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DEPARTMENT OF SURGERY

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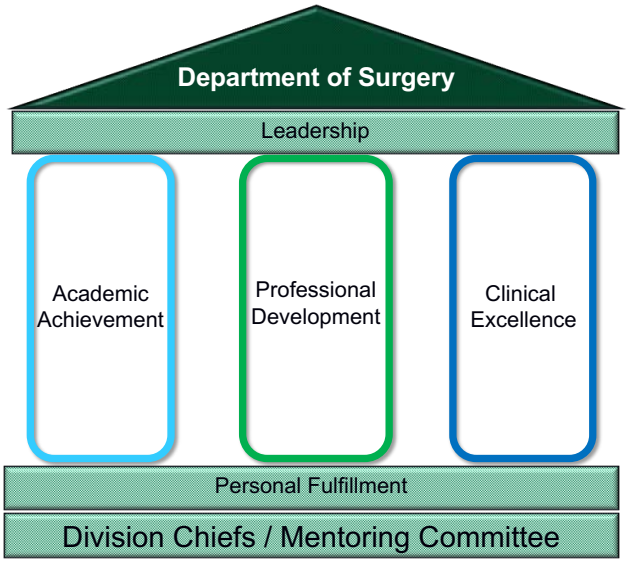
From the Chair | Douglas B. Evans, MD

Team Work Makes the *Dream* Work

The Department of Surgery has recently undergone a reorganization of roles and responsibilities to advance our three missions (education, research, clinical care) and capitalize on the talent and unique expertise of our growing faculty. Stimulated initially by an insightful external consultant and refined with internal discussion at all levels of leadership, for the first time in the history of this department we have added program-specific Vice Chair positions. This is in addition to current leadership positions including Dr. Keith Oldham, Vice Chair of the department, Dr. Matt Goldblatt, General Surgery Residency Program Director and our existing team of talented Division Chiefs. In addition, after 12 years of service to the Division of Education, Dr. Phil Redlich will step down as Division Chief due to his appointment as Vice Chair and Surgeon-in-Chief for the Zablocki VA Medical Center. We have every confidence that these new leadership positions will create additional clinical opportunity, make MCW Surgery of the best possible quality, bring unmatched efficiency to our clinical services/operating room, and enhance faculty and resident career development with an innovative and energetic focus on how to make all of us the best we can be. Our commitment to faculty development and resident education will be unmatched among academic departments in this country. As illustrated in the graphic (thank you Phil Redlich and our Mentoring Committee), while everyone shares the three pillars, our approach to career success is a personalized medicine approach (thank you Raul Urrutia). The goals within each pillar are likely unique to every faculty member and resident; understanding this will provide the navigation needed to achieve a successful career – as defined by the exceptional talents, diverse interests, and wide-ranging accomplishments of the 100 faculty and 47 residents and fellows. Individual success will be amplified when achievements are added across the department – Team work will make the Dream work! Please join me in congratulating the faculty who have assumed new leadership roles:

- Vice Chair for Off-Campus Clinical Operations (Dr. Clark Gamblin; Associate Vice Chair, Dr. Peter Rossi)
- Vice Chair for Perioperative Services (Dr. Gary Seabrook)
- Vice Chair for Quality (Dr. Jon Gould; Associate Vice Chair, Dr. Carrie Peterson)
- Vice Chair for Strategic and Professional Development (Dr. Tracy Wang)
- Vice Chair for VA Surgical Services (Dr. Philip Redlich, Surgeon-in-Chief)
- Chief, Division of Education (Dr. Brian Lewis; Associate Chief, Dr. Andrew Kastenmeier) •

Three Pillars of Career Development



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MCW Surgery

knowledge changing life

Bariatric Surgery as a Treatment for Heart Failure

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Obesity cardiomyopathy is heart failure due primarily to the underlying metabolic disease of severe obesity, and may comprise more than 50% of heart failure diagnoses in severely obese individuals.[1,2] The spectrum of obesity cardiomyopathy continues from asymptomatic diastolic dysfunction to end-stage left ventricular (LV) dilation with reduced systolic function.[3] Bariatric surgery significantly improves cardiac geometry, function and symptoms related to obesity cardiomyopathy. The mechanisms for the improvement of cardiac failure after bariatric surgery are unknown, but likely include the effect of significant body mass reduction on cardiac work load, inflammation, and metabolism, as well as positive weight-loss independent alterations in the entero-cardiac axis.

Bariatric Surgery as a Treatment for Obesity Cardiomyopathy. Weight reduction is the only effective long-term treatment for obesity cardiomyopathy.[3] Weight loss is associated with decreases in left and right ventricular mass, end-diastolic volume and diastolic dysfunction and increases aortic distensibility.[4] There are minimal studies comparing the effectiveness of substantial purposeful weight loss by exercise/caloric restriction in morbidly obese patients, due to the lack of efficacy of long-term dieting in this patient population.

There are reports back to the era of the jejunoileal bypass on the positive effects of surgical weight loss on cardiac structure.[5] Roux-en-Y gastric bypass (RYGB) surgery decreases the incidence of new heart failure development, compared to intensive lifestyle modification by almost 50% (hazard ration 0.54, 95% CI 0.36-0.820).[6] RYGB improves predictors of future cardiovascular morbidity in adolescents undergoing surgery with significant improvements in left ventricular hypertrophy, diastolic dysfunction and cardiac workload.[7]

In patients with preserved systolic function, bariatric surgery induces significant reductions in absolute and relative LV mass and wall thickness, and improved diastolic function.[8] There are multiple reports of improved diastolic dysfunction in patients with preserved ejection fraction after bariatric surgery.[9-11] Leichman et al. found that bariatric surgery normalized left ventricular relaxation impairment by nine months post-operatively.[10]

Bariatric surgery can significantly improve systolic function in patients with heart failure. In 2008, Ramani published the results of 12 patients with markedly depressed LV ejection fraction (EF) in 12 patients undergoing bariatric surgery. Unlike matched morbidly obese controls, bariatric surgery patients had a significant improvement in left ventricular EF from 21.7% pre-operatively to 35% post-operatively.[12] Vest et al. found a more modest, although significant, improvement in LVEF at six months after surgery in patients with LV systolic dysfunction (+5.1% increase in LVEF post-op).[13] There is a significant reduction in the average NYHA class after bariatric surgery, from 2.9 to 2.3, compared to a significant worsening in control patients with heart failure (NYHA class 2.4 to 3.3, p=0.02).[12]

Potential Mechanisms for Cardiac Improvement after Bariatric Surgery. The mechanisms for the improvement of cardiac failure after bariatric surgery are unknown, but likely involve a combination of multiple beneficial mechanisms. These mechanisms may include the effect of significant body mass reduction on cardiac work load and metabolism, and beneficial alterations in the entero-cardiac axis**.**

There is a precedent for critical weight loss-independent effects of bariatric surgery on metabolic disease, including type 2 diabetes mellitus. Other beneficial effects of bariatric surgery include alteration of the gastrointestinal microbiome, increases in the post-prandial bile acid pool, and increases in post-prandial glucagon-like peptide-1 (GLP-1) and receptor signaling within days after surgery.[14,15] It is possible that gastrointestinal manipulation by surgery beneficially alters the entero-cardiac axis through one of these mechanisms, providing additional improvement in cardiac function beyond the impact of weight loss.

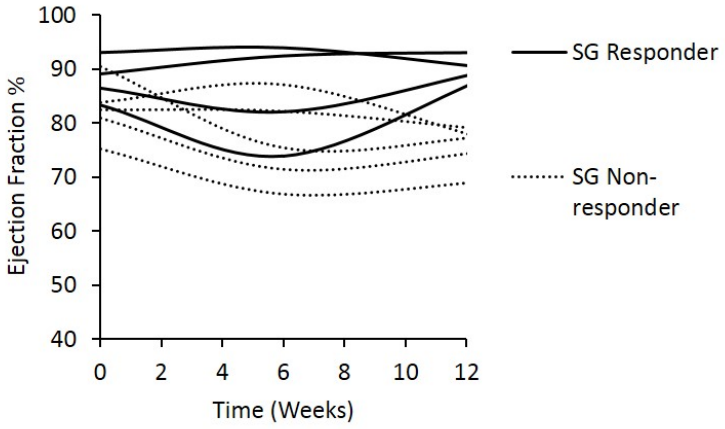

Figure 1. Individual ejection fraction % curves for sleeve gastrectomy responders (EF > 89.4%, solid lines) or sleeve-gastrectomy non-responders (EF < 89.4%, dotted lines). Adapted from Kindel T, et al.[16]

We recently published that in a rodent model of sleeve gastrectomy (SG) and diet-induced cardiac dysfunction, SG significantly improved systolic function in 44% of rats in a weight-loss independent manner.[16] Rats with improved systolic function also had significantly smaller LV internal diameter in systole and end systolic volume (Figure 1). In a separate cohort of obese rats, we have found that a SG significantly improves diastolic function independent of weight loss. These findings support that bariatric surgery alters the entero-cardiac axis in a weight-loss independent manner with the potential for reverse cardiac remodeling, in addition to the known beneficial impact of weight loss.

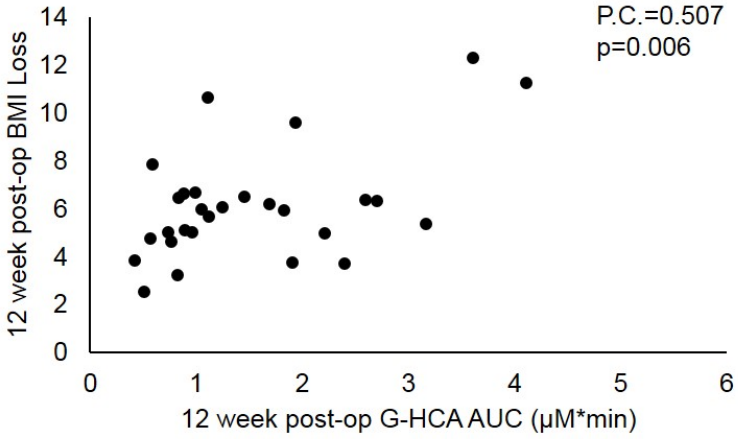

Figure 2. The positive correlation between glycine-amidated HCA (hyocholic acid) area under the curve (AUC) from a liquid test meal and BMI loss at 12 weeks after sleeve gastrectomy. Adapted from Kindel T, et al.[22]

The increase in post-operative GLP-1 is an attractive mechanistic target to mediate an effect of bariatric surgery on cardiac function. GLP-1 is secreted from enteroendocrine L cells primarily in the distal small intestine and colon. GLP-1 increases glucose-dependent insulin secretion, decreases glucagon levels, decreases gastric emptying and suppresses appetite.[17] The GLP-1R is a G protein-coupled receptor located on β-cells of the pancreas, lung, central and peripheral nervous system, blood vessels, and the heart of rodents and humans.[17] GLP-1R signaling in the cardiomyocyte leads to a reduction in apoptosis and increase in glucose uptake, independent of the classical insulin pathway.[18] GLP-1R agonists which mimic GLP-1 action of the entero-cardiac axis have been used for the treatment of ischemia-reperfusion injury and heart failure.[19-21]

There are also significant changes in bile acid signaling after bariatric surgery. We have previously found that post-prandial bile acids significantly increase after SG, and both post-prandial glycine-conjugated chenodeoxycholic and hyocholic acid are positively correlated with post-operative weight loss (Figure 2).[22] Our laboratory has found that intra-cellular cardiac signaling of bile acids significantly change in a rodent model of SG and may play a role in mediating cardiac function improvements. Future mechanistic studies are needed to determine how the entero-cardiac axis is altered after bariatric surgery to mediate weight-loss independent improvements in cardiac function.

Conclusions. Obesity cardiomyopathy is a morbid disease affecting cardiac geometry and diastolic and systolic function. Morbidly obese patients with severe heart failure are ineligible or endure long donor wait-times for cardiac transplantation due to organ-specific weight and BMI limitations.[23] For advanced heart failure patients, including those requiring mechanical circulatory support, bariatric surgery has been successfully used for weight loss as a bridge to cardiac transplantation.[24-26] Bariatric surgery also reduces the risk of heart failure development and reverses abnormalities in cardiac mass, workload and metabolism with improved diastolic function, and potentially enhancing native cardiac systolic function. Most studies of patients with heart failure and bariatric surgery have focused on patient outcomes and not the mechanisms for cardiac recovery. Future studies at MCW, supported by a CTSI/NCATS KL2 Career Development Award (PI: TL Kindel), will aim to understand the mechanisms for cardiac recovery after bariatric surgery. This could allow for the development of novel surgical and non-surgical therapies for heart failure, which replicate the beneficial metabolic mechanisms generated from the entero-cardiac axis in additional to substantial weight loss.

Bariatric programs, like the Comprehensive Weight Loss Program at Froedtert and the Medical College of Wisconsin, are committed to managing these complex patients. We have incorporated a multi-disciplinary team approach with surgery, endocrinology, pulmonology, cardiac anesthesia and advanced heart failure specialists with particular attention to the aggressive pre-operative management of obesity-associated co-morbidities. These include obstructive sleep apnea, pulmonary hypertension, type 2 diabetes mellitus, hypervolemia and cardiopulmonary deconditioning. In high volume, accredited bariatric centers like FMLH & MCW with the hospital infrastructure to support pre-operative cardiac optimization and intense cardiac support peri-operatively, bariatric surgery can be performed safely with successful progression to cardiac transplant listing and transplantation for patients with end-stage heart failure. In addition, bariatric surgery in advanced heart failure patients offers the potential for cardiac function improvement obviating the need for inotropic therapy, mechanical support, or cardiac transplant listing. •

continued on page 4

FOR ADDITIONAL INFORMATION on this topic, see references, visit mcw.edu/surgery, or contact Dr. Kindel, 414-955-1771, tkindel@mcw.edu.

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Announcing the 2017 We Care Fund Grantees

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

INNOVATION wecare DISCOVERY

The Department of Surgery is pleased to announce the recipients of the **2017 We Care Fund for Medical Innovation and Research** faculty grants. The We Care Scientific Review Committee, which changes each year, selected three grant proposals for funding. The awardees and their proposals are:

T. Clark Gamblin, MD, MS, MBA,
Stuart D. Wilson Professor and Chief, Division of Surgical Oncology
Pre-Clinical Efficacy of Combined Therapy with Novel Mitochondrial Targeted and Glycolysis Inhibitor in Hepatocellular Carcinoma

Viktor Hraska, MD, PhD,
Professor and Chief, Congenital Cardiac Surgery, Medical Director, Cardiothoracic Surgery, Children's Hospital of Wisconsin
Optimizing Cardiopulmonary Bypass to Support Cerebral and Somatic Perfusion During Aortic Arch Reconstruction

Amanda L. Kong, MD, MS,
Associate Professor, Division of Surgical Oncology
Mitochondrial Telomerase as Regulator of Mitochondrial Damage and Secondary Messengers in Chemotherapy-Induced Microvascular Dysfunction

At its core, the We Care Fund for Medical Innovation and Research in the Department of Surgery is about the hope for a future with better treatments. Established in 2010, the We Care Fund has raised more than $1 million from more than 750 grateful patients, families, friends, faculty, and alumni. Every penny raised supports research and clinical projects that can't wait for traditional funding sources.

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

Researchers supported by the We Care Fund gather a body of evidence through scientific discoveries that can lead to much larger grants from the National Institutes of Health. Philanthropic support plays a vital role in providing support to get these studies started, especially when promising research cannot wait months or even years for traditional funding.

The We Care Committee, which includes a number of professional, business and community leaders, is the engine that drives fund-raising for research and increasing community awareness. "To date, the We Care Fund has awarded $600,000 to 14 projects covering a full spectrum of research areas to discover new therapies and provide improved outcomes for patients and their families," says Arlene Lee, Committee Chair. "This year, we received 11 proposals by physicians and scientists with innovative ideas. It was one of the most competitive groups of proposals we've seen."

Private gifts from generous donors help sustain the We Care Fund, therefore the grant cycles are not predetermined and will be announced. Philanthropic support plays an important role in providing seed grants.

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

We Care Fund for Medical Innovation and Research Committee, 2017–2018

Arlene A. Lee, Chair
Carrie Raymond Bedore
Betsy Evans
Holly Gamblin
Sandra Hansen Harsh
Ruth Joachim
Jennifer La Macchia
Joel S. Lee
Liza Longhini
Mary Ann Miller
Susan Angel Miller
Brian Neuwirth
Abigail Barnes Schroeder, PA-C
Maggy Schultz
Aaron Valentine
Jennifer L. Vetter
Mark S. Young

The Optimization of Cardiopulmonary Bypass to Support Cerebral

An individualized prognostic tool for predicting survival and improving decision-making prior to surgery

VIKTOR HRASKA, MD, PHD
Professor and Chief, Congenital Heart Surgery

RONALD K. WOODS, MD, PHD
Professor, Congenital Heart Surgery

GEORGE HOFFMAN, MD
Professor and Chief, Pediatric Anesthesia

MICHAEL E. MITCHELL, MD
Professor, Congenital Heart Surgery

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Cardiovascular Research Scientist
Pediatric Cardiothoracic Surgery & Cardiology

In an effort to repair segments of the ascending aorta or the aortic arch, the need to temporarily interrupt both cerebral and somatic (systemic) blood flow is a usual requirement to properly correct the cardiac issue.[1,2] During the course of cardiopulmonary bypass (CPB), the patient's blood is diverted from the heart and lungs and redirected outside of the body in the form of extracorporeal circulation. At this point the normal physiological functions of the heart and lungs, mainly the circulation of blood, oxygenation, and ventilation, are temporarily taken over by the CPB machine and a respirator.[3] During this time, the ascending aorta is usually cross-clamped and the cardiac surgeon may simultaneously administer cardioplegia to allow the operation to commence on a non-beating heart in a field that is largely devoid of blood.[3] Moreover, significantly cooling the patient through the induction of controlled systemic hypothermia, or deep hypothermic circulatory arrest (DHCA), can further modify the operating conditions in an attempt to preserve organ function during the period of elective circulatory arrest. The use of DHCA is based on the premise that safe circulatory arrest is inversely related to body temperature.[4,5] Nevertheless, this technique has been associated with adverse neurologic ramifications.

The causality of brain injury in neonates is multifactorial, and a myriad of factors are suggested to correlate with adverse neurological outcomes, including: congenital brain anomalies, intrauterine accidents, pre & post-operative hemodynamic instability, and intraoperative trauma, as well as those caused by medical examination (iatrogenic). While congenital anomalies and injuries that occur within the uterus are unavoidable from the health care provider's perspective, insults that occur at various points throughout the perioperative period are preventable, or at least mutable with appropriate management. Specifically, proper administration of cardiopulmonary bypass (CPB) during cardiac surgery may reduce the occurrence of brain injury postoperatively, especially in the case of aortic arch reconstruction. The actual safety of DHCA is unknown, and it is generally accepted that most patients tolerate 30 minutes of DHCA without exhibiting significant decline in neuro-function; however, during periods extended to longer than 40 minutes, a marked increase in the incidence of brain injury is observed.[6] An alternative strategy to DHCA is antegrade cerebral perfusion (ACP), or regional cerebral perfusion (RCP), and was developed as a management approach for CPB during arch reconstructions to prevent neurological problems associated with DHCA while allowing more time for the repair. Although some collateral flow to non-cerebral organs will occur with ACP, the technique has only been demonstrated to preserve brain health, and severe hypothermia may still be required to avoid somatic injury. Furthermore, there is a lack of standardization in determining optimal ACP flow rates and pressures at different temperatures. Therefore, with the numerous postoperative complications and neurological sequelae that accompany DHCA, along with the inefficiency of ACP to provide adequate somatic (bodily) blood flow, the need to establish a more "physiological" perfusion mechanism has arisen.[4]

and Somatic Perfusion During Arch Reconstruction:

In 2017, the cardiothoracic surgical and anesthesia teams at Children's Hospital of Wisconsin implemented a perfusion approach during arch reconstruction surgeries that allows for full-body blood flow by dividing flow between the upper and lower body (~60% & 40% respectively), with a limited use of cooling. Theoretically, this strategy appears to be the most harmonic with normal physiology, creating an avenue for the provision of oxygenated blood to all organ regions. The decision to utilize the approach was implemented by surgical, anesthesia and ICU team leaders in an effort to improve clinical and postoperative outcomes, while simultaneously allowing sufficient time for an optimal repair at a near normo-thermic temperature (32°C).

In the present study, we plan to collect valuable data regarding the use of this technique for whole-body perfusion during arch reconstruction in neonates. This is done through utilization of innominate and femoral artery (bi-arterial) cannulation, individualized (relatively high and patient-specific) CPB flows, and a restricted use of hypothermia as a method of circulatory support to adequately meet cerebral and somatic metabolic needs during the operation. We hypothesize that patients receiving full body perfusion during arch reconstruction will fare better in the perioperative and long-term periods in the areas of neurological development and somatic tissue oxygenation. The study has several aims: (1) To assess the effectiveness of the strategy in newborns (neonates), mainly the efficiency of oxygen delivery throughout all phases of CPB; (2) To identify optimal neuro/somatic protective perfusion parameters (temperature & flow rates); (3) To demonstrate the technical feasibility and safety of the approach (consistency/reproducibility); and (4) To evaluate mortality, morbidity, and neurodevelopmental outcomes in patients throughout the early and long-term.

As a center aspiring to improve care for children and adults with congenital cardiac disease, we hope to acquire knowledge from this study that will contribute substantially to the current medical and scientific literature on the issue of perfusion during heart surgery. With the support of the MCW Department of Surgery and the We Care Fund for Medical Innovation and Research, it is our objective to present data from a perfusion technique that could improve cerebral and somatic tissue oxygenation during an operation that would otherwise require circulatory arrest and the use of hypothermia. This study has the potential to greatly inform and change the operative healthcare practice, and thus enhance the quality of life in those who suffer from cardiac lesions. Through this research, we hope to optimize a safe and effective standardized perfusion approach for surgical relief of congenital aortic arch obstruction moving forward. •

FOR ADDITIONAL INFORMATION on this topic see references, visit mcw.edu/surgery, or contact Dr. Johnson, 414-337-4721, wjohnson@chw.org.

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Mitochondrial Telomerase as a Regulator of Mitochondrial Induced Microvascular Dysfunction

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There are estimated to be 255,000 new cases of breast cancer with approximately 41,000 deaths in 2017 in the U.S.[1] Systemic therapy plays an important role in the management of these patients. With the use of anthracycline-based polychemotherapy, the reduction of annual breast cancer deaths is approximately 38% for women <40 years.[2] Symptomatic toxicity secondary to chemotherapy or targeted therapies, often managed throughout treatment, resolves or decreases upon cessation of treatment. However, severe and late onset consequences may persist after completion of therapy. The most commonly observed problems are induced cardiovascular toxicity, pulmonary fibrosis, neuropathy, neurocognitive impairments, arthralgias, and immune system-related adverse events. Novel mechanisms to manage these adverse effects are needed. In 2013, the NCI and NHLBI sponsored a two-day workshop entitled "Cancer treatment-related cardiotoxicity: Understanding the current state of knowledge and future research priorities", emphasizing the need for research on mechanisms of chemotherapy (CT)-induced cardiotoxicity.[3]

Despite all the published data on cardiac damage associated with anti-cancer therapies, including doxorubicin and the monoclonal antibody trastuzumab, surprisingly little work has been done on their effect on the microcirculation, and even less on the human coronary circulation. Excessive mitochondrial DNA (mtDNA) damage secondary to chemotherapy promotes increased reactive oxygen species (ROS) production and decreased ATP levels, which in turn leads to cell damage. Further mitochondrial damage associated patterns (DAMPs), as a result of mtDNA damage, are elevated in the circulation of models that show endothelial dysfunction and increased cardiovascular risk. DAMPs are recognized by toll-like receptors (TLRs). TLR activation causes inflammatory responses, leading to oxidative mtDNA damage, which then activates a cycle of additional mtDNA damage and DAMPs formation. We speculate that the acute effect of CT-induced mtDNA damage is further amplified by elevation of circulating mtDAMPs, leading to diminished vascular reactivity (Figure 1). Mitochondrial dysfunction, induced by mtDNA damage, affects coronary blood flow so that it no longer correlates with cardiac work load. The restoration of mitochondrial integrity in the coronary microvasculature has been proven to be sufficient to restore normal heart function. However, few reports show chemotherapy's effect on mitochondrial function, and none have investigated this in the microvasculature.

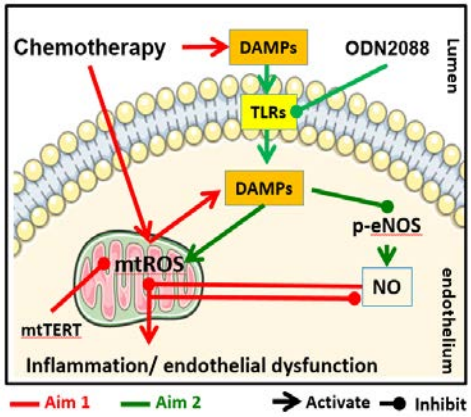

FIGURE 1: Proposed mechanism of action.

The Beyer lab has established a protective role of telomerase, a well-studied enzyme in cancer development and frequent target for chemotherapy, as a regulator of the microvascular oxidation-reduction environment. Traditionally, a subunit of telomerase, TERT, prevents cellular aging and promotes proliferation. We have recently established its role in the development of cardiovascular disease (CVD), especially via the endothelium where vascular disease begins.[4] As TERT has known effects on the regulation of gene expression in the nucleus and its binding to mtDNA has been established, a role in preventing mtDNA damage is logical. We hypothesize that CT-mediated loss of telomerase activity (TA) predisposes the patient to mtDNA damage, which results in elevation of mtDAMPs that contribute to CT-induced microvascular dysfunction.

Central to this hypothesis is that we believe mitochondrial telomerase plays a critical role in preserving physiological mitochondrial function and suppressing ROS production by preventing mtDNA damage and formation of DAMPs.

In preliminary studies, we have observed a severe reduction of endothelial function after treatment with doxorubicin. However, another mechanism of vessel dilation, smooth muscle dependent dilation, was not affected. Endothelial function has previously been described to be a critical component in the development of heart failure and cardiomyopathy. Pharmacological increases of TERT in the mitochondria (Figure 2) or global transcriptional activation of TERT prevented the effect of chemotherapy treatment. This data supports our principle hypothesis that mitochondrial activation of TERT can prevent/ overcome chemotherapy induced vascular toxicity.

Damage and Secondary Messengers in Chemotherapy-

We will test this hypothesis focusing on two adjuvant treatments, doxorubicin and trastuzumab, that are frequently used to treat breast cancer and are known to contribute to the development of heart failure. First, we hope to establish that decreased telomerase activity directly correlates with mtDNA damage and increased mtDAMPs formation after chemotherapy. We will use isolated blood vessels and blood samples collected from subjects with and without previous chemotherapy treatment to evaluate mtDNA damage, and evaluate the function of microvascular vessels. We also hope to determine the mechanistic role of mtDAMPs in the development of endothelial dysfunction. Cultured endothelial cells, isolated human adipose and coronary vessels will be treated with DAMPs and vasodilator capacity and its underlying mechanism evaluated.

Using otherwise discarded surgical tissue (cardiac and adipose tissue) from unrelated medical procedures in adult subjects, our study provides a critical translational perspective to these studies and avoids the inherent pitfalls of exclusively using non-human models to investigate human pathophysiology.[6] A good surrogate for coronary endothelial function are adipose microvessels, as the Beyer lab has previously published.[4-6] In this proposal, we seek to establish the effects of anti-cancer therapy (doxorubicin and trastuzumab) on isolated human coronary and adipose microvessels, and identify downstream signaling pathways as future targets for therapy.

This project is important in that we will be the first group to determine the contribution of endothelial derived mtDAMPs to mitochondrial injury in isolated human coronary vessels, and determine the contribution of telomerase activity to CT-induced vascular injury. Our study is innovative in that it is the first work that proposes that chemotherapy damage to endothelial cell mitochondria is sufficient to account for vascular dysfunction in the human microvasculature. Finally, we will test this hypothesis using genetic and pharmacological inhibition of TLR signaling and its effects on endothelium function.

Our project has important clinical implications. Our goal is to determine the exact mechanism of vascular injury from two therapeutic agents that are commonly used in breast cancer. Given that breast cancer is the most commonly diagnosed cancer in women, this work will provide the foundation to develop an intervention that targets the mechanism of CT-induced cardiotoxicity, thereby preventing the morbidity of cardiac dysfunction. We are thankful to the We Care Fund for Medical Innovation and Research for this grant to carry out this important work that we hope will have a significant impact on the quality of life for women affected by breast cancer. •

FOR ADDITIONAL INFORMATION on this topic see references, visit mcw.edu/surgery, or contact Dr. Kong, 414-955-1449, akong@mcw.edu.

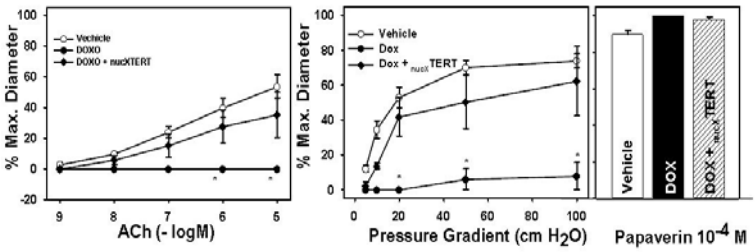

Figure 2: Doxorubicin Induced Endothlial Dysfunction is Prevented by mtTERT Activation. (Left and Center) Treatment of isolated human microvessels for 15-20 hours with doxorubicin (DOXO) eliminated ACh and flow induced endothlial dependent vasodilation, which was prevented by co-incubation with the mitcondrial telomerase activator nucXTERT. (Right) Smooth muscle dependent dilation to papaverin was not altered. N= 5+

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Searching for New Therapy in Hepatocellular Carcinoma

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Hepatocellular carcinoma (HCC) is the third leading cause of cancer-related deaths globally. Approximately 70% of patients present with advanced disease, often with concomitant cirrhosis. Currently, the single effective curative modality is surgical resection; however, given the metastatic potential and comorbidities surrounding patients with HCC, many times surgery is non-efficacious. As a result, palliative care typically is the mainstay of treatment strategies.

Sorafenib, a multi-kinase inhibitor, is the only U.S. Food and Drug Administration (FDA)-approved systemic therapy. However, sorafenib has a limited survival advantage of approximately 11 weeks. Given the increasing understanding of signaling pathways and the limited treatment options to date, the development of new therapeutic strategies is integral. Previous work at the Medical College of Wisconsin has focused on overexpression of Notch receptors and related ligands in HCC tumor tissues, and cell lines compared with normal liver tissues. Importantly, inhibition of Notch1 in HCC cells by shRNA against Notch1 or gamma secretase inhibitors resulted in cell cycle arrest or apoptosis.

Notch1 as a target: Recently, aberrant expression of Notch1 has been correlated with HCC metastasis, and inhibition of Notch1 prevented metastasis both *in vitro* and *in vivo*. Therefore, inhibition of the Notch1 signaling pathway could provide a promising target for new anticancer therapeutic drugs. One particular area of interest is the use of natural products such as flavonoids, as they exhibit targeted therapeutic options by altering various signaling pathways. Their effectiveness as anti-inflammatory, antioxidant, and antiangiogenic agents are well documented. In addition, their high bioavailability and limited toxicity profiles provide ideal candidates in chronically ill patients. Despite this, their antitumorigenic effectiveness has enriched their use as a potential cancer strategy.

Xanthohumol: Xanthohumol (XN), a natural phytochemical isolated from the cones of the hop plant (Humulus lupulus L.), has demonstrated inhibition of cancer cell proliferation *in vitro* in several solid organ-specific tumors such as breast, colon, hepatocellular, medullary thyroid, ovarian, pancreatic, and prostate. XN attenuates cellular growth through the induction of both caspase-dependent and independent apoptosis. Translating to an *in vivo* model, XN administration tempered tumor progression in the advanced stage disease of the prostate. In addition to its promising antitumorigenic ability, XN has been shown to have a low toxicity profile and high bioavailability. Furthermore, XN has been used in human clinical trials (NCT01367431, NCT02432651, and NCT02848430), testing its ability to prevent DNA damage and block oxidative stress.

Recent *in vivo* studies revealed that orally administered XN resulted in both small and large intestinal absorption and that it did not affect major organ function, including in the female reproductive system. Despite the early promising findings in the various malignancies, there is not a clear mechanism by which XN mitigates carcinogenesis. The antiproliferative effects of XN are present in established human HCC cell lines. Previous work suggests that the mechanism by which HCC cellular proliferation is reduced following XN treatment is mediated by the inhibition of the Notch signaling pathway. Therefore, XN may represent a promising, safe, and highly effective natural product against hepatocellular carcinoma *in vitro*. Future work should assess the effectiveness of XN *in vitro* with combination studies, including the FDA-approved sorafenib, as well as other chemotherapy agents.

Mitochondrial-targeted drug: We and others have also provided a strong rationale for the inhibition of glycolysis and mitochondrial function as a strategy for the treatment of cancer using Mito-CP, a mitochondria-targeted novel compound containing the triphenylphosphonium cation (TPP+) (Figure 1).

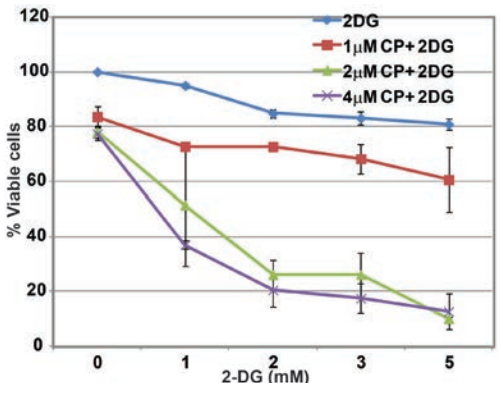

Figure 1: Combination of Mito-CP with 2-DG treatment increases the reduction of HepG2 cell growth compared to single treatment.

Metformin and xanthohumol: Recently, metformin (Glucophage) has been shown to have an anticancer property in HCC. Metformin has been utilized for more than 50 years as an approved antidiabetic drug. However, higher concentration is required to achieve an anticancer property. In order to reduce the concentration effectively, we carried out cellular proliferation assay in HCC cells with metformin in combination with xanthohumol. As predicted, cellular proliferation was reduced significantly with a lower concentration of each drug (Figure 2). The results suggest that these combination strategies may be worthy of further investigation.

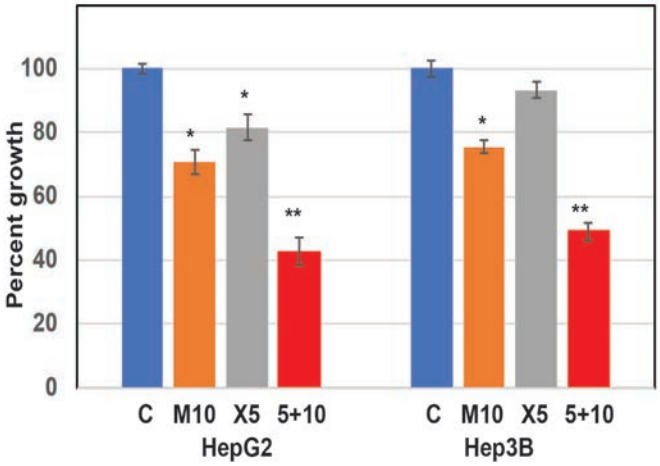

Figure 2: Combination of metformin and xanthohumol showed effective growth supression than either compound alone in HCC.

Mito-Met10: Another strategy is utilizing the mitochondria-targeted TPP. Investigators at MCW have synthesized a novel analog of metformin, Mito-Met10 (metformin conjugated to TPP), and demonstrated that it is 1,000 times more efficacious than metformin in inhibiting pancreatic cancer. However, the effect of this drug in combination with a glycolysis inhibitor or anti-myeloid cell leukaemia-1 (Mcl-1) target in HCC is not known. Based on previous studies, we hypothesize that combining Mito-Met10 with a glycolysis inhibitor [2-deoxyglucose (2-DG)] or XN will better suppress HCC cell growth both *in vitro* and *in vivo*.

We plan to treat five human HCC cell lines (Huh-7, HepG2, Hep3B, SNU-475, and SK-Hep-1) with Mito-Met10. In addition, we will treat the cells with Mito-Met10 in combination with 2-DG and/or XN. The effects on cell survival, mitochondrial integrity, and oxidative stress (bioenergetics) will be determined. As a control, human hepatocytes (normal cells) will be treated with the same drugs.

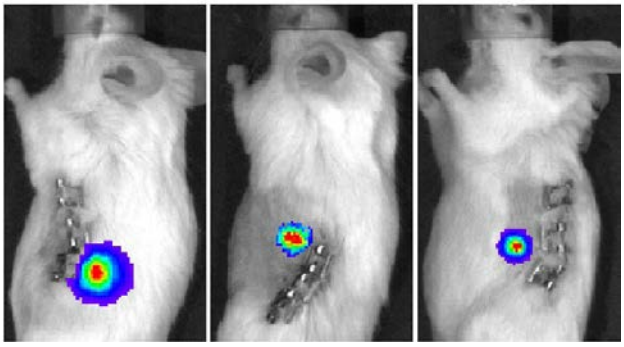

Figure 3: Mice injected with liver cancer cells into the spleen showed bioluminescence after a week.

An orthotopic xenograft liver cancer model using HCC cell lines will be developed and used to measure changes in tumor burden in response to treatment (Figure 3). This animal model is ideal because studies can be carried out quickly using xenografted human cell lines. This approach will capitalize on an existing tissue bank for HCC in future studies.

The proposed We Care Award grant study is novel and innovative as it uses a natural compound (XN) and our own synthesized metformin analog against liver cancer. The results from the proposed study would not only lead to the development of a clinical trial at MCW, but provide vital data for a planned R01 application. •

FOR ADDITIONAL INFORMATION on this topic see references, visit mcw.edu/surgery or contact Dr. Gamblin at 414-955-1450, tcgamblin@mcw.edu.

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Division of Research: Committed to Scientific Discovery and

GWEN LOMBERK, PHD
Associate Professor, Department of Surgery
and Department of Pharmacology and Toxicology
Chief, Division of Research
Director of Basic Research

"Research is to see what everybody else has seen, and to think what nobody else has thought."
— Albert Szent-Gyorgyi

In just a few short months, we have made strong inroads to initiate the Division of Research for the Department of Surgery with a vision aimed toward being *leaders in surgical research and advancing medicine through scientific discoveries*. As we have become familiar with the vibrant ongoing research across the Divisions, we have been able to identify how the Division of Research can support these research endeavors. Hopefully by now, you have become acquainted with our team either virtually or in person. Gwen Lomberk, PhD, joined the Medical College of Wisconsin in June 2017 and serves as the Chief for the Division of Research. After obtaining her PhD degree in Cancer Biology from Mayo Clinic Graduate School of Biomedical Sciences, she received training in cell biology, biochemistry, epigenetics and the biology of pancreatic cells as an NIH Postdoctoral Fellow in Digestive Diseases. In addition, during her 10 years as faculty at the Mayo Clinic, she served as a mentor to numerous undergraduate and graduate students, as well as clinical research fellows and junior faculty, and maintains her strong commitment to mentorship. Her own research program is broadly focused on the epigenetic landscapes that characterize subtypes of pancreatic cancer and refining the utility of epigenetic inhibitors for treatment and re-sensitization to conventional therapies. Krissa Packard joins us as the Research Manager with 9 years of experience in clinical and translational research. Krissa led a team of clinical research coordinators and worked on over 50 studies in the Department of Ophthalmology and Visual Sciences here at MCW. She has a master's degree in Physiology and Biophysics from Georgetown University. Lizzy Schneidler is our Senior Administrative Assistant with over 10 years of experience in healthcare, ranging from personal training to marketing and web design in the dental field. We understand that innovation and advances in surgery are dependent on research and that research is dependent on a supportive environment of appropriate resources and infrastructure. Thus, together, our mission in the Division of Research is to advance the careers of research-intensive faculty, enhance the departmental culture of academic achievement, foster inter-division, interdepartmental and inter-institution collaborations, and facilitate the resident research program.

The Division of Research Team (left to right): Elizabeth (Lizzy) Schneidler, Gwen Lomberk and Krissa Packard.

In adhering to this mission, our strategic goals are aligned with five guiding pillars. The first is ***collaborations***, for which we seek to expand and strengthen engagement and collaboration. As technology continues to advance at a rapid pace and science research has evolved into complex, multi-faceted studies, the era of doing science in isolation is not practical or fruitful. Whether you are a clinician, clinician scientist or basic scientist in the Department of Surgery, our overall vision is a unified department to advance medicine. Therefore, in the mantra of "first, do no harm", collaborative initiatives are truly the embodiment of this maxim, forming a purposeful relationship to achieve a common goal. Meaningful collaborations strategically assemble a team to provide a variety of additive or synergistic expertise, rather than the same, thereby fortifying and accelerating research to improve medicine. As part of efforts toward promoting collaboration, our monthly Surgery Research Conference takes place the second Wednesday of every month from 5-6pm to learn about each other's research interests and ongoing projects Department-wide. The level of enthusiasm and participation has been magnificent! In the coming months, we will be highlighting research across the Divisions, and we look forward to experiencing even more growth of this vital activity.

Our second pillar is to offer research ***infrastructure,*** by providing high quality research support services. We know that proper and sufficient infrastructure plays a central role in promoting transformative research. For this purpose, we have initiated work on the development of streamlined training for clinical research staff

Making Tomorrow Better Than Yesterday

and the design of our Division website to offer a "one-stop-shop" for useful research tools for both basic and clinical researchers. Similarly, the third pillar emphasizes the fostering of ***careers*** through developing an environment of academic success. Comparable to other mentorship committees, our division has started the formation of *Grant Working Groups* to enhance funding strategies. The team is also compiling funding opportunities relevant to surgical research, which will be posted on our upcoming website. We recognize that funding for surgical research from the NIH has diminished over the last few decades. In fact, it was reported that the proportion of NIH funding to surgical departments declined 27% relative to total NIH funding from 2007 to 2014, according to the NIH database[1]. However, with new initiatives, such as NIH's launching of research programs to reduce health disparities in surgical outcomes[2] as well as technological advances, such as surgical robotic systems, a revitalization of surgical research is transpiring. Our strong desire is to join forces with our colleagues in surgery to increase funding to fuel research endeavors.

Next is the ***academics*** pillar, which cultivates a transformative learning environment. In this regard, our current focus is the next generation of academic surgeons, our residents. We have been interacting with both residents who have completed their research time and those currently engaged in research to evaluate how we can best offer additional support and further enhance their research experience. The Division of Research values this part of residency as an opportunity to impart the significance of incorporating research into the surgeon's conceptual framework, in a tailored manner congruent with individual goals.

With our last pillar, the Division of Research seeks to propagate the research ***culture,*** serving as a voice within the Department as well as institutionally to advocate surgical research. While we are fully aware that the surgeon's time in the operating room is of high value to the institution, we also face the reality that in the era of evidence-based medicine, it is imperative that research is conducted at the highest quality to advance patient care. We are committed to serve as your advocates for research and will work tirelessly to fulfill our vision to be *leaders in surgical research*, *advancing medicine through scientific discoveries*.

To borrow the words of the poet and playwright Oscar Wilde, "Success is a science; if you have the conditions, you get the result." The Division of Research is a testimony to the commitment that the Department of Surgery has made to your research career. We look forward to interacting with all of you and hope to share in your research journey. Our doors are open, and we invite your input, suggestions, inquiries and active participation. •

FOR ADDITIONAL INFORMATION on this topic see references, visit mcw.edu/surgery, or contact Dr. Lomberk, 414-955-6942, glomberk@mcw.edu.

October Surgery Research Conference.

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THE WORD ON MEDICINE

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The Quality Minute: An Addition to Surgical Morbidity and

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General Surgery Resident

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Alonzo P. Walker Professor in General Surgery

Quality in medicine is becoming increasingly important; quality metrics are being tied to reimbursement, hospital ratings are national headlines, and quality improvement (QI) is becoming a mandatory part of resident education. However, often QI projects that are undertaken are done in an isolated way. There is minimal discussion with people outside of the group involved. Affected parties often do not know about it until implementation and never know the data behind the intervention. This often hinders these projects from being fully embraced.

To bring light to the ongoing projects within the Department, we held the inaugural "Quality Minute" on October 11, 2017. The "Quality Minute" is a brief presentation that highlights a QI project within the Department of Surgery. It replaces the final case at that week's Morbidity and Mortality conference. In the presentation, a brief case is presented to frame the project. This is followed by a review of national data and institutional data, if possible. The QI project or intervention is then outlined. The inaugural presentation discussed the importance of communication regarding medical errors, both near misses and safety events. For the remainder of the year, each division will have the opportunity to present a Quality Minute highlighting a quality improvement project impacting the Department of Surgery. Topics discussed this winter included incident reporting using the new Vizient system and catheter-associated infections.

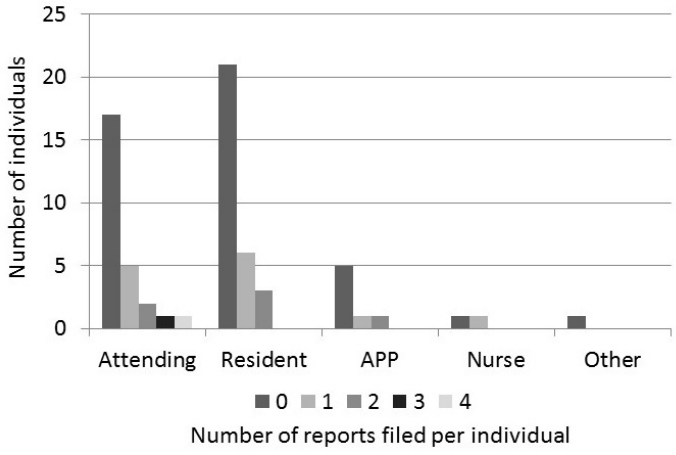

Figure 1. Number of incident reports filed by individual in past year.

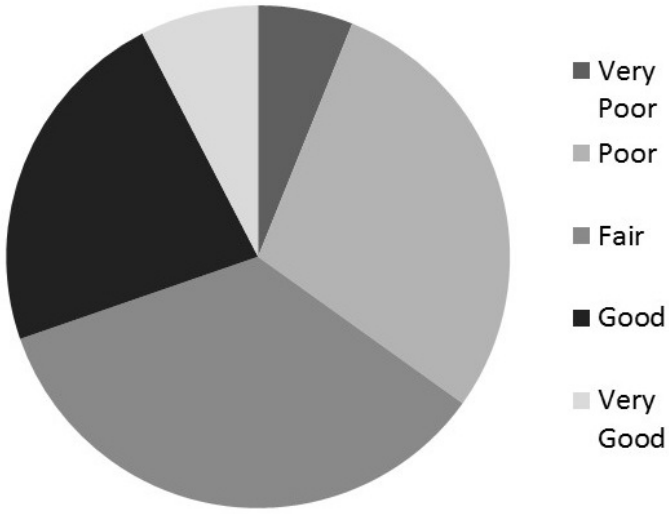

Figure 2. Rating of Dialogue regarding quality improvement.

At the October presentation, an online survey was also conducted to better understand current opinions on the culture related to quality within the Department of Surgery. We had 66 respondents: 26 attendings, 30 residents, 7 APPs, 2 nurses, 1 other. Over half (N= 37, 56.1%) of respondents have never filed an incident report; only 31.8% (N=21) have filed any in the past year (Figure 1). The majority of people (N=29, 43.9%) only know of 1-2 QI projects ongoing within the department, but 18.2% (N=12) were unaware of any. Only 30.3% of respondents reported dialogue regarding quality being better than fair (Figure 2).

The goal of the Quality Minute is to increase QI dialogue in the Department, increase resident involvement in QI projects and the methodology of them, and increase identification of patient safety issues and ongoing projects to improve patient safety. We hope that this change will affect all participants, not only residents, as it is important to have providers from all levels affected by change included in the process to increase buy-in. This also will allow residents to have a greater knowledge and understanding of QI to not only satisfy the ACGME requirement, but also provide them the tools to incorporate QI into their future practice.

This addition is based on the Quality Minute technique for QI education at the University of Pennsylvania.[1] With their addition of

Mortality Conference

the Quality Minute to M&M, they found an increase in incident reporting which has previously been shown to positively influence the culture of patient safety. Participants also reported an increase in QI dialogue, a better understanding of QI methodology and the data behind quality reporting. Over 80% of participants in their Quality Minute believed it to be a positive addition. We hope to have similar results with implementation at MCW. •

FOR ADDITIONAL INFORMATION on this topic, see reference, visit mcw.edu/surgery, or contact Dr. Gould, 414-955-1770, jgould@mcw.edu.

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Congratulations to **Dr. Amy Wagner**, Pediatric Surgeon and Co-Director of the Fetal Concerns Program, for being featured in the January 2018 edition of Milwaukee's *M Magazine.* Dr. Wagner was also the inaugural editor of *Leading the Way*.

The Word on Medicine: Where Knowledge is Changing Your Life

Join us on NEWS/TALK 1130 WISN for the "The Word on Medicine" programs supported by Selig Leasing Co., and produced by the Department of Surgery. This multidisciplinary, bi-weekly radio show will highlight innovation and discovery across MCW – how knowledge changes life! Listen to the podcasts on iHeartRadio.

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

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Referrals: 800-272-3666
Transfers/Consultations:
877-804-4700
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

Global Surgery: Cuba-US Trauma Collaborative

MARC A. DE MOYA, MD
Associate Professor and Chief
Division of Trauma and Acute Care Surgery

My father immigrated to the United States from Cuba in 1958 amidst a national revolution and civil war. As a second year medical student at the University of Havana, he fled violence and danger as many immigrants do during times of civil unrest. He never spoke about Cuba and did not even speak Spanish at home. He passed away at an early age, when I was 15 years old, and never gave me the opportunity to learn more about his homeland.

In 2009, as a trauma surgeon at the Massachusetts General Hospital (MGH), I decided to explore options for professional travel to Cuba. My hope was to connect with trauma surgeons in Cuba to learn more about their successes, challenges, and hopes. A year after multiple emails and telephone conversations, I received an email seemingly out of the blue from the President of the Cuban Trauma Society. He invited me to join them at their Cuban Surgical Society's Clinical Congress in November of 2010.

Excited and nervous, I began to plan for the trip and put together my first medical lecture in Spanish; the topic was "Damage Control Surgery." Recruiting help from my trauma surgeon colleauges in Spain, I put together the talk and made the necessary arrangements for travel with my wife, Adriana, who is a Pediatrician, and was born and raised in the Bronx of Puerto Rican descent. As we entered the country, my mind was filled with thoughts of doubt, excitement, and a little fear of the unknown. As I passed through customs and collected my luggage, we were met at the airport by friends of our host who then arranged our travel to the hotel in Havana, the Hotel Nacional. The following day I arrived at the conference and began to cultivate relationships that have endured. Although not allowed to enter the hospitals on that trip, I learned that the largest trauma center in Cuba is the Calixto-Garcia Hospital. This hospital is the largest teaching hospital for the University of Havana, with approximately 1,000 beds. Most of the top leaders in Cuban surgery rotated through the hospital at some point in their careers, including my father as a medical student.

2013 Trauma/Acute Care Surgery Symposium at the Calixto-Garcia Hospital.

2015 Trauma Nursing Symposium.

As I began to meet trauma surgeons, I started understanding their struggles. This was a country that provided access free of charge for all its citizens, however lacked a robust pre-hospital system, and had no standardized trauma system/registry or regular trauma/acute care surgery education. I was invited back in 2011 to help celebrate the 115th anniversary of the Calixto-Garcia Hospital. This time I could enter the hospital, gain a better understanding of their capabilities, and lecture in the hall where my father sat 53 years ago. It was clear to me that the Cubans were thirsty for engagement with U.S. surgeons, and they welcomed the idea of developing a more robust trauma and educational program.

In 2013, we ran our first Trauma/Acute Care Surgery Symposium at the Calixto-Garcia Hospital with more than 250 participants. The participants were a combination of medical students, residents, attendings, and nurses. In addition to the symposium, we ran an ultrasound course that focused on the FAST exam for trauma and we administered an educational needs assessment. The needs assessment identified educational gaps and formed the basis for future programming. The programming sought to provide the community

First Operative Trauma Technique Course held at the Calixto-Garcia Hospital in Havana, Cuba.

with a solid foundation in trauma resuscitation/treatment strategies and the latest approaches to emergency general surgical problems. The goal was to initiate formal courses that would be sustained by the Cubans, to expand educational capacity. One of the programs that the Cubans were interested in was the Advanced Trauma Life Support (ATLS) program run by the American College of Surgeons. Subsequently, the American College of Surgeons Committee of Trauma's Subcommittee for ATLS agreed to host a demo course in Cuba in 2014. After seeking the necessary approvals, we organized the first course and partnered with Brazilian surgeons in hopes of promulgating the course under their umbrella. The course was a success and the Brazilians were happy to help, given the U.S. embargo that prohibited U.S. companies, i.e. the American College of Surgeons, from exchanging money with Cuba.

In 2015, our symposium continued to grow and we began a formal trauma nursing symposium. Our needs assessment had identified nursing education as a need and we reached out to the nursing leadership of the country. They welcomed a nursing course/symposium focused on trauma and critical care. In fact, the National Nursing Organization hired a bus to travel the island, which is about the size of Florida, to pick up nurse leaders from all corners of the country. The first nursing symposium had approximately 200 nurses and was a two-day event. The first day was a dedicated trauma course, developed through the Pan-American Trauma Society that focused on trauma care in low-to-middle income countries. During this symposium, the MGH paid for five nurses to come with us to run that course as part of their Global Health mission. The five nurses from the MGH, a nurse from New Jersey and two from Puerto Rico, descended on the island and came away with a profound feeling of satisfaction and engagement with the Cuban nursing community.

In April of 2017, a delegation from the American College of Surgeons traveled to Cuba to explore and learn about the health care system as it pertains to surgery. In this delegation, MCW's own Clark Gamblin, MD, MS, MBA, learned about some of the surgical capabilities and provided me the opportunity to get to know one of my colleagues as I transitioned to MCW. In May of 2017, we held our fourth annual Trauma/Acute Care Surgery Symposium and second Trauma Nursing Symposium with over 24 surgeons from the U.S. (all self-funded), seven nurses from the U.S. and 10 surgeons from Cuba with over 250 participants. The symposium is a four-day affair with two days devoted to the nursing symposium with concurrent courses for the surgeons in ultrasound, disaster medicine, operative trauma techniques on live animal models, and emergency general surgery courses sponsored by the World Society of Emergency Surgery.

Since 2012, I also initiated a longitudinal study to follow the outcomes of trauma patients at the Calixto-Garcia Hospital. This past year I was presented with the information that demonstrated a 50% drop in trauma mortality over the preceding four years. When asked how this happened, the Cubans thought it was a direct result of our educational programming and their focus on delivering trauma care in a more standardized and prioritized manner. The future for this program is a national registry for trauma, the collaboration of trauma centers across the island, and broadening of surgical programs to include surgical oncology, transplantation, and others. I am happy to bring this program and house it at Froedtert/MCW to involve those interested in participating. •

FOR ADDITIONAL INFORMATION on this topic, visit mcw.edu/surgery, or contact Dr. de Moya, 414-955-1734, mdemoya@mcw.edu.

Dr. T. Clark Gamblin (left) and Dr. de Moya in 2017 during the American College of Surgeons delegation trip to Cuba.

Leading the Way

MEDICAL COLLEGE OF WISCONSIN

HONORS AND AWARDS

MCW CONVOCATION CEREMONY

At the 2017 MCW Convocation Ceremony, the Department of Surgery was recognized by the educational excellence of its faculty.

Matthew Goldblatt, MD, was named a new member of the Society of Teaching Scholars. The *MCW Society of Teaching Scholars* elects several outstanding educators to membership in recognition of their teaching excellence and their outstanding contributions as educational scholars and educational leaders. Dr. Goldblatt is a Professor in the Division of General Surgery, and also serves as General Surgery Residency Program Director for the Department.

Thomas Carver, MD, was selected for the *Edward J. Lennon, MD, Endowed Clinical Teaching Award*. The MCW Society of Teaching Scholars (STS) presents this award to faculty members early in their career who have clearly "made a difference" in MCW's teaching programs. Dr. Carver also serves as an Associate Program Director and PGY2 Curriculum Director for the Department of Surgery.

Steven Kappes, MD, was selected for the *Marvin Wagner, MD, Clinical Preceptor Award*. The STS presents this award to volunteer clinical faculty who exhibit enthusiasm, selfless dedication, effective teaching and outstanding commitment to medical education.

MCW RESEARCH DAY POSTER WINNERS

The Ninth Annual Medical College of Wisconsin Research Day was held on Tuesday, September 12, 2017. Our department was well-represented.

Carrie Peterson, MD, MS, and Timothy Ridolfi, MD, were the winners of the "Junior Faculty–Clinical & Educational Research" category. Dr. Peterson's poster was titled *The Impact of Intravenous Acetaminophen for 24 Hours After Abdominal Surgery on Pain and Narcotic Consumption: A Meta-Analysis.* Dr. Ridolfi's poster was titled *Rectal Cancer Resection with Pathologic Upstaging: Adjuvant Chemoradiation, Systemic Chemotherapy, and Observation.*

Motaz Selim, MD, was a runner up in the "Junior Faculty – Basic Research" category with his poster titled *Impact of a Dedicated Transplant Critical Care Model on Survival Outcomes After Liver Transplantation in the Highest Acuity Patients*.

Rachel Landisch, MD, was runner up in the "Clinical Fellow and Resident – Clinical & Educational Research" category with her poster titled *Efficacy of Screening Ultrasound for VTE Diagnosis in Critically Ill Children after Trauma.*

CHRISTY FOOTE FIGHTER AWARD

Alonzo P. Walker, MD, Ruth Teske Professor in Surgical Oncology, was presented with the 2017 WBCS, Inc. (Wisconsin Breast Cancer Showhouse) Christy Foote Fighter Award last October. In presenting the award on behalf of WBCS, Jan Lennon told Dr. Walker, "You honor our mission and all those fortunate patients in your care, by accepting this award." WBCS is an all-volunteer organization that invests in promising early-stage breast cancer and prostate cancer basic research at MCW. Its board of directors recently committed to fund a prostate cancer research professor. Hallgeir Rui, MD, PhD, was recruited in 2014 as the WBCS Breast Cancer Research Professor. The Christy Foote Fighter Award was established by the WBCS board of directors in 2014 to honor the dedicated service of past board member and leadership volunteer Christy Foote. Christy lost her courageous battle with breast cancer on February 5, 2014. Past awardees include Jan Lennon (2014), Diane Zore (2015) and Barbie Blutstein (2016).

BIZ TIMES AWARD WINNERS

The Health Care Heroes awards, presented annually by *BizTimes Milwaukee*, honor the accomplishments of people and organizations making a positive impact on health in the area. This year, five faculty members of the Medical College of Wisconsin (MCW) were honored, two from the Department of Surgery.

Johnny Hong, MD, Professor of Surgery and Mark B. Adams Chair in Surgery at MCW and Program Director of both Solid Organ Transplant and Pediatric Liver Transplant at Children's Hospital of Wisconsin, in the Advancements in Health Care category for performing a life-saving liver transplant on a baby just months old. It was an innovative technique that had never been done on a patient so young, but Dr. Hong and his team at Children's were confident the procedure would work.

John Densmore, MD, Professor of Surgery at MCW and pediatric surgery specialist at Children's Hospital of Wisconsin, in the Advancements in Health Care category as part of a larger team from Children's for performing ground-breaking procedures to save the life of a Wisconsin baby born without a trachea.

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

FACULTY BY SPECIALTY

Bariatric and Minimally Invasive Surgery
Matthew I. Goldblatt, MD
Jon C. Gould, MD
Rana M. Higgins, MD
Andrew S. Kastenmeier, MD
Tammy L. Kindel, MD, PhD
Kathleen Lak, MD
Andrew S. Resnick, MD, MBA

Cardiac Surgery
G. Hossein Almassi, MD
Wilfredo Crespo-Velez, MD*
Lucien A. Durham III, MD, PhD
Ralph Galdieri, MD*
Viktor Hraska, MD, PhD
R. Eric Lilly, MD*
David L. Joyce, MD
Lyle D. Joyce, MD, PhD
Robert McManus, MD*
Michael E. Mitchell, MD
Paul J. Pearson, MD, PhD
Goya V. Raikar, MD
Charles Reuben, MD*
Chris K. Rokkas, MD
Scott Schlidt, MD*
Mini Sivadasan, MD*
Ronald K. Woods, MD, PhD

Colorectal Surgery
Kirk A. Ludwig, MD*
Mary F. Otterson, MD, MS
Carrie Y. Peterson, MD, MS
Timothy J. Ridolfi, MD

General Surgery
Marshall A. Beckman, MD, MA*
Robert J. Brodish, MD*
Thomas Carver, MD
Kathleen K. Christians, MD
Panna Codner, MD
Christopher S. Davis, MD, MPH
Marc A. de Moya, MD
Christopher Dodgion, MD, MSPH, MBA
Matthew I. Goldblatt, MD
Jon C. Gould, MD
Rana M. Higgins, MD
Jeremy S. Juern, MD

General Surgery, continued
Andrew S. Kastenmeier, MD
Tammy L. Kindel, MD, PhD
Dean E. Klinger, MD*
Kathleen Lak, MD*
Kaizad Machhi, MD*
David J. Milia, MD*
Rachel Morris, MD
Kevin V. Moss, MD*
Todd A. Neideen, MD
Jacob R. Peschman, MD
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Philip N. Redlich, MD, PhD
Lewis B. Somberg, MD*
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Casey M. Calkins, MD*
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Gwen Lomberk, PhD
Qing Miao, PhD
Aoy T. Mitchell, PhD
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Surgical Oncology–Breast Surgery
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Caitlin R. Patten, MD*
Alonzo P. Walker, MD
Tina W.F. Yen, MD, MS

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Douglas B. Evans, MD*
Tracy S. Wang, MD, MPH*
Stuart D. Wilson, MD
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Callisia N. Clarke, MD
Douglas B. Evans, MD*
T. Clark Gamblin, MD, MS, MBA
Edward J. Quebbeman, MD, PhD
Susan Tsai, MD, MHS

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T. Clark Gamblin, MD, MS, MBA
Harveshp Mogal, MD

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David W. Johnstone, MD*
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Terra R. Pearson, MD
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Thomas Carver, MD
Panna A. Codner, MD
Christopher S. Davis, MD, MPH
Marc A. de Moya, MD
Terri A. deRoon-Cassini, PhD
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Rachel Morris, MD
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Gary R. Seabrook, MD
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Waukesha Memorial Hospital

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

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MARK YOUR CALENDARS

Upcoming Events

FEBRUARY 23: MCW & MD Anderson Endocrine Surgery Symposium—The Westin, Milwaukee

MARCH 20–21: Douglas Tyler, MD, Ellison Visiting Professor—Medical College of Wisconsin

MAY 4: 2018 Annual GI Symposium—The American Club, Kohler

MAY 9: David Spain, MD, Lunda Visiting Professor—Medical College of Wisconsin

MAY 15–16: Benjamin W. Starnes, MD, Towne Visiting Professor—Medical College of Wisconsin

MAY 18: Atlanta Pancreas Cancer Symposium—Georgia Tech Conference Center, Atlanta

JUNE 4–6: Midwest Trauma/Acute Care Surgery Symposium—Hilton Milwaukee City Center, Milwaukee

JUNE 15: Rebecca M. Minter, MD, Eberbach Visiting Professor—Medical College of Wisconsin

JUNE 27: Patricia Donahoe, MD, Glicklich Visiting Professor—Children's Hospital of Wisconsin

AUGUST 21–23: Will Chapman, MD, Adams Visiting Professor and Solid Organ Transplantation Symposium—Medical College of Wisconsin

SEPTEMBER 25–26: David McFadden, MD, Schroeder Visiting Professor—Medical College of Wisconsin

SEPTEMBER 27–28: Society of Asian Academic Surgeons Annual Meeting—Pfister Hotel, Milwaukee

JANUARY 25, 2019: MCW Pancreatic Cancer Clinical Symposium—Harley-Davidson Museum, Milwaukee

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

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