Competency-Based Plastic Surgery Training
ACAPS September 2019

Vu T. Nguyen, MD
Assistant Professor
Residency Program Director
University of Pittsburgh Medical Center
No Disclosures

- Program funding for Plastic Surgery Boot Camp
  - Lifecell
  - Allergan
  - KLS Martin
Reality

Hybrid Time/Competency-Based Training
Argument for **CBME**

**System**

- **Accountability**
  - patients / public

- Time ≈ **Cost**

- Feedback loop – test / **validate** / develop
Argument for CBME

Programmatic

- Identifies the Outliers

Educator

- Entrustable activities ~ “trustworthiness”

Learner

- Learner ownership ~ Individualized education
Timeline

- **Pitt CBME application** – Spring 2014
- Competency-Based **Consortium** – Summer 2015
- **CCBPST application to ACGME AIRE** – Fall 2016
- **PS-RRC approval** – Spring 2018
- **1st Competency-Based R1 Class** – Fall 2018
Goals

- To implement a *flexible* curriculum that delivers plastic surgery education based on learner *competency*, not postgraduate year of training;

- To use rigorous *assessment* tools that provide *frequent* adequate formative and summative *evaluation* at all levels of training and produce valid information for determination of competency levels;

- To employ standard developmental *benchmarks* that reflect graduated levels of competency attainment and serve as effective standards for advancement and graduation
▪ To *graduate* residents based on attainment of *competency* with less stringent adherence to time in training;

▪ To implement a *faculty development* program that prepares attending plastic surgeons to *teach* and *assess* residents according to competencies; and

▪ To *collaborate* as four distinct health care centers to *share* ideas and best practices so that the curriculum is both standardized with regards to content and assessment and individualized with regards to delivery and individual resident outcome.
Recruitment

2018 - 2019
- Dept website w/ FAQ
- CBME Consent
- Post-interview contact
- NRMP Match - #1, 3, 12

2019 - 2020
- NRMP Match - #6, 8, 14
Research Program Process

Subjective / Objective Outcomes

- Multiple Domains
  - 360-degree Evaluations
  - In-Service Examinations
  - PS Operative Logs
  - Milestone Modular Examinations
  - Surgical Skills Evaluation Tool
  - Clinical Competency Committee - Milestones
Research Program Process

**Objective Assessments**

- Milestone Modular Examinations
  - Breast
  - Craniofacial
  - Hand
  - Aesthetic / Body Contouring
  - General Reconstructive
  - Non-Clinical Competencies

- Surgical Skills Evaluation Tool
# Milestone Modular Exams

<table>
<thead>
<tr>
<th>Exam</th>
<th>Initiation</th>
<th>Milestone Level</th>
<th>Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Clinical</td>
<td>R1</td>
<td>Level 1 + 2</td>
<td>Losee, Nguyen</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Level 3 + 4</td>
<td></td>
</tr>
<tr>
<td>General Recon</td>
<td>R1</td>
<td>Level 1 + 2</td>
<td>Admin Chief Resident Solari</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Level 3 + 4</td>
<td></td>
</tr>
<tr>
<td>Hand</td>
<td>R2</td>
<td>Level 1 + 2</td>
<td>Davit, Spiess</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Level 3 + 4</td>
<td></td>
</tr>
<tr>
<td>Breast</td>
<td>R3</td>
<td>Level 1 + 2</td>
<td>De La Cruz, Gimbel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Level 3 + 4</td>
<td></td>
</tr>
<tr>
<td>Craniofacial / Peds</td>
<td>R3</td>
<td>Level 1 + 2</td>
<td>Grunwaldt, Goldstein</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Level 3 + 4</td>
<td></td>
</tr>
<tr>
<td>Aesthetic / BC</td>
<td>R3</td>
<td>Level 1 + 2</td>
<td>Gusenoff, Shestak</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Level 3 + 4</td>
<td></td>
</tr>
</tbody>
</table>
Unilateral cleft lip repair

- Rotation-advancement: Marking, inject epinephrine +/- local anaesthesia, medial lip element incisions, separate muscle from mucosa and vermillion, make lateral lip element incision, separate muscle from mucosa and vermillion, raise C-L and M flaps, subperiosteal dissection to release nasal base, inset C-flap, repair orbiculare muscle, dermal closure, consider inset of white roll flap from lateral to medial, inset Nordhoff flap to balance red line, rhinoplasty with Tajima incisions, medial rotation or lower lateral cartilages and alar transfixion sutures, close skin, close vermillion and mucosa.

Bilateral cleft lip repair

- Marking, inject epinephrine +/- local anaesthesia, probial incisions to elevate full thickness vermillion probial flap, elevate buccal mucosal turnover flaps from premaxilla, make lateral lip element incisions bilaterally and raise L-flaps, separate muscle from vermillion and skin, supraperiosteal elevation of lip and alar rims, raise inferior turbinate flaps, reconstruct nasal floor with L-flaps.
Surgical Skills Evaluation Tool

SIMPL

System for Improving and Measuring Procedural Learning

MileMarker
SIMPL

- **Smartphone** app based intra-op evaluation tool
- **Validated**
- **3 questions** – option dictated formative feedback
- Takes **1 minute** to complete
- **Data analytics**
SIMPL app

- Repair of cleft lip and cleft nasal deformity, primary, unilateral
  - Edward Kobraei

- Breast reconstruction with free flap
  - Edward Kobraei
  - How much guidance did you provide for the majority of the critical portion of this procedure?
    - Show & Tell
    - Active Help
    - Passive Help
    - Supervision Only
3 Questions

1. Level of resident autonomy – Zwisch scale

<table>
<thead>
<tr>
<th>Zwisch Scale Level</th>
<th>Attending Physician Behaviors</th>
<th>Resident Behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Show and tell</td>
<td>Performs &gt;50% of critical portion; demonstrates key concepts, anatomy, and skills; explains case (narrates)</td>
<td>Opens and closes; observes and listens during critical portion</td>
</tr>
<tr>
<td>Active help</td>
<td>Leads the resident (active assist) for &gt;50% of the critical portion; optimizes the field/exposure; demonstrates plane/structure; coaches technical skills; coaches next steps, identifies key anatomy</td>
<td>The above, plus actively assists (i.e., anticipates surgeon’s needs); practices component technical skills</td>
</tr>
<tr>
<td>Passive help</td>
<td>Follows the lead of the resident (passive assist) for &gt;50% of the critical portion; acts as a capable first assistant; coaches for polish, refinement of skills, and safety</td>
<td>The above, plus can “set up” and accomplish next steps; recognizes critical transition points</td>
</tr>
<tr>
<td>Supervision only</td>
<td>Provides no unsolicited advice for &gt;50% of the critical portion; monitors progress and patient safety</td>
<td>The above, plus mimics independence; can work with less experienced assistant; can safely complete case without faculty guidance; recovers from most errors; recognizes when to seek advice/help</td>
</tr>
</tbody>
</table>


### 3 Questions

**2. Intraoperative resident performance**

<table>
<thead>
<tr>
<th>SIMPL Performance Scale</th>
<th>SIMPL Performance Descriptor</th>
<th>Correlate in Plastic Surgery Milestones Performance Scale (Level)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unprepared/critical</td>
<td>Poorly prepared to perform this procedure and/or critical performance errors</td>
<td>1</td>
</tr>
<tr>
<td>deficiency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inexperienced with</td>
<td>Resident appears inexperienced in performing this procedure; frequent problems regarding technique, execution, smoothness, efficiency, and forward planning</td>
<td>2</td>
</tr>
<tr>
<td>procedure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intermediate</td>
<td>Performance reflects an intermediate stage of development; performance of procedural elements is variable but acceptable for the amount of experience with this procedure; not yet at the level expected for graduating residents</td>
<td>3</td>
</tr>
<tr>
<td>performance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Practice-ready</td>
<td>Resident is ready to perform this operation safely, effectively, and independently assuming resident consistently performs procedure in this manner</td>
<td>4</td>
</tr>
<tr>
<td>performance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exceptional</td>
<td>One of the best performances I have ever seen; above the level expected of graduating residents</td>
<td>5</td>
</tr>
<tr>
<td>performance</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3 Questions

3. **Complexity** of the procedure

Autonomy / Competence

Overview

The following tables regard those who have participated in the study by providing at least one evaluation or being evaluated at least once.

Table 1: Number of evaluations by users active in current time period

<table>
<thead>
<tr>
<th>User role</th>
<th>N</th>
<th>Mean</th>
<th>Median</th>
<th>IQR</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>113</td>
<td>10</td>
<td>5</td>
<td>1 - 18</td>
<td>33</td>
</tr>
<tr>
<td>Attending</td>
<td>51</td>
<td>10</td>
<td>5</td>
<td>1 - 11</td>
<td>33</td>
</tr>
<tr>
<td>Trainee</td>
<td>62</td>
<td>10</td>
<td>3</td>
<td>1 - 21</td>
<td>28</td>
</tr>
</tbody>
</table>

Table 2: Number of evaluations by active, inactive, and archived users since launch

<table>
<thead>
<tr>
<th>User role</th>
<th>N</th>
<th>Mean</th>
<th>Median</th>
<th>IQR</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attending</td>
<td>1317</td>
<td>66</td>
<td>32</td>
<td>24 - 88</td>
<td>413</td>
</tr>
<tr>
<td>Trainee</td>
<td>1792</td>
<td>75</td>
<td>65</td>
<td>15 - 109</td>
<td>226</td>
</tr>
</tbody>
</table>
Figure 2: Trainee Zwisch rating distribution by PGY (all data since launch)
Figure 3: Trainee Performance rating distribution by PGY (all data since launch)
Figure 1: Evaluation Trends
Important Questions

- Will it lead to competition between residents of similar years?

- Will it create an unfriendly environment and take away from our team-based culture?
Competency-Based ≠ Well-Being
2018-19 UPMC/Stanford Physician Wellness Survey Residents & Fellows
2018 UPMC/Stanford Survey Results – Residents & Fellows

- Survey conducted Sept – Oct 2018
- **65%** response rate (1191 of a possible 1819 UPMC residents and fellows)
- **59%** of all UPMC Employed Physicians
- Institutional Results are reported as compared to Physician Wellness Academic Consortium (PWAC) national benchmarks
Overall, UPMC residents and fellows are experiencing levels of **40% burnout** (less than national benchmark of 45%).

Physician Burnout at UPMC

- **43% residents**
- **32% fellows**
- **40% attendings** (37% national)

**Fig 1** - Burnout was measured using a ten-item scale assessing emotional exhaustion and interpersonal disengagement. The burnout score is based on a 5-point Likert scale ranging from 0 to 4, where a lower score demonstrates the lack of burnout while a higher score demonstrates the existence of burnout. An average item score of at least 1.33 out of 4.0 indicates the presence of burnout.
Well-Being Resources for UPMC Residents & Fellows

- **Life Solutions**: Resident and Fellow Assistance Program
  - RFAP Life Solutions: 412-647-3669
  - www.lifesolutionsforyou.com (Corporate Login: RFAP)
  - Free, 24/7, confidential support for UPMC residents and fellows (and household members)
  - Counseling in person or by phone (6 sessions per issue)
  - Psychiatric consultation and prescribing
  - Support for stress, depression, anxiety, substance misuse, relationship concerns, domestic violence, etc.
  - Personalized resources (e.g. child- or eldercare, housing, legal, finance, test-taking, career development, etc.)
  - Beating the Blues USM™ an online evidence-based cognitive behavioral therapy tool with free private access: (infolnet > HR Direct > MyHealth Online > Resources > for Healthier Living > Manage Stress > Beating the Blues USM™)

- **CISM ASAP**: Critical Incident Stress Management ASAP
  - ASAP Program: 1-833-823-ASAP (2727)
  - https://infolnet.upmc.com (Search “CISM ASAP”)
  - Free, 24/7, confidential individual and/or group support for any work-related event by the Critical Incident Stress Management (CISM) ASAP multi-disciplinary team

- **Physicians for Physicians**
  - PAP Program: 412-647-3669
  - https://infolnet.upmc.com (Search “Physicians for Physicians”)
  - Free, 24/7, confidential peer support with a UPMC resident or attending for any work-related stressor or adverse event
  - For more information: 412-418-1200 (Luke Chelluri, MD)

- **Professionalism Concern Line**
  - GME Hotline: 1-844-GME-4DOC (463-4362)
  - Contact GME about mistreatment, abuse, coercion, or other professionalism concerns by supervisor, staff or colleague

- **Patient Safety**
  - Access RiskMaster via Epic or Cerner
  - https://infolnet.upmc.com (Search “RiskMaster”)
  - Report near-misses, medication events, medical errors, etc.

- **Crisis Resources**
  - resolve Crisis Services: 1-888-7-YOU-CAN (796-8226)
  - Local, free, 24/7 hotline, mobile team, and walk-in center
  - National Suicide Prevention Lifeline
  - Call 1-800-273-TALK (8225) or Text HELP to 741-741

- **THRIVE survey award**
- **Co-Chair GME WELL subcommittee**
- **Women’s Wellness Group**
- **Resident Social Wellness Committee**
- **Resident healthcare provider access**
- **Resident Wellness Bingo Cards**

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To learn more about the UPMC Graduate Medical Education WELL (Well-Being, Environment, Living and Learning) Subcommittee initiatives, please visit: https://pwwellness.upmc.com or contact Samea Jacobson, MD (jacobsona@upmc.edu) and Vu Nguyen, MD (nnguyen31@upmc.edu)
### RESIDENT WELLNESS BINGO CARD

**Vintage Inaugural 2019-20 version**

<table>
<thead>
<tr>
<th>P</th>
<th>L</th>
<th>A</th>
<th>S</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visit your PCP once this year</td>
<td>Try a new restaurant in Pittsburgh</td>
<td>Team meal outside of the hospital</td>
<td>Attend a Pittsburgh sports game (college, pro)</td>
<td>Have a phone conversation with out of town friend or family &gt;15min</td>
</tr>
<tr>
<td>Exercise &gt;3 days a week for 2 weeks in a row</td>
<td>Visit your dentist once this year</td>
<td>Check in with a mentee</td>
<td>Travel out of town for a weekend (non-meeting related)</td>
<td>Complete the annual UPMC wellness survey</td>
</tr>
<tr>
<td>Take a walk or run through Frick Park</td>
<td>Use sunscreen on a sunny day</td>
<td>Sleep &gt;8hr for 3+ nights in a row</td>
<td>Go to a museum</td>
<td>Cook/Try a new recipe</td>
</tr>
<tr>
<td>Read for pleasure at a coffee shop</td>
<td>Check in with a mentor</td>
<td>Have a movie night</td>
<td>Outdoor activity on a nice day/Take a selfie with a river</td>
<td>Download and try a meditation app</td>
</tr>
</tbody>
</table>

**PARENT BONUS:** For those with children, read their nightly story and put them to bed

**WOMEN’S BONUS:** For women, check your hormone levels or consider oocyte cryopreservation

**MEN’S BONUS:** For men, take a vitamin containing lycopene, or eat a tomato

*Once a row or column has been completed, return to Michelle Gigliotti to claim prize. Grand prizes for completing all items by June 1, 2020.*
Competency & Well-Being

Enhanced Assessment

Improved Feedback

Trust-worthiness

Individual Learning

Competency
Programmatic Development

Night-float

- **Earlier** exposure to core plastic surgery
- Structured *supervision*
- Post-call *fatigue*
- 2\textsuperscript{nd} semester *R1 & R2* – 2 months
- “…much more robust plastic surgery experience…”
- “…tremendous asset to accelerate our education…”
- “…gain early exposure and a deeper level of understanding…”
- Faculty Evaluations – range 3.41 - 5.0

- Rotation Evaluations – range 3.30 - 4.65

  - Recon 4.65
  - Night-float 4.59
  - CHP 4.50
  - Mercy 4.40
  - Magee 4.36
  - AGH 4.39
  - Body Cont 4.30
  - Aesthetic 4.12
  - Pass/Wexf 4.06
  - VA 4.03
  - Hand 4.00
  - Shady/Float 3.30
Personal Development
Free-Tissue Transfer with the Aid of Loupe Magnification: Experience with 251 Procedures

Saleh M. Shenaq, M.D., Michael J. A. Klebuc, M.D., and Daniel Vargo, M.D.

Houston, Texas
- Take a break

- Gather instrumentation –
  - Needle holder, jeweler’s forceps, micro-scissors, vessel dilator, micro-clamps, background, irrigation, Weck-Cels, instrument wipe, etc.

- Optimize microsurgical field –
  - Maximal exposure; optimum lighting; dry, dry, dry

- Optimize position / comfort
Faculty Development

University of Pittsburgh Department of Plastic Surgery
Visiting Professor and Grand Rounds Speaker
Robert A. Weber, MD
May 8 – 9, 2018

6:00pm
Journal Club
Casbah, 229 South Highland Avenue, Pittsburgh, PA 15206
(T) 412-661-5656

7:00 – 9:00am
Plastic Surgery Grand Rounds – LR5 Scaife Hall
Robert A. Weber, MD
Topic 1) When is a Resident Ready to Graduate?
Topic 2) Teaching and Learning the Skill of Surgery
Agenda for Visiting Professor – Dr. Vu Nguyen

August 22, 2019

<table>
<thead>
<tr>
<th>TIME</th>
<th>EVENT</th>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:45pm</td>
<td>Meet Dr. Nicholas Webster &amp; Dr. Abigail Rodriguez</td>
<td>1st Floor Brindley Circles Entrance</td>
</tr>
</tbody>
</table>
Competency-Based Training

- Individualized, in-folded *education* vs. post-residency remediation
- Timely identification of *accelerated* resident and resident needing *assistance*
- Improved resident *well-being*
- Motivated, *life-long learning*