Surgery Research Conference

Division of Education Research Update

August 8th, 2018

ACCME Accreditation Statement: The Medical College of Wisconsin is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians. AMA Credit Designation Statement: The Medical College of Wisconsin designates this live activity for a maximum of 1.0 AMA PRA Category 1 Credit™. Physicians should claim only the credit commensurate with the extent of their participation in the activity. Hours of Participation for Allied Health Care Professionals: The Medical College of Wisconsin designates this activity for up to 1.0 hours of participation for continuing education for allied health professionals.
Research Highlights
Congratulations, Dr. Hunt!

Josh Hunt, PhD, MA

Research Affairs Committee (RAC) New Faculty Pilot Grant

Feasibility of a Validation Study of the Injured Survivor Screen
Congratulations, Dr. Miao!

Qing Miao, PhD

NIH National Heart, Lung, and Blood Institute R01
Roles of Nogo-B receptor in maintaining the structural integrity of blood vessels
Congratulations, Pancreas Program!

Susan Tsai, MD (PI)
Gwen Lomberk, PhD
Raul Urrutia, MD
Douglas Evans, MD

Theodore W. Batterman Family Foundation Grant
Pathogenic Characterization of Germline Variants in Pancreatic Cancer
SAVE THE DATE!

2018 Fall Research Symposium

The Fall Research Symposium will consist of research presentations, done in quick shot format, with special emphasis on projects completed during the summer in preparation for regional or national presentations.

Date: Friday, September 14th
Time: 12:00-4:00pm
Location: Helfaer Auditorium

Abstract submission deadline: **August 14th, 5:00pm**

- Medical Students
- Residents
- Fellows
MCW Office of Research presents:

SAVE THE DATE!

Research Day

Date: Monday, September 24th
Poster Session: 1:00-3:00pm, HUB Gallery, 1st Floor
Keynote Address: 3:00-4:00pm, Kerrigan Auditorium

Michael Rosbash, PhD
Investigator, Howard Hughes Medical Institute
Peter Gruber Professor of Neuroscience, Brandeis University
Pediatric Surgery
"Ovarian torsion in pediatric and adolescent patients: A systematic review."
Journal of Pediatric Surgery

"Challenging surgical dogma in the management of proximal esophageal atresia with distal tracheoesophageal fistula: Outcomes from the Midwest Pediatric Surgery Consortium."
Journal Of Pediatric Surgery
(Lal DR, Gadepalli SK, Downard CD, Ostlie DJ, Minneci PC, Swedel R, Chelius TH, Cassidy L, Rapp CT

"Diagnosis and treatment of gastric antral webs in pediatric patients."
Surgical Endoscopy
(Amin R, Martinez AM, Arca MJ)

Colorectal Surgery
“Aortic Graft Infection Secondary to Iatrogenic Transcolonic Graft Malposition.”
Vascular & Endovascular Surgery
(Blank JJ, Rothstein AE, Lee CJ, Malinowski MJ, Lewis BD, Ridolfi TJ, Otterson MF)

“The impact of intravenous acetaminophen on pain after abdominal surgery: a meta-analysis.”
Journal of Surgical Research
(Blank JJ, Berger NG, Dux JP, Ali F, Ludwig KA, Peterson CY)

Vascular Surgery
“Development of Angiosarcoma in a Saphenous Vein Graft after Femoral to Above-Knee Popliteal Artery Bypass.”
Annals of Vascular Surgery
(Morris R &Lee CJ)
Cardiothoracic Surgery

“Another win for multiarterial bypass grafting: What’s next?.”
Journal of Thoracic & Cardiovascular Surgery
(Encarnacion CO & Almassi GH)

Pediatric Congenital Cardiac Surgery

“Porcine Small Intestinal Submucosa May Be a Suitable Material for Norwood Arch Reconstruction.”
Annals of Thoracic Surgery
(Jacobsen RM, Mitchell ME, Woods RK, Loomba RS, Tweddell JS)

General Surgery

Surgery

“Roux-en-Y gastric bypass as a salvage procedure in complicated patients with failed fundoplication(s).”
Surgical Endoscopy

“Long-term Quality of Life in Neonatal Surgical Disease.”
Annals of Surgery

“Heparin-protamine balance after neonatal cardiopulmonary bypass surgery.”
Journal of Thrombosis & Haemostasis.

Surgical Oncology

“Decreased trend in hospital mortality from pancreatic cancer despite increase in number of hospital admissions.”
PLoS ONE
(Bhandari S, Abdul MKM, Hollabaugh W, Sharma K, Evans DB, Guda N)

“Characterizing parathyroid carcinomas and atypical neoplasms based on the expression of programmed death-ligand 1 expression and the presence of tumor-infiltrating lymphocytes and macrophages.”
Surgery
(Silva-Figueroa A, Villalobos P, Williams MD, Bassett RL Jr, Clarke CN, Lee JE, Busaidy NL, Perrier ND)
The Division of Research has been contacted by students regarding potential research projects.

Please contact Lizzy Schneidler at eschneidler@mcw.edu if you are interested in working with a student on a project and we can provide potential candidates.
“The Word on Medicine: where Knowledge is changing life”

Personalized Medicine: August 11th at 3:00pm

Medical experts and patients discuss the importance of personalized medicine for cancer treatment and beyond

Dr. Raul Urrutia
Dr. Michael Zimmerman
Dr. Craig Mackinnon
Dr. Ben George
Jennifer Geurts, MS, CGC
Next Week: Special Surgery Research Conference:

Academic Metrics: Understanding H-index and Blue Ridge NIH Award Rankings

Next Wednesday, August 15th
5:00-6:00 pm
Location: HUB A1015/A1035

Raul Urrutia, MD
Division of Education

Chief, Division of Education – Dr. Brian Lewis
Associate Chief, Division of Education – Dr. Andrew Kastenmeier
Education Specialist/PhD Educator – recruitment in process
Senior Administrative Assistant – Marilyn Zarka, MBA

General Surgery Residency Program

Program Director: Matthew Goldblatt, MD
Program Manager: Lisa Olson
Education Program Coordinator III: Theresa Krausert
Associate Program Directors:
  Thomas Carver, MD
  Rana Higgins, MD
  Dave Lal, MD, MPH
  Michael Malinowski, MD
  Carrie Peterson, MD, MS

PGY 1 Curriculum Director: Michael Malinowski, MD
PGY 2/3 Curriculum Director: Thomas Carver, MD
PGY 4/5 Curriculum Director: Christopher Dodgion, MD, MBA, MSPH

Student Clerkship

M3 Clerkship Director: Andrew Kastenmeier, MD
M3 Associate Clerkship Director: Caitlin Patten, MD
M4 Clerkship Director: Jacob Peschman, MD
Program Manager: Catie Fihn, MBA

Faculty Development
(Events & Symposiums)

Vice-Chair of Strategic and Professional Development: Tracy Wang, MD, MPH
Community Program Coordinator III: Heidi Brittnacher
Education Program Coordinator I – recruitment in process
Division of Education

Michael J. Malinowski, MD
PGY 1 Curriculum Director
Associate Program Director
Clinical Competency Committee Chair
Current Fellow in Masters of Education, Johns Hopkins University
Curriculum Mission

• Provide current, responsive and complete resident education to prepare for practice at completion of training.
• Disseminate to local, regional and national venues our successful curricular formats, assessment tools and evaluation methods, etc.
• To improve specialty care, both institutionally and nationally through educational evaluation and data review pertinent to protected block curriculum.
Education Domains

• Resident Curriculums
• Medical School Clerkship
• Fellowship Curriculums
• Multidisciplinary programs- Ultrasound tech, nurse practitioner/APP, nursing students, etc.
## What is entailed in the PBC

<table>
<thead>
<tr>
<th>Years</th>
<th>Schedule</th>
<th>Annual Instructional Hours</th>
<th>Components</th>
<th>Director</th>
</tr>
</thead>
<tbody>
<tr>
<td>PGY 1</td>
<td>4 day block Q~2months (6 times per year)</td>
<td>185</td>
<td>81 hours skill/lab training</td>
<td>Malinowski</td>
</tr>
<tr>
<td>PGY 2-3</td>
<td>3 day block Q ~2 months (PGY 3s attend 2 days)</td>
<td>137</td>
<td>56 hours skill/lab training</td>
<td>Carver</td>
</tr>
<tr>
<td>PGY 4-5</td>
<td>0.5 day sessions (9 timers per year)</td>
<td>28</td>
<td>2 trauma pig labs</td>
<td>Dodgion</td>
</tr>
</tbody>
</table>
What is the importance/reality

• The curriculum and education products should be peer-reviewed and validated by data.
• The old days where fellowship match data and board pass rates justified an entire residency curricula are gone.
• The good news is that with all the hours of instruction there has to be an internal environment for meaningful research products that can change medical, resident and fellowship education on broad strokes.
Curriculum Topics

- Skills Curriculum
- Clinical didactics
- Presentation Skills
- Communication
- Radiology
- Critical Care
- Basic Science didactic
Skills Curriculum

- Knot tying/suturing
- Clinical handoffs
- Ultrasound
- Central line placement
- Cadaver Lab
- Bowel/GI anastomosis
- Vascular anastomosis
- Fundamentals of Laparoscopic Surgery (FLS)
- F. of Endoscopic Surgery (FEC)
- Plastic Surgery Flaps
- Robotics curriculum
- Intern OSCE
- Advanced Knot tying
- Mock Oral Competency Exam
Assessments

- Mock Oral Exams
- Public speaking curriculum
- Knot tying curriculum
- FLS/FEC
- Robotic curriculum
- Pre/Post Test
Educational Products and Research

• Advanced knot tying and suturing curriculum
• Oral Competency Exam Curriculum
• Intern Skills Assessment of national Medical School Boot Camp Programs
• Cadaver Lab Assessment
• Multidisciplinary Shadowing Program
• Ultrasound Curriculum and knowledge decay (Carver)
Past Year’s Presentations
AY 2017-2018

• Intern skills assessment of national medical school boot camp experience
  – IRB reviewed, three years of data
  – Association of Surgical Education, Podium presentation, April 2018
  – Innovations in Medical Education Research Conference, Poster, April 2018
  – Condon-Donegan Research Competition, Oral Presentation, June 2018

• Oral Competency Exam Curriculum
  – IRB reviewed, two years of data
  – Wisconsin Surgical Society Oral Presentation, November 2017
Current and Future Work

• Cadaver Lab Curriculum assessment of initial content transfer and retention over the PGY 1 year.
  – Content Pre/Post intervention assessments
• Multidisciplinary Shadowing program, placing residents and RNs in shared clinical space to understand shared goals, unique challenges and scope of practice.
  – Survey based assessment tools centered on nursing education modules and institution wide shadowing program.
  – Establish “culture of effective productivity for patient care”
  – Bridge generational gaps
• Oral Presentation Curriculum evaluating benefits of early oral presentation skills program.
National Involvements

• American College of Surgeons
  – ERRA Pilot “Entering Resident Readiness Assessment”
    • One of the first programs in the country to pilot an online case based assessment for incoming residents designed by the ACS for early resident definition.

• Association for Surgical Education and Association for Program Directors in Surgery
  – Membership in National Committees on Faculty Development, and Evaluation and Assessment.
All avenues of scholarship

- Discovery
- Integration
- Application
- Teaching

Resource Needs

• Culture and value for education...
  – Administrative support, FTE support, project support, faculty teaching support

• How do we change the perception of lesser research?
  – Demand solid research designs and methods to prove program and institutional benefits of resident research/curriculum.
  – Produce data that passes the same rigor of basic science or outcomes research.
  – Disseminate to national community.

Why is this important in the current environment?
  – With limited funding and shorter training periods, our education has to be validated and effective for maximal impact.

Institutions that commit to these expectations should be rewarded with appropriate stature as national leaders.
Career Support for Education Pathways

More than clinician educators distinction?
• Masters in Education
• PhD in Education
• American College of Surgeons “Surgeons as Educators Course”
  – Annual week long retreat of education leadership
• Kern Institute Teaching Academy (KinetiC3)- Alexandra Harrington, MD.
  – Course length- One year commitment
  – Audience- Institutional Educators
  – Certificate of Completion- Capstone requirement
Next steps

• We produce excellent educational products, which in turn produce excellent residents enhancing programmatic, institutional and regional respect and a culture of excellence.
• Education must be as important a goal to our mission as our clinical product and basic science research because it also has significant immediate and long lasting impacts on the future of our profession.
Thank You
knowledge changing life

R2/3 Curriculum - Skill Retention After Training

Thomas Carver, MD, FACS
Associate Professor of Surgery
knowledge changing life

R2/3 Curriculum - Skill Retention After Training

Thomas Carver, MD, FACS
Associate Professor of Surgery
I have no disclosures
I have no disclosures
Skill Decay

- Deterioration of skills or knowledge during periods of non-use

- Particularly pertinent in surgical training

- Most skill training is designed to improve short-term performance
  - Long-term retention is desired

An integrated theory for improved skill acquisition and retention in the three stages of learning
J Surg Ed. March/April 75(2) 2018
Ultrasound and Skill Decay

• FAST training is a model
  – Multi-step procedure
  – Performed infrequently
  – Training typically done as “massed” practice

• Has knowledge and skill components

• Errors have serious consequences
Total Quick Score

* < 0.001
Problem?

- Massed training does not lead to long term retention

- Several methods are described to combat skill decay
  - What is best way to provide FAST education?

- Is there a problem with other hands-on skills?
R2/R3 Curriculum Opportunities

- Hands-on skills can be graded and tracked
- Assessments are available through ACS simulation
- Couple with resident experience/confidence
- Will follow grading throughout the year
Instructions to Resident:
One limb of a bifurcated graft has been brought below the inguinal ligament. Perform an end-to-side anastomosis on the common femoral artery.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Not Done or Incorrect</th>
<th>Done Correctly</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Control of Vessel</strong></td>
<td></td>
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</tr>
<tr>
<td>1. Uses appropriate vascular clamp (<em>DeBakey available for the exam</em>)</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2. Achieves appropriate proximal and distal control</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>Arteriotomy</strong></td>
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<tr>
<td>3. Uses appropriate blade (#11) to make an oblique arteriotomy</td>
<td>0</td>
<td>1</td>
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<tr>
<td>4. Extends arteriotomy with Potts scissors or blade</td>
<td>0</td>
<td>1</td>
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<tr>
<td>5. Arteriotomy extended longitudinally in anterior wall in midline</td>
<td>0</td>
<td>1</td>
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<tr>
<td>6. Creates appropriately sized enterotomy (~2x diameter of graft)</td>
<td>0</td>
<td>1</td>
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<tr>
<td>7. Avoids trauma to posterior wall of artery</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>Graft Preparation</strong></td>
<td></td>
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<tr>
<td>8. Ensures graft oriented without twisting or kinking</td>
<td>0</td>
<td>1</td>
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<tr>
<td>9. Cuts graft to appropriate length with spatulated head</td>
<td>0</td>
<td>1</td>
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<tr>
<td><strong>Anastomosis</strong></td>
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<tr>
<td>10. Selects appropriate suture (<em>4-0 available for the exam</em>)</td>
<td>0</td>
<td>1</td>
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<tr>
<td>11. Selects vascular needle driver and forceps</td>
<td>0</td>
<td>1</td>
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<tr>
<td>12. Starts appropriately – first stitch at heel of graft and apex of arteriotomy</td>
<td>0</td>
<td>1</td>
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<tr>
<td>13. Places a rubber shed on anterior wall suture while suturing the posterior wall</td>
<td>0</td>
<td>1</td>
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<tr>
<td>14. Starts with suturing the back wall</td>
<td>0</td>
<td>1</td>
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<tr>
<td>15. Performs bites from outside to inside on graft and inside to outside on artery</td>
<td>0</td>
<td>1</td>
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<tr>
<td>16. Takes suture bites in two (separate bite for graft and artery)</td>
<td>0</td>
<td>1</td>
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<tr>
<td>17. Spaces bites consistently 5mm from one another</td>
<td>0</td>
<td>1</td>
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<tr>
<td>18. Instructs assistant to follow using appropriate tension and direction</td>
<td>0</td>
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<tr>
<td>19. Completes the posterior wall suture around the toe of the anastomosis</td>
<td>0</td>
<td>1</td>
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<tr>
<td>20. Completes anterior wall suturing starting at the heel</td>
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<tr>
<td>21. Has the two suture ends meet and ties along the anterior wall (avoiding the toe of the anastomosis)</td>
<td>0</td>
<td>1</td>
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<tr>
<td>22. Avoids excessive trauma / handling of artery with instruments</td>
<td>0</td>
<td>1</td>
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<tr>
<td>23. Guides suture down to desired position following bites</td>
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<tr>
<td>24. Ensures that graft lays as patch (on outside) over the arteriotomy</td>
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<tr>
<td>25. Flushes graft with saline and allows for back bleeding prior to securing last knots</td>
<td>0</td>
<td>1</td>
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<tr>
<td>26. Ties final suture with appropriate tension – no air knot</td>
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<tr>
<td>27. Uses a minimum of six throws on all knots</td>
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<tr>
<td>28. Loads needle 1/2 to 2/3 from tip &gt;80% of time</td>
<td>0</td>
<td>1</td>
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<tr>
<td>29. Uses correct needle needle angle &gt;60% of time</td>
<td>0</td>
<td>1</td>
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</tbody>
</table>
## ACS/APDS Surgery Resident Skills Curriculum
### Global Rating Scale

Please circle the number corresponding to the candidate’s performance regardless of the candidate’s level of training.

<table>
<thead>
<tr>
<th>Category</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tbody>
<tr>
<td><strong>Respect for Tissue</strong></td>
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<tr>
<td>Frequently used unnecessarily force or tissue or caused damage by inappropriate use of instruments</td>
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<tr>
<td>Careful handling of tissue but occasionally caused inadvertent damage</td>
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<tr>
<td>Consistently handled tissue appropriately with minimal damage to tissue</td>
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<tr>
<td><strong>Time &amp; motion</strong></td>
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<tr>
<td>Many unnecessary moves</td>
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<td>Efficient incision and motion and maximum efficiency</td>
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<tr>
<td><strong>Instrument handling</strong></td>
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<tr>
<td>Repeatedly makes tentative or awkward moves with instruments through inappropriate use</td>
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<tr>
<td>Competent use of instruments but occasionally appeared effort or awkward</td>
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<tr>
<td>Paired movements with instruments and no stiffness or awkwardness</td>
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<tr>
<td><strong>Knowledge of instruments</strong></td>
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<tr>
<td>Frequently asked for wrong instrument or used inappropriate instrument</td>
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<tr>
<td>Knew names of most instruments and used appropriate instrument</td>
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<tr>
<td>Obviously familiar with instruments and their names</td>
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<tr>
<td><strong>Flow of operation</strong></td>
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<tr>
<td>Frequently stopped operating and seemed unsure of next move</td>
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<tr>
<td>Demonstrated some forward thinking with reasonable progress of procedure</td>
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<tr>
<td>Obviously planned course of operation with effortless flow from one move to the next</td>
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<tr>
<td><strong>Use of assistants (if applicable)</strong></td>
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<tr>
<td>Consistently poor use of assistants or failure to use assistants</td>
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<tr>
<td>Appropriate use of assistants</td>
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<tr>
<td>Strategic use of assistants to the patient’s advantage</td>
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<tr>
<td><strong>Knowledge of specific procedure</strong></td>
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<tr>
<td>Deficient knowledge, required specific instruction at most steps of operation</td>
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<tr>
<td>Knew all important steps of operation</td>
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<td>Demonstrated familiarity with all steps of the operation</td>
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<td><strong>Overall performance</strong></td>
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<tr>
<td>Would not allow to perform procedure clinically without significant guidance/supervision</td>
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<tr>
<td>Would selectively allow to perform procedure clinically</td>
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<tr>
<td>Would allow to perform procedure independently</td>
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<tr>
<td><strong>Quality of final product</strong></td>
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<tr>
<td>Very poor</td>
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<tr>
<td>Competent</td>
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<tr>
<td>Overall superior</td>
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</tbody>
</table>

### Net Assessment

- 1: Unacceptable: should repeat module
- 2: Borderline: needs more practice
- 3: Proficient

Resident: ____________________________
Examiner: ____________________________
Date: _______________________________
Interim Experience Survey

1. Since the initial training/testing period have you performed any FAST exams?
   a. Yes/No.

2. If yes – how many have you performed? # ________

3. Since the last training/testing period have you had additional training in FAST ultrasound?
   a. Yes/No

4. If yes, did you perform any FAST exams?
   a. Yes/No

5. If yes – how many FAST exams did you perform during that training? # ________

6. Please use the scale below to answer the following questions.

<table>
<thead>
<tr>
<th>Not at all comfortable</th>
<th>Somewhat comfortable</th>
<th>Very comfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>4</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

Please rate your comfort level performing a FAST exam. _____
Please rate your comfort level obtaining a hepatorenal view. _____
Please rate your comfort level obtaining a splenorenal view. _____
Please rate your comfort level obtaining a substernal view of the heart. _____
Please rate your comfort level obtaining a view of the bladder. _____
Please rate your comfort level at identifying a positive FAST exam. _____
Please rate your comfort level adjusting the gain and depth. _____

Subject: # ________ Date: ________
R2/R3 Curriculum Opportunities

• Additional ultrasound training
  – FAST
  – Echocardiography
  – US-guided procedures

• Colonoscopy/EGD simulation

• FLS/Robotic skills
R2/R3 Curriculum Opportunities

- Skill decay (knowledge retention) is concerning

- Changes already being made in this curriculum
  - Spaced repetition of desired skills
  - Skill is a trackable outcome

- Expanding the group allows for longitudinal study
Questions?
Department of Surgery Medical Student Education Program

Department of Surgery Research Conference
August 8, 2018

Andrew Kastenmeier, MD
Associate Professor
Director, Surgery Clerkship
Associate Chief, Division of Education
Disclosure Information

Nothing to disclose.
Surgery Clerkship

• Required clerkship for all medical students
• Occurs during the 3rd year of medical school
• 200+ students per year
• 2 months
  ▫ 2 consecutive one-month rotations
• 17 different rotations
  ▫ Froedtert, VA, community hospitals

• 2 Regional Campuses (3 year programs)
  ▫ MCW Green Bay
  ▫ MCW Central Wisconsin
Individual Learning Plans Support Independent Study and Contribute to Improved Learning and Outcomes in the Surgery Clerkship

Andrew Kastenmeier, MD1, 4, Catie Fihn, MBA1, 4, Robert Treat, PhD2, Philip Redlich, MD, PhD1, 3, 4, Raymond Chou1, 4, Amy Homel, MS1, 4, Brian Lewis, MD1, 3, 4

1Department of Surgery, Medical College of Wisconsin, 2Academic Affairs, Medical College of Wisconsin, 3Clement J. Zablocki VA Medical Center, 4Division of Education in the Department of Surgery, Medical College of Wisconsin

Surgical Education Week (ASE, APDS) April 21, 2017

In 2014, we had an opportunity to implement a new curricular element to our surgical clerkship.

We wanted to implement an exercise with the goal of developing self-directed learning skills.

Designed the Individual Learning Plan (ILP) requirement as a way to foster self-directed learning skills.
LCME Standard 6: Competencies, Curricular Objectives, and Curricular Design

**Element 6.3 - Life-Long Learning**

“The faculty of a medical school ensure that the medical curriculum includes *self-directed learning* experiences and time for *independent study* to allow medical students to develop the skills of life-long learning.”

Clinical Learning Environment

- Medical school – the clinical years
  - Transition from classroom learning to clinical learning
  - Unpredictable aspects of curriculum
  - Preparation for life-long learning
Individual Learning Plan (ILP)

- M3 clerkship students were required to independently identify a personal learning need:
  - Surgical topics that represent a personal knowledge gap
  - Surgical topics of interest
  - Surgical topics that were likely to be insufficiently covered during the 8-week general surgery clerkship
Individual Learning Plan (ILP)

- Web Initiative for Surgical Education of Medical Doctors (WISE-MD®)
  - On-line modules pertaining to surgical disease
    - 21 available on-line modules
    - Presented in video format
    - Narrated by academic experts

- Available on-line through an institutional subscription at MCW
Individual Learning Plan (ILP)

- After completing the WISE-MD® module, students were required to synthesize the relevant information and:
  - complete an essay (limited to 450 words)
  - or
  - craft a multiple-choice, board-style question (MCQ) with explanations for each answer option
Individual Learning Plan (ILP)

- Students submitted their work electronically.
- Work was reviewed.
  - Via an iPad application (Assignment Grader®)
- ILP requirement constitutes 5% of the clerkship grade.
- Students were required to compete two ILPs during the clerkship.
Individual Learning Plan (ILP)

- ILPs required starting in July 2014.
- Starting in 2015 we began surveying the students at the end of the M3 clerkship.
- Starting in 2016 we began surveying students following their M4 surgical elective or acting internship.
Is the ILP project an effective way for students to acquire medical knowledge?

1. Survey students at the end of the M3 clerkship regarding their perceptions of the impact of the ILP requirement on:
   - Surgical knowledge
   - Clinical skills
   - NBME Surgery Subject Examination preparedness
   - Overall educational value

2. Compare NBME Surgery Subject exam scores before and after initiation of the ILP project
Does the ILP project foster SDL skills?

Survey students a year later (following M4 surgery rotation) regarding:

1. Ability to independently identify knowledge gaps and to evaluate the quality of medical information

1. The frequency with which they perform SDL related to patient care

2. Effectiveness of the M3 surgery clerkship as well as the ILP project in developing SDL skills
Results

• Twelve 8-week M3 rotations, 394 students

• 788 ILP submission were received (100% completion rate)
FREQUENCY OF TOPIC SELECTION

0 30 60 90 120

Trauma...
Burn mgmt
Breast ca
AAA
Thyroid
Carotid dz
Skin ca
Lung ca
Pyloric...
Adrenal mass
Bowel obstr
Mbd obesity
Inguinal...
Pancreatitis
Diverticulitis
Anorectal dz
Appendicitis
Cholecystitis
Hypercalce...
Peds hernia
Colon ca
M3 Survey Data

• Starting in 2015 we began surveying the students at the end of the M3 clerkship.

• 165 students answered survey questions representing a 100% response rate.
My ILPs improved my medical knowledge of surgery

- Strongly Agree: 82%
- Slightly Agree: 40%
- Neutral: 25%
- Slightly Disagree: 10%
- Strongly Disagree: 0%
My ILPs improved my patient care skills on the surgery clerkship

- **Strongly Agree**: 60%
- **Slightly Agree**: 25%
- **Neutral**: 10%
- **Slightly Disagree**: 5%
- **Strongly Disagree**: 0%
My ILPs helped prepare me for the NBME surgery subject exam

- Strongly Agree: 40%
- Slightly Agree: 45%
- Neutral: 15%
- Slightly Disagree: 10%
- Strongly Disagree: 0%

81% of respondents agreed that their ILPs helped prepare them for the NBME surgery subject exam.
Please rate the overall educational value of the two required ILPs

<table>
<thead>
<tr>
<th>Educational Value</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exceptional educational</td>
<td>13.3%</td>
</tr>
<tr>
<td>High educational value</td>
<td>44.9%</td>
</tr>
<tr>
<td>Average educational value</td>
<td>32.1%</td>
</tr>
<tr>
<td>Low educational value</td>
<td>9.1%</td>
</tr>
<tr>
<td>No educational value</td>
<td>0.6%</td>
</tr>
</tbody>
</table>
NBME Surgery Subject Exam

• Compared 2013-2014 class (prior to ILP project) to the 2014-2015 class

• Mean scores for the NBME SSE increased the year following implementation of the ILP requirement
  ▫ 74.9 vs 76.6
  ▫ \( p = 0.042 \)
  ▫ \( d = 0.21 \) (Cohen’s effect size)
M4 SURVEY DATA

• 32 M4 students completed the survey representing a 100% response rate.
  ▫ 20 students were on the surgery acting internship (AI)
  ▫ 12 students were on a surgery elective

• There was no statistical difference in survey results between students on the AI and elective rotations (Mann-Whitney U-tests).
I have the ability to identify personal knowledge gaps

PERCENTAGE

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>65%</td>
<td>35%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>
I have acquired independent learning skills that will support lifelong learning

100% Strongly Agree
How often do you independently access resources (journals, on-line content, textbooks, etc.) for patient care?
The surgery clerkship was effective in helping me develop independent learning skills.
Please rate the effectiveness of the M3 clerkship ILPs toward your development of independent learning skills.

- Highly Effective: 15%
- Very Effective: 25%
- Effective: 40%
- Somewhat Effective: 10%
- Little or No Effectiveness: 10%
Conclusions

The ILP requirement has been a well-received and effective educational tool for the acquisition of medical knowledge.

- Students perceive ILPs as having strong educational value and a positive impact on:
  - medical knowledge
  - preparedness for the NBME Surgery Subject Exam

- The ILP requirement may be associated with higher NBME Surgery Subject Exam scores.

- ILPs offer an additional method for learning on the surgery clerkship.
Conclusions

Senior medical students perceive that they have acquired self-directed and life-long learning skills.

- They perceive that the surgery clerkship and the ILP requirement, foster these skills.

Overall, the ILP requirement supports components of the LCME standard (6.3) to provide experiences which allow the development of self-directed learning skills.
Thank you . . .

- Questions?
Next Week: Special Surgery Research Conference:

Academic Metrics: Understanding H-index and Blue Ridge NIH Award Rankings

Next Wednesday, August 15th
5:00-6:00 pm
Location: HUB A1015/A1035

Raul Urrutia, MD