

**Graduate Medical Education**  
**Annual Institutional Review – Academic Year 2022-2023: Executive Summary and Report**

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**I. Background and Overview of GME:**

This Annual Institutional Review is complete and respectfully submitted for review by various network entities and committees including Graduate Medical Education Committee (GMEC), Department of Education (DOE), Medical Executive Committee (MEC), and the Board of Trustees.

Leadership in the Division of Graduate Medical Education changed over the past year with Joseph E. Patruno, MD being introduced as the Designated Institutional Official (DIO) and Robert Sweeny starting as the Director of Graduate Medical Education (DGME) in July 2022. Additionally, Terri Vian was hired as Scholarly Activities Coordinator and Liaison, a pilot position designed to support scholarly activity and academic productivity in several larger training programs. The remainder of the GME team includes two experienced GME Specialists: Tanya Ensminger-Fernandes and Despina Tsarouhis.

Lehigh Valley Health Network (LVHN) has retained our status as an Accreditation Council for Graduate Medical Education (ACGME) Sponsoring Institution with continued accreditation that was effective on January 11<sup>th</sup>, 2023. Currently the network sponsors a total of 33 training programs, comprised of 326 trainees who work at 35 clinical training sites. These programs have all achieved ACGME Initial Accreditation or Continued Accreditation with no programs on warning, probation, or losing accreditation in the past year. Additionally, our well-established Dental Residency Program remains in good standing and maintains accreditation through the Commission on Dental Accreditation.

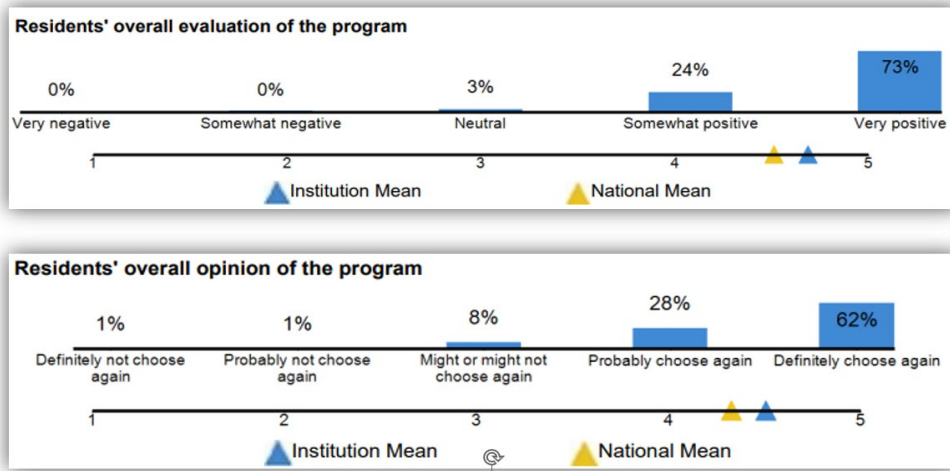
Our most recent ACGME Clinical Learning Environment (CLER) site visit was completed in April 2021 and a follow-up visit has not been scheduled by the ACGME to date. Although the impact of COVID was less pronounced in the past year, as compared to prior 2 years, the aftereffect of the pandemic continues to influence graduate medical education with changes in how care is provided, supervision practices, and recruitment processes.

Reflecting both the strength of the network and the caliber and breadth of clinical service lines offered, GME at LVHN continues to expand which will be reviewed in this report.

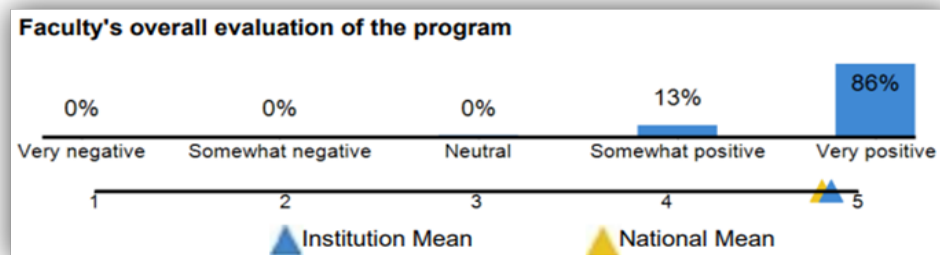
**II. Data Metrics**

**a. Resident and Faculty Satisfaction:**

Satisfaction among residents, fellows and faculty continues to be favorable at LVHN. Annual ACGME program surveys achieved a 97% response rate with the satisfaction rate in training environment being 97%. 90% of trainees at LVHN reported they would choose their current program again. In both areas LVHN institutional mean scores exceeded national means for satisfaction.



Faculty satisfaction was also quite positive based on ACGME survey results. With a 94% response rate 99% of faculty evaluated their affiliated programs as either positive or very positive. Once again institutional means for faculty satisfaction exceed those of national means.



#### b. Current Residencies and Fellowships:

Currently, LVHN supports a total of 14 residency programs encompassing 274 residents in training.

Program	Total filled slots	Program	Total filled slots
Colon and rectal surgery	2	Neurology	12
Dental*	8	Obstetrics and gynecology	24
Dermatology	6	Pediatrics	16
Emergency medicine	58	Plastic Surgery - Integrated	6
Family medicine (rural)	4	Psychiatry	18
Family medicine	22	Surgery	31
Internal medicine	51	Transitional year	16
<b>Total filled slots for all residency programs = 274</b>			

\*non-ACGME or CODA Accreditation/unaccredited

The network also sponsors a total of 20 fellowship programs encompassing 62 trainees.

Program	Total filled slots	Program	Total filled slots
Advanced Emergency Ultrasound (EM)*	1	Medical toxicology (EM)	3
Cardiovascular disease	15	Micrographic surgery and dermatologic oncology (D)	1
Child and adolescent psychiatry	0	Mixed Reality in Complex Intracranial Surgery Fellowship (Neurosurgery)*	1
Clinical neurophysiology	1	Nephrology (IM)	4
Endocrinology, diabetes, and metabolism	4	Neurocritical care (multidisciplinary)	0
Gastroenterology	6	Pulmonary disease and critical care medicine (IM)	6
Geriatric medicine (FP)	1	Rheumatology (IM)	3
Hematology and medical oncology (IM)	9	Sports medicine (FP)	2
Hospice and palliative medicine	1	Surgical critical care (GS)	3
Interventional cardiology	0	Vascular neurology (N)	1
<b>Total filled slots for all fellowship programs = 62</b>			

\*non-ACGME or CODA Accreditation/unaccredited

**c. Expansion:**

The network's training environment continues to grow. This includes several residencies and fellowships that will be introducing their first classes and trainees in the coming year including:

- Maternal-Fetal Medicine: 1 fellow, 3-year program, total of 3 trainees
- Podiatry\*: 1 fellow, 2-years, total of 2 trainees
- Interventional Cardiology: 2 fellows, 1-year program, total of 2 trainees
- Neurocritical care (multidisciplinary): 2 fellows, 2-year program, total of 4 trainees
- Otolaryngology (ENT): 1 fellow, 5-year program, total of 5 trainees
- Neurosurgery: (Site visit in 11/2022 and anticipating approval of the program in 2/2023)

Several established programs have also been approved by the ACGME for expansion over the past 3 years including the following:

Residents	Current	New	Fellows	Current	New
Emergency Medicine	56	64	Rheumatology	3	4
Family Medicine	18	24	Gastroenterology	6	9
Psychiatry	16	24	Pulmonary Critical Care	6	9
<b>Total</b>	<b>90</b>	<b>112</b>	Medical Toxicology	2	4
			<b>Total</b>	<b>17</b>	<b>26</b>

Several programs are in the preliminary process of being considered for development in the next 1-5-years including the following:

ACGME Programs in development/submitting applications for accreditation	
Residency Programs	Fellowship Programs
Anesthesia	Addiction Medicine
Interventional Radiology	Electrophysiology
Orthopedic Surgery	Pediatric Emergency Medicine
Orthopedics	Urology (non-accredited)
Pain Management	Vascular Surgery
Physical Medicine and Rehabilitation (PM&R)	
Radiology	

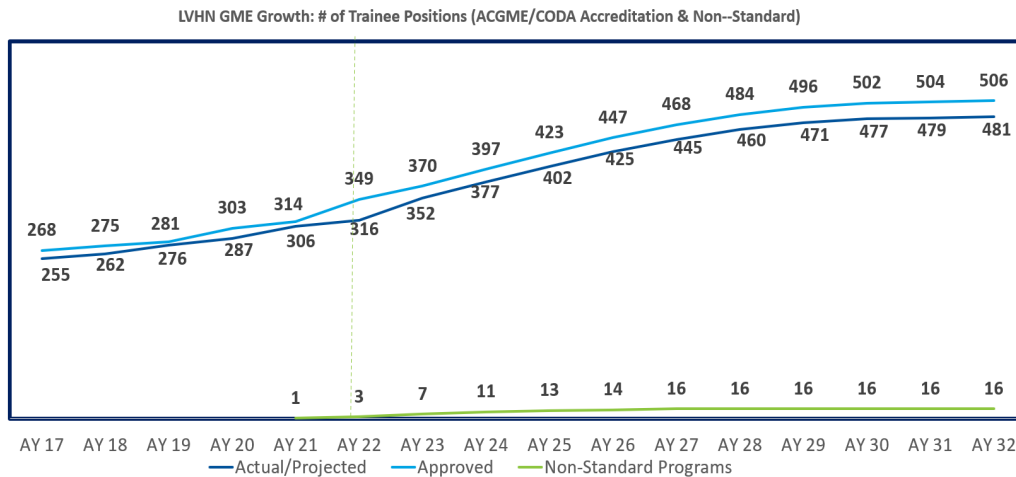
Additionally, several non-traditional and non-ACGME accredited fellowships including the *Mixed Reality in Complex Intracranial Surgery Fellowship* (currently active in neurosurgery) and the planned *Advanced Otology fellowship* in ENT which will start in the Spring of 2023, have been integrated. Other research fellowship and preceptorship models are being offered to both graduates of American training programs and talented and accomplished international candidates who can access state licensing.

Planning has started to potentially integrate GME into our northern-tier hospitals in the next 1-3 years. As these hospitals have not traditionally been teaching institutions, creating an infrastructure to support graduate education will take time and resources. This includes program leadership and core faculty required to support the mission and assurance that the environment offers an adequate clinical and educational experience. We are currently assessing and creating the environments, and the financial feasibility, to support further expansion new training programs.

LVH-S has been inaugurated as the first site, outside of the Lehigh Valley proper, to start a training program. In June 2022 the “Rural” Family Medicine program welcomed its first 4 trainees. The program, over the next 3 years, will grow to a total of 12 residents. This program has been well-received, had a positive influence on the culture and clinical community, and is expected to provide a pipeline to our medical staff in the future.

Based on recent changes in national legislation pertinent to academic medicine there is new opportunity to increase our networks trainee Cap space, compliment, and CMS reimbursement (\$22,000-\$533,000 per trainee FTE). Specifically, legislation promotes rural-urban partnerships through accreditation and financial incentives that would potentially benefit our rurally designated hospitals (LVH-S, LVH-CC).

The attached chart tracks the recent growth of GME program trainees in our network since 2017 which has gone from 255 to 326 trainees (22%). It is projected the number of residents and fellow will increase from 326 to 445 in the next 5 years (28%) and there will be a 33% increase in GME trainees in the next 10-years from 326 to 481.



#### d. Clinical and Educational Environment:

Many improvements have been planned and initiated in both hospitals and ambulatory settings with the goal of improving the educational and work environment for trainees. These spaces are also being created to further well-being and create community between programs. As most training programs are based at, or touch, the Cedar Crest Campus this is the initial focus of improvement with other hospitals to be upgraded as needed in the future. Cedar Crest improvements that are in process include:

- Creation of the *Whalen* Resident and Fellow Lounge (ECC5).
- Refurbishing of all call rooms and locker facilities (Pool Wing).
- Program Specific Educational Space for Internal Medicine and Family Medicine Program (Computer Lab).
- Resident and fellow computer lab and clinical work area (ECC2).
- GME assigned educational and lecture space (ECC1).
- Updates of resident workspaces in labor and delivery (OBGYN), pediatrics, emergency medicine, and medical subspecialties.
- Reorganization and new construction in the Department of Surgery.
- Improvements in the Surgical Education Center (Kasych Ground Floor).

Other educational environment improvements include the addition of two new facilities focused on education and innovation which are separate from the direct clinical environment. This includes the Center for Healthcare Education in Center Valley.



This 70,000 square foot, state-of-the-art facility, will support both the undergraduate and graduate educational missions and create a more cohesive, global, academic environment. This facility includes lecture and classroom space, advanced educational technology, and is a progressive simulation venue.

Additionally, as of January 1<sup>st</sup>, 2023, LVHN acquired the *Venel Institute* which will similarly expand the educational environment. This facility, as a well-established and premier regional simulation center, will expand anatomical and surgical research and allow faculty and trainees to participate in the most advanced simulation. It also incorporates critical cadaver capabilities and is a setting where trainees can interact with community partners and industry in a collaborative setting.





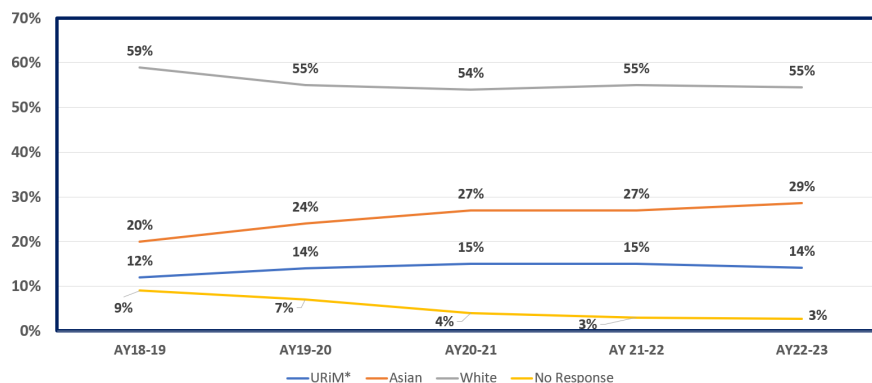
**e. Interviews and Recruitment Data:**

LVHN is a desirable network and clinical environment to complete both medical and surgical training as a resident or fellow. Applicant and match data show a significant increase in applications received and applicants interviewed in the past year. This is likely due to the reputation of our network but also the transition to virtual interviewing process opening the opportunity to expand the interview pool. In total, 94% of available positions filled in the past year with the distribution between allopathic students, osteopathic students, and international medical graduates remain consistent compared to prior years at 41%, 46% and 13% respectively. As for location of medical schools, LVHN attracted and matched a smaller number of candidates from Pennsylvania at 22%. This was decreased from the prior 4 years where 31-41% of new trainees matched were from Pennsylvania medical schools. We are exploring why this change may be the case but expect it is also a reflection of the broader applicant pool we are attracting, and interviewing, at LVHN through virtual recruitment. The impact of this change, and added geographic diversity, is not expected to have any significant effect on the training environment.

	AY18	AY19	AY20	AY21	AY22	5 Year Trends
U.S. medical & dental school applicants	4,331	4,199	6,893	5,195	10,759	
Applicant interviews conducted	1,203	1,311	1,386	1,291	1,882	
Match positions available	106	109	116	118	140	
Positions matched	104	106	108	118	132	
% matched from allopathic schools	35%	38%	39%	40%	41%	
% matched from osteopathic schools	45%	33%	46%	48%	46%	
% matched from international schools	15%	29%	15%	12%	13%	
% matched from PA medical schools	35%	41%	31%	31%	22%	

**f. Diversity and Inclusion:**

The GME office and every training program strive to enhance diversity when both interviewing and selecting applicants to train at LVHN. There remain opportunities to attract more diverse, and especially underrepresented minority candidates in our training programs despite seeing improvements in the data over the past several years as depicted below:



**g. Scholarly Activity:**

Each training program has different requirements and expectations for scholarly activity. The network, by providing a variety of resources and support, both encourages and actively promotes scholarly activity among all trainees and faculty. Resident and fellow academic output from the past year includes:

- **243** Case Reviews
- **193** Quality Assurance and Performance Improvement Projects
- **348** Peer reviewed posters, abstract, and presentations
- **102** peer reviewed journal articles (PMID)

**h. Graduation Data:**

Graduates of LVH-sponsored training programs are sought after and establish successful professional careers. An important metric in evaluating program success is board pass rate for graduates. Most accrediting bodies expect a pass rate of >85% of trainees. The rolling 3-year board pass rate for training programs at LVHN is listed in the following table with the global mean passage rate estimated at 92%. This data is broken down by program in the following table.

PROGRAM	Board Passage Rate ( 3year rolling avg)
Cardiovascular Disease	100.00%
Clinical Neurophysiology	N/A
Dental - LVH- 17 & Muh	N/A
Dermatology	100.00%
Emergency Medicine	ABEM 90% AOA 98%
Emergency Medicine, Medical Toxicology	100.00%
Endocrinology, Diabetes & Metabolism	83.00%
Family Medicine - Lehigh	95%
Gastroenterology	100.00%
Geriatrics	N/A
Hematology/Oncology	92.00%
Hospice Palliative Medicine	90.00%
Internal Medicine	94.00%
Nephrology	100.00%
Neurology	75.00%
Obstetrics & Gynecology	89.00%
Pediatrics	95.00%
Psychiatry	N/A
Pulmonary Disease and Critical Care Medicine	N/A
Rheumatology	100.00%
Sports Medicine	100%
Surgery, Colon/Rectal	100.00%
Surgery, General	90.00%
Surgery, Plastics	100.00%
Surgical Critical Care	100.00%
Transitional Year	N/A
<b>TOTALS</b>	



A composite of graduate activity for the past year is depicted in the image below. A total of 118 residents and fellows completed training this past year. 13, or 11% of these trainees remained at LVHN where they joined our medical staff as attendings. Another 9 (8%) matched into our fellowship programs.

## AY22 Graduation Data

- **86** medical/dental residents + **32** fellowship graduates
- **13** stayed at LVHN for appointment to Medical Staff
- **9** continued to residency/fellowship with LVHN
- **36** continued to residency/fellowship elsewhere

A goal of GME and the network is to attract our trainees at LVHN to our fellowships and also our exceptional medical staff. Expanding on the prior data, in the past 5-years we have recruited 22 residents to our fellowship programs and 83 residents and/or fellows to our medical staff. This equals, on average, 21 individuals recruited or maintained in the network annually. Attrition among this physician cohort was 11% which includes mostly fellows leaving LVHN to take positions elsewhere.

The departments that have had the greatest success over this time in recruiting from our training pool are Emergency Medicine (16), Pediatrics (10), and Family Medicine (9).

Department or Specialty	LVHN Residents recruited as Fellows	Residents/Fellows recruited to Medical Staff	Left network after training or starting on Medical Staff
Cardiology	6	6	2
Colorectal Surgery	1	0	1
Emergency Medicine	0	16	0
Endocrinology	1	1	0
Family Medicine	NA	9	2
Family Medicine - Sports	2	4	2
Gastroenterology	2	2	0
General Surgery	NA	3	0
Hematology-Oncology	2	5	0
Hospital Medicine	NA	7	1
Hospice-Palliative Medicine	1	1	0
Infectious Disease	0	1	0
Internal Medicine	NA	4	0
Maternal-Fetal Medicine	NA	1	0
OB/GYN	NA	4	1
Pediatrics	NA	10	1
Pulmonology	1	2	1
Rheumatology	4	4	0
Surgical Critical Care	2	2	1
Transplant Surgery	NA	1	0
<b>Total</b>	<b>22</b>	<b>83</b>	<b>12</b>

### **III. Conclusions and Future Goals:**

Overall, the state of the GME at LVHN remains robust and strong. This includes our residency and fellowship programs as well as the global GME environment. The environment is dynamic with sustained growth as outlined above. Additionally, we are focusing on how we can improve the process and the number of our graduates who choose to stay and practice at LVHN. This will be accomplished through a strategic, proactive, and multi-disciplinary approach to choosing trainees and recruiting them. Finally, we will be aggressively taking steps to improve the academic environment through better supporting research, quality improvement, and scholarly activity. Specific goals for AY 2023-2024 include:

- 1) Maintaining and improving the culture for residents and fellows to learn and train while keeping programs accredited.
- 2) Strategically expanding our GME footprint: This includes bolstering current programs and developing new programs that match our needs and introducing GME programs to our northern hospitals. This will require investment in infrastructure but also careful assessment of financial benefit and feasibility.
- 3) Expanding scholarly activity and academic output from both residencies and fellowships with peer-reviewed publications being the goal. This mission will be complimented by updated facilities in the clinical setting and in our new educational and simulation centers.
- 4) Assessing options for improvements in efficiency, standardization, and operations with the goal of identifying the ideal model for GME; considering a centralized model as an alternative to the current departmentally supported GME structure.
- 5) Improved success (Hire > 20% of trainees) in recruiting physicians from our training programs. This will be accomplished through 1) strategic recruiting of resident and fellow trainees 2) proactive identification, and engaging early, superior candidates to hire to our medical staff, and 3) aggressive and compelling contracting with a focus on professional and personal priorities of candidates.