Graduate Medical Education
2009 Annual Report

Submitted from Division of Education
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Introduction

Throughout 2009, the Graduate Medical Education community at Lehigh Valley Health Network has continued to develop and implement policies and learning strategies that achieve accreditation requirements and that prepare our resident physicians to serve the Lehigh Valley community and beyond. The Graduate Medical Education Committee (GMEC) and the Division of Education have provided the institutional oversight required to achieve these ends.

GMEC Mission – to offer graduate medical education programs in which physicians in training develop personal, clinical, and professional competence under the guidance and supervision of the faculty and staff.

GMEC Vision –to develop the strategies and mechanisms needed to ensure that LVHN's graduate medical education programs have adequate educational, financial, and human resources to demonstrate measurable improvements in learning and patient outcomes.

GMEC Strategy – GMEC's strategy is based on organizational objectives and the Accreditation Council for Graduate Medical Education (ACGME)'s definition of "institutional competency", which includes an organization's ability to:

- Gather and analyze data from the educational and clinical environments.
- Ensure resident education in patient safety and quality of care.
- Lead program and academic innovations.
- Predict and trend performance.
- Develop, align and implement policies and procedures that impact graduate medical education programs.
- Create conditions that promote collaboration and knowledge sharing and transfer.

We are pleased to provide the following 2009 Graduate Medical Education Report highlighting evidence of ongoing strengths, opportunities and the larger trends affecting Lehigh Valley Health Network's Graduate Medical Education programs.

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Overview: Academic Years 2007-09

As a member of the Council of Teaching Hospitals of the Association of American Medical Colleges, LVHN has an established history of providing high quality education programs to developing healthcare professionals. Specifically, graduate medical education (GME) has been a valued tradition for more than a half-century at our hospital. Below is an overview of GME-related descriptive statistics, trends and recent highlights.

I	**Demographics**	**AY07**	**AY08**	**AY09**	**Recent Highlights**
1	# residents/fellows	182	199	202	Expansion in Cardiology, EM, etc; fellowship changes
2	# visiting residents	68	70	75	Additional visiting residents to burn service
3	# total accredited residency programs	16	17	17	Approved ACGME Cardiology Fellowship
4	# allopathic (ACGME) accredited programs	11	12	12	Approved ACGME Cardiology Fellowship
5	# osteopathic (AOA) accredited programs	3	3	3	Regulatory change in AOA internship
6	# dually (ACGME/AOA) accredited programs	1	1	2	Approved ACGME emergency medicine program
7	# re-accredited programs	2	3	2	All programs awarded re-accreditation
8	# new program(s) applied for	1	1	1	AY07-Cardio; AY08-EM; AY09-Neurology (pending)
9	# of graduates	71	76	78	AY07 and 08 AOA internship graduates not included
II	**Recruitment**				
1	# U.S. medical school applicants	1004	1219	1362	Increases due to reputation and increase in graduates
2	# applicant interviews conducted	461	533	605	Attractions: reputation, technology, location, and peers
3	# match positions available	72	73	74	All programs filled / FM scrambles occasionally
4	% from allopathic accredited medical schools	55%	53%	51%	First match from University of South Florida
5	% from osteopathic medical schools	21%	34%	35%	50% of osteopathic match from PCOM
6	% from international medical schools	24%	13%	14%	Diverse mix of international medical schools
7	% from Pennsylvania medical schools	39%	60%	50%	Majority from Philadelphia medical school market
8	% who completed at least 1 LVHN clerkship	41%	44%	42%	One metric to assess clerkship student experience
III	**Program Development**				
1	# internal reviews conducted	3	2	5	Institution, FM, IM, OB/GYN, and C/R
2	# progress reports reviewed and approved	3	3	4	Reviewed by GMEC 6-months post internal review
3	Resident satisfaction survey				
4	Participation rate	76%	71%	64%	Switch to electronic survey
5	Overall satisfaction (1=poor, 5=excellent)	3.98	3.90	3.54	Residents stated the need for higher quality feedback
6	Desire to work at LVHN (same scale)	4.24	3.69	3.33	Opinions not as sought before decisions are made
7	GME policies reviewed and updated	6	10	17	Updated disciplinary action and grievance procedures
8	# residents contributing to publications	25	26	29	Re-assessing support levels
9	# residents contributing to poster presentations	40	59	51	Re-assessing support levels
IV	**GME Finance**				
1	Additional resident FTE's reimbursed	27.61	12.96	3.48	Growth plan and standardization in reporting
2	Additional GME reimbursement captured	$1.6m	$641k	$616k	Source: LVHN Finance dept Medicare Cost Reports
3	Unused GME Medicare FTE's at LVHM	25.27	12.88	19.73	Regulatory change in AOA internship
V	**Faculty Development (network-wide)**				
1	# faculty development workshops offered	2	0	14	New interprofessional *Teaching Leader Series*
2	# faculty attended	94	0	319	50% nurses, 25% physicians, and 25% other

Resident Supervision, Evaluation and Duty Hours

The Graduate Medical Education Committee (GMEC) is committed to offer graduate medical education programs in which physicians in training develop personal, clinical, and professional competence under the guidance and supervision of the faculty and staff. GMEC provides institutional oversight of LVHN's graduate medical education programs which is limited to ensuring resident supervision, evaluation, and policy development and implementation.

Resident Supervision - All post-graduate medical education trainees at LVHN are supervised by an attending physician who also has clinical privileges in the area they are supervising. Currently, LVHN has over 500 physician faculty with academic appointments through Penn State College of Medicine. All patient care is supervised by these faculty who have expressed interest in resident education and who have attained baseline education on teaching and learning mostly through their respective disciplinary associations and faculty development offerings at LVHN. Program directors ensure and document adequate supervision of residents at all times through residents' rotation schedules. Faculty schedules are structured to provide residents with continuous supervision and consultation. Faculty and residents are educated annually to recognize signs of fatigue.

Resident Evaluation –GMEC has developed and implemented a policy to ensure timely feedback of residents. The goal is that all core faculty complete 75% of their evaluations assigned to them within 30 days of a resident's completion of a rotation. Guidelines for defining core faculty include the following:

- Program director identifies a faculty member as critical to providing feedback
- Core faculty is experienced in educational methods (like evaluation and in depth knowledge of competencies).
- Core faculty understands the department's goals, objectives, and curriculum.
- Core faculty is involved in evaluations on a routine basis.
- Core faculty is expected to complete evaluations online.
- Core faculty spend substantial amount of time working with residents.
- Core faculty does not have to be specified in the accreditation Program Information Form.

In AY09, 70% of core faculty achieved this goal. Program directors in collaboration with Division of Education's faculty development initiative are working to improve this metric and overall timing of feedback to residents.

Duty Hours - GMEC and each residency program have written policies governing resident duty hours that foster education and the safe care of patients. Duty hour assignments recognize that faculty and residents have responsibility for the safety and welfare of patients. *Internal Tracking and Reporting* - LVHN residency programs track duty hours through an electronic residency management system. Duty hour compliance reports are generated, analyzed and presented at GMEC on a quarterly basis. These reports identify problematic rotations. When violations in duty hours occur, program directors are required to report back to GMEC explaining details of the violation(s) and the plan to ensure that the violation does not repeat.

Resident Training in Patient Safety and Quality Improvement

In AY09, 25% of our residents participated in formal lean, quality improvement and patient safety activities. These opportunities provide residents unique educational experiences to learn how patient safety and QI initiatives, projects and committees can improve patient care.

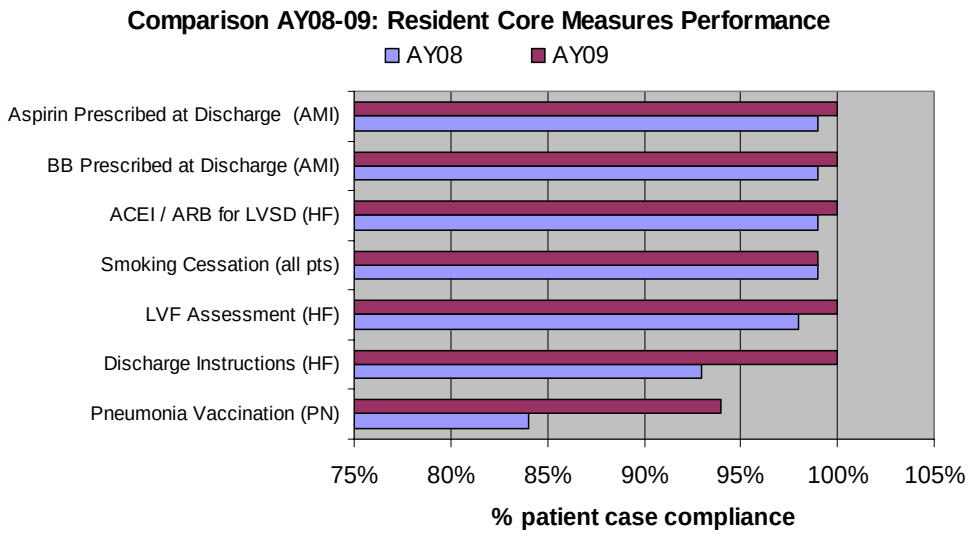
Lean and QI Initiatives

- Value Stream #1 In-hospital Flow RIE 3: Collaborative Rounding
- Value Stream #1 In-hospital Flow RIE 6: Admissions Process
- Exemplary Care and Learning Site
- Numerous quality improvement projects in ambulatory setting (ex. RIE's, open access, EMR implementation, chronic care management, continuity care, etc).
- Numerous improvement projects in inpatient setting (ex. reducing inappropriate echo requests, analysis of door to balloon times, etc).

Patient Safety and QI Committees

- Clinical Case Review
- Code Blue
- Diabetes Quality Improvement Team
- Department-specific PI/QA committees
- Ethics
- Infection Control Committee
- Multi-Specialty Quality Improvement Council
- Occurrence Analysis Committee
- Patient Safety Council
- Protocols and Observation Unit Committee
- Quality Improvement Team
- Surgical Quality Council
- Ultrasound Committee

Resident Performance on Core Quality Measures - In AY09, 128 residents in four programs had contact with patients where core measures were applicable. As illustrated in graph to the right, residents improved their performance in core measures in AY09. Source: LVHN Quality Department.



Other Resident Education in Patient Safety - In addition, all residents are required to complete the *Annual Core Curriculum* on the Learning Content Management System. The *Annual Core Curriculum* consists of the following fourteen e-learning patient safety modules.

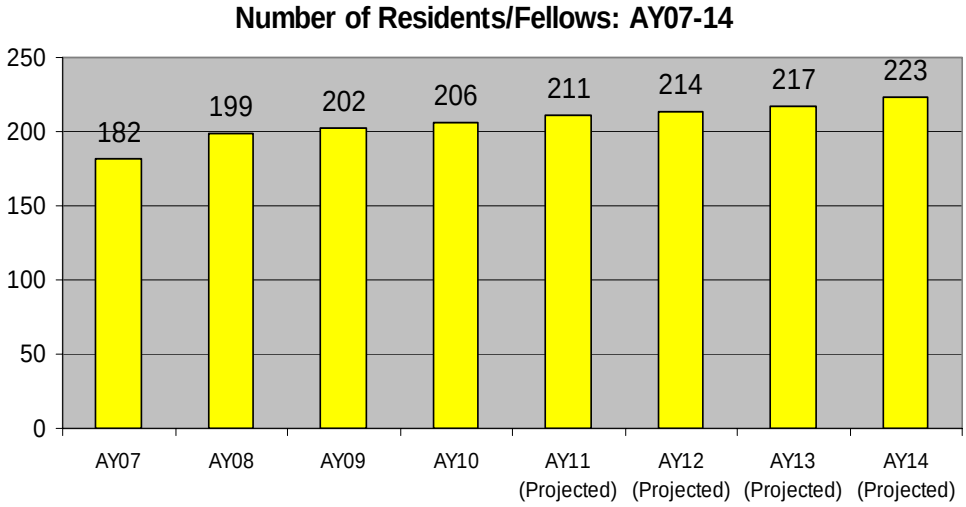
- Bloodborne Pathogens
- Basic Infection Control - Hand Hygiene
- Central Lines Bedside Collaboration
- Emergency Response
- Fall Prevention
- Hazard Communication
- MCARE/Act 13
- National Patient Safety Goals
- Pharmacy and Medication Overview
- Restraints Reduction
- Patient Rights and HIPAA
- Patient Hand-off Communication (SBAR)
- Risk Management/Patient Safety Overview
- TB and Respiratory Protection

Graduate Medical Education Growth

New and Expanding GME Programs - New GME programs are starting and some existing programs are expanding. In 2005, as part of the Medicare Prescription Drug, Improvement, and Modernization Act of 2003, the Centers for Medicare and Medicaid Services awarded LVHN **41** newly funded GME positions. These newly funded GME positions allowed LVHN to plan for programmatic growth that aligned to organizational strategy. Below is a projection of the number of residents and fellows who will be training at LVHN and the programs

Over the next four years, several clinical departments will add more residents and fellows or start new programs.

Below is a summary of the residency and/or fellowship programs that are planning to expand or start a program.



	AY10 (# of residents/fellows)	AY14 (# of residents/fellows)
Cardiology Fellowship	12	12
Colon/Rectal Surgery	2	2
Dental Medicine	7	7
Emergency Medicine*	54	56
Emergency Medicine Services Fellowship	0	0
Family Medicine*	21	21
General Surgery	23	28
Integrated Penn State Fellowships	1	1
Internal Medicine**	51	51
Neurology *(pending)*	0	6
OB/GYN	19	20
Palliative Care Fellowship	0	3
Pediatrics *(starting application process)*	---	---
Plastic Surgery	3	3
Psychiatry *(exploring)*	---	---
Surgical Critical Care Fellowship	1	1
Transitional Year	12	12
TOTALS	***206***	***223***

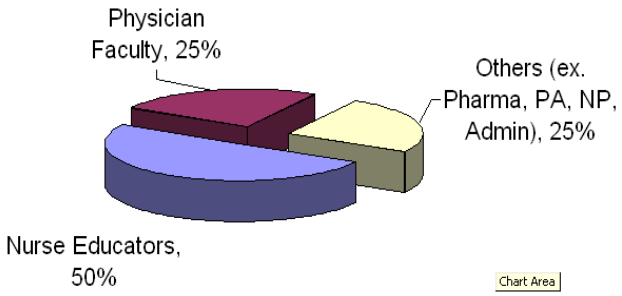
* Dually Accredited programs (allopathic and osteopathic)
** Includes Medicine AOA Interns

Faculty Development

With generous support from the Dorothy Rider Pool Health Care Trust, the Division of Education sponsors and delivers network-wide, *interprofessional* workshops for all clinical educators (i.e. physicians, nurses, physician assistants, etc). This workshop series called, ***The Teaching Leader*** has been designed to assess and build LVHN's capacity and capabilities for teaching and outcomes-based education.

Below are a few stats on the series:

- 14 workshops delivered in AY09.
- Over 300 clinical educators attended.
- Participant breakdown:
  - 50% nurse educators
  - 25% physician faculty
  - 25% other educators
- 90% would highly recommend to peers



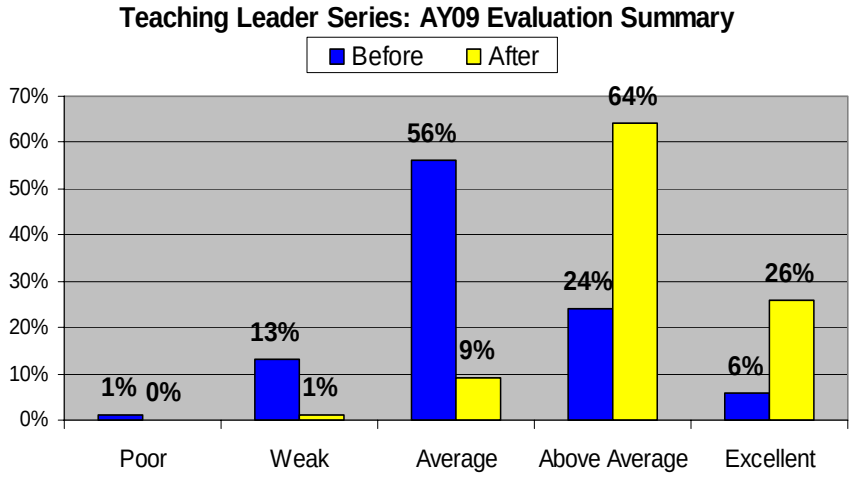
- Workshops delivered content on diverse topics such as:
  - Adult Learning and Teaching Strategies
  - Small Group Teaching/Facilitation
  - Narrative Medicine
  - Teaching Ethics and Professionalism
  - Feedback and Microskills
  - Interactive Team Communication
  - Difficult Feedback/Remediation
  - Using Technology to Enhance Learning

Increases in Faculty's Knowledge of Teaching and Learning:

At the conclusion of each workshop, participants were asked to complete a self-retrospective evaluation rating their level of knowledge prior to and at the conclusion of the workshop on the topic that was presented.

Overall, participants rated increases in teaching knowledge and skill.

More than 50% of faculty who attended the 2008 faculty development workshops said that their top teaching priority was to learn more about diverse teaching methods and how to more effectively deliver feedback.



Sample of Participant Comments on the program…

- *"Able to take a few teaching strategies and apply to my teaching and to "teaching, teaching/clinical coaching skills"*
- *"The feedback and microskills workshop was extremely beneficial. One attendee had experience with giving feedback and provided additional examples I remembered."*
- *"Helps with clearer guidelines for teaching small groups."*

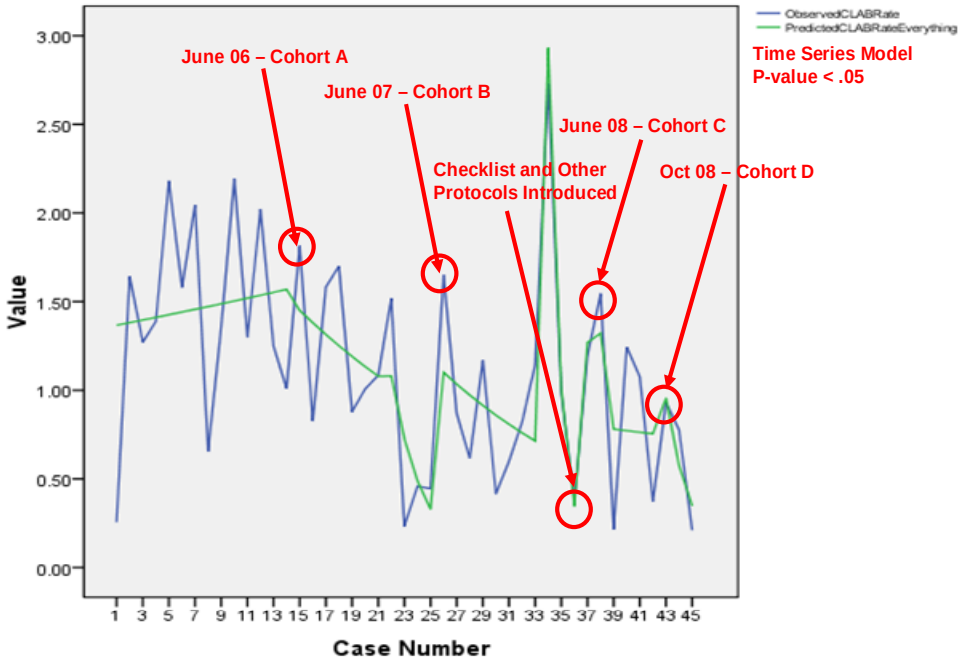
Medical Education Research

Impact Study of a Central Lines Simulation Training Program: The study objective was to evaluate the impact of central lines simulation and education training program on learner and patient outcomes. Two questions and their findings related to the study are included in this report. *Note: This is not the complete findings report from the study.*

Main Findings:

1. Time series analysis suggests that central lines simulation training and a performance support checklist during actual line placement is associated with the hospital's significant reduction in central line-associated infection (CLAB) rate since April 2005 (Figure 2) and is also associated with annualized savings of at least $130,000, based on conservative estimates.

Figure 2: LVHN Central Lines Acquired Bloodstream Infection Rate
April 2005 – December 2008



2. 71% of course taking residents were always 100% bundle compliant (i.e. new patient safety protocol) whereas only 55% of non-course taking residents were.

3. Focus groups with floors nurses and residents who took and did not take the course revealed the following themes:
   a. Resident focus groups said they had a greater risk of breaking sterility when the nurse was not in the room because they were so focused on properly inserting the line.
   b. Resident focus groups also said they tended to be more persistent in their number of attempts when no one else was in the room with them.
   c. Conversely, when nurses were in the room, the procedure was frequently paused once the attempt limit was exceeded.
   d. Nursing focus groups said that residents who take the course may be less likely to persist in their line attempts because of their interprofessional training.

4. Conclusion: This study produced evidence suggesting that the interprofessional nature of central lines simulation training for incoming residents contributes to: a) better resident adherence with patient safety protocols and b) reduces the risk of complications and infections than if the course did not exist because course design establishes expectations among residents and nurses to pause line insertion in the event of 2 unsuccessful attempts.

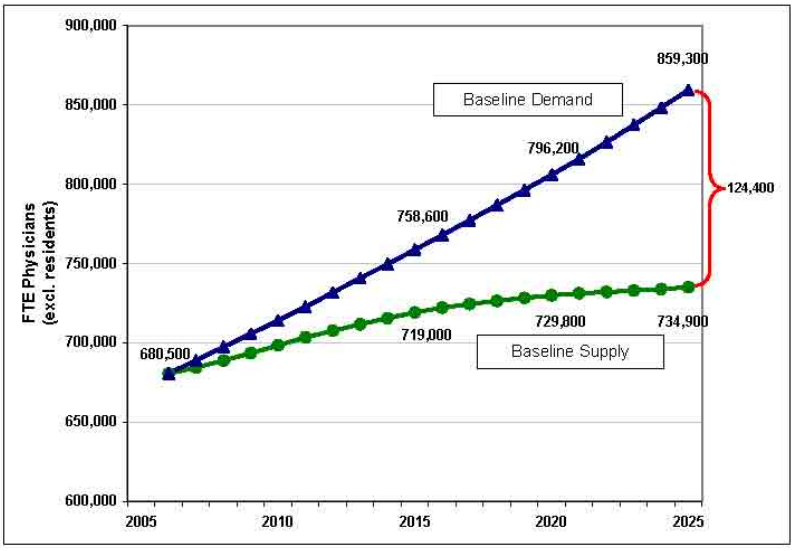
Trends in Graduate Medical Education

Duty Hours: A National Patient Safety Issue - In 2007, the Institute of Medicine (IOM) formed the *"Committee on Optimizing GME Trainee (Resident) Schedules to Improve Patient Safety"*. The committee's task was to develop strategies to enable optimization of work schedules to improve safety in the healthcare work environment. The Accreditation Council for Graduate Medical Education has charged a task force to examine the IOM recommendations and propose changes to current duty hour standards. LVHN's Designated Institutional Official and Chair of Surgery Department, Dr. Thomas Whalen, is a committee member on the Accreditation Council for Graduate Medical Education Duty Hours Review Task Force.

Medicare GME Finance - Spending an estimated $9 billion in 2008, Medicare is the largest financial supporter of graduate medical education. Medicare has charged its advisory arm, the Medicare Payment Advisory Commission (MedPAC) to examine medical education innovations that teach residents how to provide high quality and efficient health care that meets the needs of the U.S. population. MedPAC is the body that sets Medicare reimbursement rates for clinical care and they are also in a position to influence financing decisions surrounding GME at the federal level. LVHN was one of four healthcare systems selected for a site visit because of our ambulatory medicine innovations (ex. Family Medicine Residency's P4 initiative). At the conclusions of the 2-day site visit, MedPAC representatives commented that *"The quality of education at LVHN is extraordinary."*

Physician Workforce Shortage - As studied and report by the Association of American Medical Colleges (AAMC), the supply of physicians, which assumes a continuation of current supply, use and demand patterns, will not be able to keep pace with the projected increase in demand (See Figure 1). By 2025, a shortage of 124,000 physicians is projected. AAMC has recommended that U.S. medical schools increase their enrollment by 30% by 2015.

Figure 1. Baseline Physician FTE Supply and Demand Projections, 2006 - 2025



In response to these projections and anticipated community needs, LVHN and University of South Florida College of Medicine established a new affiliation to create a two year clinical branch campus at LVHN. The LVHN branch campus will serve as the clinical education site for third and fourth year students in a uniquely designed track. The track will afford graduates the unique opportunity to learn in an environment that values patient safety, quality, efficiency, leadership development, team effectiveness, and information technology.

Academic Year 2010 GME Priorities

Faculty Development - Next steps for assessing and building LVHN's capacity and capabilities for teaching and outcomes-based education is to:

- Develop a teaching competency model.
- Tap into local college/university expertise.
- Incorporate faculty development with faculty/preceptor onboarding process.
- Design faculty development e-learning modules with an emphasis on teacher self-assessment and feedback skills.
- Enhance faculty skill in assessment, evaluation, giving feedback, manuscript development, mentoring, and advising.
- Develop a Teaching and Learning Certificate program accredited by a local college/university and University of South Florida Health.
- Develop a Resident as Teacher program.

In addition, there are other opportunities to develop faculty in small groups that emphasis reflective practice and teaching how to provide high quality care, such as Schwartz Rounds, Balint Groups, Flinders Training, Direct Observations, Narrative Medicine, Crucial Conversations, and Difficult Case Resolution. Over the next year, administrative support and curriculum development for many of these learning opportunities will be explored.

Spreading Innovations and Expanding Use of Standardized Patients and Simulation – As highlighted earlier in this report, there are several GME program innovations which are in their second and third years of development (ex. Family Medicine's P4 initiative, Internal Medicine's ECLS and use of standardized patients and simulation). In 2010, GMEC will facilitate several learning sessions where program leaders will present outcomes, learnings, and potentially transferable curriculum elements. Department-specific simulation curriculums and resources will also be presented. GMEC will identify, prioritize, and sponsor at least one learning innovation to pilot in another residency program.

Resident Training in Lean Methods – In AY09, 25% of residents participated in formal lean, quality improvement and patient safety activities. In 2010, GMEC will charge programs to have their residents participate more frequently in SPPI Rapid Improvement Events.

Academic Year 2010 Progress

GMEC redesign -A3 - GMEC has completed its first A3 process to exam and optimize staff time in GMEC-related meetings and other efficiencies to better respond to needs in the GME community and LVHN. The GMEC - A3 is located on the Division of Education's intranet site.

New Director, Osteopathic Medical Education: The network recently appointed one of our former exemplary residents (now medicine attending), Jennifer Mariotti, DO, to the position of Director of Osteopathic Medical Education. Dr. Mariotti will co-chair GMEC and oversee the accreditation and development of LVHN's osteopathic residency programs.

Faculty Development – *The Teaching Leader Series* has over doubled its offerings to 34 workshops. Average attendance is 19 clinical educators.