

# SURGERY UPDATE LEADING THE WAY

SUMMER 2012 • VOLUME 4, NUMBER 2



## From the Chairman

**DOUGLAS B. EVANS, MD**

Chairman, Department of Surgery, Medical College of Wisconsin  
Donald C. Ausman Family Foundation Professor of Surgery

The featured photo on the cover of this issue of *Leading the Way* acknowledges the many contributions of the departing chief residents as we prepare for the annual Eberbach Banquet in their honor. We are extremely fortunate to have Dr. Sean Mulvihill as this year's Eberbach Lecturer. Dr. Mulvihill is the Associate Vice President for Clinical Affairs and Chief Executive Officer for University of Utah Medical Group.



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*Leading the Way* is written for physicians for medical education purposes only. It does not provide a complete overview of the topics covered and should not replace the independent judgment of a physician about the appropriateness or risks of a procedure for a given patient.

### *Congratulations to the graduating chief residents:*

**Bren Heaton, MD**—General Surgery,  
St. Alphonsus Medical Group, Boise, Idaho

**SreyRam Kuy, MD**—Vascular Surgery  
Fellowship, Medical College of Wisconsin

**Sara Mijal, MD**—Vascular Surgery Fellowship,  
University of Iowa, Iowa City, Iowa

**Anthony Nelson, MD**—General Surgery,  
Wheaton Franciscan Medical Group,  
St. Joseph's Hospital, Milwaukee, Wisconsin

**Timothy Ridolfi, MD**—Colon and Rectal  
Surgery Fellowship, Cleveland Clinic,  
Cleveland, Ohio

**Allegra Saving, MD**—General Surgery,  
Seattle, Washington

**Jill Whitehouse, MD**—Pediatric Surgery  
Fellowship, Medical College of Wisconsin,  
Children's Hospital of Wisconsin

### *In addition to the departing chiefs, we also recognize the departing fellows:*

#### **Pediatric Surgery Fellow:**

**Ramin Jamshidi, MD**—Hospital at Great  
Ormond Street, London, United Kingdom

#### **Vascular Surgery Fellow:**

**Irina Shakhnovich, MD**—Gunderson  
Lutheran Medical Center, La Crosse, Wisconsin

#### **Surgical Critical Care Fellow:**

**Carolyn Pinkerton, MD**—General Surgery  
Residency, Medical College of Wisconsin

#### **Pediatric Critical Care Fellow:**

**Henry Chang, MD**—Research Fellow,  
Division of Pediatric Surgery, Medical College  
of Wisconsin

#### **Minimally Invasive Surgery Fellow:**

**Hiram Gonzalez-Ortiz, MD**—Monvalley  
Hospital, Monongahela, Pennsylvania

#### **Hepato-Pancreato-Biliary Surgery Fellow:**

**Ray Wong, MD**—Cleveland Clinic

#### **Endocrine Surgery Fellow:**

**Carrie Carsello, MD**—Albany Medical  
College

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# Molecular Markers in Thyroid



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Thyroid nodules are an extremely common clinical finding, identified in up to 7% of neck physical examinations and up to 67% of neck imaging studies. Most thyroid nodules (95%) represent benign hyperplastic changes or adenoma formation, with the remaining small percentage of nodules harboring a thyroid cancer. Thyroid cancer is the most common type of endocrine cancer; estimates provided by the National Cancer Institute indicate that approximately 45,000 new cases of thyroid cancer and 1,700 deaths from thyroid cancer occurred in the United States in 2010. Approximately 95% of thyroid cancers are derived from follicular epithelial cells and fall into the class of “well-differentiated thyroid cancer”, which includes papillary and follicular carcinoma. These are usually slowly growing tumors that, when detected early, are highly treatable with an excellent long-term prognosis.

Fine-needle aspiration (FNA) of the thyroid is a quick, inexpensive, and minimally invasive procedure that has excellent sensitivity in screening for malignancy. However, the diagnostic accuracy of FNA is limited by the inability to distinguish certain specific cancers, such as follicular carcinoma and follicular-variant papillary carcinoma, from benign adenomas and adenomatoid hyperplasia on cytology alone. In this setting, evidence of capsular or vascular invasion is required to reliably make the diagnosis. For this reason, between 20–25% of thyroid nodule biopsies are regarded as indeterminate, and frequently require thyroidectomy for definitive diagnosis. Approximately 5–30% of cytologically indeterminate nodules removed surgically are diagnosed as cancer, so the majority of surgeries are performed on non-malignant thyroid glands. Additionally, for patients diagnosed with malignancy, a second completion surgery to remove the remaining thyroid lobe usually is required, creating an additional burden in terms of costs and patient time.

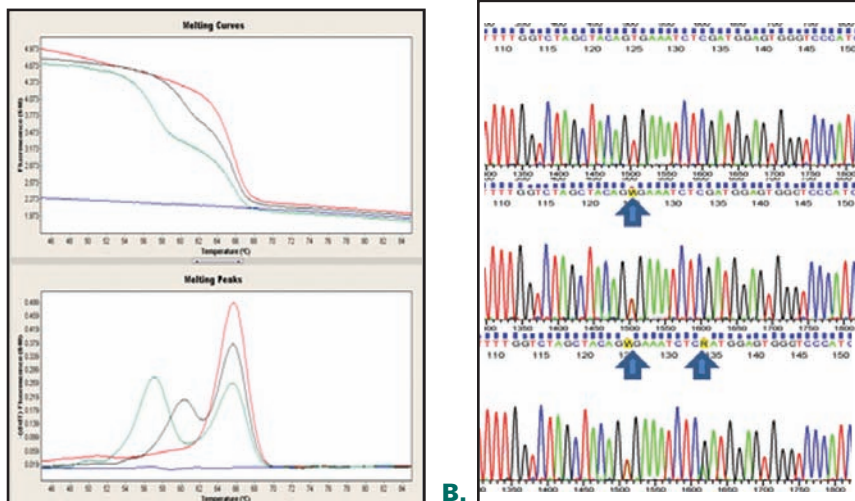
There has been recent interest in the use of mutational analysis in the diagnostic evaluation of thyroid nodules. Genetic alterations leading to the inappropriate activation of the MAPK/ERK pathway commonly are found in papillary thyroid cancer (PTC). These alterations are either missense mutations in the BRAF and RAS genes or chromosomal rearrangements involving the 3' end of RET and various unrelated genes. Mutations in the BRAF gene are the most common genetic alteration in PTC, where they are observed in 35% to 70% of cases. The mutations involve nucleotide T1799A of the cDNA sequence leading to V600E amino acid substitution.

As a consequence of this mutation, BRAF kinase activity is constitutively activated leading to upregulation of signaling through the MAP kinase pathway. Roughly 15% of PTC have mutations in one of the three RAS genes—KRAS, NRAS, or HRAS, with the latter two most commonly observed. The vast majority of RAS mutations are observed in the follicular variant of PTC, where 40% of this subtype harbors a RAS mutation. Furthermore, RAS mutations are observed in follicular carcinoma of the thyroid and in benign follicular lesions known as follicular adenomas. Therefore, RAS mutations are not specific for PTC. Chromosomal rearrangements involving the RET gene are found in approximately 30% of PTC. Several types of rearrangements involving RET are observed. RET/PTC1 is the most common, followed by RET/PTC3. RET/PTC are associated with radiation exposure and in papillary carcinomas arising in children and young adults.

Point mutations in BRAF and RAS can be detected using various detection methods, such as dideoxy sequencing (Sanger sequencing), real-time PCR followed by melting curve analysis, pyrosequencing, and several alternative methods. Most methods for the detection of BRAF and RAS mutations have comparable sensitivity and specificity, and the preferred choice often is determined by the nature of the specimen. In the Clinical and Translational Research Core Lab, mutations in BRAF and RAS readily can be detected by either Sanger sequencing or real-time PCR followed by melting curve analysis. The latter is relatively less complex and rapid. Chromosomal rearrangements involving RET/PTC can be detected by fluorescence *in situ* hybridization (FISH).

These mutations can be detected in fine needle aspiration (FNA) thyroid biopsies and are attractive targets for screening in patients with cytologically indeterminate nodules. In a study by Nikoiforov *et al*, 479 patients who provided 513 indeterminate specimens were surgically treated. In specimens that met the Bethesda criteria for “follicular lesion of unknown significance”, the risk of malignancy based on cytology alone was 14%; this increased to 88% in the presence of any mutation, and dropped to 5.9% in the absence of mutation. For specimens that met Bethesda criteria for “follicular neoplasm”, the risk of malignancy based on cytology was 27%, which increased to 87% in the presence of any mutation, and decreased to 14% in samples in which no mutation was identified. Specimens that were “suspicious for malignancy” had a risk of

# Nodules



A.

B.

BRAF V600E Single and V600E/R603Q Double Mutation Melting Curve versus Sequencing Electropherogram. (A) Melting curve analysis of BRAF V600E (upper panel) and BRAF V600E R603Q double mutation. Wild-type BRAF melt curves are in red. Control melt curves are black. Patient melt curves are green. (B) Dideoxy sequencing electropherograms confirming the mutations detected in panel A.

malignancy of 54% based on cytology; this rose to 95% for mutation-positive and decreased to 28% in mutation-negative samples.

Yip *et al* examined the potential impact of mutational analysis on indeterminate thyroid nodules and concluded that appropriate use of a molecular panel could result in a 20% reduction in diagnostic lobectomies followed by a completion thyroidectomy (i.e., two-stage approach), with a corresponding increase in total thyroidectomy as the initial procedure of choice; the authors concluded that use of mutational analysis would facilitate more insightful preoperative planning. Review of these and other data would indicate that patients whose specimens have relatively low-risk cytology and no evidence of mutation could be more comfortably offered the option of conservative monitoring over surgical resection.

## BRAF Mutation and Extent of Surgery

BRAF mutations also can be detected in surgically resected thyroid samples. Recent studies have examined the utility of the BRAF V600E mutation as an independent prognostic factor in PTC. In a study of 500 consecutive cases of PTC, Lupi *et al* found that the BRAF V600E was associated with extrathyroidal invasion (64 vs. 36%;  $p < 0.0001$ ), multicentricity (52 vs. 38%,  $p = 0.003$ ), and presence of nodal metastases (64 vs. 40%;  $p < 0.001$ ). Kebebew *et al* also found the BRAF mutation to be associated with more aggressive disease. Overall, a V600E BRAF mutation was found in 51% of 245 patients with PTC and was associated with lymph node metastasis, distant metastasis, higher TNM stage, and recurrent and persistent disease on univariate analysis. On multivariate analysis, BRAF V600E mutation was associated with higher rates of recurrent and persistent disease (OR = 4.2 [1.2–14.6]). In a separate study of 60 patients with a BRAF V600E mutation who underwent total thyroidectomy for PTC, clinically evident nodal recurrence occurred in 11% of BRAF V600E-positive patients, as compared to 7% of BRAF V600E-negative patients ( $p = 0.02$ ). All patients required reoperative surgery.



## Dr. Robert B. Love to Join the Department of Surgery in August 2012 as Section Chief of Adult Cardiac Surgery

Robert B. Love, MD will be joining us as Section Chief of Adult Cardiac Surgery on August 1, 2012. Dr. Love is currently Professor and Vice Chairman of the Department of Thoracic and Cardiovascular Surgery at Loyola University Medical Center and Director of the Lung Transplantation Program. Prior to joining Loyola Strich School of Medicine, he was Vice Chair of the Division of Cardiothoracic Surgery at the University of Wisconsin and Director of the Complex Aortic Surgery Program.

Dr. Love is a graduate of Bethel College and Rush Medical School. His general surgery training was at the University of Wisconsin. He then completed a fellowship in Vascular Surgery at Gloucestershire Royal Hospital in England as well as a Cardiothoracic Surgical Fellowship at UW-Madison. Dr. Love then joined the faculty at the University of Wisconsin where he remained until being recruited to Loyola in 2006. Dr. Love brings with him 20 years of experience in all aspects of cardiac surgery and heart and lung transplantation. He maintains an active laboratory exploring ways to optimize pulmonary function in recipients of lung transplants. He has more than 80 publications in the peer-reviewed literature and is committed to the innovation and discovery necessary for the next decade of advances in cardiac surgery as well as heart and lung transplantation. •

## MOLECULAR MARKERS CONTINUED FROM PAGE 3

Given these findings, the extent to which the presence of a BRAF V600E mutation might influence the extent of surgery in patients with a preoperative diagnosis of PTC is unclear. Current American Thyroid Association guidelines recommend that patients with a thyroid cancer >1 cm undergo a total thyroidectomy; thyroid lobectomy may be sufficient for tumors <1 cm in the absence of other risk factors, such as previous head and neck irradiation, or clinical or radiographic evidence of cervical lymph node metastases. Prophylactic central compartment neck dissections, i.e., removal of central compartment (level VI) lymph nodes in the absence of preoperative suspicion of metastases by physical examination, preoperative imaging, or intraoperative assessment, may be performed, particularly in patients with larger tumors, but remains controversial.

Currently, all patients undergoing surgery for PTC by the Endocrine Surgery Program at the Medical College of Wisconsin receive consideration for prophylactic central compartment neck dissection. We have recently shown that in a cohort of 103 patients who underwent thyroidectomy for PTC at our institution over a 22-month period, a larger proportion of patients who underwent central compartment neck dissection had a stimulated thyroglobulin of <2.0 ng/mL at the time of adjuvant radioactive iodine. There was no difference in rates of iatrogenic recurrent laryngeal nerve injury or hypoparathyroidism (unpublished data). While longer follow-up is needed, these results suggest that prophylactic central compartment neck dissection is safe and may lead to more effective radioactive iodine treatment and lower rates of cervical recurrence. Preoperative knowledge of the presence of a BRAF V600E mutation may help determine the extent of thyroidectomy, prophylactic central compartment neck dissection (ipsilateral or bilateral), and potentially lower rates of cervical recurrence, need for reoperation or additional treatment with radioactive iodine. •

**FOR ADDITIONAL INFORMATION** on this topic, see references, visit [mcw.edu/surgery](http://mcw.edu/surgery), or contact Dr. Wang at 414-805-5755; [tswang@mcw.edu](mailto:tswang@mcw.edu).

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

**Froedtert & The Medical  
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Referrals: 800-272-3666  
Transfers/Consultations:  
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[mcw.edu/surgery](http://mcw.edu/surgery)

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

**Children's Hospital  
of Wisconsin**  
Referrals/Transfers/  
Consultations: 800-266-0366  
Acute Care Surgery:  
414-266-7858

# Damage Control Resuscitation: Past, Present, Future



**ANAHITA DUA, MD**  
General Surgery Resident



**KAREN BRASEL, MD, MPH**  
Division of Trauma/Critical Care

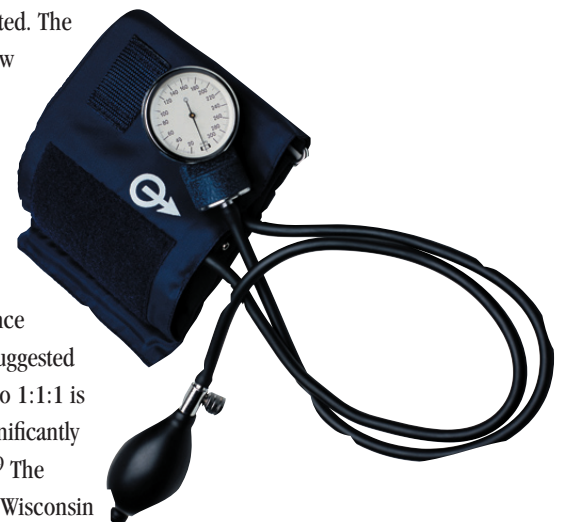
**D**amage control resuscitation and damage control surgery are aimed at stabilizing the physiologically deranged patient before the physiologic “point of no return” is reached.<sup>1</sup> Damage control surgery, first described in part by Rotondo *et al*, refers to completing only those procedures in the operating room that are absolutely necessary to control hemorrhage and contamination.<sup>2</sup> Damage control resuscitation incorporates damage control surgery, and in addition, refers to a resuscitation strategy aimed at restoring physiology by incorporating permissive hypotension and the early use of fresh frozen plasma, platelets, and packed red blood cells.<sup>3</sup> By attempting to halt the progression of acidosis, hypothermia, and coagulopathy in the severely injured patient, damage control resuscitation can lead to an increase in survivability.<sup>2,3</sup>

*Shock*, defined as inadequate tissue perfusion to meet metabolic needs, is second only to head injury as a cause of mortality after traumatic injury. One of the challenges in early resuscitation is the lack of a reliable indicator of the presence or absence of shock. Traditional targets include heart rate and blood pressure (BP). Guided by principles outlined in Advanced Trauma Life Support™, patients with a high heart rate or low BP are initially given crystalloid resuscitation with the goal of establishing a normal blood pressure. There is increasing evidence that attempts to increase BP prior to definitive control of hemorrhage may in fact be harmful. Permissive hypotension allows for formation of a clot at the injured site, and increasing the BP may “pop the clot”, resulting in further hemorrhage.<sup>1</sup> Furthermore, crystalloid has been shown in both animal and human models to cause a dilution of red blood cells and coagulation factors, adding to the acute traumatic coagulopathy and further complicating efforts at controlling hemorrhage.<sup>3,4</sup> Gonzalez *et al* noted that there is an increasing body of evidence suggesting that large volumes

of crystalloid are associated with complications such as abdominal compartment syndrome, disruptions in electrolyte balance, dilution of coagulation factors, and impaired clot formation.<sup>5</sup>

In 1994, a randomized, prospective trial found that limiting fluid prior to the attainment of hemostasis showed a small survival advantage in the limited fluid group, although there were several methodologic problems with the study.<sup>6</sup> Although these findings provided some evidence, the definition of hypotension continues to vary. Watching the systolic BP hover around 80 mmHg is difficult for many trauma surgeons, which forces the reactionary two liters of crystalloid. The Medical College of Wisconsin is currently participating in a trial investigating the use of permissive hypotension in severely injured trauma patients, using a blood pressure of 70 mmHg rather than 90 mmHg as the lower acceptable limit. This research is being done as a part of the Resuscitation Outcomes Consortium, an NIH-funded clinical trials group with 11 sites in North America. The Milwaukee site is led by principal investigator Dr. Tom Aufderheide and lead trauma investigator Dr. Karen Brasel.

Another major advancement in the field of hemorrhagic shock relates to the widespread acceptance and implementation of massive transfusion protocols. One definition of massive transfusion is the replacement of whole blood volume of the course of 24 hours or 50% of blood volume in three hours. There is a growing body of literature that has shown a reduction in severe sepsis, septic shock, and multi-organ failure with this practice, especially when blood products are delivered early during resuscitation through a predefined protocol.<sup>7,8</sup> There also is a significant reduction in the amount of blood products used during resuscitation when massive transfusion protocols are enacted. The next question is how much blood and what components of blood should be administered to patients in hemorrhagic shock. Early evidence from the military suggested that a ratio closer to 1:1:1 is associated with significantly improved survival.<sup>9</sup> The Medical College of Wisconsin



**DAMAGE CONTROL CONTINUED ON PAGE 6 >>**

was associated with the largest study that replicated these results in the civilian population, a retrospective analysis of massively transfused patients.<sup>8</sup> These retrospective findings were confirmed prospectively in a subsequent study also conducted at MCW. However, the findings of improved survival were confined to those with the most severe degree of shock; again, this is difficult to determine in the very early management of any specific patient.

Randomized control trials are needed to determine the optimal ratio to use in the massively transfused, severely injured trauma patient. Partially due to the significant difficulties that exist in performing such studies in the setting of acute trauma, much of what is practiced in the civilian world is based on anecdotal data, retrospective reviews, or simply tradition. Over the last few years, basic science research into aspects of trauma such as inflammation, endothelial reactivity, cytokines, and molecular reactions to drugs have become more prominent. Future targeting of essential points in the inflammation process without turning off the whole inflammatory system is important. The role of genetics as a potential target also may be significant.<sup>10</sup>

Overall, in regard to hemorrhagic shock resuscitation, the concept that blood pressure and heart rate are no longer the only targets of resuscitation is an important advance in the treatment of hemorrhagic shock. Furthermore, the implementation of massive transfusion protocols and a switch to the earlier use of blood products over crystalloid has been a major change in resuscitation. Further randomized control trials are necessary in the civilian trauma patient population to investigate whether an ideal ratio of blood and blood products exists. The Medical College of Wisconsin is preparing to participate in just such a trial, again as part of the Resuscitation Outcomes Consortium anticipated to begin this summer. •

**FOR ADDITIONAL INFORMATION** on this topic, see references, visit [mcw.edu/surgery](http://mcw.edu/surgery), or contact Dr. Brasel 414.805.8624, [kbrasel@mcw.edu](mailto:kbrasel@mcw.edu)

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## Faculty Development is a Top Priority

*Drs. Jon Gould and Travis Webb recently attended the week-long Harvard Leadership for Physician Executives Seminar*

**LEAD—Leveraging potential, Engaging commitment, Aligning judgment, and Developing capabilities.**

These are four key principles of effective leadership that we recently learned how to apply to our leadership roles during an intensive week-long seminar sponsored by Harvard Medical School and the Levinson Institute. In medical school, we learned how to be a doctor; in residency, we learned how to be a surgeon; and through courses such as the Leadership for Physician Executives Seminar, we are learning how to be effective and accountable leaders. This course, which has been offered for more than 30 years, provides an opportunity to meet, network, and discuss leadership principles with an international group of faculty and participants. The experience was incredibly valuable for us and provided us with great insight into our own management styles and habits (both good and bad). We hope the knowledge and skills gained will benefit us, our colleagues on and off this campus, the Department of Surgery, and our organization for many years to come. We both returned to Milwaukee with new ideas and enthusiasm for our leadership roles and clearer insight into how we can prepare our teams to realize our shared vision for the future.

—Jon Gould, MD and Travis Webb, MD, MHPE

# Cortical-Sparing Adrenalectomy



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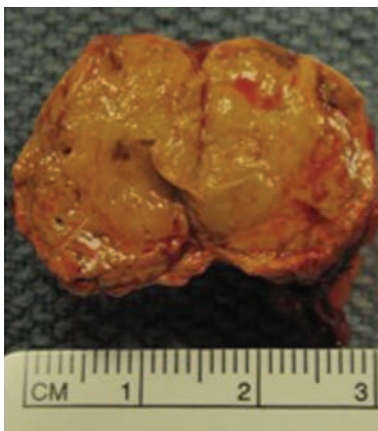
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The adrenal gland is composed of an outer cortex and an inner medulla, which have different physiologic functions and are independently regulated. The adrenal cortex secretes three major products: glucocorticoids (cortisol), mineralocorticoids (aldosterone), and sex steroids (mainly androgens), while the principal secretory products of the adrenal medulla are epinephrine and norepinephrine.

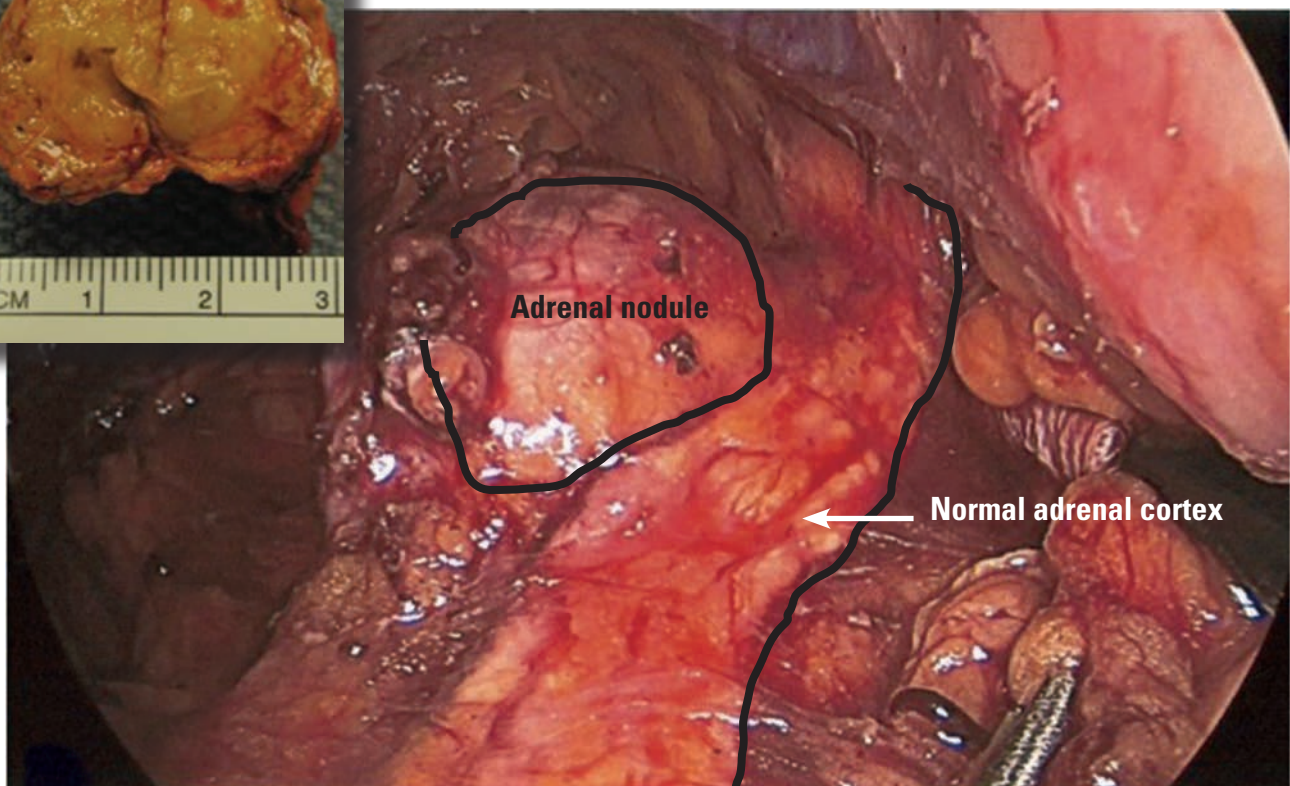
Neoplasms of the adrenal cortex, the vast majority of which are benign, may either be functional (with over-secretion of cortisol, aldosterone, and/or sex steroids), or nonfunctional. For example, the small, 8 mm adrenal cortical nodule in a patient with primary aldosteronism is uniformly benign and, if successfully removed surgically, results in resolution of hypokalemia

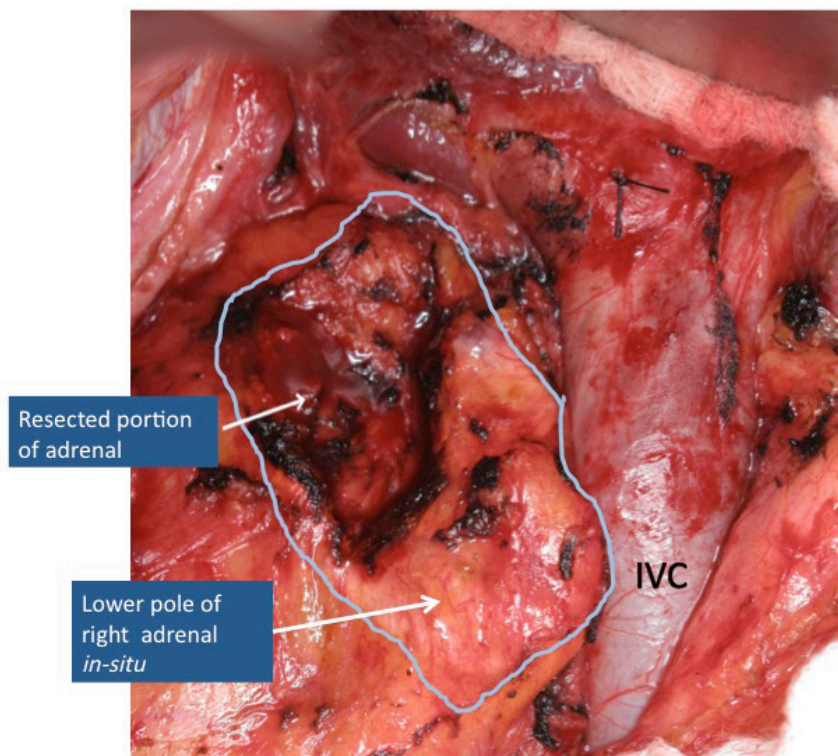
and improved blood pressure control. Similarly, the 2.5 cm adrenal cortical nodule in a 25-year old woman with adrenal-dependent hypercortisolism causing Cushing's Syndrome is also uniformly benign and, when successfully removed, results in complete resolution of the hypersecretory condition. In contrast to these benign tumors, a 10 cm heterogenous tumor arising from the adrenal cortex with irregular borders on imaging studies is most consistent with a primary adrenal cortical cancer (ACC). Such large adrenal cortical cancers may be associated with excess production of cortisol, aldosterone, and sex steroids, but may also be non-secretory. The clinical observation that malignant tumors of the adrenal cortex are most commonly large (>4 cm) was made many years ago and is the basis for

**ADRENALECTOMY** CONTINUED ON PAGE 8 >>



**FIGURE 1:** Laparoscopic view of a left adrenal gland prior to completion of a minimally invasive, transabdominal, cortical-sparing adrenalectomy. The surgical specimen is shown in the inset.





**FIGURE 2:** Intraoperative photograph of the adrenal bed after a right-sided cortical-sparing adrenalectomy.

current treatment guidelines which recommend adrenalectomy for adrenal tumors  $>4$ – $6$  cm in maximal diameter (because of the possibility of an adrenal tumor of this size being an ACC).

Neoplasms of the adrenal medulla are referred to as pheochromocytomas. Similar to adrenal cortical tumors, the overwhelming majority of intra-adrenal pheochromocytomas are benign. This observation is particularly important in patients with inherited pheochromocytomas, such as those with multiple endocrine neoplasia type 2A (medullary carcinoma of the thyroid, pheochromocytoma, and hyperparathyroidism), Von Hippel-Lindau syndrome (hemangioblastomas, renal cell carcinoma, pancreatic tumors, and pheochromocytoma), and neurofibromatosis type 1 (also referred to as Von Recklinghausen's disease). Because patients with these inherited endocrinopathy syndromes may develop bilateral pheochromocytomas, they are at risk for surgical removal of both adrenal glands over the course of their lifetime. If, in an effort to remove the tumor within the adrenal medulla, the entire adrenal gland is removed, the patient also loses all adrenal cortex and therefore, is at risk for adrenal insufficiency (Addison's disease) if medical management is not optimal. The absence of the adrenal glands requires lifelong replacement of both glucocorticoids and mineralocorticoids, and is associated with a decreased quality of life, and puts the patient at risk for Addisonian crisis.

Given the potential for significant morbidity and mortality associated with lifelong medical management of the patient after bilateral adrenalectomy, surgeons and endocrinologists hypothesized that removal of the adrenal medulla and the associated pheochromocytoma could be performed while leaving a portion of adrenal cortex *in-situ* ("cortical-sparing

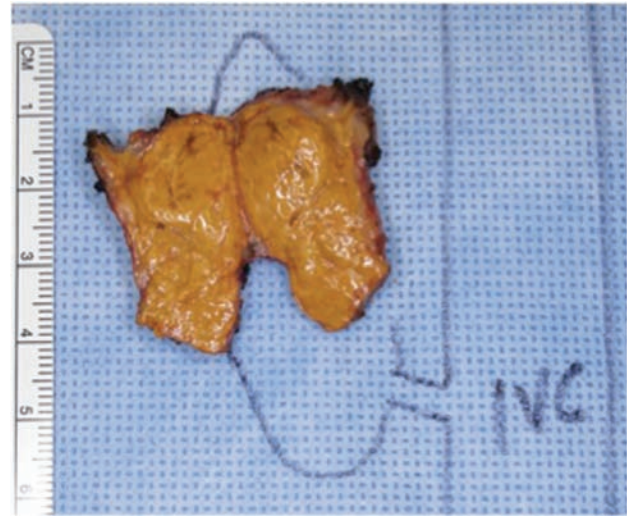
adrenalectomy"). This hypothesis was further supported by the observation that most patients with an inherited pheochromocytoma have benign disease; malignant pheochromocytomas are very rare when they occur as part of an inherited syndrome. Results of cortical-sparing adrenalectomy in patients with an inherited pheochromocytoma over the past two decades have demonstrated the safety of this procedure; namely, metastatic pheochromocytoma has not developed. In addition, the majority of patients have normal cortical function after surgery. Therefore, the cortical-sparing technique has prevented the need for lifelong glucocorticoid replacement in those patients who present with bilateral pheochromocytomas or in those patients who undergo a cortical-sparing procedure after previous contralateral total adrenalectomy.

The concept of cortical-sparing adrenalectomy has recently been extended to patients with Cushing's Syndrome due to benign cortical adenomas. In patients who have either bilateral adrenal involvement, requiring bilateral adrenalectomy, or in patients who have undergone a previous adrenalectomy and now have a cortisol producing adenoma in their remaining adrenal gland, preserving some normal cortex may prevent lifelong glucocorticoid and mineralocorticoid replacement. The same principle applies here as with pheochromocytomas; namely, one is dealing with a benign neoplasm of the adrenal gland and the surgical approach is designed to preserve functioning adrenal cortex. Although cortical-sparing adrenalectomy has been largely performed using open surgery, a minimally invasive approach either anteriorly or posteriorly (retroperitoneoscopic approach) may be possible in patients with favorable anatomy. Favorable anatomy would include a relatively small tumor located either in the





**FIGURE 3:** Intraoperative photographs of the surgical specimen following a cortical-sparing right adrenalectomy.



superior or inferior portion of the adrenal gland, thereby preserving well-vascularized adrenal gland which is likely to be associated with normal cortical function.

In Figure 1, we demonstrate a laparoscopic view of a left adrenal gland prior to completion of a minimally invasive, transabdominal, cortical-sparing adrenalectomy. In this situation, the spleen and pancreas have been reflected to the patient's right, allowing an anterior exposure of the left adrenal gland. Figures 2 and 3 illustrate intraoperative photographs of a cortical-sparing right adrenalectomy in a patient where an open procedure was favored given the patient's strong desire to do all possible to prevent postoperative adrenal insufficiency and, most notably, the location of the tumor. One can see that the exposure to the right adrenal gland is excellent after reflecting the liver to the patient's left, thereby exposing the intra-abdominal inferior vena cava and the entire anterior surface of the right adrenal gland. As noted in these two figures, access to the left adrenal gland required complete rotation of the spleen and pancreas to the level of the left crus of the diaphragm. Exposure of the right adrenal gland required complete rotation of the liver with full mobilization of the right lobe to allow complete exposure of the intra-abdominal inferior vena cava. Whether the exposure is done open or laparoscopically, it is critically important that the adrenal gland be exposed in a bloodless field and that the portion of adrenal gland to be preserved *in-situ* not be mobilized out of the retroperitoneum. This latter point is especially important when ligation of the adrenal vein is required (due to the local anatomy of the neoplasm being removed) as in order to perform a successful cortical-sparing technique, the adrenal gland must be incised without mobilization of the gland out of the adrenal bed. This

allows for preservation of named and unnamed small inflow and outflow vessels to the adrenal cortex.

In this brief article, we call attention to the important option of adrenal cortex-preserving surgery for patients with bilateral benign cortical or medullary neoplasms and for those who have undergone a prior unilateral adrenalectomy and now have a contralateral, benign, pheochromocytoma or functional cortical adenoma. Cortical-sparing adrenalectomy can prevent the need for lifelong glucocorticoid replacement and the associated risk of Addisonian crisis. We have not discussed the evaluation of an incidental adrenal nodule and the indications for surgery in patients with nonfunctioning incidental adrenal nodules, a clinical scenario becoming increasingly common. Subsequent articles in *Leading The Way* will focus on the complexity of contemporary evaluation and treatment of adrenal nodules. •

**FOR ADDITIONAL INFORMATION** on this topic, see references, visit [mcw.edu/surgery](http://mcw.edu/surgery), or contact Dr. Findling at 262-253-7155, [jfindling@mcw.edu](mailto:jfindling@mcw.edu); Dr. Wang at 414-805-5755, [tswang@mcw.edu](mailto:tswang@mcw.edu); or Dr. Evans at 414-805-5706, [devans@mcw.edu](mailto:devans@mcw.edu).

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# Communication Between Breast Cancer Patients and Their



**MALLORY COHEN, BS**  
Third-Year Medical Student



**KATHLEEN JENSIK, MSW**  
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**REBECCA C. ANDERSON, PhD**  
Division of Transplant Surgery



**ALONZO P. WALKER, MD**  
Ruth B. Teske Professor of Surgical Oncology,  
Division of Surgical Oncology  
Senior Associate Dean for Faculty Affairs and Diversity

**B**reast cancer patients encounter body image changes throughout their diagnosis, treatment, and recovery. These changes leave them with challenging psychosocial concerns, including breast-related body image stress (Helms *et al*). This stress can be treated if it is effectively identified through communication with their physician.

Many studies investigating the importance of patient-physician communication are found in the literature, and suggest that patients in all aspects of health care heal better physically and mentally when they have positive interactions with their physicians (Han *et al*). However, no prospective study has analyzed the communication between a breast cancer patient and her physician in the context of body image. This communication should be examined in order to indicate which body image issues patients are experiencing, and to help discover the correct care plan for the patient.

## Hypothesis

Women with breast cancer are reluctant to talk about their emotions regarding breast-related body image issues and often depend upon physicians to initiate the subject. Some physicians are uncomfortable approaching the subject of breast-related body image stress with breast cancer patients.

## Objective

The objectives of this study were to determine: (1) how breast cancer patients prefer their physicians communicate with them about breast-related body image stress; and (2) how comfortable physicians are with discussing body image issues with their patients.

## Methods

This was a qualitative pilot study that took place over 12 weeks and included 33 patients and 10 physicians. Data were collected from the patients through the Breast Evaluation Questionnaire (BEQ), followed by

a qualitative questionnaire. The BEQ is a valid and reliable assessment for the subscales: Comfort not fully dressed; Comfort fully dressed; and Satisfaction with breast attributes (Anderson *et al*). One focus group included women with Stages 0, I, II, and III breast cancer who were within one year of their diagnosis. The second group included surgical oncologists, plastic surgeons, radiation oncologists, and medical oncologists. These physicians were given a qualitative questionnaire regarding their comfort with asking patients about their breast-related body image stress. Data trends were examined, and depending on the responses of each survey, the most frequent answers were analyzed.

## Results

These data suggest that breast cancer patients prefer their physicians be direct, open, and honest when discussing their breast-related body image issues. Seventy percent of patients reported that there was more the physician could do to improve patient comfort in discussing breast-related body image concerns. On a five-point Likert scale (1= very uncomfortable and 5= very comfortable), the physicians most frequently answered with a “4” when asked how comfortable they are speaking about breast-related body image issues, however, only 40% consistently address the topic themselves during the patient’s visit. This suggests that although patients prefer their physicians be direct, open, and honest, their physicians, while comfortable discussing body image issues, do not directly initiate the topic.

These data also show that breast cancer patients have similar advice for medical students. The patients report that medical students should empathize with their patients and be direct and honest when discussing breast-related body image issues. This is consistent with the patients’ recommendations to improve physician-patient communication regarding breast-related body image concerns.

# Physicians About Breast-Related Body Image Issues

## Conclusions

These data show that breast cancer patients prefer their physicians be direct, open, and honest in their conversations about their breast-related body image issues. They also advise medical students to be direct and honest in their future communications with patients. Physicians are comfortable discussing breast-related body image issues; however they do not always raise the question.

There were some limitations to the study. The study only included newly diagnosed patients with Stages 0, I, II, and III breast cancer, which excluded patients with metastatic breast cancer and patients with a previous diagnosis of breast cancer. Finally, the study included a small sample size. These limitations were necessary for a qualitative pilot study to examine the trends of the data in order to create a larger, more focused study in the future (Cohen *et al*). •

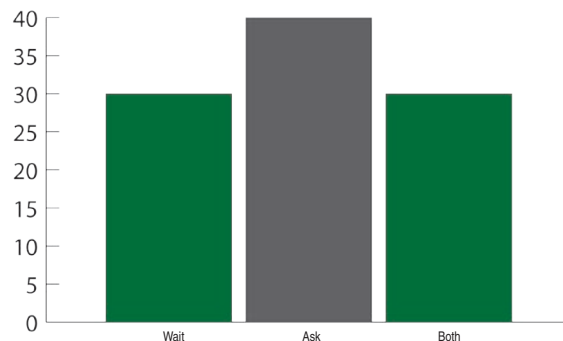
**FOR ADDITIONAL INFORMATION** on this topic, see references, visit [mcw.edu/surgery](http://mcw.edu/surgery), or contact Dr. Anderson at 414-955-6932; [rsanders@mcw.edu](mailto:rsanders@mcw.edu).

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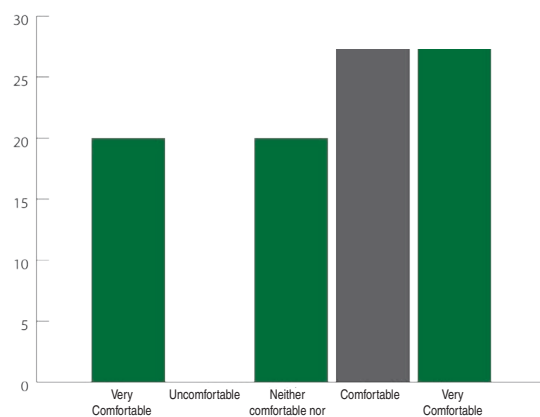
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## Physician Questionnaire:

*Do you wait for the breast cancer patients to bring up their breast-related body image issues or do you ask if they have any?*

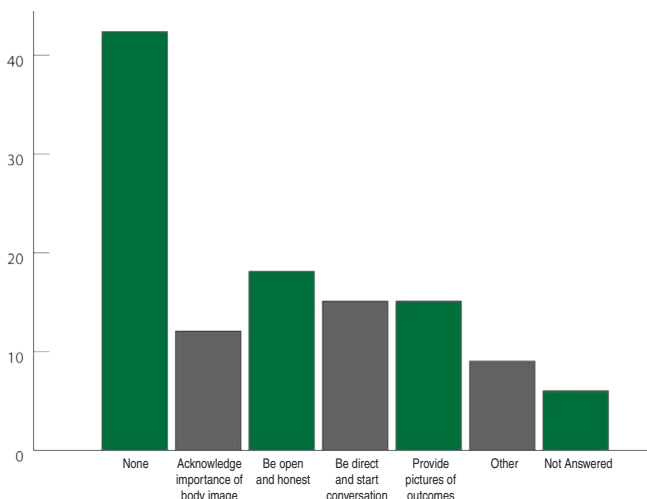


*How comfortable do you feel speaking with your breast cancer patients about their breast-related body image issues on a scale of 1–5?*



## Patient Questionnaire:

*In what way could your physician make you more comfortable communicating your breast-related body issues?*



## MCW surgeons perform a historic pediatric heart-liver transplant



**DAVID C. CRONIN, II, MD, PHD**  
Division of Transplant Surgery; Director, Liver Transplantation



**JAMES S. TWEDDELL, MD**  
Chief, Division of Cardiothoracic Surgery

Successful combined heart-liver transplantation is an uncommon procedure that requires an extraordinary level of expertise, skill, and institutional commitment from a variety of sources. In March 2012, under the direction of Dr. James Tweddell and Dr. David C. Cronin, just such a procedure was successfully performed at Children's Hospital of Wisconsin. This complex and now-historic operation represented the first combined heart-liver transplant in the State and one of nine such procedures among pediatric recipients in the United States from 1988–2012. •



## Department of Surgery welcomes incoming residents

We are delighted to announce and welcome the 2012–2013 PGY 1 Categorical General Surgery Residents:

- **Munyaradzi Chimukangara, MD**, State University of New York Upstate Medical College
- **Heather L. Dague, MD**, University of Illinois College of Medicine at Peoria
- **Daniel G. Davila, MD**, Feinberg School of Medicine, Northwestern University
- **Nathan W. Kugler, MD**, Southern Illinois University School of Medicine
- **Rachel M. Landisch, MD**, Medical College of Wisconsin
- **Rebecca K. Marcus, MD**, University of Minnesota Medical School
- **William S. Ragalie, MD**, The University of Wisconsin School of Medicine and Public Health

## Surgery residents who will spend the next academic year in research

**Anahita Dua, MD**—University of Texas-Houston Trauma Research Center; **Research Focus:** Injury

**Sarah Greenberg, MD**—Boston Children's Hospital Paul Farmer Global Surgery Fellowship; **Research Focus:** Clinical research in global surgery

**Ryan Groeschl, MD**—MCW Division of Surgical Oncology; **Research Focus:** HPB with emphasis on liver surgery outcomes and emerging technologies

**Rachel Morris (nee Harris), MD**—University of Texas MD Anderson Cancer Center Program in Cell Biology; **Research Focus:** Cell signaling in pancreatic cancer (funded by T32 grant)

**Nathan Heinzerling, MD**—MCW Division of Pediatric Surgery; **Research Focus:** The basic science of necrotizing enterocolitis

**Paul Jeziorczak, MD**—MCW Division of Pediatric Surgery; **Research Focus:** Role of endothelial microparticle-induced inflammation in acute lung injury and ventilator-associated tracheitis in the pediatric trauma population

**Lisa McElroy, MD**—Institute for Healthcare Studies/Northwestern University Transplant Outcomes Research Consortium; **Research Focus:** Patient care transitions and medical errors



# David A. Haven Memorial Fund to Support Pancreatic Cancer Research



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

Often, a memorial fund can leave one with a feeling of sadness. The word “memorial” suggests that a very beloved person is no longer here. But one look at Dave’s picture will tell you that Dave Haven’s life was about strength and hope. He was a man of determination and compassion. Behind that smile was a keenly intelligent, kind, fun-loving, and generous person.

Dave Haven, a senior pharmacist from Green Bay, was a devoted family man to wife, Deb, and daughters Sara and Kari. Unfortunately, at the age of 58, Dave was diagnosed with pancreatic cancer. After his death, family and friends established a memorial fund to support pancreatic cancer research in the Department of Surgery at the Medical College of Wisconsin.

“Pancreatic cancer research is going to benefit the next generation. This disease is so insidious that it is going to take researchers to defeat it, and it is going to take people supporting the researchers,” Mrs. Haven says. “We are fortunate and privileged to be able to direct this gift from the Haven family to celebrate Dave’s life in support of pancreatic cancer research. This memorial is dedicated to all those who have struggled through the twists and turns of pancreatic cancer, may you find peace in your journey.”

The Haven fund will support two programs in the Department of Surgery: (1) the clinical trial of Personalized Medicine for Pancreatic Cancer (under the direction of Drs. Tsai and Christians); and (2) the clinical trial of Greater Milwaukee Pancreatic Cancer Genetic Screening Program (under the direction of Dr. Tsai and Jennifer Geurts, MS, CGC). To our knowledge, the clinical trial of Personalized Medicine for

Pancreatic Cancer represents the first attempt in the United States at applying the principles behind personalized medicine for patients with early-stage pancreatic cancer. Advances in genetic screening indicate that not every pancreatic cancer tumor is identical, and that, as a result, treatment must vary from patient to patient, depending on the biology of their individual tumor.

In addition to this program, the gift will support the newly established Greater Milwaukee Pancreatic Cancer Genetic Screening Program to advance the early detection of premalignant and malignant lesions in individuals at high risk for developing pancreatic cancer. The goal is to identify high-risk individuals, tools for early detection and intervention, and techniques for cancer risk reduction and prevention.

“The Haven family gift will have a profound and direct impact on the development of personalized pancreatic cancer therapy. There is no question that the most limiting step in the development of new and improved pancreatic cancer treatment is the financial support of research. This gift will directly and immediately support the development of new cancer therapies, which will make a difference in many patients’ lives,” said Douglas B. Evans, MD, Donald C. Ausman Family Foundation Professor and Chairman of the Department of Surgery.

By supporting medical research and treatment, families like the Haven family are helping to improve the lives of others affected by cancer. If you or someone you know is interested in establishing a fund in memory or honor of someone special, please contact Meg Bilicki, Director of Development, Department of Surgery, at (414) 805-5731. •

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*Columbia St. Mary's Hospital*  
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*St. Joseph's Hospital*  
 Christopher J. Fox, MD  
*Waukesha Memorial Hospital*



**A Disease-specific  
Pilot Program for  
Outpatient EPIC Referrals**

The Medical College of Wisconsin Department of Surgery has initiated a pilot program for disease-specific, outpatient EPIC referrals for those programs previously placed via either the 'General Surgery' and/or the 'Clinical Cancer Center' referrals.

**For urgent/emergent issues, requiring same-day attention, please call the Acute Care Surgery service via the Froedtert Hospital operator (414-805-3000).**

These referrals include:

**Bariatric/Minimally Invasive Surgery (RFSUC.002)**

Bariatric Surgery, foregut surgery (achalasia, hiatal hernia, reflux surgery)

**Breast Cancer Surgery (RFCCC.003)**

For benign breast conditions, use the Breast Care Referral, Undiagnosed

**Colorectal Surgery (RFSUC.003)**

Anorectal disease, colorectal cancers, benign colorectal disease, inflammatory bowel disease

**Condon Hernia Institute (RFSUC.005)**

All abdominal wall defects/hernias including ventral, recurrent, incisional, inguinal, femoral

**Endocrine Surgery (RFSUC.001)**

Thyroid cancer, benign thyroid disease, parathyroid disease, adrenal tumors, carcinoid tumors, carcinoid disease, inherited endocrine tumors

**General Surgery (RFSUC.000)**

Abdominal pain, abdominal mass, gallbladder disease, soft tissue masses/nodules, feeding tubes

**Hepatobiliary Surgery (RFSUC.004)**

Liver tumors (benign and malignant), gallbladder disease, biliary tree disorders, bile duct cancers

**Pancreatic Surgery (RFSUC.006)**

Pancreatic cancer, benign pancreatic diseases (cysts, pancreatitis), pancreatic neuroendocrine tumors

**Surgical Oncology (RFCCC.002)**

Melanoma, retroperitoneal sarcoma, neuroendocrine tumors, carcinoid tumors, carcinoid disease, carcinomatosis, hyperthermic chemoperfusion therapy (HIPEC)

LEARN MORE AT [MCW.EDU/SURGERY](http://MCW.EDU/SURGERY)

## Division of Vascular Surgery welcomes Dr. C.J. Lee



**C.J. Lee, MD** will join the Division of Vascular Surgery on July 1, 2012. Dr. Lee is a graduate of the University of Michigan and the University of Michigan Medical School. Following his surgical training also at Michigan (Go Blue!), he joined the Northwestern University Vascular Fellowship Program. He is currently in the final year of his fellowship. While in medical school, he received virtually every honor possible, including AOA and

the Gardner Child Award for Excellence in Surgery. As a surgical resident, he received the Young Investigator Award and the Resident Research Prize from the Society of University Surgeons. He has received the Teaching Award from the University of Michigan (as a resident), and Northwestern University (as a fellow). Dr. Lee has published 12 peer-reviewed manuscripts and an additional 12 book chapters. The Department of Surgery is excited to have Dr. Lee join our vascular faculty.



### Please Update Your Address

The Medical College  
of Wisconsin

Department of  
Surgery wants

to stay in touch.

Please contact Dana  
Schmidman at

[dschmidm@mcw.edu](mailto:dschmidm@mcw.edu)

to update your contact  
information.

## Honors and Awards



Dr. Webb

**Travis P. Webb, MD, MHPE**, Associate Professor in the Division of Trauma/Critical Care received the 2012 Association for Surgical Education (ASE) Philip J. Wolfson Outstanding Teacher Award at the ASE Annual Banquet on March 23, 2012. This award recognizes outstanding teachers, and Dr. Webb is the fourth Department of Surgery faculty member to receive this prestigious award. (He joins Karen Brasel, MD, MPH; Philip Redlich, MD, PhD; and John A. Weigelt, MD, DVM.)



Dr. Brasel

**Karen Brasel, MD, MPH**, Professor in the Division of Trauma/Critical Care, has been appointed as a Director of the American Board of Surgery. Her term will start in June 2012. The Directors of the American Board of Surgery are elected for a single, six-year term from ABS nominating organizations or through an at-large process. They are distinguished surgeons from the best academic institutions in the United States. Dr. Brasel is the third MCW faculty member to be appointed to the ABS, following in the footsteps of Robert Condon, MD and Jonathan Towne, MD. Congratulations Dr. Brasel!



Dr. Termuhlen

**Paula Termuhlen, MD**, Professor and General Surgery Residency Program Director, has been appointed to the Accreditation Council for Graduate Medical Education (ACGME) Residency Review Committee. Her term will start on July 1, 2012. Dr. Termuhlen was also elected President of the Association of Program Directors in Surgery. Congratulations Dr. Termuhlen!



Department of Surgery  
9200 West Wisconsin Avenue  
Milwaukee, WI 53226

## MARK YOUR CALENDARS

### Upcoming Events

#### **June 22, 2012: 52<sup>nd</sup> Annual Carl W. Eberbach Lecturer—Sean J. Mulvihill, MD**

The Department of Surgery is honored to welcome Sean J. Mulvihill, MD, as the 52<sup>nd</sup> Annual Carl W. Eberbach lecturer on Friday, June 22, 2012, at 4:00 p.m. in Conference Room M, located on the third floor of the Clinical Cancer Center. Dr. Mulvihill is the Associate Vice President for Clinical Affairs and the Chief Executive Officer for the University of Utah Medical Group. He is an editor of *Surgery: Basic Science and Clinical Evidence*, and has authored more than 150 scientific papers, editorials, and book chapters.

#### **Saturday October 13, 2012: Get your Rear in Gear,<sup>®</sup> a 5K run/walk**

Please join us for Get Your Rear in Gear<sup>®</sup>, a 5K run/walk to promote awareness for colorectal cancer. Nearly 700 people participated in last year's event and 1,000 participants are anticipated for this year's race. It will be held Oct. 13, 2012 at Hart Park in Wauwatosa. For more information, please visit [getyourrearingear.com/events/list/2012/Milwaukee-wi-2012](http://getyourrearingear.com/events/list/2012/Milwaukee-wi-2012), or email Lynn Fischer at [lfischer@mcw.edu](mailto:lfischer@mcw.edu).

#### **October 16, 2013: 26<sup>th</sup> Annual C. Morrison Schroeder Lecturer—Timothy C. Flynn, MD**

The Department of Surgery is honored to welcome Timothy C. Flynn, MD, as the 26<sup>th</sup> Annual C. Morrison Schroeder lecturer on Tuesday, October 16, 2013. Dr. Flynn is the Chief Medical Officer at the University of Florida College of Medicine.