

# LEADING THE WAY

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DEPARTMENT OF SURGERY



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## From the Chair | Douglas B. Evans, MD

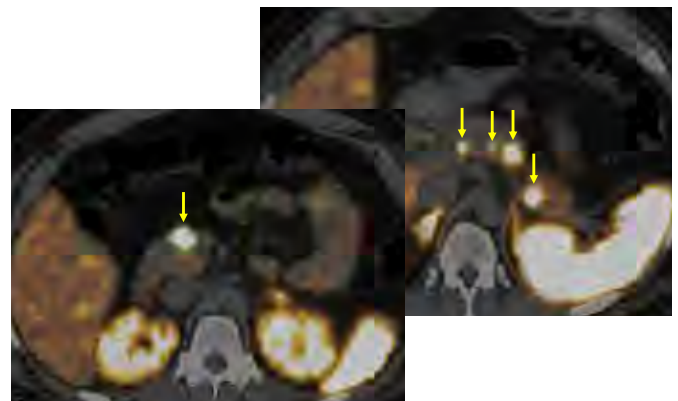
This issue of *Leading The Way* highlights the research of our 2018 “We Care” grant recipients, Drs. David Joyce, Tammy Kindel, and Tina Yen. A huge thank you to those who make the support of this research program possible – the We Care Committee, (members pictured in photograph to the right). Innovation and discovery represent the only way to ensure that tomorrow’s treatments are better than today’s. Importantly, research is also the cornerstone of good patient care and all successful educational programs – as it develops inquisitive minds. A commitment to the constant quest for new knowledge contains the promise that every patient receives the best possible treatment. This may be as simple as a quick refresher on current treatment guidelines or as complex as spending the weekend trying to piece together a confusing clinical scenario in a patient whose diagnosis remains elusive. Allowing the clinic to be an extension of the laboratory brings an inquisitive mind to the bedside of all patients. Such inquisitive minds recently cared for a young man who presented with hyperparathyroidism. Because of his young age and the finding of multigland disease, he underwent genetic testing which confirmed the diagnosis of Multiple Endocrine Neoplasia type 1. This allowed for the early diagnosis and treatment of multifocal neuroendocrine tumors in his pancreas (see scan images to the right, bottom). He and his wife were about to start a family, which now will be done with the aid of in-vitro fertilization with preimplantation genetic diagnosis, thereby removing this disease from future generations in his family. This would not have happened without inquisitive minds. The development of inquisitive minds is made possible by talented educators who make innovation and discovery contagious.

The We Care Fund supports the research which fuels the fire of innovation and discovery and allows physician scientists to be successful. Such basic, translational and clinical research creates a culture of discovery as part of the daily practice of medicine. This would not be possible without the We Care Fund and the unique commitment and many extra efforts of the We Care Committee – individuals whose hard work leads directly to better treatments for the patients of Milwaukee and far beyond – turn the page for a complete listing of the wonderful people who represent “We Care.” •



### Members of the We Care Committee

Meg Bilicki, Jenni Vetter, Arlene Lee, Aaron Valentine, Carrie Bedore, Betsy Evans, Holly Gamblin, Jennifer La Macchia, Sandy Harsh, Abby Schroeder, Joel Lee



Gallium-68 DOTATATE PET scan demonstrating several foci of increased radiotracer uptake within the pancreas consistent with MEN1-associated multifocal neuroendocrine tumor.

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# Congratulations 2018 We Care Fund Grantees!

By: Meg M. Bilicki, Director of Development for the Department of Surgery



The Department of Surgery is pleased to announce the recipients of the **2018 We Care Fund for Medical Innovation and Research** faculty grant recipients. The We Care Scientific Review Committee, for which membership changes each year, selected three grant proposals for funding. The awardees and their proposals are:



- **David L. Joyce, MD**, Associate Professor, Division of Cardiothoracic Surgery  
*Percutaneous Distal Embolic Protection (PDEP) for Left Ventricular Assist Device Thrombolysis*



- **Tammy Lyn Kindel, MD, PhD**, Assistant Professor, Division of General Surgery  
*The Effect of Bariatric Surgery and Antibiotics on the Gut Microbiome and Hypertension*



- **Tina W. F. Yen, MD, MS**, Professor, Division of Surgical Oncology  
*A Multimodal Scanning Microscope for Intraoperative Assessment of Tumor Margins During Breast Conserving Surgery*

The We Care Fund for Medical Innovation and Research in the Department of Surgery brings innovation and discovery from bench to bedside. Established in 2010, the We Care Fund has raised more than \$1.4 million from more than 1,000 grateful patients, families, friends, faculty, and alumni. Every penny raised supports basic, translational or clinical research; projects that require immediate funding and cannot wait for traditional funding sources.

As part of one of the nation's top academic medical health centers, the MCW Department of Surgery uses the We Care Fund to support research in the fields of cancer, cardiovascular disease, gastrointestinal diseases, organ transplantation, diseases of the newborn/child, and trauma.

To date, the We Care Fund has awarded \$905,000 to 17 projects covering the full spectrum of research which will provide improved outcomes for patients and their families. In 2018, 11 proposals were submitted by physicians and scientists with truly innovative ideas.

The We Care Committee, which includes professional, business, and community leaders, is the engine that drives fundraising for research and increasing community awareness.

This past year, the We Care Committee held its first annual Derby de Mayo fundraiser, which was attended by 150 enthusiastic supporters. "Thank you to everyone who came out and participated in the Derby de Mayo event! Together we were able to raise an additional \$40,000 for the We Care Fund," says Arlene Lee, Committee Chair. This year's Derby de Mayo celebration will be held on May 4 at Engine Company No. 3. Private gifts from generous donors help sustain the We Care Fund; therefore, the request for applications are not predetermined and are announced each winter prior to the spring grant reviews. Philanthropic support plays a vital role in providing seed grants.

If you would like to learn more about the We Care Fund, or are interested in making a gift or attending the Derby de Mayo event, please visit the website at [www.mcw.edu/wecare](http://www.mcw.edu/wecare) or contact Meg Bilicki, Director of Development for the Department of Surgery, at [mbilicki@mcw.edu](mailto:mbilicki@mcw.edu) or (414) 955-1841. •

## WE CARE FUND FOR MEDICAL INNOVATION AND RESEARCH COMMITTEE, 2018 - 2019

Arlene A. Lee, Chair	Joel S. Lee
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Jamie Evans	Brian Neuwirth
Sandra Hansen Harsh	Abigail Barnes Schroeder, PA-C
Melissa Irwin	Peggy Schuemann
Ruth Joachim	Brian Trexell
Kathryn Kuhn	Aaron Valentine
Jennifer La Macchia	Jennifer Vetter

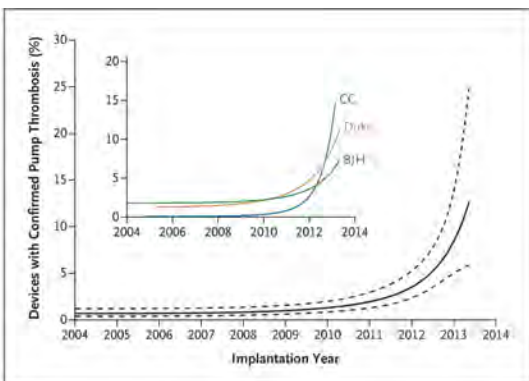
# The Milwaukee Medici



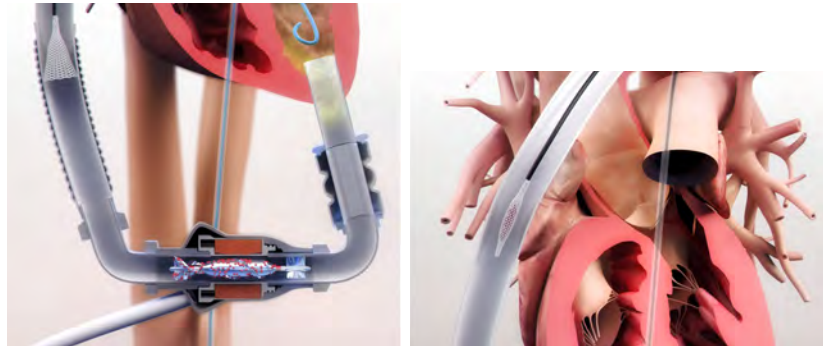
**DAVID L. JOYCE, MD**  
Associate Professor  
Division of Cardiothoracic Surgery

In his book, *The Geography of Genius: A Search for the World's Most Creative Places from Ancient Athens to Silicon Valley*, Eric Weiner explored several unique environments throughout history that provided the necessary ingredients for the world's most notable breakthroughs to occur. Anyone who has stared into the eyes of the Mona Lisa or craned their neck to observe the stunning detail of the Sistine Chapel can easily appreciate this intersection of time and space that occurred in Florence at the end of the fifteenth century. Although it is somewhat more difficult to identify the precise conditions that precipitated these creative explosions, there is very little question that much of the credit for some of the greatest art ever produced belongs to the House of Medici. In the words of Weiner, "the Medicis were originally apothecaries—their coat of arms looked like six pills arranged in a circle—and that is, in a way, the role they played. They revved up the metabolism of Florence, like a dose of caffeine."

When I arrived in Milwaukee for the first time at the beginning of 2017, there was an unmistakable sense of "brutal optimism" typical of a Silicon Valley startup but almost unheard of in an academic medical community. Walking around this hub of activity (even before there was a "HUB"), there was a definite vibe that the Medical College of Wisconsin was hard at work in an important chapter of medical history. Just as the generosity of some local benefactors enabled the artists of the Renaissance to redefine beauty, the "We Care Fund" has emerged as Milwaukee's canvas for scientific discovery. Established in 2010 through a collaboration between Department of Surgery Chair Douglas Evans and Arlene Lee, this grant mechanism provides an opportunity to obtain seed funding that can fuel discovery to bring novel therapies



**Figure 1.** A recent study from three large LVAD implanting centers revealed a significant increase in pump thrombosis. Although this has been offset in part with newer technology, the delicate balance between thrombosis and bleeding remains the Achilles Heel of LVAD therapy. *N Engl J Med* 2014; 370:33-40



**Figure 2** These drawings depict the deployment of a catheter into the LV cavity, which permits local administration of lytic agents to dissolve clots that have formed within the LVAD device. Deployment of the percutaneous distal embolic protection device permits capture of embolic debris to prevent stroke or other embolic complications.

from "patents to patients," to steal a line from the Office of Technology Development.

Our research team was honored this year to receive a We Care Fund award for our work in the treatment of heart failure. Although the surgical treatment of heart failure has seen dramatic technologic advances through the evolution of Mechanical Circulatory Support, the propensity for thromboembolic and hemorrhagic complications presents a substantial limitation of this therapy. As part of a collaboration with Mayo Clinic Ventures and the "Innovation Accelerator Program," we developed a minimum viable product for a percutaneous embolic protection device that can be deployed in the treatment of Left Ventricular Assist Device (LVAD) thrombosis. This complication has been recently recognized as a growing limitation of LVAD therapy (Figure 1) and has traditionally required a device exchange through an invasive surgery. In an effort to mitigate the substantial morbidity and mortality associated with this procedure, our team developed a strategy to administer lytic therapy directly into the left ventricular cavity while capturing any embolic debris with the protection device, which is under development. By testing this approach in a series of animal experiments, we hope to establish a proof of concept that will enable us to move toward human trials.

Although anyone who has toiled in the basic science laboratory can attest to the substantial challenges that exist with this type of endeavor, we are humbled and encouraged by the opportunity to collaborate with so many thoughtful members of the Milwaukee medical community in our efforts. Through the generosity of the We Care Committee, we aspire to bring new hope to the advanced heart failure population in Wisconsin and beyond. •

**FOR ADDITIONAL INFORMATION** on this topic visit [mcw.edu/surgery](http://mcw.edu/surgery), or contact Dr. Joyce, 414-955-6969, [djoyce@mcw.edu](mailto:djoyce@mcw.edu).

# We Care Research Grant 2018: The Effect of Bariatric Surgery on Gut Microbiome and Hypertension Resolution



**TAMMY L. KINDE, MD, PHD, FACS, FASMBS**  
Assistant Professor  
Division of General Surgery

Hypertension is the leading cause of cardiovascular and renal diseases, including stroke, heart failure, coronary artery disease, and chronic kidney disease, accounting for 13% of all deaths and estimated to affect 1.6 billion people by 2025.<sup>[1]</sup> Despite lifestyle changes with diet and exercise, the prevalence of hypertension remains high with the majority of patients requiring life-long medical treatment.

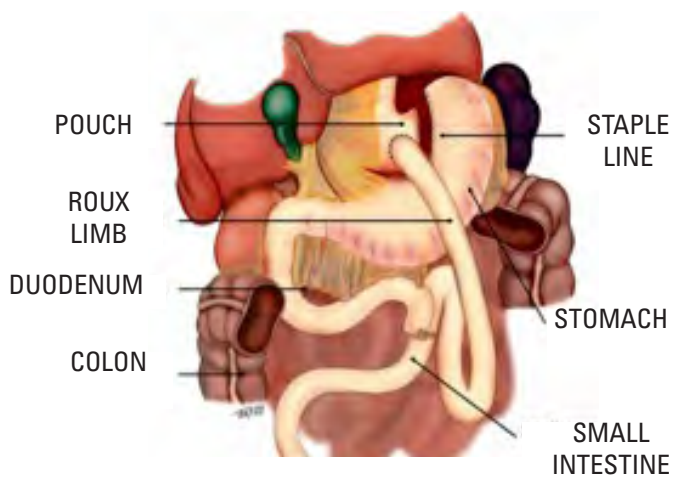
The cause of hypertension is unknown in 90% of cases. However, it is believed that systemic inflammation mediated by alteration in the gut microbiome is an important contributor to hypertension.<sup>[2]</sup> Supporting this belief of a role for gut microbial changes in the pathogenesis of hypertension, alteration of the gut microbiome with antibiotics or probiotics improves hypertension.<sup>[3,4]</sup>

Although many patients require life-long medical treatment for their hypertension, Roux-en-Y gastric bypass (RYGB), a bariatric surgery performed for the treatment of morbid obesity, results in substantial improvement in hypertension with 50% of patients able to come off all medications (resolution of hypertension) by one year after surgery.<sup>[5]</sup> One mechanism for the dramatic resolution of hypertension after bariatric surgery may include beneficial, post-surgical changes in the gut microbiome. As shown in Figure 1, RYGB re-routes nutrient flow from the majority of the stomach, duodenum, and proximal small intestine directly to the jejunum with mixing of bile, pancreatic secretions, and nutrients occurring more distal in the small bowel. There appears to be

profound and consistent changes in the gut microbial composition after RYGB.<sup>[6-8]</sup> However, the effect of RYGB on the gut microbiome in hypertensive patients and its role in disease resolution is unknown.

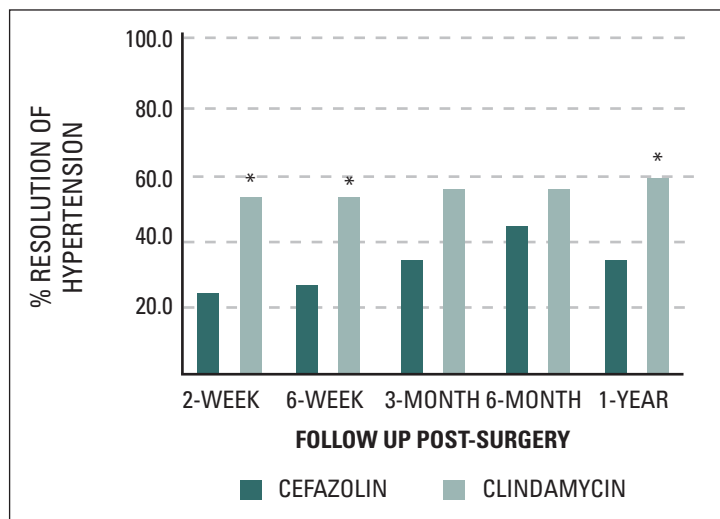
In support of a role for the microbiome in hypertension resolution after RYGB, we have previously performed a retrospective analysis of adult bariatric patients who underwent RYGB between 2012-2016 at the Medical College of Wisconsin's Comprehensive Weight Loss Center. The standard antibiotic prophylaxis to reduce the risk of surgical site infections given with RYGB is a one-time pre-operative dose of intravenous cefazolin. Intravenous clindamycin is used as an equally efficacious alternative in patients with a penicillin allergy. We found a higher resolution rate of hypertension after RYGB with the use of prophylactic clindamycin compared to cefazolin. As shown in Figure 2, patients who underwent RYGB and received clindamycin had a significantly higher rate of hypertension resolution compared to cefazolin as early as 2 weeks post-operatively (52.4% vs 23.5% respectively,  $p=0.008$ ) and up to 1-year (57.9% vs 44.0%,  $p=0.05$ ). We found no significant differences in pre-operative demographics such as patient age, severity of hypertension, pre-operative body mass index, or post-operative weight loss to account for the significant effect of antibiotic choice on hypertension resolution. Despite intravenous dosing, both antibiotics are excreted into the bile and subsequently into the gastrointestinal tract where they can reach high concentrations in the intestinal lumen leading to major disruptions of the gut microbiota<sup>[9,10]</sup>. However, their effects on the microbiome differ. Clindamycin is a broad-spectrum antibiotic that primarily targets anaerobic bacteria as well as gram-positive aerobic bacteria such as *Staphylococcus aureus*. Cefazolin is a broad spectrum antibiotic with gram-positive and gram-negative coverage. The short or long-term additive effect of different, selective intravenous antibiotics to surgeries inherently altering the gastrointestinal microbiome, like RYGB, has never been studied.

This study funded by We Care will include two main aims. The first will prospectively determine if clindamycin antibiotic administration at the time of RYGB improves the rate of hypertension resolution compared to cefazolin. We will include 36 hypertensive patients who are undergoing RYGB as treatment for morbid obesity. Patients will be randomized to a single peri-operative antibiotic dose of clindamycin or cefazolin, and we will monitor the rates of hypertension resolution at one year. Our second aim will be to determine if RYGB with selective antibiotic administration changes the post-operative microbial composition with increased diversity and richness up to one year after surgery. To complete this aim, we will analyze stool samples by 16S sequencing for richness and diversity both pre-operatively and at 2 time points post-operatively



**Figure 1.** Roux-en-Y gastric bypass

# Bariatric Surgery and Antibiotics on the



**Figure 2.** Post-operative % resolution of hypertension in patients undergoing Roux-en-Y gastric bypass. (\*)  $p < 0.05$  comparing cefazolin to clindamycin for designated time point.

of hypertensive patients undergoing RYGB receiving either clindamycin or cefazolin. We predict an increase in richness and diversity at one year after RYGB, with significant beneficial microbial composition changes in clindamycin compared to cefazolin patients. In addition, we will perform metagenomics sequencing for gene content and functional assessment related to inflammation and hypertension.

This research project will help understand the role of the gut microbiome in the beneficial metabolic effects of RYGB and how the host-gut microbial environment can be beneficially augmented with gastrointestinal surgery and antibiotics to resolve hypertension. Our research team includes a unique, collaborative team of content-experts from the Medical College of Wisconsin, including the Comprehensive Weight Loss Center, the Genomic Sciences and Precision Medicine Center, and the Center for Microbiome Research. Study members include Dr. Tammy Kindel, principal investigator, as well as Drs. Raul Urrutia, John Kirby, Nita Saltzman, and Michael Zimmermann. These studies are novel with the potential to expand knowledge and treatment not just to hypertensive obese patients, but to any disease process that is affected by the microbiome and inflammation, such as type 2 diabetes mellitus, asthma, and multiple gastrointestinal cancers. •

**FOR ADDITIONAL INFORMATION** on this topic, see references, visit [mcw.edu/surgery](http://mcw.edu/surgery), or contact Dr. Kindel, 414-955-1771, [tkindel@mcw.edu](mailto:tkindel@mcw.edu).

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# A Multimodal Scanning Microscope for Intraoperative Breast-Conserving Surgery



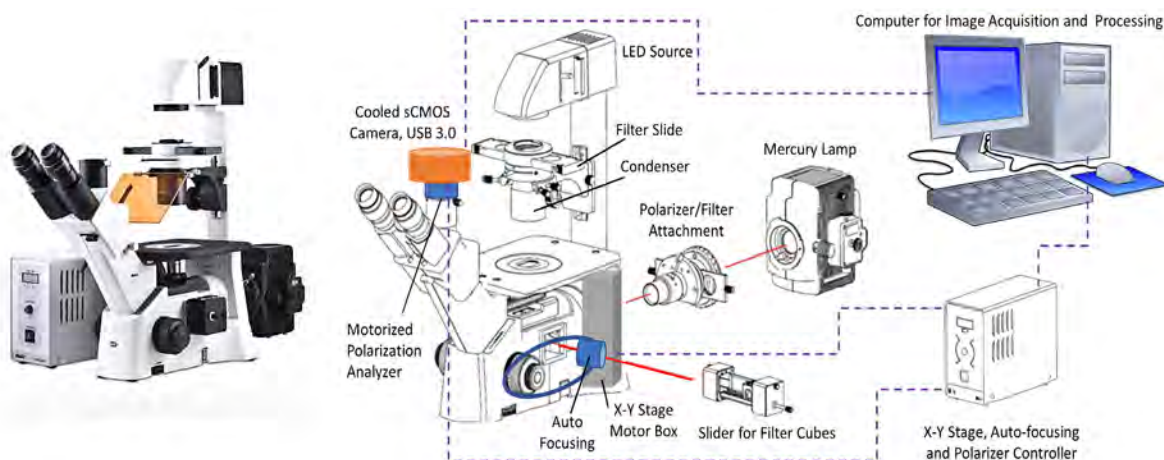
**TINA YEN, MD, MS**  
Professor  
Division of Surgical Oncology

**B**reast cancer is the most common cancer in women. In 2018, it is estimated that there will be over 265,000 women with newly diagnosed breast cancer in the United States, of whom about 50-75% will undergo breast-conserving surgery (BCS, lumpectomy).<sup>1-3</sup> The goal of BCS is to completely remove the tumor with a rim of normal, unaffected breast tissue while preserving as much normal tissue as possible. During surgery, the lumpectomy specimen typically undergoes X-ray examination to ensure that the tumor has been excised and to evaluate radiographically how close the tumor is to the surface of the specimen. However, definitive pathologic evaluation of margin status typically requires several days. Positive margin status, or the presence of cancer cells at the surface of the specimen, is one important predictor of higher rates of local recurrence after BCS.<sup>4</sup> Since definitive margin status information is not available until days after the initial surgery and rates of positive margins vary substantially, approximately 20-25% of women undergo subsequent re-excision surgery to remove more breast tissue to achieve negative margins, or no cancer cells at the surface.<sup>2-4</sup> Thus, complete tumor excision with a rim of normal tissue around the tumor, ideally at the first operation, is essential to not only reduce the risk of recurrence but also reduce patient anxiety, optimize cosmesis, avoid delay for adjuvant cancer therapy, and

decrease costs (estimated \$228 million annually) associated with additional surgeries.<sup>4,5</sup>

Currently, four methods are available to perform intraoperative margin assessment.<sup>6,7</sup> Radiologic examination of the resected specimen is largely available and rapid but is associated with variable rates in accurately predicting margin status and does not improve re-excision rates. Frozen section is an involved technique (freezing, slicing and histologically evaluating the surgical specimen) that typically samples only a portion of the surgical margin and has variable false-negative rates. In addition, this technique is extremely labor- and time-intensive, requires an on-site pathologist, and significantly lengthens operating room time. Cytologic imprint prep analysis by touch preparation (touching a glass slide to the specimen margin) or scrape preparation (scraping the specimen surface prior to transferring the tissue to a glass slide) is less labor-intensive; however, these techniques require a specialized on-site cytologist. A considerable number of patients undergo BCS at an ambulatory surgery center where there is no on-site pathologist or cytologist. For these reasons, these intraoperative pathology options are not routinely available or used.<sup>6</sup> Lastly, the only FDA-approved device for margin analysis, the MarginProbe®, is a pen-like probe that utilizes radiofrequency to analyze tumor margins.<sup>6,7</sup> Limitations are its low specificity (<70%) and the time required to manually scan the entire specimen point-by-point. Thus, there is a critical need for a more effective intraoperative tool to assess margins accurately and efficiently during BCS to reduce re-excision rates.

Given the limitations of currently available methods, three emerging optical approaches are being evaluated: 1) imaging the surgical field to guide resection;<sup>8-10</sup> 2) examining the resection cavity *in vivo*;<sup>11</sup> and 3) examining the margins of the excised



**Fig. 1.** (a) Photograph of the Motic AE31e microscope and (b) schematic illustration of the multimodal scanning microscope.

# erative Assessment of Tumor Margins

tumor specimen.<sup>12-14</sup> Each approach has its potential benefits and limitations and none have demonstrated the capability to analyze an entire lumpectomy specimen with both adequate microscopic resolution and time efficiency in a clinical setting.

With the We Care pilot funding, I have partnered with **Bing Yu, PhD**, a biophotonics engineer who holds a joint appointment at MCW and Marquette University in the Joint Department of Biomedical Engineering. Our central hypothesis is that there are significant cellular and structural optical contrasts that can be used to differentiate breast cancer cells from normal tissues. For this proposal, we aim to design and construct a multimodal scanning microscope using multiple different contrast agents for reflectance, fluorescence and polarization imaging (Fig 1). We will then image fresh breast cancer and normal breast specimens and analyze images to identify optical biomarkers for distinguishing cancer from normal cells.

Our ultimate goal is to successfully develop this novel multimodal scanning microscope that can efficiently image the entire excised lumpectomy specimen for residual cancer cells at high resolution and with high accuracy without disrupting operating room workflow or significantly prolonging time in the operating room. If the multimodal scanning microscope detects positive margins intraoperatively, surgeons could then remove additional tissue while the patient is still in the operating room. This would translate to improving oncologic outcomes (decreasing re-excision rates, delays in adjuvant treatment, recurrence rates) and patient satisfaction (anxiety, cosmesis), and decreasing economic burden (costs of additional surgeries and income loss due to recovery from multiple surgeries) to patients, caregivers, healthcare systems, and society. This multimodal scanning microscope could fulfill a huge unmet need for the vast majority of surgeons who do not have access to any intraoperative margin assessment options. The results from this pilot We Care funding will serve as the basis for larger scale successor clinical studies that will determine the sensitivity and specificity as well as clinical usability of the multimodal scanning microscope for margin detection during BCS. If successful, tens of thousands of unnecessary surgeries could be prevented annually. •

**FOR ADDITIONAL INFORMATION** on this topic, see references, visit [mcw.edu/surgery](http://mcw.edu/surgery), or contact Dr. Yen, 414-955-1440, [tyen@mcw.edu](mailto:tyen@mcw.edu),

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# An Overview of the Initial Experience with the Department of Surgery's "Quality Minute"



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PGY4 Surgery Resident



**JON GOULD, MD**  
Chief and Alonzo P. Walker Chair of General Surgery  
Vice Chair for Quality, Department of Surgery

In October 2017, the Medical College of Wisconsin's Department of Surgery began hosting a monthly 'Quality Minute.' This is a brief presentation highlighting an ongoing quality improvement project affecting the department. This presentation may relate to a potential project not yet started, an ongoing project, or an update on an established or previously presented project. In the 2017-2018 academic year, we had presentations regarding Safety Event Reporting, Catheter Associated Infections, Venous Thromboembolism Events, Surgical Site Infections, Hand Hygiene, the Rothman Index, Preoperative Carbohydrate Loading in Bariatric Surgery, and updates from the NSQIP Semi-Annual Report. These Quality Minutes occur during our Morbidity and Mortality Conference and are attended by faculty surgeons, residents, advanced practice providers, medical students, and surgical ancillary staff. Depending on the theme of the presentation, invited guests are often asked to comment on hospital-wide initiatives related to the topic of the day. For instance, the hospital's VTE champion, a hematologist, was actively involved in the VTE presentation and discussion. One of our goals of the Quality Minute has been to increase awareness of ongoing QI efforts and opportunities, improve collaboration, and enhance the overall culture of safety in the department and beyond.

In order to better evaluate the impact of the program, a survey was distributed via email immediately prior to the first and last Quality Minute for the academic year ending in June 2018. In the initial survey, 66 people responded, the majority of which were residents (N=30, 45.5%) and attending surgeons (N=26, 39.4%). Other respondents included 7 advance practice providers (10.6%), 2 nurses (3.0%), and 1 self-classified as other (1.5%). At that time, only 40.9% of people (N=27) had filed a safety incident report at any time, and only 21 people (31.8%) had filed one in the previous year. Seven months after initiating the Quality Minute, our follow up survey had 47 responses; 19 residents (40.4%), 18 attending surgeons (38.3%), 5 advance practice providers (10.6%), 1 nurse (2.1%), and 4 self-classified as other (8.5%). We noted an increase in event reporting at any time (N=23, 48.9%) and in the past year (N=19, 43.2%). Our survey also revealed that the awareness among respondents of ongoing quality improvement projects increased over the first 7 months of the Quality Minute.

Another benchmark to evaluate any change in the culture related to safety is the dialogue in the department related to safety and quality improvement. To evaluate this, we asked respondents to rate the dialogue regarding quality. Prior to beginning the Quality Minute, over a third of people (N=23/66, 34.8%) rated the quality dialogue as poor or very poor. Only 30.3% of people (N=20/66) believed it to be good or very good. After seven months of the Quality Minute, 47.8% (N=22/46) believed the dialogue to be good to very good and only 13.0% (N=6/46) believed it to be poor or very poor. Interestingly, in the initial study, 20 of the 23 people rating the dialogue as poor or very poor were attendings or residents, but in the follow-up survey, only 3 attendings or residents still rated it as poor or very poor. It often takes many years to change the culture of any department, but we believe that this is an indication that we are seeing improved awareness and dialogue around safety and surgical quality, even at this early stage of our experience with the Quality Minute.

Given the positive response we have received regarding the Quality Minute this past year, we are planning to continue this monthly presentation. We hope that this continues to improve the collaboration and conversation among divisions within the Department of Surgery. We are also hoping that this brings stronger resident involvement in ongoing quality improvement projects. If you have any projects that are appropriate to highlight, please contact Dr. Jon Gould and we will be happy to discuss a Quality Minute presentation with you. We also welcome any feedback or suggestions to continue improving the Quality Minute and ensure that it is utilized to its full potential. •

**FOR ADDITIONAL INFORMATION** on this topic, visit [mcw.edu/surgery](http://mcw.edu/surgery), or contact Dr. Gould, 414-955-1760, [jgould@mcw.edu](mailto:jgould@mcw.edu).



# Utilizing the Rothman Index to Improve Patient Care and Outcomes



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In June 2018, Froedtert Hospital, Community Memorial, and St. Joseph's Hospitals implemented the Rothman Index (RI) into our clinical care setting, making it the first in Wisconsin and one of 80 in the country.<sup>1</sup> The RI is a peer-reviewed, statistically validated patient acuity score that is integrated into the electronic health record (EHR). It utilizes vitals signs, lab results, and nursing assessments to depict patients' clinical status and predict risk of clinical deterioration. The weighted attention to nursing assessments is what makes the RI unique compared to other patient acuity scoring systems.<sup>2</sup>

The RI score is updated continuously and in real time, and trends are visible in the patient's chart. Within our health system, we implemented a novel approach and have our virtual care team (VCT) at Inception Health monitoring these trends on every patient within our three-hospital system at all times. They then review the chart in conjunction with the trends and can notify and work closely with bedside nurses if concerns arise. Nurses can then assess patients and make decisions about notifying other members of the care team and escalating care when needed. With PeraHealth, Inc. as its parent company, the RI is deployed as a platform that includes PeraTrend, the visual dashboard for clinical surveillance, and PeraAnalytics, the assessment program to provide population-based quality analysis. PeraWatch is the system that allows our VCT to monitor such a large patient volume in real-time.

The RI was developed after a personal tragedy by two brothers, Michael and Steven Rothman, with professional backgrounds in engineering,

quantum chemistry, mathematical modeling, and data analytics. Their mother underwent surgery for aortic stenosis and initially recovered well, but soon suffered a complication with rapid decline and passed away. The brothers were convinced that the subtle evidence of her early decline was visible in the existing data within the EHR, but not recognized until too late to effectively intervene. The amount of data currently available within the EHR on any given patient is simply too extensive and complex for any single individual to assimilate, analyze, and act upon within a reasonable timeframe. This was the impetus for development of the RI tool.

Over the last ten years, the RI has been rigorously validated with evidence published in peer-reviewed journals. The predictive analytics tool has been implemented in a number of hospitals, and PeraTrend was granted 510(K) clearance by the FDA in 2018, one of the first technologies of its kind to receive that designation.<sup>3</sup> It also holds patents in Canada and reports foreign patents pending.<sup>3</sup>

Implementation of the RI tool and operating system have demonstrated impressive clinical outcomes. At Houston Methodist, a Clinical Emergency Response Team of nurse practitioners (NPs) utilized RI scores and trends to prioritize patient rounding and reduced failure to rescue rates by 22% and ICU transfers by 14%. Shannon Skilled Nursing Facility utilized PeraAnalytics to reorganize their discharge readiness assessment and achieved a 14% readmission rate, the lowest of eight facilities in their area and below the 23.5% national average for skilled nursing facilities (SNFs).

Applications for the RI have also been evaluated independently in the literature. Assessing discharge readiness and reducing hospital and ICU readmissions is a common application.<sup>4-6</sup> Others include predicting rapid responses and early sepsis,<sup>7,8</sup> determining optimal nursing assignments,<sup>9</sup> and providing a visual aid to assist patients and families in end-of-life care decisions.<sup>10</sup> The RI has notably been validated and utilized for both pediatric and adult patients.

In surgical patients, the RI has been found to predict post-discharge adverse events in geriatric hip fracture and elective spine patients.<sup>11,12</sup> It has also been found to predict rapid responses, postoperative sepsis, organ dysfunction, and surgical ICU transfers and readmission.<sup>13-15</sup>

Within our institution, the RI has a growing presence as an important clinical resource. Nurses are beginning to report the RI scores in their communications with clinicians about patient concerns. On some floors, data is displayed in areas visible to patient family members who have engaged nurses and physicians based on the scores and trends they see. This encourages further discussion on goals of care. In our department, residents presenting in weekly Morbidity & Mortality (M&M) conferences have been asked to incorporate the RI into case presentations and to comment on how it was utilized and whether it was insightful.

**CONTINUED ON PAGE 10**



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### ROTHMAN INDEX

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In January 2019, Froedtert Hospital and its affiliate hospitals will have six months of data for population-level analysis and to assess the impact of the tool on various clinical process and outcome metrics. Hospital-wide quality improvement projects are underway to better understand and design interventions around pressing concerns such as hospital capacity, nurse staffing, patient transfers for inpatient diagnostic studies, and readmissions. There will also be projects within the department specific to our surgical patient population.

Michael Rothman, as the Chief Science Officer for the Rothman Society for Innovation and Research, conceptualizes clinical deterioration not as a strictly linear trend but as a series of sharper declines with less effective recovery. He comments, “tools like the RI allow us to visualize these trends in real-time. The immediate goal will also be to understand what interventions based on the RI are most effective.” The ultimate goal, according to Rothman, will be to “change the nature of mortality in the hospital in a significant way.”

As technology advances, it is worthwhile to remember that tools are just that – tools. Health care professionals are responsible for diagnosing and treating disease, while simultaneously preventing harm to our patients during those processes. As the clinical care environment becomes increasingly complex, with more data, diagnostics, therapeutics, and greater needs for health system integration, tools like the RI have the potential to allow those designing and working within the system to improve the experience and outcomes for patients, with the ultimate goal of saving lives and providing the safest care possible. •

**FOR ADDITIONAL INFORMATION** on this topic, see references, see references, visit [mcw.edu/surgery](http://mcw.edu/surgery), or contact Dr. Resnick, 414-955-0287, [aresnick@mcw.edu](mailto:aresnick@mcw.edu).

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# Training Medical Students to “Stop the Bleed”



## RONALD L. SCHOCKE, MSII

Urban and Community Health Pathway  
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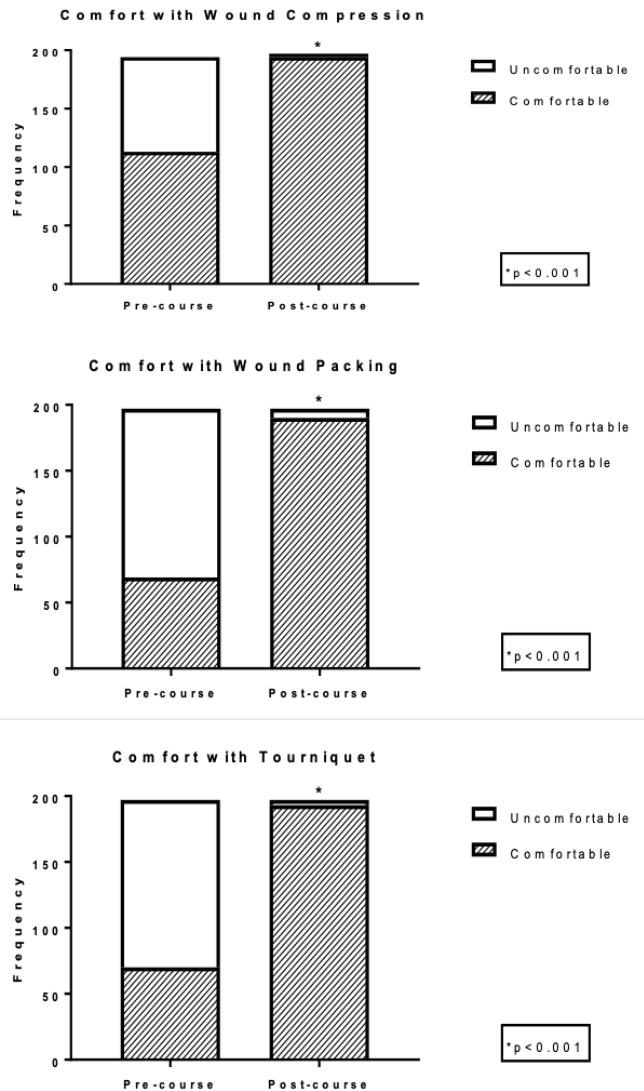
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Injury is the leading cause of death before the age of 45 in the United States (U.S.), and hemorrhage from penetrating extremity wounds is the most preventable cause of death from trauma.<sup>1</sup> In the battlefield, utilization of hemorrhage control measures such as tourniquets has led to considerably higher rates of injured warrior survival.<sup>2,3</sup> Nowadays, it is essentially standard that first responders are taught the basics of hemorrhage control and tourniquet use. Recently, focus has turned towards the use of tourniquets in the civilian sector as well, with reasonable data indicating its enhancement of survival rates among injured U.S. citizens.<sup>4</sup> Civilian bystanders are oftentimes the only potential difference between life and death, as uncontrolled hemorrhage can be lethal in mere minutes; thus, widespread knowledge throughout the U.S. population regarding basic hemorrhage control is rapidly becoming an accepted life-saving approach.

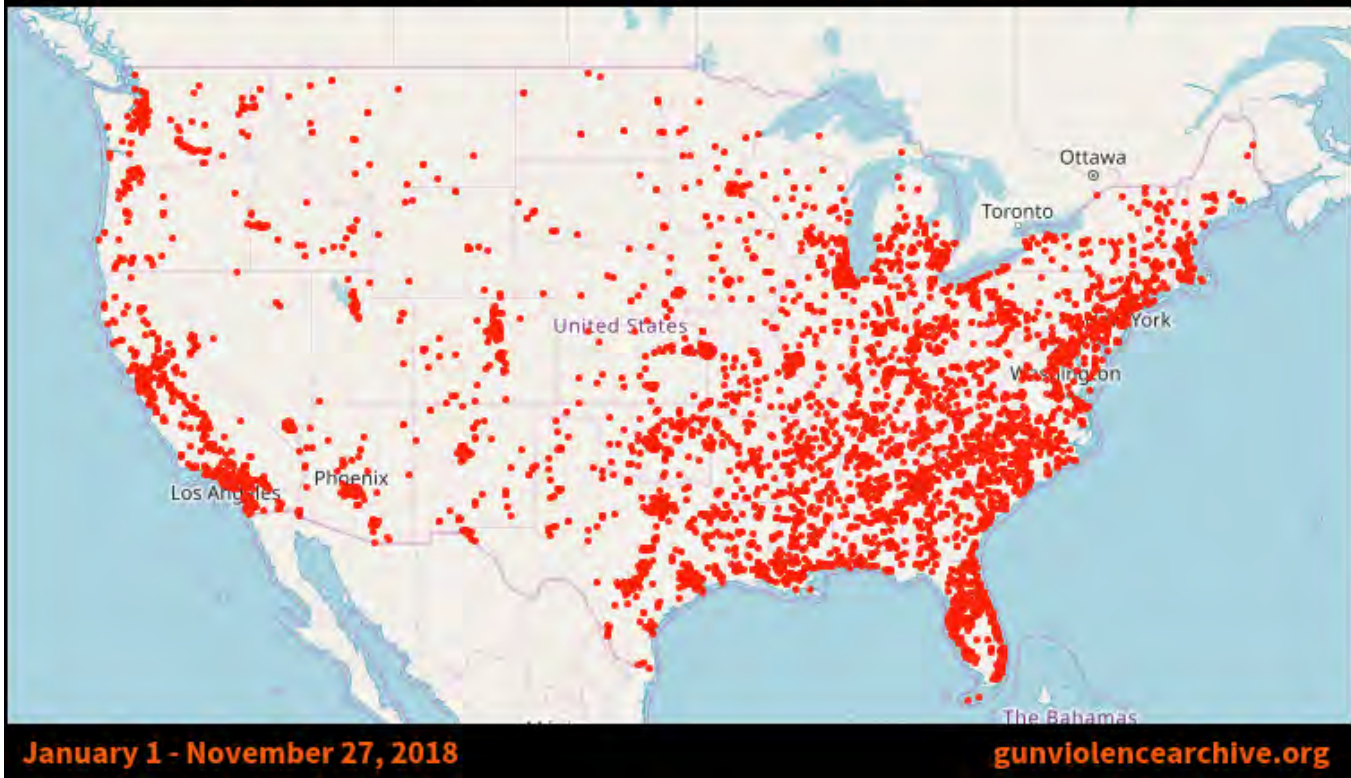
In recent years, there has been an uptrend in the frequency of firearm injuries and mass casualty scenarios, and it was consequently on the heels of the Sandy Hook Elementary shooting disaster (claiming the lives of 20 school children and six adult staff members) that the nationwide Stop the Bleed<sup>®</sup> campaign was developed. Now a formal initiative of the Department of Homeland Security and spearheaded by the American College of Surgeons, Stop the Bleed<sup>®</sup> is an ongoing effort to teach all citizens how to stop life-threatening hemorrhage before professional medical help arrives.<sup>5</sup> The Stop the Bleed<sup>®</sup> program has been robust in Wisconsin, and as partners, the Southeast Regional Trauma Advisory Council and Froedtert and the Medical College of Wisconsin (MCW) have alone trained over 3,000 people. Moreover, we led the effort in the unanimous passing of 2017 Assembly Joint Resolution 111, which states that Wisconsin formally supports the Stop the Bleed<sup>®</sup> program.

To build on our successes, and in response to the public health crisis of mass casualties, firearm violence, homicides, and suicide, we aim to strengthen our Stop the Bleed<sup>®</sup> efforts and establish a program that



**Figure 1:** Incoming medical students’ comfort with wound compression, wound packing, and tourniquet use before and after the Stop the Bleed<sup>®</sup> course during medical school orientation.

is more geared towards “Prevent the Bleed.” To do so will require a significant pool of volunteers who are comfortable with working in the community to share the basic and vital skills of hemorrhage control while furthering firearm and intentional injury prevention efforts. Thus, we engaged the entire incoming MCW class of 2022 by teaching them Stop the Bleed<sup>®</sup>.



**Figure 2:** Number of deaths recorded (13,230) in the United States from January 1-November 27,2018 as reported by [gunviolencearchive.org](http://gunviolencearchive.org).

During orientation week, one hour was utilized to teach the Stop the Bleed® B-Con course to 197 first-year medical students. A survey was administered to assess pre- and post-course comfort with wound compression, wound packing, and tourniquet use. Students were also asked if they were interested in later participating in the Stop the Bleed® program and to comment on their experience.

With an overall survey response rate of 100%, the compiled data demonstrated that only 21 students (11%) had previously heard of Stop the Bleed®. Before the course, the number of students who rated themselves as “comfortable” or “very comfortable” with the basics of hemorrhage control were: 113 (57%) for compression, 69 (44%) for wound packing, and 69 (35%) for tourniquet use. After the course, those who rated these levels of comfort were significantly greater: 194 (98%) for compression, 190 (96%) for wound packing, and 193 (98%) for tourniquet use ( $p < 0.0001$  for all comparisons) (Figures 1). These results confirm that Stop the Bleed® training for medical students during their orientation is effective. Even more encouraging, and perhaps more importantly, nearly 60% of students (115) indicated that they would like to become associate instructors, and many stated that the training was their favorite part of medical school orientation.

Our work, which was selected as a winner at the Department of Surgery Fall Research Symposium and which will be presented at

the 14th Annual Academic Surgical Congress, indicates that Stop the Bleed® training was enthusiastically received by an entire incoming medical school class. Not only was student comfort with hemorrhage control techniques significantly increased by the course, but we also recruited 115 medical students to help with MCWs “Stop the Bleed” program as associate instructors, acting as a highly valuable resource moving forward as we increase our efforts of both primary and secondary injury prevention.

Though few reminders are needed, it is essential to highlight the ongoing importance of programs such as Stop the Bleed® and others directed at injury prevention. As of the date of this article’s submission, there were 51,253 shootings resulting in 25,543 injuries and 13,218 deaths in 2018 (Figure 2). Of those killed or injured, 3,166 were younger than 18 years old, and 265 were police officers. Additionally, 342 of these shootings were mass casualty incidents, whereby 4 or more individuals were injured or killed.<sup>6</sup> These numbers are not only tragic; they also support that firearm injury is a significant public health problem. In fact, the incidence of death from firearms is the same as that from motor vehicle collisions or falls (Figure 3), and the cost of firearm injuries in the U.S. approaches \$200 billion annually.<sup>7,8</sup> As a response, the American College of Surgeons’ (ACS) Committee on Trauma (COT) has made

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## STOP THE BLEED

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firearm injury prevention a priority and has highlighted the following as goals of their strategy:

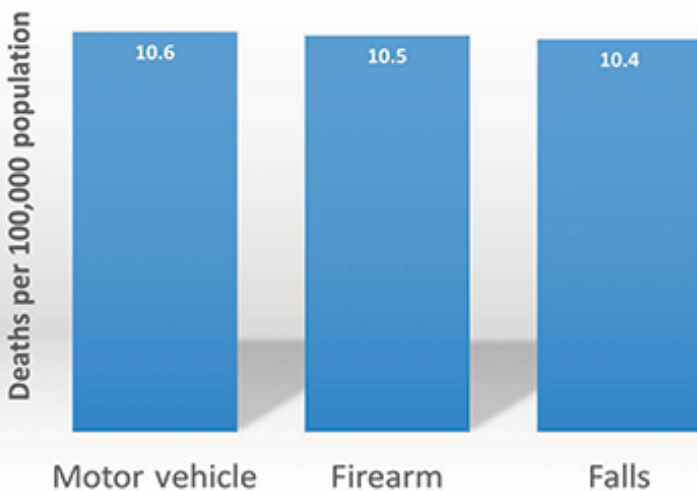
“Prevent injuries from occurring through firearm injury and violence prevention programs; achieve immediate bleeding control at the scene of injury *before* emergency medical services (EMS) professionals arrive by turning bystanders into immediate responders through the proliferation of Stop the Bleed® and bleedingcontrol.org and by providing support for EMS; ensure the delivery of rapid and effective on-site medical care with bleeding control through the COT’s partnership with the National Association of Emergency Medical Technicians and its Prehospital Trauma Life Support course; provide rapid, definitive, high-quality trauma center treatment of the injured patient through the ACS COT’s Trauma Center Verification, Review, and Consultation (VRC) Program, the Trauma Quality Improvement Program, the ACS COT Performance Improvement and Patient Safety Program, and the Advanced Trauma Life Support Course, [and to] promote robust rehabilitation and reintegration programs designed to minimize disability (VRC and our recent efforts to achieve zero preventable deaths and disability from injury).”

At MCW, Froedtert, and Children’s Hospital of Wisconsin, our missions are aligned and directly support the national objectives of the ACS COT and the movement towards zero preventable deaths from injury. Through our efforts to engage the medical student body with the Stop the Bleed® program, we can employ a valuable resource to this endeavor; not only is a cadre of instructors required for Stop the Bleed®, but also their enthusiasm and creativity promise to make a tangible difference in our communities. •

**FOR ADDITIONAL INFORMATION** on this topic, see references, see references, visit [mcw.edu/surgery](http://mcw.edu/surgery), or contact Dr. Davis, 414-955-1731, [chdavis@mcw.edu](mailto:chdavis@mcw.edu).

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**Figure 3:** Burden of death in the United States by mechanism of injury. Centers for Disease Control National Center for Health Statistics, 2014.

# Surgery Resident Skill Retention after Focused Assessment with Sonography in Trauma Training



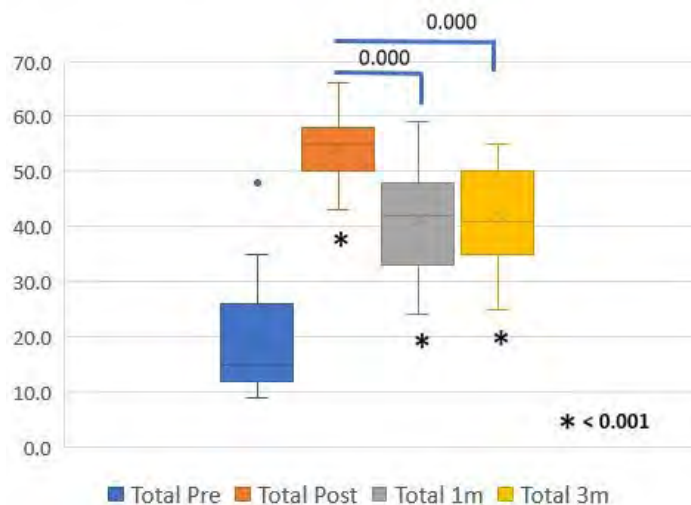
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During the last two decades, point-of-care ultrasound (POC US) examinations performed by non-radiologists have increased in prevalence, and in some cases, such as the Focused Assessment with Sonography in Trauma (FAST), have become the standard of care. Since the introduction of FAST, surgeon educators have debated how to teach novices this technique.<sup>1-3</sup> The number of studies necessary to become proficient in FAST is still disputed, but ranges between 10-50 studies.<sup>2</sup> FAST training is typically done as massed practice, which can introduce basic concepts, but considerable hands-on skill and knowledge must be maintained for the correct interpretation of a FAST.<sup>4</sup> Skill decay is particularly relevant in general surgery, given the procedural nature of this specialty; however, most research has focused on laparoscopic skill decay and little attention has been paid to surgical ultrasound training.<sup>5-7</sup> There is currently no literature regarding skill decay following initial FAST training, and no clear recommendations for maintenance of competency.

Medical education is continually moving toward competency-based training, requiring the development of objective assessment tools for evaluation of competence. POC US is highly operator-dependent, therefore reliable and valid assessments of competence are needed to ensure patient safety. Different tools to assess ultrasound procedural skill have been developed: The Quality of Ultrasound Imaging and Competence (QUICK)<sup>4</sup> score and the Objective Structured Assessment of Ultrasound Skills (OSAUS).<sup>8</sup> QUICK uses a combination of the Task-Specific Checklist (TSC) and a Global Rating Scale (GRS) to assess both task completion and the quality of task performance, respectively, and this has been validated to assess FAST performance. The Objective Structured Assessment of Ultrasound Skills (OSAUS) has been validated for ultrasound assessment, but not FAST exams specifically.<sup>8</sup>



**Figure 1. Total QUICK Scores**

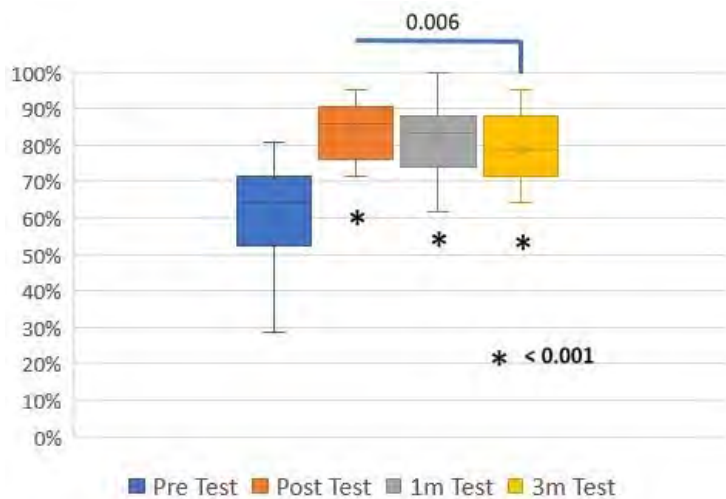
We recently completed a study evaluating knowledge and skill degradation in surgery residents following an introductory FAST training session. The study group consisted of first and second-year surgery residents, chosen because of their limited exposure to ultrasound. The FAST training protocol included a one-hour didactic session of ultrasound basics, FAST basics, and image interpretation, followed by three hours of practical skill instruction. The residents were assessed pre-training, post-training, at one month, and at three months. At each time point, subjects completed a survey of their experience and confidence with FAST, a written knowledge assessment, and a hands-on skills assessment. Each resident's FAST exam was video recorded to assess the quality of their performance (GRS), and the ultrasound image clips of each FAST area were saved to provide a binary measure of task completion (TSC). The QUICK score was used to grade each learner's performance, and two reviewers scored the performances retrospectively.

Nineteen surgery residents (12 PGY-1, 7 PGY-2) were followed for three months; 36.8% had previous FAST training. There were no differences noted for year of training and no correlation of performance to either previous FAST experience or confidence. The residents showed significant improvement after the training, demonstrating some level of short-term competence. However, resident performance of the FAST significantly deteriorated by one month, but this decay stabilized at three months (Figure 1). Knowledge decay was much slower and was not significant until the three-month test (Figure 2).

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## QUICK SCORES

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**Figure 2.** Written Test Scores

Previous research in ultrasound skill has focused on achieving short-term competency, however, this study shows that massed training is associated with a decline in performance at one month. The implication of this goes beyond ultrasound skill, but can apply to surgical education as a whole. Education research has shown for some time that long-term skill retention after a single training session is minimal. There is a need to incorporate more time-spaced training into surgical education. The theory of spaced repetition suggests there is an optimal approach to maximize retention: spreading out material over time and periodically refreshing old content. Further work will be done to determine the best approach to combat skill decay in FAST education. Hopefully in the future, these training models can apply not only to ultrasound but to other surgical procedures as well. •

**FOR ADDITIONAL INFORMATION** on this topic, see references, see references, visit [mcw.edu/surgery](http://mcw.edu/surgery), or contact Dr. Carver, 414-955-1733, [tcarver@mcw.edu](mailto:tcarver@mcw.edu).

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Dhaval Patel, MD  
Tracy S. Wang, MD, MPH\*  
Stuart D. Wilson, MD  
Tina W.F. Yen, MD, MS

### **Surgical Oncology–Hepatobiliary and Pancreas Surgery**

Kathleen K. Christians, MD  
Callisia N. Clarke, MD  
Douglas B. Evans, MD\*  
T. Clark Gamblin, MD, MS, MBA  
Karen E. Kersting, PhD, LCP  
Susan Tsai, MD, MHS

### **Surgical Oncology–Regional Therapies**

Callisia N. Clarke, MD  
T. Clark Gamblin, MD, MS, MBA  
Harveshp Mogal, MD

### **Thoracic Surgery**

Mario G. Gasparri, MD  
George B. Haasler, MD  
David W. Johnstone, MD\*  
Paul L. Linsky, MD

### **Transplant Surgery**

Calvin M. Eriksen, MD  
Johnny C. Hong, MD  
Christopher P. Johnson, MD  
Joohyun Kim, MD, PhD  
Terra R. Pearson, MD  
Jenessa S. Price, PhD  
Allan M. Roza, MD  
Motaz A. Selim, MBBCh, MSC, MD  
Melissa Wong, MD  
Stephanie Zanoski, PhD  
Michael A. Zimmerman, MD

### **Trauma/ACS**

Marshall A. Beckman, MD, MA\*  
Thomas Carver, MD  
Panna A. Codner, MD  
Christopher S. Davis, MD, MPH  
Marc A. de Moya, MD  
Terri A. deRoon-Cassini, PhD  
Christopher Dodgion, MD, MSPH, MBA  
Anuoluwapo F. Elegbede, MSc, MD  
Joshua C. Hunt, PhD, MA  
Jeremy S. Juern, MD  
David J. Milia, MD\*  
Todd A. Neideen, MD  
Jacob R. Peschman, MD  
Lewis B. Somberg, MD\*  
Jill R. Streams, MD  
Colleen Trevino, MSN, PNP, PhD  
Travis P. Webb, MD, MHPE

### **Vascular Vascular and Endovascular Surgery**

Shahriar Alizadegan, MD\*  
Kellie R. Brown, MD\*  
Brian D. Lewis, MD  
Michael J. Malinowski, MD  
Peter J. Rossi, MD\*  
Abby Rothstein, MD\*  
Gary R. Seabrook, MD

### **Affiliated Institution Program Directors**

Gary T. Sweet Jr., MD  
*Aspirus Wausau Hospital*  
James Rydlewicz, MD  
*Aurora–Grafton*  
Alysandra Lal, MD  
*Columbia St. Mary's Hospital*  
Joseph C. Battista, MD  
*St. Joseph's Hospital*  
John G. Touzious, MD  
*Waukesha Memorial Hospital*

### **Chief Surgical Residents**

(2018–2019)  
Justin Dux, MD  
Nathan Kugler, MD  
Gregory Larrieux, MD  
Rachel Landisch, MD  
Stephen Masnyj, MD  
Robert McMillan, MD

\* Participates in Community Surgery/Off-campus locations.

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# Leading the Way

## HONORS AND AWARDS

### Dr. Tammy Kindel Receives NIH K08 Award



Tammy L. Kindel, MD, PhD, was awarded a K08 NHLBI/NIH Mentored Clinical Scientist Research Career Development Award for her project, "The Role of GLP-1 in Cardiac Recovery after Bariatric Surgery in Obesity-Induced Heart Failure."

This project will lead to an understanding of how bariatric surgery improves heart function in patients with obesity-associated cardiomyopathy. Dr. Kindel's research is critically important to improving our understanding of the physiologic complications of obesity. The award was funded through 2022, with funds in excess of \$600,000.

### Medical Student Awarded STS Scholarship

Bernice Badu, an MCW M2 student, was recently awarded the Society of Thoracic Surgeons' Looking To The Future scholarship to attend the STS 55th Annual Meeting. This will provide her the opportunity to network with faculty and have an assigned mentor for one-on-one insights. The Division of Cardiothoracic Surgery's David Joyce, MD, is Badu's advisor for the Scholarly Pathway. Badu has also been actively involved in the Research Mentoring Program since May 2018, and her research project entitled *Single Center Experience with a Percutaneous Right Ventricular Assist Device in the Management of Refractory Right Ventricular Failure*, was recently presented at the Academic Surgical Congress' 14th Annual Meeting.

### Milwaukee Academy of Surgery Celebrates 55 Years

President Dr. Tracy Wang and members of the Milwaukee Academy of Surgery (MAS) came together in February to celebrate the 55<sup>th</sup> anniversary of the Academy's first meeting in 1964. Honored guest and keynote speaker was Dr. E. Christopher Ellison, Robert M. Zollinger Professor Emeritus, The Ohio State University College of Medicine. His father, Dr. Edwin H. Ellison was the MCW Department of Surgery Chair from 1958 to 1969 and a founding member of the MAS.



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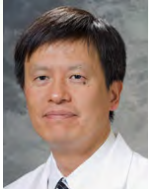
- Listen to the Latest Word on Medicine: Live on News/Talk 1130 WISN @ 2pm CST every Friday

Please send us an email at [surgeryonair@mcw.edu](mailto:surgeryonair@mcw.edu) if there is a specific topic you would like us to cover.



## NEW FACULTY

### CARDIOTHORACIC SURGERY



**Takushi Kohmoto, MD, PhD, MBA**, joins the MCW Department of Surgery in April as Professor of Surgery and will serve as the Heart and Vascular Service Line Associate Director for Heart

Transplantation. He was previously at the University of Wisconsin School of Medicine and Public Health, where he was Professor of Cardiothoracic Surgery, Surgical Director of the Heart Transplant Program, and Director of the Mechanical Circulatory Assist Device Program. Dr. Kohmoto earned his medical and postdoctoral degrees from Okayama University Hospital in Japan. He completed residency training at Okayama University Hospital and the Tokyo Women's Medical University Hospital in Japan. He completed a post-doctoral clinical fellowship in cardiothoracic surgery at New York Presbyterian Hospital and a post-doctoral cardiothoracic research fellowship at Columbia University in New York. He earned an Executive MBA from the UW-Madison School of Business. Dr. Kohmoto will join the Division of Cardiothoracic Surgery this spring.

### SURGICAL ONCOLOGY



**Karen Kersting, PhD**, Assistant Professor of Surgery, joined the MCW Department of Surgery in December from the Department of Family and Community Health where

she provided behavioral health assessment and intervention to patients of the Columbia St. Mary's Family Health Center. Prior to joining MCW in 2016, Dr. Kersting completed the Psychology Postdoctoral Fellowship Program in Primary Care Integration, Women's Health and Behavioral Medicine at the Dayton VA Medical Center. She obtained her Ph.D. degree in Psychology at Virginia Commonwealth University and completed a psychology internship at the VA Maryland Health Care System in 2015. Dr. Kersting's practice will be focused on surgical oncology patients in the Clinical Cancer Center. She has a special interest in how patients with pancreatic cancer can better adapt to such a life-altering diagnosis.



**Dhaval Patel, MD**, Assistant Professor of Surgery, joined us in December from the National Institutes of Health in Bethesda, Maryland where he was an Endocrine Surgeon in the Endocrine Oncology

Branch. Dr. Patel completed an Endocrine Oncology clinical and research fellowship at the NIH Endocrine Oncology Branch in 2014. He earned his medical degree at Drexel University School of Medicine in Philadelphia and completed general surgery residency training at the State University of New York at Stony Brook. Dr. Patel will provide clinical care of patients on the Surgical Oncology service at Froedtert Hospital and the General Surgery service at the Zablocki VA Medical Center. •

### DR. PETER J. ROSSI NAMED CHIEF OF THE DIVISION OF VASCULAR AND ENDOVASCULAR SURGERY



Following a national search, **Dr. Peter J. Rossi** was appointed Chief of the Division of Vascular and Endovascular Surgery. Dr. Rossi succeeds Dr. Gary Seabrook, whose contributions to this campus have been (and continue to be) invaluable to the success of the Department of Surgery, the Perioperative Enterprise, and the long, storied tradition of Vascular Surgery at MCW.

Dr. Rossi is a graduate of the University of Illinois where he also completed medical school. He chose the University of Chicago for residency training in general surgery and came to MCW in 2004 as the 27<sup>th</sup> vascular surgery fellow under the direction of Dr. Jonathan Towne. Dr. Rossi joined our faculty in 2009. He is currently Associate Director of the Heart and Vascular Service Line and Associate Vice Chair in the Department of Surgery for Off Campus Clinical Operations.

The Division of Vascular Surgery at MCW dates its origins to the emergence of clinical vascular surgery in America. Dr. Victor Bernhard, who studied under the direction of Dr. Michael DeBakey, began Vascular Surgery as a defined surgical subspecialty at MCW. In 1975, Dr. Jonathan Towne was recruited to join Dr. Bernhard after completing one of the first clinical vascular surgery fellowships in this country with Dr. Jesse Thompson. A Vascular Surgery Fellowship was established in 1979 at MCW, and the 41<sup>st</sup> Fellow is now enrolled in the program — one of the oldest vascular surgery fellowships in the United States.

In 1980, Dr. Towne became the Chief of the Division of Vascular Surgery and held this position until his retirement in 2007. Dr. Gary Seabrook, a 1989 graduate of the Fellowship, has been Division Chief for the past 11 years. In over four decades of academic medicine, the MCW Division of Vascular Surgery has made significant contributions to the practice of vascular surgery. The Division was a pioneer in perfecting techniques for lower extremity bypass grafting, the development of non-invasive evaluation of carotid artery disease and the post-op surveillance of arterial reconstructions. With the emergence of endovascular techniques, MCW vascular surgeons, in a time-honored collaboration with the Division of Intervention Radiology, were early adopters of aortic stent grafting. A custom hybrid operating room, constructed at Froedtert Hospital, with state-of-the-art angiographic imaging in a surgical suite, has become a prototype for specialized vascular care.

Dr. Rossi's passion for program expansion, faculty development and multidisciplinary care will enrich the many talented faculty and advanced practice providers who have worked tirelessly to make our programs in vascular and endovascular care so successful.



Department of Surgery  
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## MARK YOUR CALENDARS

### Upcoming Events

**MARCH 12–13: Peter Allen, MD, Ellison Visiting Professor**

**MAY 4: We Care Derby de Mayo Event – Engine Company No. 3, Milwaukee**

**MAY 14–15, 2019: Ronald Dalman, MD, FACS, FAHA, Towne Visiting Professor**

**JUNE 3-5, 2019: A Combined Conference: Midwest Regional Trauma/Acute Care Surgery Symposium and Military/Civilian Research Colloquium: Neuroscience Innovations; Lunda Visiting Professor, Hasan Alam, MD**

**JUNE 12: Shawn Rangel, MD, Glicklich Visiting Professor**

**JUNE 14: Mary Klingensmith, MD, Eberbach Visiting Professor**

**JUNE 26: Knowledge Saving Life – Medical College of Wisconsin**

**JULY 10–11: Robert Fisher, MD, Adams Visiting Professor and Solid Organ Transplantation Symposium**

Please contact Heidi Brittnacher ([surgeryevents@mcw.edu](mailto:surgeryevents@mcw.edu)) for more information on any of these events.

### Department of Surgery

*Dedicated to Clinical Care,  
Research and Education*

- Cardiothoracic Surgery
- Colorectal Surgery
- Community Surgery
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- General Surgery
- Pediatric Surgery
- Research
- Surgical Oncology
- Transplant Surgery
- Trauma/ACS
- Vascular & Endovascular Surgery

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