME) enterprise of ChristianaCare has a long history and remains strong. Our individual programs perform at a high level and remain competitive regionally and nationally. Looking forward, the future of graduate medical education in Delaware is on solid footing with ChristianaCare's ongoing commitment to educating physicians in Delaware.

However, major challenges loom. First and foremost is financing. As general health care financing and money for education becomes more complex and limited, ChristianaCare must adapt to ensure that its residency programs are financially viable. The present patchwork system of partial government funding (Medicare) and a cap placed on federal funding for residency programs will hopefully be modified in the future.

As ChristianaCare moves forward, it will also have to make decisions on the importance of adding residents in both primary care and subspecialty areas, ensuring that both educational excellence and enough funding are present in each program. There has already been a movement toward enhancing or even developing new programs that can provide graduates in the most needed specialties for our community. The psychiatry residency is a prime example of this.

ChristianaCare has the responsibility to provide for the education of undergraduate medical students and to conduct programs of graduate medical education with the aim of increasing the number of physicians practicing in Delaware. The GME and residency program leadership will need to attract college students to our two affiliated medical schools, SKMC and PCOM. The Delaware Institute of Medical Education and Research (DIMER) was developed many years ago to fund and provide valued medical school applicant spots at the two medical schools. The goal is to educate medical students about our opportunities, so they utilize our branch campus (rotating their entire third year of medical school at ChristianaCare) and eventually train and stay here. Keeping residencies strong will enable many of the 700+ rotating medical students to experience the exceptional education here and choose ChristianaCare and Delaware for their training. In addition to our affiliated medical schools, ChristianaCare also hosts hundreds of medical students per year from many area schools for various rotations. Many of these students rotating at Christiana Care match into one of our residency/fellowship programs and many of our graduating residents/fellows choose to stay and practice in Delaware.

In addition to caring for our patients, the residents are afforded the opportunity for developmental growth while training at ChristianaCare. Programs such as a "pocket-MBA" and leadership training, along with the professional opportunities within our many committees, rounds out the experience for our residents. These varied experiences allow our graduates to be clinician leaders within our community and throughout the United States. GME efforts are more aligned with ChristianaCare's system-wide goals and initiatives than ever before, and our work

has only just begun. We will continue to develop a robust culture of safety and quality in our clinical learning environment. Our commitment to continuous quality improvement of our learning environment will not only ensure that ChristianaCare is a national leader in GME but will ensure that we deliver on our commitment to serve our neighbors as expert, caring partners in their health.

GME at ChristianaCare has a long and storied history. The training programs are the backbone of the health care in our community. The residents at ChristianaCare continue to drive innovation and change and, most important, will be the clinicians caring for all of us soon.

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