

# LEADING THE WAY

MEDICAL COLLEGE OF WISCONSIN DEPARTMENT OF SURGERY

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## From the Chair

DOUGLAS B. EVANS, MD

### Social Media and the Importance of Delivering Accurate Medical Information to Patients



**Kirk Ludwig, MD**  
 Vernon O. Underwood Professor  
 in Colon Cancer Research  
 Chief and Professor, Division of  
 Colorectal Surgery  
 2017 Eberbach Banquet  
 Commencement Address  
 (Honoring the Department of Surgery  
 Graduating Chief Residents and  
 Fellows).

I recently saw a patient in the outpatient cancer center who was referred with an adrenal tumor. She had watched the recent YouTube video highlighting Dr. Tracy Wang and the Endocrine Surgery program and she commented: “Most of my questions were answered by Dr. Wang – I found the video so much more helpful than the information I could read on the internet.”

We have embarked on a comprehensive program of information transfer across social media and the internet. Perhaps the most wide-ranging initiative involves a series of YouTube videos which have been completed by a number of MCW Department of Surgery faculty. Thus far, more than 20 videos have been posted – more are on the way and in the planning stages. The videos posted are listed below\* and can be found on the MCW YouTube page (search “MCW Medical Moments” on YouTube.com). In addition, we will soon be launching a video highlighting our residency program, narrated by Dr. Kirk Ludwig (pictured to the left) with an introduction by our Program Director, Dr. Matthew Goldblatt. Watch for this on YouTube and on our social media pages!

The Department has also relaunched our social media, including Facebook and Twitter, with accounts for the Department, Divisions, and General Surgery Residency. We are highlighting the YouTube videos (#mcwmedicalmoments) as well as the Department’s commitment to continuing medical education with program-specific symposia and scientific research (#leadingtheway, #wecarefund).

— *Drs. Douglas Evans, Tracy Wang and Rana Higgins*

#### Current Department Twitter accounts:

- Department of Surgery: [@MCWSurgery](#)
- General Surgery Residency: [@MCWSurgeryRes](#)
- Division of Minimally Invasive and General Surgery: [@MCWMIGS](#)
- Division of Surgical Oncology: [@mcwsurgonc](#)
- Division of Trauma and Acute Care Surgery: [@MCWtraumaacs](#)
- Section of Endocrine Surgery: [@MCWEndoSurg](#)
- Pancreatic Cancer Program: [@MCWPancreas](#)

#### \*Medical Moments with the Department of Surgery available on the MCW YouTube Channel:

*Acute Care Emergency Surgery:*

Jeremy Scott Juern, MD

*Adrenal Gland:* Tracy S. Wang, MD, MPH

*Aorta and Aortic Disease:*

C.J. (Cheong Jun) Lee, MD

*Breast Cancer:* Amanda L. Kong, MD, MS

*Breast Cancer:* Caitlin R. Patten, MD

*Carotid Artery Disease:* Peter J. Rossi, MD

*Colon Cancer:* Carrie Peterson, MD, MS

*Colorectal Cancer:* Timothy J. Ridolfi, MD

*GERD (Gastroesophageal Reflux Disease):*

Jon C. Gould, MD

*Heart Surgery:* Paul J. Pearson, MD, PhD

*Hernias:* Matthew J. Goldblatt, MD

*Liver and Pancreas Tumors:*

Kathleen K. Christians, MD

*Liver Surgery:* T. Clark Gamblin, MD, MS, MBA

*Liver Transplantation:* Johnny C. Hong, MD

*Primary Hyperparathyroidism:*

Tina W.F. Yen, MD, MS

*Patient and Family Questions, Second Opinions and Research:* Douglas B. Evans, MD

*Trauma and Acute Care Surgery:*

Marc A. de Moya, MD

*Thoracic Outlet Syndrome:* Brian D. Lewis, MD

*Thyroid Cancer:* Tracy S. Wang, MD, MPH

*Varicose Veins:* Kellie R. Brown, MD

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# Innovations in Tracheal Surgery for Neo



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General Surgery Resident



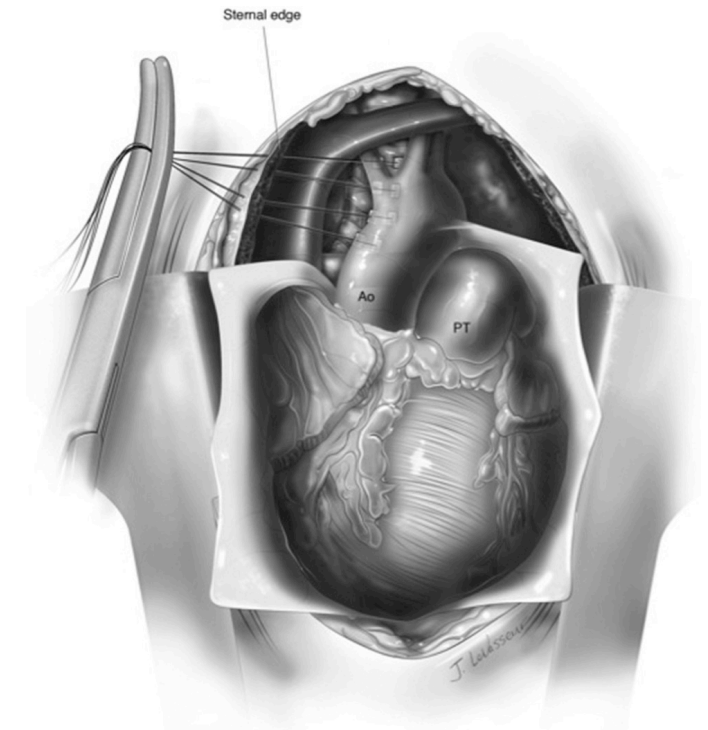
**MICHAEL MITCHELL, MD**  
Professor, Congenital Heart Surgery

Infants born with tracheal defects represent a small but clinically very challenging spectrum of patients. Symptoms can range in severity from cough and stridor to refractory respiratory failure requiring ventilator dependence and acute life threatening events (ALTEs), or “near-death spells.” Congenital airway disease falls into two general categories: tracheomalacia, in which weakness of the airways prevents normal respiratory function, and congenital tracheal stenosis, in which the normally “U” shaped cartilaginous rings of the trachea are “O” shaped and can be dangerously narrowed. Although congenital tracheal disease is very rare, and many patients ultimately do not require surgery, these patients are very complex. In addition to the tracheal disease, patients frequently have other forms of congenital heart disease or congenital malformations, which complicate their management and affect their morbidity and mortality. In a seminal review of two pediatric tracheal surgeries, the overall mortality rate was 18%.<sup>1</sup>

The Herma Heart Center at the Children’s Hospital of Wisconsin (CHW) has assembled a “tracheal team” dedicated to the multi-disciplinary treatment of patients with congenital disease of the airways. The tracheal team includes pediatric specialists in the fields of cardiothoracic surgery, cardiology, pulmonology, general surgery, anesthesia, and otolaryngology. Close collaboration between these specialties is essential in caring for these complex patients.

Tracheomalacia, in cases that require surgery, is often treated with aortopexy, in which the aorta is dissected away from the trachea and tacked to the sternum. Congenital tracheal stenosis can either be treated with resection of the narrowed segment with end-to-end anastomosis if the affected length is small, or slide tracheoplasty for longer segment stenosis. In slide tracheoplasty, the trachea is horizontally transected at the midpoint of its most narrowed segment. The two ends are then filleted open lengthwise, on the anterior surface of one end and the posterior surface of the other. The two ends are then sewn together. This technique doubles the circumference of the narrowed trachea and quadruples the cross-sectional area, decreasing the resistance to airflow and the work of breathing.<sup>2</sup> In addition to experience with the standard surgical treatments for congenital tracheal stenosis and tracheomalacia, the tracheal team has described several novel surgical treatments for congenital tracheal disease.

In 2014, pediatric cardiothoracic surgeon Michael Mitchell, MD, and colleagues reported their experience in 21 patients with

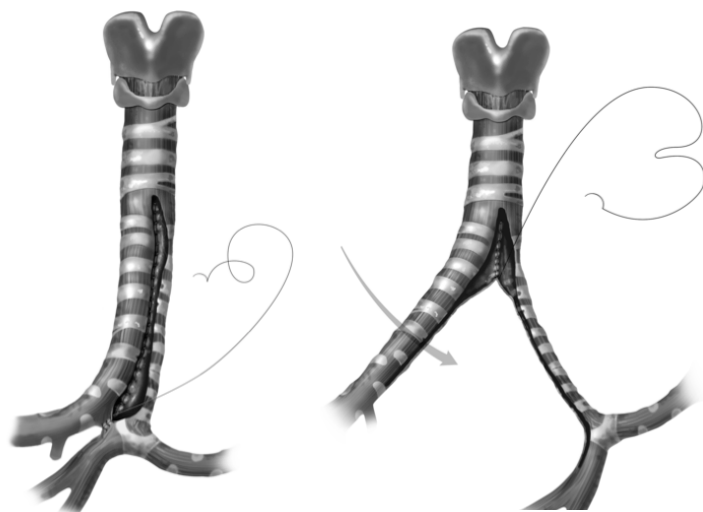


**FIGURE 1: Anterior Tracheal Suspension.** Pledgeted sutures are passed through the right sternal plate, elevating the anterior trachea.<sup>3</sup>

tracheobronchomalacia using the novel procedure of anterior tracheal suspension.<sup>3</sup> In this technique, the trachea is approached through a median sternotomy, and sutures are placed first through the anterior wall of the weakened trachea and then through the right side of the sternum. The sternum is then closed, and the sutures are tied, lifting, or “anteriorly suspending,” the portion of weakened trachea (Figure 1). At the same time, a separate physician operating a bronchoscope looks through the inside of the airway. This allows the operating surgeon to ensure the sutures are tied with just the right amount of tension to create optimal airway enlargement without distortion or kinking. There were no deaths, and all patients experienced greatly reduced respiratory support, with no long-term mechanical ventilation required, and no recurrent ALTEs.

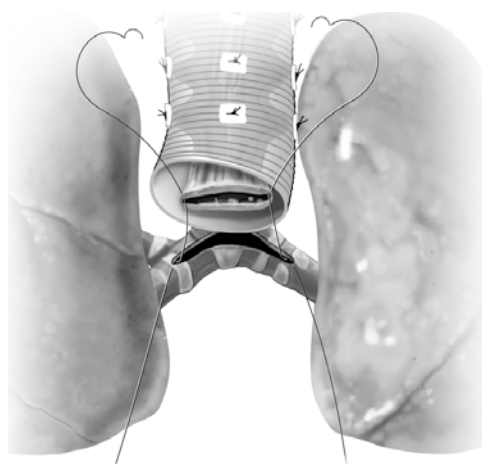
Very rarely, patients with congenital tracheal stenosis will have abnormal branching patterns of their main airways. One such

# nates and Children



**FIGURES 2 AND 3: Bridging Bronchus Tracheoplasty.** The edges of a stenotic bronchus are opened longitudinally and sewn together lengthwise, preserving native tracheal length without placing tension on the anastomosis.<sup>4</sup>

pattern is termed a “bridging bronchus” pattern, with three separate mainstem “bronchi-one” to the right upper lobe, one to the right middle and lower lobes, and one to the left lung. This abnormal branching pattern complicates conventional slide tracheoplasty. Furthermore, slide tracheoplasty does not address stenosis that extends into the mainstem bronchi. In a presentation at the 2017 meeting of the Society of Thoracic Surgeons, Drs. Ragalie and Mitchell reported the CHW tracheal team’s experience in four patients, including in those less than 30 days of age, with side-to-side tracheobronchoplasty.<sup>4</sup> This procedure had been described only



**FIGURE 4: Esophagocarinoanastomosis.** Illustration of the anastomosis between the esophagus and the carina in a patient with tracheal agenesis. The esophagus is sewn to an externally placed graft to prevent collapse.

once in the literature, and never before in a neonatal patient. In this procedure, the narrowed two bronchi to the right lung are opened lengthwise and sewn together in a side-to-side fashion (Figures 2 and 3). This must be performed with the use of heart-lung bypass while the airways are open and surgically manipulated. In addition to tracheal reconstruction, all four patients required other forms of cardiac surgery at this index operation, ranging from repair of partially anomalous venous return to aortic coarctation. All four patients are alive and do not have respiratory symptoms and are meeting age-appropriate milestones at follow-up ranging from 1 to 7 years.

An additional novel procedure the tracheal team has performed recently includes reconstruction of complete tracheal agenesis with esophagocarinoanastomosis (Figure 4). This patient was the first survivor of tracheal agenesis in the United States and only the fifth recorded in worldwide experience.<sup>5</sup> The tracheal team at the Children’s Hospital of Wisconsin is excited and able to push the envelope on tracheal reconstruction in children because of its multidisciplinary approach. The team is able to optimize outcomes for these rare and high-risk patients by allowing for safe performance of innovative reconstructions for these very challenging congenital anomalies that, until now, were often considered inoperable and universally fatal. •

**FOR ADDITIONAL INFORMATION** on this topic see references, visit [mcw.edu/surgery](http://mcw.edu/surgery) or contact Dr. Mitchell, 414-266-2491, [memitchell@mcw.edu](mailto:memitchell@mcw.edu).

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# The Pancreatic Cancer Nomogram: An individualized prognostic tool for predicting survival

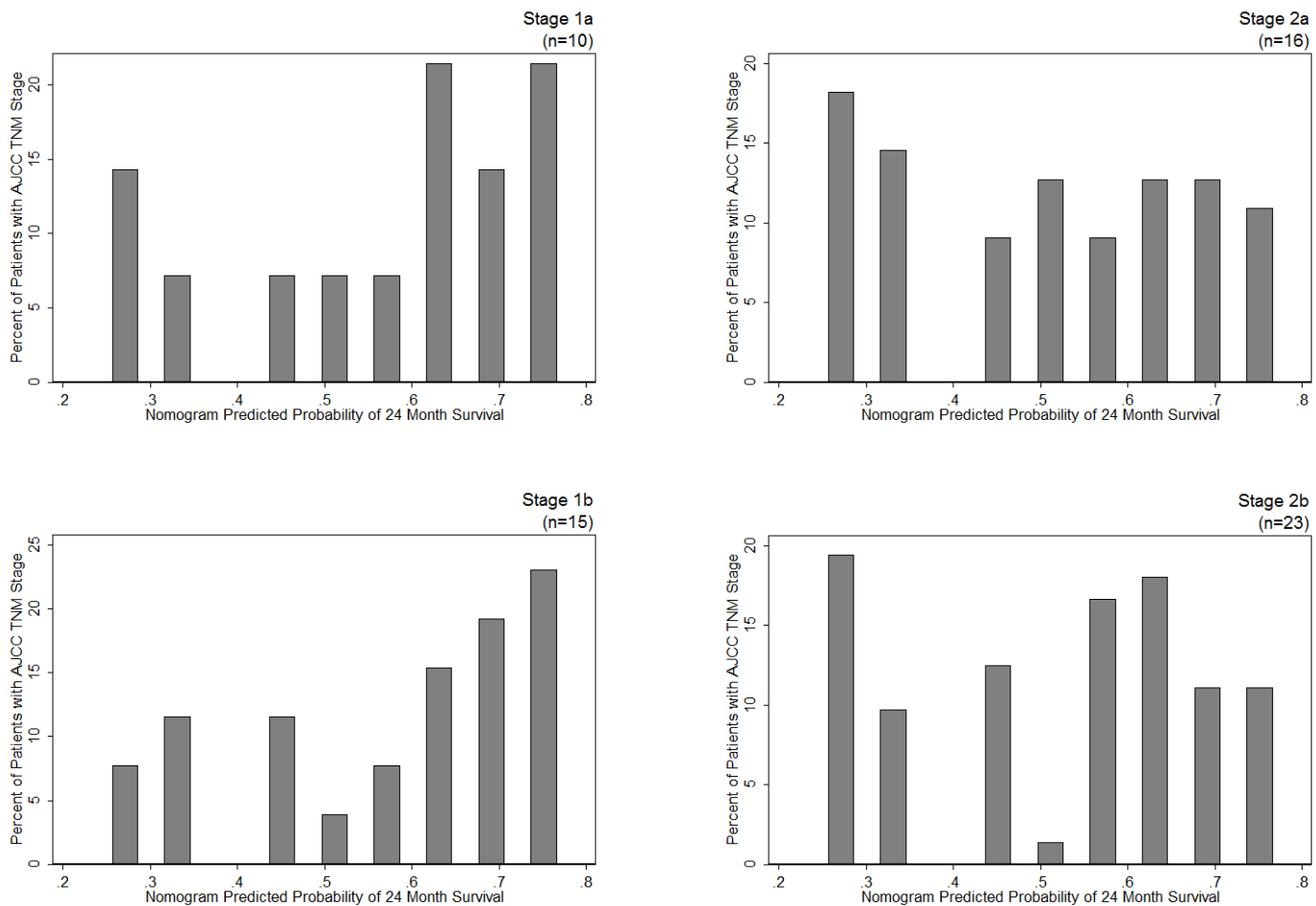


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A new diagnosis of cancer can be life-changing, and it is important to provide patients an accurate estimation of survival. Prognostic tools, such as the American Joint Commission on Cancer (AJCC) staging system, are important for both clinicians and patients' decision-making with regards to treatment and counseling. The AJCC staging system was developed from population-based estimates from patients who have undergone surgery. The staging system utilizes pathologic variables (tumor size, nodal status, presence of metastases) and does not account for a patient's individual characteristics, such as age or response to treatment. As such, within each AJCC stage, there can still be a wide variation in survival.<sup>1</sup> To provide a more individualized estimation of survival, alternative cancer nomograms have been developed which incorporate additional prognostic factors that are not included in the AJCC staging system. They have been favorably proposed as an alternative or even as a new standard.<sup>2</sup>



**Figure 1:** Histograms of nomogram-predicted survival probabilities at 24 months after restaging within each AJCC TNM stage.

# Survival and improving decision-making prior to surgery

Nomograms have been developed for patients with localized pancreatic cancer (PC) who undergo upfront surgery, but have not been developed for patients who have received preoperative (neoadjuvant) therapy. Given the increasing utilization of neoadjuvant therapy, identification of high-risk patients prior to surgery may improve surgical selection to maximize quality of life and survival. At the Medical College of Wisconsin (MCW), we developed and internally validated a prognostic nomogram using a prospectively maintained institutional database of patients with localized PC. It is the first nomogram to be designed in the neoadjuvant setting and first to be designed for use prior to surgery.

Our analysis showed that clinical stage (HR:2.32; 95%CI:1.49-3.62) and preoperative CA19-9 levels (HR:1.66; 95%CI:1.08-2.58) were the strongest prognostic factors. Clinical stage was defined as resectable or borderline resectable. A parsimonious nomogram including clinical stage, preoperative CA19-9, and age predicted 1-, 2-, and 3- year survival with concordance indices (c-indices) of 0.64, 0.64, and 0.65, respectively. The c-indices for 1-, 2-, and 3- years using the AJCC staging system were 0.58, 0.55, and 0.55, respectively. The c-index measures the nomogram's predictive accuracy and denotes the probability that given a pair of individuals, the one who experiences the expected outcome has a higher predicted probability of that event.<sup>3</sup> C-index=0.5 indicates no discriminative ability, and c-index=1.0 indicates perfect discriminative ability.<sup>3</sup> Thus, our prognostic nomogram utilizing clinical stage, preoperative CA19-9, and age provides more accurate survival prediction than the AJCC stage model. We also showed that there was considerable heterogeneity of the nomogram-predicted survival probabilities, even within the same AJCC stage (Figure 1).

The nomogram can be used to identify high-risk patients and engage patients in more informed, shared decision-making with regard to surgery. The nomogram could be utilized in the preoperative setting at the time of restaging prior to surgery (Figure 2). For instance, an 80 year-old patient (0 points) with a borderline resectable tumor (100 points) and elevated preoperative CA 19-9 (58 points) would have a total of 158 points. This patient would have a 1-, 2-, and 3-year survival probability of .73, .33, and .24, respectively.

There are some important limitations to the nomogram, including missing data and sample size. The model included 168 patients, which is a moderate sample size. In the future, we plan to perform external validation to assess the nomogram's generalizability using data from the M. D. Anderson Cancer Center. Furthermore, the nomogram represents the most parsimonious model. There were variables, such as performance status, which were considered for inclusion in the model, but were ultimately

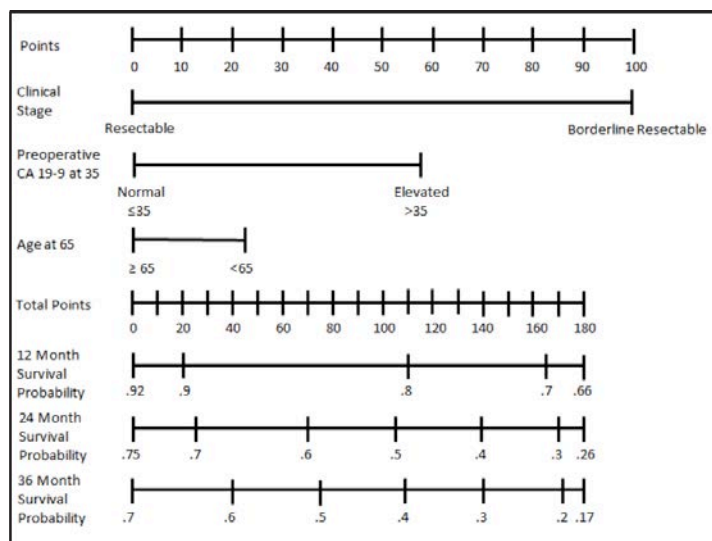


Figure 2: Preoperative nomogram.

excluded due to the amount of patients who had missing data. It is possible that the model discrimination and performance might be improved with additional variables in the future.

We believe that the prognostic nomogram can serve as a valuable tool for patients and physicians. We plan to make the nomogram a free-access online tool for easier accessibility and utility that can be used clinically. •

**FOR ADDITIONAL INFORMATION** on this topic, see references, please visit [mcw.edu/surgery](http://mcw.edu/surgery), or contact Dr. Tsai, 414-805-1706, [stsai@mcw.edu](mailto:stsai@mcw.edu).

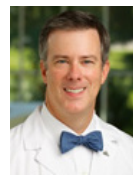
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# A Cost-Effective Analysis of Bevacizumab-Based



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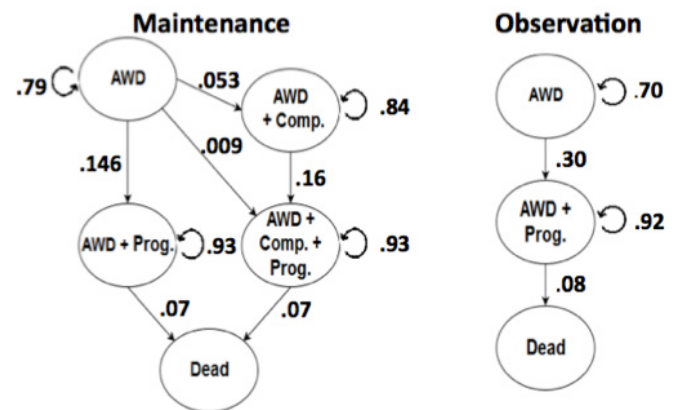
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In 2015, colorectal cancer was the fourth most common newly diagnosed cancer and had the third most deaths of any cancer type. As a result, the economic burden of these cancers is staggering. Mariotto et al. estimated the total cost of colorectal cancer treatment in the United States in 2010 to be between \$14.14 – \$17.83 billion. The total cost for 2020 is estimated to grow to between \$16.86 – \$20.39 billion.<sup>1</sup> Due to this large humanitarian and economic burden, it is imperative to analyze the cost-effectiveness of treatments.

Maintenance therapy utilizing capecitabine and bevacizumab (trade name Avastin) is currently a standard treatment in patients with metastatic colorectal cancer (MCRC).<sup>2</sup> Bevacizumab is humanized monoclonal antibody that works by inhibiting the VEGF/VEGF-R pathway to prevent angiogenesis to growing tumors. Capecitabine is converted in the body to 5-FU, which then inhibits thymidylate synthase, thus disrupting thymine and DNA synthesis.

A 2013 trial (CAIRO3) on the Dutch Colorectal Cancer Group reported the efficacy of capecitabine plus bevacizumab in maintenance therapy for metastatic colorectal cancer (MCRC) patients. From this trial, Simkens et al. reported that patients undergoing the bevacizumab plus capecitabine maintenance regimen, for an average of 8.5 months, had a 3.5 month increased overall survival (OS) vs. observation alone (21.6 months vs. 18.1 months).<sup>3</sup> While this highlights clinical efficacy, there has yet to be a study to determine its cost-effectiveness.

This research effort therefore analyzed the cost-effectiveness of the bevacizumab plus capecitabine maintenance therapy regimen for patients with MCRC. This was done by using TreeAgePro 2014 to a construct of Markov using data from the CAIRO3 trial. The constructed model is displayed in Figure 1 with transition probabilities. Transition probabilities are a patient's probability to transition between one health state to another within a 9 week/2.25-month period (9 weeks was chosen based on the time between patient assessment reported in the CAIRO3 trial). In the maintenance arm of the Markov model, five health states exist: Alive with Disease (AWD), Alive with Disease + Complication (AWD + Comp.), Alive with Disease + Progression (AWD + Prog.), Alive with Disease and Complications and Progression (AWD + Comp. + Prog.), and Dead. In the observation arm of the



**FIGURE 1:** Markov model for patients undergoing maintenance therapy (left) and observation (right). All patients start in the AWD state and progress to a new state in subsequent cycles.

Markov model, three health states exist: AWD, AWD + Prog., and DEAD. By assigning monetary costs and life gained to each state, a cost-effectiveness analysis can be done to model a patient's progression through the disease.

Costs to each health state were determined using a third-party payer's perspective, based on Medicare Part B reimbursement. The costs of chemotherapy drugs were obtained from the Medicare Fee for Service Part-B Drugs 2015 ASP Drug Pricing file.<sup>4</sup> Costs for administration of maintenance chemotherapy was obtained from the Medicare Part B Chemotherapy Administration Payment and Policy.<sup>5</sup> Costs to all progressive and dead states were \$0 due to patient removal from maintenance therapy. These costs are displayed in Table 1.

The utility was 9 weeks (2.25 months) of life gained for each cycle. This was corrected for global quality of life (QoL). The CAIRO3 trial reported a QoL of 0.73 for the maintenance group and 0.735 for the observation group.<sup>3</sup>

From the constructed Markov model, it was determined that for a patient with MCRC, the total cost of the maintenance arm after 10 cycles

# Chemotherapy

Cost type	Cost / 9-week cycle
Cost of drugs	Bevacizumab: \$12,527
	Capecitabine: \$7,721
Cost of admin <sup>a</sup>	\$2,287.50
Treatment for complications	Hydrochlorothiazide (hypertension): \$1.05
	Clobetasol (palmar-plantar erythrodysesthesia): \$13.41

**TABLE 1:** Costs per cycle for maintenance therapy. Costs based on administration to 1.86 m<sup>2</sup>, 82 kg patient for ≤ 1 hour administration time.

was \$108,848; the total Quality-Adjusted Life Month (QALM) gained was 14.93 months (unadjusted for QoL; 20.37 months). The total cost of the observational arm was \$0; the total QALM gained was 13.67 (unadjusted for QoL; 18.75 months). This yielded an Incremental Cost-Effectiveness Ratio (ICER) of \$86,387/QALM (\$1,036,648/QALY), or unadjusted for QoL yielded \$67,190/ life month (\$806,281/life year). When compared to a willingness-to-pay (WtP) threshold of \$100,000 per life year gained, the therapy regimen is determined to not be cost-effective.

The ability of bevacizumab-based therapies to lengthen patients' life in cancer treatment has been well-supported in a variety of cancer types, stages of cancer and treatments types. The current use and approval of bevacizumab by clinicians in treatment for MCRC is supported by the apparent extension of life when bevacizumab is utilized.<sup>6</sup> However, from this model, the researchers were able to determine that bevacizumab plus capecitabine is not a viable cost-effective approach to maintenance therapy in MCRC.

This study was limited by the use of a single data set from a lone trial, as this is the only known trial analyzing the effectiveness of maintenance therapy for MCRC.<sup>3</sup> The study also did not address the cost to society due to the patient's or patient's family's loss of productivity, or the opportunity cost to the hospital and health care professionals. •

**FOR ADDITIONAL INFORMATION** information on this topic, see references, please visit [mcw.edu/surgery](http://mcw.edu/surgery), or contact Dr. Gamblin, 414-805-5020, [tcgamblin@mcw.edu](mailto:tcgamblin@mcw.edu).

State	Cost per cycle (maintenance)	Maintenance arm QALM adjusted effectiveness (unadjusted)	Observation arm QALM adjusted effectiveness (unadjusted)
AWD	\$22,529.66	1.65375 (2.25)	1.6425 (2.25)
AWD + Comp.	\$22,537.09 <sup>a</sup>	1.65375 (2.25)	1.6425 (2.25)
AWD + Prog.	\$0	1.65375 (2.25)	1.6425 (2.25)
AWD + Comp. + Prog.	\$0	1.65375 (2.25)	1.6425 (2.25)
Dead	\$0	0	0

**TABLE 2:** Total costs accrued and life (effectiveness) gained per 9-week cycle.

\* All costs of drugs are based on administration to a 1.86 m<sup>2</sup>, 82 kg patient.

<sup>a</sup> Cost based ≤ 1 hour administration time.

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# Intrahepatic Cholangiocarcinoma – An



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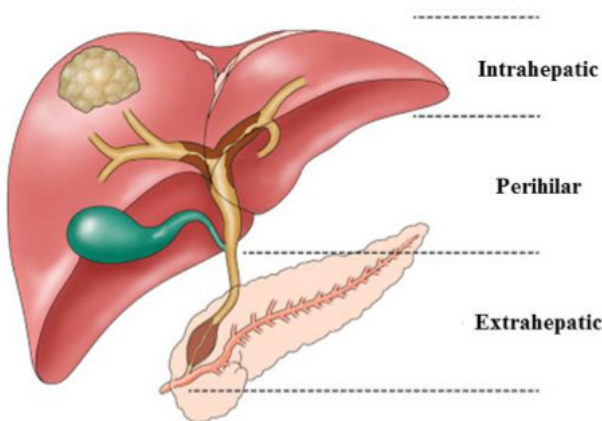
Cholangiocarcinoma (CCA) is a poorly understood primary liver cancer that develops from the epithelium of the bile duct. It accounts for 10-15% of all primary liver malignancies, and is the second most common type of liver cancer worldwide behind hepatocellular carcinoma (HCC).<sup>1</sup> Surgical resection offers the only potential for cure and is currently the sole treatment option associated with prolonged disease-free survival.<sup>2</sup> Unfortunately, most patients with CCA present with advanced disease not amenable to surgical intervention. Furthermore, these patients have poor responses to standard chemotherapy regimens, and median survival is less than one year.<sup>3</sup>

CCA is traditionally classified anatomically, based on its location along the biliary tree, as extrahepatic, perihilar, or intrahepatic disease. Recent genomic studies have revealed distinct somatic mutations amongst CCAs originating from different anatomic sites (Figures 1a and 1b).<sup>4-7</sup>

Intrahepatic cholangiocarcinoma (ICC) arises from the proximal branches of the bile duct located within the liver. It is of particular interest due to its increasing incidence worldwide, compared to a stable or even decreased incidence of extrahepatic disease.<sup>9</sup> This increase has

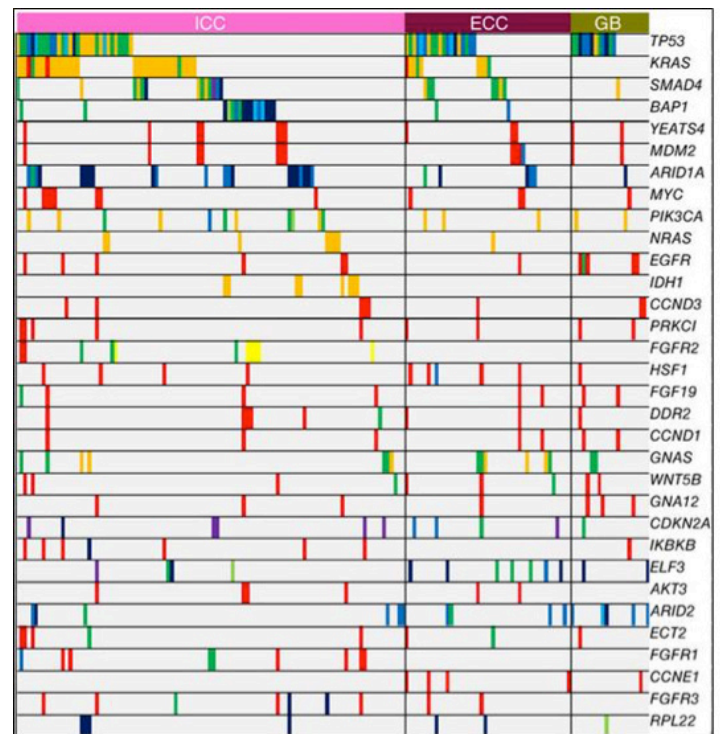
been particularly rapid in the Western world, and in the United States has translated into an annual percent increase of 4.36% over the last decade.<sup>10</sup>

Genes encoding chromatin regulatory factors have been found to be mutated in ICC. One such gene is BRCA-associated protein 1 (BAP1), which encodes a nuclear deubiquitinase that plays a role in chromatin remodeling. BAP1 is mutated in 3-33% of ICCs,<sup>4,7</sup> and loss of this protein may be associated with global epigenomic and transcriptomic alterations that contribute to tumor development, progression, and metastatic dissemination.



**Figure 1a (above):** Anatomic classification of CCA. Adapted from Rizvi & Gores 2013.<sup>8</sup>

**Figure 1b (right):** The mutational landscape of CCA. Adapted from Nakamura et al. 2015.<sup>7</sup>



■ Identical missense    ■ Nonsense    ■ Homozygous deletion  
■ Fusion gene    ■ Splice site    ■ Non-identical missense  
■ Amplification    ■ Frameshift indel    ■ In-frame indel



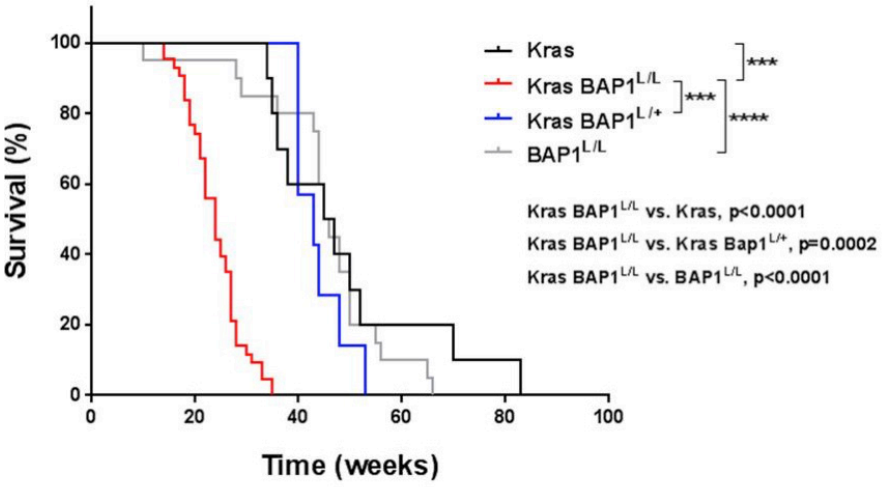
# Orphan Disease

Despite its rising incidence and dismal prognosis, there is a paucity of research dedicated to improving the current understanding of ICC. In Dr. Anirban Maitra's laboratory at the M. D. Anderson Cancer Center, investigation into BAP1's role in ICC pathogenesis and the development of a novel murine model for this disease is underway. Animal models serve as systems for studying human disease processes, and are excellent tools for investigating novel biomarkers and therapies. One reason ICC research has been hampered is due to a lack of genetically faithful animal models. Thus, developing an ICC murine model has the potential to not only advance our current understanding of the pathogenesis of ICC, but may form the basis for improved early detection efforts and targeted therapies.

A genetically engineered mouse model (GEMM) incorporating a deletion of the chromatin remodeling gene BAP1, and an activating mutation in Kras was developed. The Albumin-Cre promoter was used to induce hepatoblast-specific mutations.<sup>11</sup> Hepatoblasts are the common progenitor cell for both cholangiocytes, from which ICC develops, and hepatocytes, the cell of origin of HCC. It was elected to combine BAP1 deletion with Kras activation for two primary reasons. First, Kras is found to be mutated in several types of cancer, including ICC.<sup>4-7</sup> Second, previous research into hepatogenesis and CCA have demonstrated that liver-specific Kras mutations favor development of ICC over HCC.<sup>12</sup>

Several generations of cross-breeding were performed to obtain all desired experimental cohorts. Individual mice were followed until they appeared moribund, at which point necropsy and subsequently histologic analysis was performed. A board-certified pathologist specializing in hepatobiliary histopathology independently reviewed and classified tumors. Samples of tumor were collected, washed, and placed into culture. They were fed until a confluent monolayer of cells was formed and passaged appropriately.

Mutant Kras was found to cooperate with loss of BAP1 and result in lethal hepatic transformation with dose-dependent survival. The average survival of mice with homozygous loss of BAP1 and Kras activation (Kras BAP1<sup>L/L</sup>) was only 24 weeks ( $p < 0.0001$ ). Mice with heterozygous BAP1 loss and Kras activation (Kras BAP1<sup>L/+</sup>), or with BAP1 loss alone (BAP1<sup>L/L</sup>), had an average survival  $\geq 40$  weeks, and mice with mutant Kras only survived just beyond 50 weeks (Figure 2).



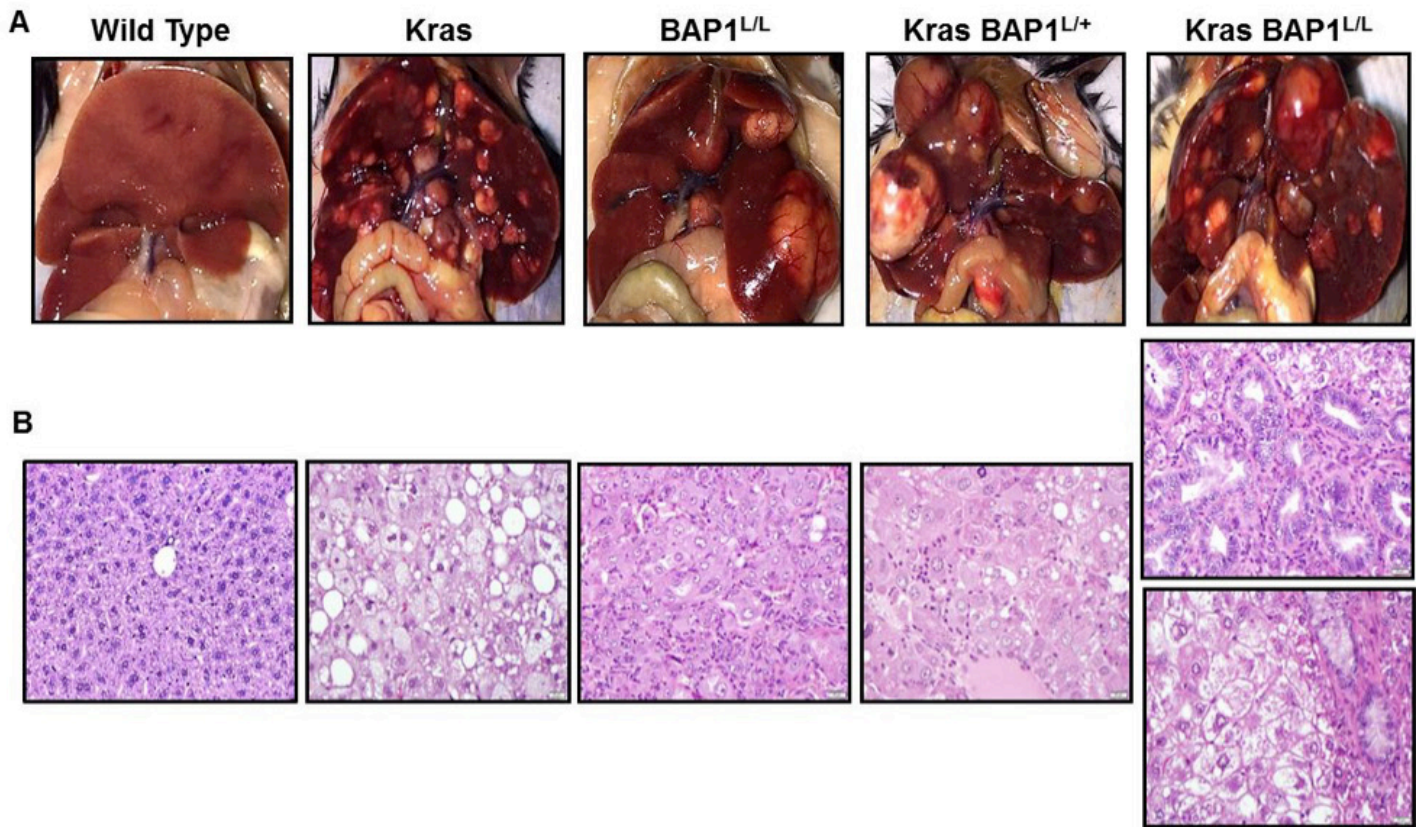
**Figure 2:** Kaplan-Meier survival analysis of experimental cohorts.

Upon necropsy, animals from all cohorts demonstrated massive hepatomegaly and one or more solid liver tumors ranging in size from less than one millimeter (miliary disease) to 20 mm. Tumor necrosis was frequently evident. Some mice demonstrated fluid-filled cystic lesions in addition to solid tumors, and some demonstrated lung lesions. Microscopic analysis of the liver tumors revealed that phenotype was genotype-dependent. Specifically, Kras BAP1<sup>L/L</sup> mice demonstrated biliary precursor lesions, frank ICC, and HCC. Conversely, Kras BAP1<sup>L/+</sup>, BAP1<sup>L/L</sup>, and Kras mice developed only HCC (Figure 3).

A novel GEMM incorporating BAP1 deletion combined with Kras activation was generated and found to result in reproducible development of liver disease. When designing this project, and taking into consideration the best available data on the pathogenesis of ICC, it was hypothesized that a mouse model incorporating BAP1 deletion and Kras activation would result in the development of ICC that recapitulates features of human ICC. In the case of mice with homozygous deletion of BAP1 and Kras activation, this hypothesis is correct, albeit ICC develops in the context of a mixed disease picture with both ICC and HCC present in the liver. Mice with heterozygous deletion of BAP1 and Kras activation, BAP1 loss alone, or Kras activation alone develop only HCC. Although not consistent with the original hypothesis, three novel GEMMs with potential for studying HCC were discovered.

A few points are important to consider when interpreting these findings. First, the majority of GEMMs that currently exist for ICC are mixed models that develop a combination of ICC, HCC, and true hepatocellular-cholangiocarcinoma lesions.<sup>12-14</sup> Second,

**continued on page 10**



**Figure 3:** Experimental mice have large hepatic tumor burdens. A—Gross liver tumors. B—Histological examination of the hepatic parenchyma reveals biliary precursor lesions, frank ICC and/or hepatocellular carcinoma. For Kras BAP1<sup>L/L</sup>, top panel demonstrates ICC, bottom HCC. Magnification 200X.

the bipotential nature of hepatoblasts likely contributes to the mixed disease observed in Kras BAP1<sup>L/L</sup> mice. By more specifically targeting BAP1 deletion and Kras activation to the biliary tree, it may be possible to enhance the ICC phenotype of the model. Adenoviral Cre enzyme enables such specificity,<sup>15</sup> and a novel surgery enabling retrograde biliary tree administration of this enzyme has been developed. Ad-Cre injection in Kras BAP1<sup>L/L</sup> mice to induce cholangiocyte-specific BAP1 deletion and Kras activation is ongoing.

To date, this work has demonstrated that liver-specific BAP1 deletion and Kras activation in mice results in ICC that mimics human disease on a pathologic level. Whether or not this is the case on a molecular level has yet to be fully determined. A combination of cell lines derived from these mice and others derived from human

ICC tumors are being used to examine potential similarities at the molecular level. These cell lines are also being used to interrogate the oncogenic pathways that drive development of ICC in the context of BAP1 mutations. Ongoing components of this project will hopefully be able to provide novel insight into the pathogenesis of ICC. Additionally, through a collaborative effort with the Departments of Medical and Surgical Oncology at M. D. Anderson, investigation into potential relationships between tumor mutational status and patient outcome amongst those individuals with ICC undergoing surgical resection are underway. •

**FOR ADDITIONAL INFORMATION** on this topic, please visit [mcw.edu/surgery](http://mcw.edu/surgery), or contact Dr. Marcus at [rmarcus@mcw.edu](mailto:rmarcus@mcw.edu).

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# MCW DEPARTMENT OF SURGERY CHIEF RESIDENTS 2017–2018



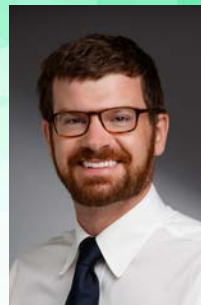
Fadwa Ali, MD



Daniel Davila, MD



Joseph Helm III, MD



William Ragalie, MD



Tanner Spees, MD

# Self-Directed Learning in the Surgery Clerkship



**RAYMOND CHOU, MD**  
2017 Medical School Graduate



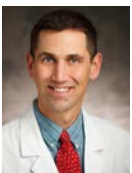
**ANDREW KASTENMEIER, MD**  
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**PHILIP REDLICH, MD, PHD**  
Professor, General Surgery  
Gerald L. Schmitz MD Professor of Surgery  
Chief, Surgical Education



**ROBERT TREAT, PHD**  
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**BRIAN LEWIS, MD**  
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Professor  
Division of Vascular Surgery



**CATIE FIHN, MBA**  
Student Coordinator  
Vascular Fellowship Coordinator



**AMY HOMEL, MS**  
Previous Student Coordinator  
Program Manager  
Department of Anesthesiology

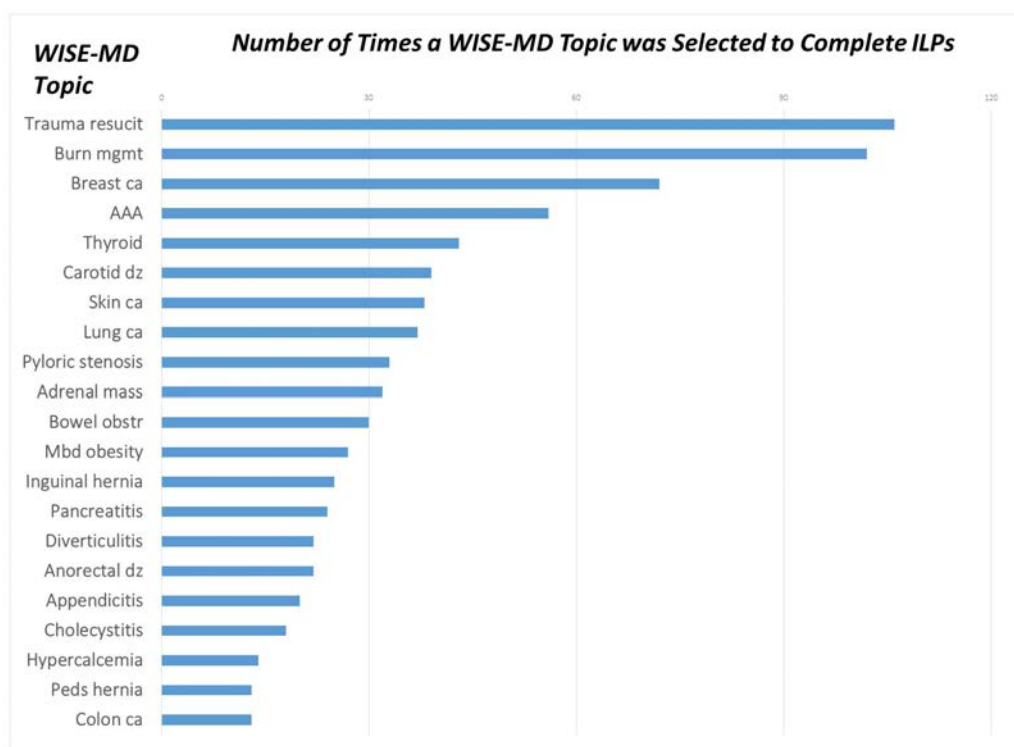
Life-long learning skills supported by independent study and self-directed learning are necessary for a successful career in the ever-evolving field of medicine. The Liaison Committee on Medical Education (LCME), which accredits medical education programs in the United States and Canada that lead to the MD degree, recognizes the importance of lifelong learning skills. As part of its comprehensive standards for accreditation, the LCME has mandated that “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 lifelong learning.”<sup>1</sup> According to the LCME, self-directed learning involves three components: 1) self-assessment of learning needs, 2) independent identification, analysis and synthesis of relevant information, and 3) appraisal of the credibility of the information sources. Leadership of the junior medical student surgery clerkship at the Medical College of Wisconsin (MCW) created and implemented Individual Learning Plans (ILP) to support lifelong learning skills.

Starting in July 2014, third-year medical students at MCW were required to complete two ILPs during their 8-week surgical clerkship. For each ILP, students were instructed to identify a surgery-related topic that they may not encounter during their clerkship. Students were provided resources from the Web Initiative for Surgical Education of Medical Doctors (WISE-MD) online case modules through MedU from which to choose topics. WISE-MD is an online resource consisting of 21 case-based, self-directed educational modules. In prior literature, the usefulness of WISE-MD modules has been demonstrated by improved knowledge and clinical reasoning.<sup>2</sup> To complete the assignment, students were instructed to write a short essay (limited to 450 words) or a multiple-choice board-style question (MCQ), with

explanations for each answer about the topic, based on the information that they had learned.

To date, 788 submissions have been received from 394 students. Of these submissions, 478 (60.7%) were essays and 310 (39.3%) were MCQs. The most frequently selected modules were trauma resuscitation, burn management, and breast cancer, with frequencies of 13.5%, 12.9%, and 9.1%, respectively (Figure 1). Beginning in September 2015, students were surveyed about their ILPs at the end of the clerkship as part of the required post-rotation evaluation. One hundred sixty-five students answered required survey questions (100% response). Most students responded that the ILP improved their medical knowledge, patient care skills, and preparedness for the NBME Surgery Subject Exam (SSE), with frequencies of 81.8%, 60.0% and 80.6%, respectively (Table 1). Many students (79.8%) rated ILPs as equally or more effective than traditional didactic lectures. The primary reasons for choosing the ILP topic were to address a perceived knowledge gap (73.3%) and improve general surgical knowledge (13.3%). The overall educational value for the ILP requirement was rated as either exceptionally high or high by 58.2% of students. The total number of WISE-MD modules accessed at MCW increased 5.5 fold

# through Individual Learning Plans



**Figure 1:** Frequency of student selection for specific WISE-MD module topics to complete Individual Learning Plans. Total module topic selections (788): Trauma (106), Burn management (102), Breast cancer (72), Abdominal aortic aneurysm (56), Thyroid (43), Carotid disease (39), Skin cancer (38), Lung cancer (37), Pyloric stenosis (33), Adrenal mass (32), Bowel obstruction (30), Morbid obesity (27), Inguinal hernia (25), Pancreatitis (24), Diverticulitis (22), Anorectal disease (22), Appendicitis (20), Cholecystitis (18), Hypercalcemia (14), Pediatric hernias (13), Colon cancer (13).

the year following implementation of the ILP requirement. Mean scores for the SSE showed a statistically significant increase in the year following implementation of the ILP requirement (74.9 vs 76.6;  $p=.042$ ).

WISE-MD is a useful platform for ILPs due to its flexibility and access; however, simply providing a suitable resource for students without a goal-directed framework may not fully realize the potential benefit to the student. In NYU School of Medicine's preliminary study of the utility of WISE-MD, an early trend toward improved knowledge and clinical reasoning for students was observed.<sup>2</sup> This same study also tracked utilization of the modules by 71 students from two consecutive 8-week surgical clerkships, noting that 31% of students either did not log on or spent less than three minutes online.<sup>3</sup> We found 100% utilization among our students, since completion of the

ILP project was a requirement of the surgery clerkship. Another prior study characterized the frequency of WISE-MD module access and identified the top three topics chosen for ILPs in our study (trauma, burn management, and breast cancer) to be fourth, seventh, and eleventh out of twenty available at that time.<sup>3</sup> The top three accessed modules in the comparative study include typical general surgery topics of appendicitis, inguinal hernia, and bowel obstruction, seen to be seventeenth, thirteenth, and eleventh in our study.<sup>3</sup> These differences likely stem from the deliberate selection of topics by our students to address knowledge gaps as instructed, and potentially influenced by the significant time investment required to learn the material and complete the assignment. The frequency by which WISE-MD modules are selected by current students may help guide future students in tailoring their

**Table 1:** Post-clerkship survey results of the impact of ILPs on students by percentage of responders.

My ILPs improved my:	Strongly agree	Slightly agree	Neutral	Slightly disagree	Strongly disagree
Medical knowledge of surgery	39.4	42.4	12.7	4.9	0.6
Patient care skills on the surgery clerkship	22.4	37.6	31.5	4.2	4.2
Preparation for the NBME surgery subject exam	38.2	42.4	12.1	4.9	2.4

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## Individual Learning Plans, continued from page 13

independent study to address knowledge gaps, as well as clerkship directors in prioritizing didactic sessions.

Results of the survey should be interpreted carefully. Whereas an increase in SSE scores was noted following ILP requirement implementation, the reasons for this increase may be multifactorial. In addition, we did not objectively assess and compare the acquisition of patient care skills. However, we contend that the ILP requirement enhances the educational experience on the surgery clerkship and supports the development of life-long learning skills. Future study includes the impact of ILPs on fourth-year student performance on their Surgery Acting Internship rotations. •

**FOR ADDITIONAL INFORMATION** on this topic, see references, visit [mcw.edu/surgery](http://mcw.edu/surgery) or contact Dr. Kastenmeier, 414-805-5356, [akastenm@mcw.edu](mailto:akastenm@mcw.edu).

# Welcome

## DEPARTMENT OF SURGERY NEW FACULTY

### CARDIOTHORACIC SURGERY

**Lyle D. Joyce, MD, PhD**, Professor of Surgery and Section Chief of Adult Cardiac Surgery, joins us from the Mayo Clinic in Rochester where he was Professor of Surgery and head of mechanical circulatory support. He earned his medical degree from Baylor College of Medicine. His general surgery residency was at the University of Minnesota Hospital, followed by an internship in cardiovascular pathology at Dr. Jesse Edwards Miller Hospital. Dr. Joyce completed cardiothoracic surgery residency at the University of Utah and his post-doctoral fellowship at the University of Minnesota Hospital. His practice includes aortic diseases, cardiac assist devices, Maze procedure valve repair, aortic reconstruction, beating heart coronary artery bypass, pulmonary thromboendarterectomy, heart transplantation and the surgical treatment of heart failure. Notably, Dr. Joyce was on the team that implanted the first permanent artificial heart in a human, and he was the first surgeon ever to use a total artificial heart in a woman, saving her life.

**David L. Joyce, MD**, Associate Professor of Surgery, joins us from the Mayo Clinic in Rochester where he was Assistant Professor of Surgery. He earned his medical degree from Harvard Medical School. Dr. Joyce completed general surgery residency at both The John Radcliffe Hospital in Oxford, England and Johns Hopkins Hospital in Baltimore, followed by a cardiovascular surgery residency at Stanford University. He was a research fellow at Baylor College of Medicine in Houston and at the National Institutes of Health. His practice focuses on heart transplantation, mechanical circulatory support

and lung transplantation. Dr. Joyce also has expertise in minimally invasive cardiac surgical procedures including off-pump minimally invasive bypass procedures, minimally invasive valve procedures and minimally invasive insertion techniques for mechanical support devices. He also performs a variety of complex aortic procedures, including valve sparing aortic root replacements and pulmonary thromboendarterectomies.

### GENERAL SURGERY

**Kathleen L. Lak, MD**, joins the MCW faculty after completing the Minimally Invasive and Bariatric Surgery Fellowship in the Division of General Surgery in July 2017. She earned her medical degree at the Medical College of Wisconsin and also completed general surgery residency training in our program. Her practice will encompass minimally invasive and bariatric surgery at Froedtert Hospital. She will also see patients and perform ambulatory surgical procedures at Drexel Town Square Health Center (opening in January 2018).

### TRANSPLANT SURGERY

**Melissa Wong, MD**, joins us from UCLA where she recently completed her fellowship in multi-organ transplantation and hepatobiliary surgery. She earned her medical degree from the Mount Sinai Medical School of Medicine and her surgical residency was completed at the State University of New York, Downstate Medical Center, Brooklyn, New York. Dr. Wong will be involved in the liver, kidney, and pancreas transplantation programs at Froedtert Hospital and Children's Hospital of Wisconsin.

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# Syrian Reflections



**SABINA SIDDIQUI, MD**  
Assistant Professor  
Division of Pediatric Surgery

In the summer of 2013, my wandering scalpel found its way to the small border town of Reyhanli, Turkey. I had been visiting Turkey as part of the Syrian American Medical Society to teach those brave and tenacious folks that constituted the skeletal remains of the medical infrastructure left behind by Syria's civil war. In other words, we were teaching urologists the principles of damage control laparotomy and carpenters to place chest tubes. But that is a story for another day.

Reyhanli is a small town that lives on the southern border of Turkey and the northern edge of Syria. The locals, a heterogeneous group of displaced Syrians and relief workers from all across the globe, refer to the town by its Arabic name, Reyhaniya. Once you get past the military guard surrounding the perimeter of the city since the May 2013 bombings, the language most often spoken on the streets is more reminiscent of Damascus than Istanbul. There are marbled ice cream and fruit salad bars that remind the displaced and volunteers of what the flush cities across the border looked like before the era of the "Arab Spring" and civil war.

As I rolled up in a dusty and stifling hot cab, my jeans stuck to the tacky surface of the plastic seats, the sun was setting over the hilltops that mark the border between two countries. Bright flashes of light broke up the purple skyline accompanied by the sound of rapid gunfire. That was not the only reminder of why we were all gathered in this particular village-turned sanctuary city. The most common accessories sported by anyone under the age of 30 were colostomy bags and extremity external fixation hardware. If you were not an inspired Italian driving an ambulance down to the border, you were a person who had some form of band-aid placed and then transferred over the border for definitive management. These transfers were often in the cover of night, with ambulances painted black, without the benefit of lights. This is the story that I would like to expand on today.

There are multiple "half-way" home medical facilities littering the neighborhoods within Rehaniya. I did rounds one evening in one that focused on children. While I focused on the needs of medical professionals, civilian children were also listed among the victims. In the common yard, we saw children in wheel chairs, crutches and otherwise well-looking children all playing together. Among these



**Dr. Siddiqui and displaced children practice their jump shots at the Southern Syria/Northern Iraq border.**

children was a young girl so badly burned her face was completely disfigured and she only had hair growing in patches, we will call her Ayah. As I reflected on the children's ability to find joy in the context of their displacement, I also realized that Ayah's disfigured visage was not anything alien or strange to her peers. These kids grow up thinking that severe burns and the resultant scars are a variant of "normal." While her easy engagement with her peers speaks to our capacity for inclusion and acceptance, the question arises, what can we do to make that particular capacity remain hypothetical in nature?

There are a number of very important reasons I feel the medical community needs to pay attention to what is occurring in Syria. First and foremost is the systemic targeting of the health care infrastructure and personnel. I first was recruited to travel to Turkey and cross the border to teach the few and remaining health care personnel trauma resuscitation, damage control surgery and pediatric surgical care. I was aware of the civil war and need of my medical services; the gentleman recruiting me made an impassioned enough humanitarian plea that I was sold. Like Han Solo, I unwittingly took a job that I am qualified for and previously performed in unstable environments. And like Han, I did not realize that in offering my services to the Rebellion, I would unwittingly become a member of the resistance. It was soon after my first day in Gazientep that the stories of surgeons placed in jail and tortured for treating victims of barrel bomb blasts started surfacing. A surgeon's hands were burned for the crime of raising his own scalpel in an attempt to save a life.

**continued on page 16**

## Syrian Reflections, continued from page 15

The everyday conversation referred to strategies to provide support for patients in spite of or despite The Regime. The medical relief and humanitarian organizations' struggle to maintain neutrality when hospitals and shelters are bombed, when ambulances are targeted and when access to those in need is blandly denied. Médecins Sans Frontières (Doctors Without Borders) has repeatedly reported "MSF presence and medical activities in Syria remain severely constrained, mainly due to shifting front lines, insecurity in armed opposition areas, and a lack of authorization to operate in government-controlled areas."

This past March, on the six-year anniversary of the ongoing conflict, the Lancet Commission published its report on the "weaponization of health care in Syria." They documented over 200 military attacks on health care facilities in 2016 alone. The targeting of specific medical facilities offering care, such as Kafr Zita (a hospital moved into a cave to allow it to continue to run), is obvious, as the site has been bombed no less than 33 times since 2014. They further discuss the targeting of our medical colleagues. Since the first execution of a physician who responded to a multi-trauma at a mosque shooting, Syria has become "the most dangerous place on earth for health care providers" with over 814 medical providers killed over the years, the majority of whom were physicians.

As medical professionals, we should be appalled at the targeting of our colleagues; but perhaps the true gravity of the situation lies in my Han Solo dilemma. Despite our basic humanitarian oaths, we find ourselves knocked off our platform of neutrality in this particular conflict. When the children in besieged Aleppo are denied vaccinations, when saline has to be mixed and made underground, and when "anti-



terrorism" laws criminalize the delivery of health care to victims of the ubiquitous violence, the threat to the ethical foundations of our very profession is glaringly apparent.

This deserves a second look. It deserves greater attention and stronger advocacy. We should remain vigilant and knowledgeable and write to our representatives, pay attention to opportunities from groups like SAMS (<https://www.sams-usa.net>), Amnesty International (<https://www.amnestyusa.org>), UNHCR (<http://www.unhcr.org>) and Human Rights Watch.

Six years into this conflict there is a huge need to build capacity from scratch. There will be opportunities to educate, provide research and clinical experience, both at home and abroad. Until that opportunity manifests, our voice may be all we have to offer. It is important to make a stand, to validate and reaffirm our belief in international laws and basic human rights and principles. •

## American College of Surgeons Clinical Congress San Diego | October 23, 2017

Plan to join us on Monday, October 23, 2017 at the MCW Department of Surgery / Marquette Medical Alumni Association reception during the American College of Surgeons 103rd Annual Clinical Congress.

The reception will be held 6:00 to 8:00 p.m. at the University Club atop Symphony Towers, 750 B Street, in the Founders' Room on the 34th floor.





# Ethics: Surgical “Buy-In”



**MARSHALL BECKMAN, MD, MA**  
Associate Professor  
Division of Trauma/ACS

A study published in the *BMC Medical Ethics*<sup>1</sup> journal surveyed clinical bioethicists. The question posed to the panel was, “What do you think are the top ten ethical challenges that Canadians may face in healthcare?” The number one ranking scenario was disagreement between patients/families and health care professionals about treatment decisions. As I thought about this, I wondered whether this Canadian study published a decade ago applies to us in the United States and in Milwaukee. This study brought to mind work that has been done on this campus on the topic of surgical “buy-in”. In 2010, Karen Brasel, MD, MPH, previous Professor in the Division of Trauma/ACS, was involved in a study published in *Critical Care Medicine*.<sup>4</sup> Therein, the concept of surgical “buy-in” was defined and discussed. Surgical “buy-in” is “a complex process by which surgeons negotiate with patients a commitment to postoperative care before undertaking high-risk surgical procedures.”

The conclusions of this study were that surgeons and patients have different perspectives on the doctor-patient relationship. Surgeons can have the sense of a “surgical covenant”. This is a bond between a patient and the surgeon, whereby the patient trusts the surgeon to make an incision and peer into his or her body, while the surgeon promises to do everything in his or her power to keep the patient alive.<sup>2</sup> This study concludes that at times in the surgeon’s mind, the agreement goes beyond this covenant. The surgeon may feel this concept of “buy-in” that the patient does not share.

This topic was further explored recently where the following statement was proposed: “During a high-risk operation, surgeons generally assume that patients buy-in to life-supporting interventions that might be necessary postoperatively. How patients understand this agreement and their willingness to participate in additional treatment is unknown.”<sup>3</sup> This study concluded that surgeons are inconsistent with their discussions with patients and their preferences for treatment limitations after big operations. Additionally, patients have a broad range of preferences for postoperative care that may change in the postoperative setting.

In moving back to the original question, what is the biggest ethical question facing us and our patients? The disagreement between patient and physician about treatment decisions is certainly one that many of us see in our daily practice. This may be a broader

conversation than the informed consent discussion we all have prior to any procedure, no matter how big or small. The informed consent discussion has several elements. We discuss the risks, benefits, alternatives to the proposed treatment, and potential complications related to the procedure and the alternatives. Additionally, the patient must freely give consent without coercion. Our patients come to us because we have the knowledge, skill, equipment, techniques, and medications to potentially make them better. The “surgical covenant” that exists allows the surgeon to invade a patient’s body, a privilege that no other profession has. This covenant is built on trust. These studies show that many times, there are differences in understanding about the course of treatment after a big operation. They trust us to make an incision and fix the problem. We should also include in that covenant a full discussion of what may come after the big operation. We can then engage them in communicating their preferences for various life-supporting interventions. This allows us to fully serve the patient with all of our faculties, especially our knowledge and skill. Let us all strive to fulfill the surgical covenant to the utmost, each and every time. •

**FOR ADDITIONAL INFORMATION** on this topic, see references, visit [mcw.edu/surgery](http://mcw.edu/surgery) or contact Dr. Beckman, 414-805-9420, [mbeckman@mcw.edu](mailto:mbeckman@mcw.edu).

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# MCW Global Health Medical Mission Trip to Nepal



**DEAN KLINGER, MD**

Professor  
Department of Surgery

When I thought about going to Nepal, my first thoughts were of Mount Everest and the Himalayan Mountains. I said “Sign me up!”, I knew nothing of the culture or the medical systems in place. I started reading about Nepal and immediately learned of the poverty that exists. The average income is \$450 per year. I came to learn that the majority of the wealth is in Kathmandu. This means that the great majority of the 29 million people that live in Nepal are extremely poor. With the aid of Ted MacKinney, MD (Associate Professor, Department of Internal Medicine), and Bipin Thapa, MD (Associate Professor, Department of Internal Medicine), my itinerary for the trip was set. I was to spend time at a very diverse array of hospitals: a government-run hospital, a mission hospital, a hospital funded by philanthropic organizations, and a government-run organ transplant hospital. As I visited each one of them, I asked myself, “Why am I here? What is my role? What do I have to offer?”

The first hospital that I visited was Patan Hospital in Kathmandu. This is a government-funded hospital. Patients do not need to pay to receive care. It appeared to be adequately staffed, but there was evidence of the affliction of poverty. There were only two functioning operating rooms. In April of 2015, there was an earthquake that damaged five operating rooms which were finally being renovated at the time of my visit two years later. The hospital’s ability appears to be hampered by the lack of funding it receives but the surgeons are skilled and take good care of the people.

My travels then took Dr. MacKinney and myself to Chaurjahari Hospital in the western part of Nepal. This hospital was founded by Dr. MacKinney in 1994. The medical staff, including nurses, doctors and paramedics, all seemed to care about each other and the people they served; they had a real sense of community and purpose. The outpatient clinic was staffed by three physicians who saw 100 people per day and performed three to five operations per day. There were no anesthesiologists on-site, and operations



Dr. Klinger with the medical staff at The Organ Transplant Hospital of Nepal.

were done primarily with regional or local anesthesia. The operating rooms were well-equipped. During my stay, I noticed that there seemed to be a higher rate of post-operative wound complications than expected. With this observation, I realized my trip’s purpose. I questioned if there was a way to decrease post-operative wound complications and promote adequate healing. I contemplated the factors - nutrition, hygiene, or surgical technique? With these questions in mind, the Medical College of Wisconsin is pursuing a joint project with Chaurjahari Hospital to study the potential causes. Plans are to institute changes to determine if we can improve care for these people and decrease their post-operative complications.

The next hospital I visited was in Dhulikhel, a suburb of Kathmandu. This progressive hospital was built with philanthropic donations and continues to receive large sums of money from other countries. The hospital staff is thriving and working hard to improve the care they deliver. About one year ago, the government of Nepal announced it would pay for patients to receive hemodialysis. Prior to that time, only the wealthy received dialysis. Vascular surgeons at Dhulikhel were excited to hear my ideas and have me operate with them in creating vascular access. Their hope is to increase the number of patients they care for with renal failure.

The last hospital I spent time at was the Organ Transplant Hospital of Nepal. This is a government-run hospital, but as the name implies, looks to be a center of excellence in transplant for Nepal. At this hospital, the vascular surgeons have been creating vascular access for a number of years and have about 50 dialysis machines. They create a high volume of arteriovenous fistulas each month. Their current issues are the care and management of the complications that occur with fistulas. As time progresses, these fistulas are developing thrombosis, stenosis, aneurysms, and the doctors are seeing patients with swollen arms and trouble with fistula maturation. Along with three Nepali surgeons, we saw an entire afternoon clinic of patients with complications. We discussed treatment options and operated on several of these patients. My role here was to exchange ideas and educate. Again, the limitations of poverty were present. They are in need of an ultrasound machine to help them assess the patients, which I plan to help them acquire.

I finished my visit to Nepal with a 12-day hike into the Himalayas and a visit to Mount Everest Base Camp. I had the privilege of taking MCW to new heights!

I believe I have now defined my role in Nepal. I hope to return next year with an ultrasound machine for the transplant hospital and a plan to reduce wound complications at the mission hospital. I believe this experience has changed who I am and my perspective on life. •



Dr. Klinger takes MCW to new heights at Mount Everest Base Camp.

# Leading the Way



## DEPARTMENT OF SURGERY EDUCATION AWARDS AND RECOGNITION

### 2017 Eberbach Award Winners

#### FACULTY HONORED



John Aiken, MD

The Eberbach Banquet is held every year to honor Department of Surgery graduating residents and fellows and recognize outstanding faculty and resident educators. At this year's banquet, held June 17th at the InterContinental Milwaukee hotel, **John Aiken, MD** (Division of Pediatric Surgery), received the *Golden Cane Award* for the second consecutive year and fourth year overall. Established in 1987, the Golden Cane Award recognizes an outstanding educator, as chosen by junior and senior medical students. **Marshall Beckman, MD** (Division of Trauma/ACS), was selected by current surgery residents as the recipient of this year's *Professionalism Award*. This award, established in 2005, is presented to the faculty member who best exemplifies outstanding professionalism.

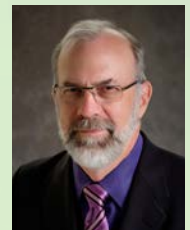


Marshall Beckman, MD



Steven Kappes, MD

Established in 1986, the *Aprabamian Faculty Teaching Awards* are selected by the graduating chief residents, recognizing two outstanding faculty teachers (one from the full-time academic faculty, and one from an affiliated institution). The first of this year's winners, **Steven Kappes, MD**, Site Director at Aurora Grafton, is a repeat winner, also having received the award in 2016, 2003 and 2001. The second award recipient was **Edward Quebbeman, MD, PhD** (Division of Surgical Oncology). Congratulations and thank you to these devoted educators for their dedication and contribution to the education and training of our medical students and residents.



Edward Quebbeman, MD, PhD

#### RESIDENTS and PHYSICIAN ASSISTANT HONORED

Multiple resident awards were given throughout the evening. The *Barney Becker Award*, given to the outstanding resident teacher of the year as chosen by senior medical students, was awarded to **Carlos Encarnacion, MD** (Cardiothoracic Resident). **John Miura, MD**, was the recipient of the *Robert E. Condon Golden Scalpel Award*. This award, chosen by surgery faculty, is awarded to a graduating resident for outstanding technical ability. Outstanding ability in a junior resident is recognized and chosen by the graduating chief residents with the *Junior Resident of the Year Award*, nicknamed the *Iron Dog*. This year's *Iron Dog* recipient was **Kelly Boyle, MD**. Graduating residents also chose **Samantha Vicker, PA-C**, to receive the *Physician Extender Award*. Residents who scored the highest on the American Board of Surgery In-Training Exam were also recognized – **Kaleb Kohler, MD** (junior resident), and **Rachel Landisch, MD** (senior resident).

New this year was the *James R. Wallace, MD, PhD Award for Minimally Invasive Surgery*. This award, named to honor Dr. Wallace, a Professor in Surgery at MCW since 1992 who passed away suddenly in 2016, is given to the chief resident who has achieved the highest level of technical skill in minimally invasive surgery. The inaugural award was presented to **Munyaradzi Chimukangara, MD**.



#### MCW ON THE RADIO

Join us on Saturday, October 14 at 4:00 p.m. on NEWS/TALK 1130 WISN for the inaugural program of "The Word on Medicine" supported by Selig Leasing Co., and produced by the Department of Surgery. This multidisciplinary, biweekly radio show will highlight innovation and discovery across all of MCW—how knowledge changes life! The first program, organized by Dr. Amanda Kong, will be devoted to breast cancer in honor of Breast Cancer Awareness month. Please listen in!

continued on page 20

# Leading the Way

## MCWAH RESEARCH AWARD

Two General Surgery Residents were among the recipients for the MCWAH 2017 Research Awards, which recognizes housestaff employed by MCWAH for excellence in research. The winning residents were nominated by their Program Director, Matthew Goldblatt, MD, and selected by the MCWAH Research Committee, comprised this year of Drs. Jonathan Bock, Thomas Ebert, Tina Yen, Kathlyn Fletcher, Patrick Hettinger, and Kenneth Simons.

The first award recipient was **Fadwa Ali, MD**, who won for her research titled *Is Extended Venous Thromboembolism Prophylaxis Indicated Following Colon Surgery for Inflammatory Bowel Disease?*, presented at The American Society of Colon and Rectal Surgeons Annual Scientific Meeting.

**Nathan Kugler, MD** was the second award recipient, winning for his research titled *Thoracic Irrigation Prevents Retained Hemothorax: A Prospective Propensity Scored Analysis*, presented at the Western Trauma Association.

## LISA OLSON TO SERVE ON EXECUTIVE COMMITTEE OF ARAS



**Lisa Olson**, Program Manager for the General Surgery Residency Program, was recently appointed to the executive committee of the Association of Residency Administrators in Surgery (ARAS). She will serve as the Executive Secretary for the organization.

ARAS is a subcommittee of the Association of Program Directors in Surgery (APDS), which underwent a name change from the Association of Residency Coordinators in Surgery (ARCS) to better characterize their role as professionals, innovators and decision-makers within training programs.

“Being selected to the executive committee of the ARAS is a great honor. Lisa has worked hard for this organization and it is great that she is being recognized. In addition, this high-profile position helps to put the Medical College of Wisconsin and the Surgery Residency on a national stage,” said Matthew Goldblatt, MD, Professor of Surgery and Program Director for the General Surgery Residency Program.

## GENERAL SURGERY RESIDENCY PROGRAM RECEIVES \$1.1M GRADUATE MEDICAL EDUCATION GRANT

The General Surgery Residency Program has received a five-year, \$1,125,000 grant from the Wisconsin Department of Health Services to support new residents working in rural and underserved areas of the state beginning July 1, 2017. Directed by **Matthew Goldblatt, MD**, Professor of Surgery and Program Director for the General Surgery Residency Program, this grant supports three general surgery categorical residents for the duration of their five years of GME training.

The rural track residents will spend two months of each PGY year rotating in Wausau, WI. Residents will work with Surgical Associates S.C., practicing at Aspirus Wausau Hospital, led by site director and general surgeon Gary Sweet, Jr., MD. **Zoe Lake, MD**, is the first resident matched into the rural track. Dr. Lake started July 1, 2017, and will rotate in Wausau in April/May of 2018.



Thank you to **Amy Wagner, MD**, Associate Professor, Division of Pediatric Surgery (left), who served as the *Leading the Way* editor from 2013–2017. We welcome **Rana Higgins, MD**, Assistant Professor, Division of General Surgery (right), as our new faculty editor.



# MCW Alumni Elected To Top Leadership Positions in American Surgical Association

*Contributed by Stuart D. Wilson, MD, Emeritus Professor, Department of Surgery*

The American Surgical Association (ASA), founded in 1880, is this nation's oldest and most prestigious surgical organization. The members include the nation's most prominent surgeons from the country's leading academic medical institutions, many of whom are the Chairs of the Departments of Surgery at these institutions. Memberships also include leading surgeons from around the world.

Two MCW alumni recently have been elected President of the ASA—Anna Ledgerwood, MD (President, 2015), and E. Christopher Ellison, MD (President Elect, 2017). It is fair to say that both cemented their decisions on surgical careers after they had surgical rotations in our MCW-affiliated hospital programs.



**Anna Ledgerwood, MD**, a 1967 MCW graduate (then Marquette), was one of only three women in a class of 100. During her clinical years, she first rotated on Dr. Edwin Ellison's service at the Milwaukee County Hospital and then again on the "Blue" surgical service as a senior medical student. "What really

turned me on to surgery was not only taking care of patients, but the caliber of the surgical residents and the attendings. But in particular, it was the surgical residents," she said. Dr. Ledgerwood did her surgical residency at Detroit Receiving Hospital and Wayne State University School of Medicine. She is recognized nationally and internationally for her achievements in trauma and critical care. Dr. Ledgerwood has a reputation as a great teacher and role model. One of the most remembered aspects of Dr. Ledgerwood's legacy is the now famous "Charlie Lucas – Anna Ledgerwood" trauma and ICU rotation at the Detroit Receiving Hospital, which provided training rotations for thousands of medical students and surgical residents over the years. Many of the students came from other medical schools for a one-month rotation on the Lucas-Ledgerwood service.

Dr. Ledgerwood has held many leadership roles in local and national surgical organizations. She became the first female President of the American Surgical Association when elected at the 134th annual meeting in Boston on April 11, 2014. Notably, Dr. Ledgerwood recently returned to Milwaukee for MCW's commencement and the 50th reunion of her graduating class.



**E. Christopher Ellison, MD**, is a 1976 graduate of the Medical College of Wisconsin. He matched for a surgical residency at The Ohio State University Medical Center. This residency choice was not surprising because Dr. Larry C. Carey had just become Chief of Surgery and The Robert M. Zollinger Professor and Chair at Ohio State. Dr. Carey did his

residency in Milwaukee under Dr. Edwin Ellison (Chris' father), and Dr. Carey has been a mentor for Chris Ellison. Dr. Chris Ellison rapidly established himself as an outstanding clinician, teacher and investigator. He rose in rank to Professor and Chief of General Surgery at Ohio State and then became The Robert M. Zollinger Chairman of The Department of Surgery. He was also Vice Dean of Clinical Affairs at The Ohio State University Wexner Medical Center. Among other leadership roles, Dr. Chris Ellison has served as President of the Ohio Chapter and Governor at Large of the American College of Surgeons and the Chair of the American Board of Surgery. He has been a continuous contributor to solving the problem of the impending shortage of the surgical workforce.

To be elected President of the American Surgical Association is indeed a significant honor. Only two other Wisconsin surgeons have achieved this leadership role. The first was Dr. Nicholas Senn, arguably Wisconsin's most famous surgeon, who served as ASA President in 1892. The other surgeon was Dr. Layton Ridders, who was the past Chairman of the Department of Surgery, University of Wisconsin School of Medicine when elected ASA President in 2013. Congratulations to two of our most distinguished MCW alumni, Drs. Anna Ledgerwood and Chris Ellison. •

# Get Your Rear in Gear Milwaukee 5K Run / Walk



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

The Division of Colorectal Surgery at the Medical College of Wisconsin, in partnership with the Colon Cancer Coalition, has established the Get Your Rear in Gear Milwaukee 5K Run / Walk.

Since 2011, the event has raised more than \$100,000 to support MCW programs for colon cancer research, education, prevention, and screening, as well as the Get Your Rear in Gear Visiting Professor. Colorectal cancer is the third most common cancer diagnosed in both men and women in the U.S. During 2017, it is estimated that 50,260 Americans will die from colorectal cancer. One in 21 people is expected to develop colorectal cancer in their lifetime.

Kirk A. Ludwig, MD, FACS, FASCRS, the Vernon O. Underwood Professor in Colorectal Surgery, and his team are transforming research and clinical cancer programs to meet a continuing need for new medical discovery and to serve the patients and families who rely on effective and compassionate colorectal cancer care. During the past year, Timothy Ridolfi, MD, Assistant Professor in the Division of Colorectal Surgery, received support for his research from the Get Your Rear in Gear organization.

Drs. Ludwig and Ridolfi are leading a research project that makes use of advanced imaging technology, the 7T MRI housed at the MCW Center for Imaging Research within the Daniel M. Soref Imaging Research Facility.

The capacity of the 7T MRI is available to a relatively small number of researchers around the world. The precise imaging this equipment is designed to capture is ideal for understanding a wide range of pathologies and how treatment interventions mitigate the process of disease. The project, Initial Experience of Rectal Cancer Staging with 7T Magnetic Resonance Imaging, has the potential to advance our understanding of how this particular therapy improves outcomes. They hope to begin enrolling patients for the study in summer.

The 2017 Get Your Rear in Gear Milwaukee 5K Run / Walk will be held on Saturday, October 14, at 9 AM in the Rotary Performance Pavilion at Hart Park in Wauwatosa. All are welcome at the event, which is routinely attended by those whose lives have been touched by a diagnosis of colon or rectal cancer. Thanks to the improvements in prevention, early detection, and treatment, more than a million people in the U.S. count themselves as survivors of colorectal cancer.

Participants enjoy post-run refreshments, t-shirts, and marathon-quality medals for age group winners. Awards for the Most Creative Team, Largest Team, Top Individual Fundraiser, and Top Team Fundraisers will be given at the event. The day includes the opportunity to honor survivors and remember those lost to colon cancer.

“We are grateful to every volunteer, sponsor, survivor, patient and most of all, the families and friends of those we remember. Our aim is to educate patients and their families about colorectal cancer and to support the physicians and researchers at MCW who are dedicated to exploring new therapies and diagnostic tools for colon and rectal cancer. Only with targeted research can we find solutions that will diminish the effects of this disease,” said Dr. Ludwig.

For more information on the Get Your Rear in Gear Milwaukee 5K Run/Walk, please contact Lynn Dickinson at (414) 805-1690 or [ldickinson@mcw.edu](mailto:ldickinson@mcw.edu).

Register online at: [www.getyourrearingear.com/milwaukee](http://www.getyourrearingear.com/milwaukee)



**To refer a patient or request a transfer/consultation, please use the references below:**

## ADULT PATIENTS

**All non-cancer requests**  
Referrals: 800-272-3666  
Transfers/Consultations:  
877-804-4700  
[mcw.edu/surgery](http://mcw.edu/surgery)

**Clinical Cancer Center**  
Referrals: 866-680-0505  
Transfers/Consultations:  
877-804-4700

## PEDIATRIC PATIENTS

Referrals/Transfers/  
Consultations: 800-266-0366  
Acute Care Surgery:  
414-266-7858

# THE MEDICAL COLLEGE OF WISCONSIN **DEPARTMENT OF SURGERY**

## FACULTY BY SPECIALTY

### **Bariatric and Minimally Invasive Surgery**

Matthew I. Goldblatt, MD  
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Rana M. Higgins, MD  
Andrew S. Kastenmeier, MD  
Tammy L. Kindel, MD, PhD  
Kathleen Lak, MD  
Andrew S. Resnick, MD, MBA

### **Cardiac Surgery**

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Wilfredo Crespo-Velez, MD\*  
Ralph Galdieri, MD\*  
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Paul J. Pearson, MD, PhD  
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Carrie Y. Peterson, MD, MS  
Timothy J. Ridolfi, MD

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Panna Codner, MD  
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Jeremy S. Juern, MD  
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### **General Surgery, continued**

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Travis P. Webb, MD, MHPE  
John A. Weigelt, MD, DVM, MMA

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Kellie R. Brown, MD\*  
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*Columbia St. Mary's Hospital*  
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### **Chief Surgical Residents**

(2017–2018)  
Fadwa Ali, MD  
Daniel Davila, MD  
Joseph Helm III, MD  
William Ragalie, MD  
Tanner Spees, MD

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

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# MEDICAL COLLEGE OF WISCONSIN

Department of Surgery  
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Milwaukee, WI 53226

## MARK YOUR CALENDARS

### Upcoming Events

**OCTOBER 13: MCW Pancreatic Cancer Scientific and Translational Research Symposium** – University Club, Chicago, Illinois

**OCTOBER 26: Vascular Access Symposium** – Hampton Inn & Suites, Milwaukee

**NOVEMBER 10: Academic Festschrift in Honor of John A. Weigelt, MD, DVM, MMA** – Medical College of Wisconsin

**DECEMBER 2: Advances in Minimally Invasive General Surgery Symposium** – MCW-Green Bay Campus

**FEBRUARY 2, 2018: Pancreatic Cancer Clinical Symposium** – Harley-Davidson Museum, Milwaukee

**FEBRUARY 23, 2018: Endocrine Surgery Symposium** – The Westin, Milwaukee

**JUNE 4-6, 2018: 1st Annual Midwest Trauma/Acute Care Surgery Symposium** – Hilton Milwaukee City Center

*We now offer ABMS MOC Part 2 Self-Assessment credit for our Grand Rounds Lectures. Scan the QR code to proceed.*

*Please contact Heidi Brittnacher ([hbrittna@mcw.edu](mailto:hbrittna@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
- Surgical Education
- General Surgery
- Pediatric Surgery
- Research
- Surgical Oncology
- Transplant Surgery
- Trauma/ACS
- Vascular Surgery

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