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WMIJ

volume 115 • no. 3 • june 2016

Treating Mental Health

**How community alliances and system change
can lead to better patient outcomes**

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Katherine Sanders has a BS, MS and PhD in Industrial & Systems Engineering from UW-Madison. She specializes in human factors and sociotechnical systems engineering, essentially the health and productivity of people at work. Her academic work as an occupational stress researcher gave rise to a commitment to design programs to support professionals in high burnout occupations. She's one of a small number of PhD systems engineers focused on occupational health, and has a specific interest in the well-being of healers.

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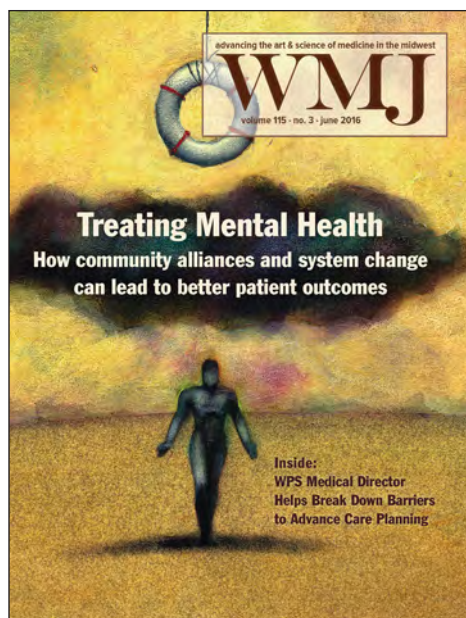
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COVER THEME

Treating Mental Health: How community alliances and system change can lead to better patient outcomes

Thirty-day hospital readmission rates are used as a quality measure and, in the area of mental health, the data are troubling. Among patients discharged for schizophrenia and other psychotic disorders, the 30-day readmission rate is the second highest of all major diseases. An article in this issue of *WMJ* describes a program that successfully reduced inpatient psychiatric readmissions by implementing organizational change and patient interventions.

Cover design by
Mary Kay Adams-Edgette

The mission of *WMJ* is to provide a vehicle for professional communication and continuing education for Midwest physicians and other health professionals. *WMJ* is published by the Wisconsin Medical Society.

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Improving Opioid Prescribing

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With growing concern for the opioid abuse epidemic and a likely prescribing-related continuing medical education mandate by the Medical Examining Board, the Wisconsin Medical Society presents a new webinar series approved for **AMA PRA Category 1 Credit™**.

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- Prescribing Opiates Responsibly: Treating Pain Without Feeding Addiction
- Drug Testing in Clinical Practice: The Science and Art of Drug Monitoring
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Patten vs the AMA

Editor's Note: The following editorial was published in WMJ, Volume 14, No. 12, p. 514-515, May 1916

At the present writing there is being tried in Chicago one of the most important cases which has been before the Courts for many years. The Pattens, owners of the Chattanooga Medicine Company which manufactures Wine of Cardui, and other Patent Medicines, are suing [sic] the AMA (American Medical Association) for \$300,000 damages for alleged libelous statements in regard to Wine of Cardui published in the Propaganda for Reform Department of the Journal AMA. The suit, so it appears to us, is after all the fight of men making their money by duping ill women, against the forces which stand for decency, honesty, and preservation of the lives of women.

We understand that both sides have been preparing for months for this fight. The Pattens, as representatives of the whole order of those who gain their millions by advertising and selling Patent Medicines, are really representing all the Patent Medicine interests. Should this suit go against them, it might well sound the death knell of the whole nefarious Patent Medicine business.

The testimony is voluminous already and the suit is only begun. We have marked one circumstance as the trial has gone on, that is, that not all newspapers contain notices of the progress of the trial. Further, that only those newspapers which have cleaned their pages of objectionable quack-medicine advertisements publish any of the doings at the trial.

It makes us wonder how long we are going to stand the entrance into our homes of the newspaper which carries on every page prominent advertisements of patent medicines and quacks, some of which are disgusting and almost all are false and misleading. From what we see of some first-class newspapers, we are led to believe that they can be and are successful business enterprises in spite of the fact that they refuse the advertisements of quacks and patent medicines. It does not seem necessary for a newspaper's existence that it lend itself as a party to deceive the sick. It does not need the money of those who prey upon the ills of humanity.

This particular trial is important for the public, not for us as physicians and surgeons. Cases of illness which have used Patent Medicines eventually seek our advice in the end, provided they do not die while

taking the medicine. The charge thrown at the Medical Profession by the adherents of cults and isms, that our activities against them are due to curtailment of business, is too absurd to notice. We lose nothing, but it makes one boil inside to see patients reach the last stages of some chronic disease after having been for months either taking some Patent Medicine or taking treatment (?) from some quack.

We hope with all the hope that is in us, that Patten loses his suit. We hope the Federal Government will indict him for misbranding his Wine of Cardui, which on his own admission is not wine.

Should the Patent Medicine interests lose, it will mean that thousands of lives will be saved much suffering and thousands of lives will be prolonged.

• • •

That 1-cent verdict

That 1-cent verdict returned by the jury in the Wind of Cardui case against the American Medical Association teases us to thought...

Both sides claim it as a victory. The defendant feels that, in view of the large amount demanded, a verdict of 1 cent is equivalent to a verdict in its favor. The plaintiff, on the other hand, concerned not only with the damages sued for, but presumably with the good name and reputation of the preparation, thinks that even a 1-cent verdict is a vindication.

As the jury has so far shed no particular light on the psychology responsible for the decision, we must assume that it thought the American Medical Association was wrong but not wrong enough to hurt and that the plaintiff was right but not right enough to help very much.

Incidentally, and irrespective of the merits of this particular case, it is permissible to suggest that the American Medical Association will hardly find its prestige diminished among good citizens by its opposition to the sale of propriety medicine containing a marked percentage of alcohol.

—Chicago Herald (*Reprinted in WMJ, Volume 15, No. 3, p. 83, August 1916.*)

WPS Medical Director Helps Break Down Barriers to Advance Care Planning

Jennifer Wieman

In the space of just 2 years, 1999 to 2001, Michael Ostrov, MD, MS, lost his father to pancreatic cancer and then his sister to colon cancer. And while his sister had an advance directive in place, his father did not.

"All of a sudden you're in the midst of this very chaotic time, where you're having to help your father make all these decisions—what's right, what's wrong, how fast you have to make them. If we'd had the opportunity to have that kind of conversation ahead of time that would have been wonderful," Dr Ostrov said.

Having that conversation is a part of advance care planning (ACP)—the ongoing process of reflecting on, understanding and discussing future medical decisions, including end-of-life preferences.

Over the past 4 years, Dr Ostrov has helped to further advance care planning throughout Wisconsin. He's done this through his involvement with Honoring Wisconsin (HCW), the Wisconsin Medical Society's ACP initiative, when two of the health care organizations for which he held leadership roles became active participants, and in his current position as medical director of network and quality at WPS Health Solutions in Madison. It's because of Dr Ostrov's cumulative efforts toward promoting advance care planning statewide that he was honored with the Wisconsin Medical Society's 2016 Physician Citizen of the Year Award during its Annual Meeting, April 2-3.

The mission of HCW is to promote the benefits of and improve processes for advance care planning across the state, in health care settings and in the community—something that resonates deeply with Dr Ostrov. It harkens back to not only his experiences with his father and sister,

but also to his earlier years as a family physician at Group Health Cooperative-South Central Wisconsin (GHC-SCW) in Madison. There, he saw the full spectrum of human life—from delivering babies to caring for people at the end of life.

In 1990, Congress passed the Patient Self-

understand the question or know how it relates to the choices available to them. In order to get over that barrier, there needed to be a "safe space," where people could share their values and preferences for their future medical care with those closest to them.

Everybody [in health care] came to realize that you just can't just tell a person, "Well, here's a form, we'd like you to take it home and fill it out and then bring it back in because we want it in your chart." That was unsuccessful the majority of the time.

—Michael Ostrov, MD, MS

Determination Act, requiring patients to be informed of their right to make their medical wishes known to their families and physicians through an advance directive. However, little changed after the law was enacted, because people were unsure how to talk about their medical wishes and preferences with their families and friends on their own. Doctor Ostrov witnessed this first-hand with his adult patients.

"Everybody [in health care] came to realize that you just can't just tell a person, 'Well, here's a form, we'd like you to take it home and fill it out and then bring it back in because we want it in your chart,'" he said. "That was unsuccessful the majority of the time."

Doctor Ostrov added that questions in an advance directive, such as whether a person would want artificial respiration or feeding tubes, are difficult for people to answer because they often don't feel comfortable or they don't fully

Gundersen Health System's Respecting Choices® First Steps® model, which includes a structured facilitator training curriculum, did just that.

"It is a brilliant idea," Dr Ostrov said. "Train facilitators to help people and their loved ones have these sensitive conversations about what they want when the time comes to make decisions about [their] treatment in the face of life-limiting illness."

The model is about more than just training facilitators, however. It also focuses on system redesign to make having these conversations possible.

Started in La Crosse in 1991, Respecting Choices® is an internationally recognized evidence-based ACP model of care that today is in place in more than 80 communities throughout the United States. It has been adopted throughout Australia and has initiatives in such countries

as Germany, Singapore, and Spain. According to Respecting Choices®, 96% of patients in La Crosse have engaged in advance care planning and have an advance directive in their medical record.

When the Wisconsin Medical Society (Society) launched HCW in 2012, it adopted the Respecting Choices® First Steps® model. GHC-SCW—where Dr Ostrov had transitioned from a family physician to full-time medical director—was one of the first 6 organizations to participate. Excited that the Society and HCW were developing a statewide approach to advance care planning, Dr Ostrov knew his organization had to be a part of it.

“To me, why we got involved and why this happened was because of the terrific program that the [Wisconsin] Medical Society set up. Otherwise it would have been something I read about and knew about, but would have never had the time to turn my attention to,” he said.

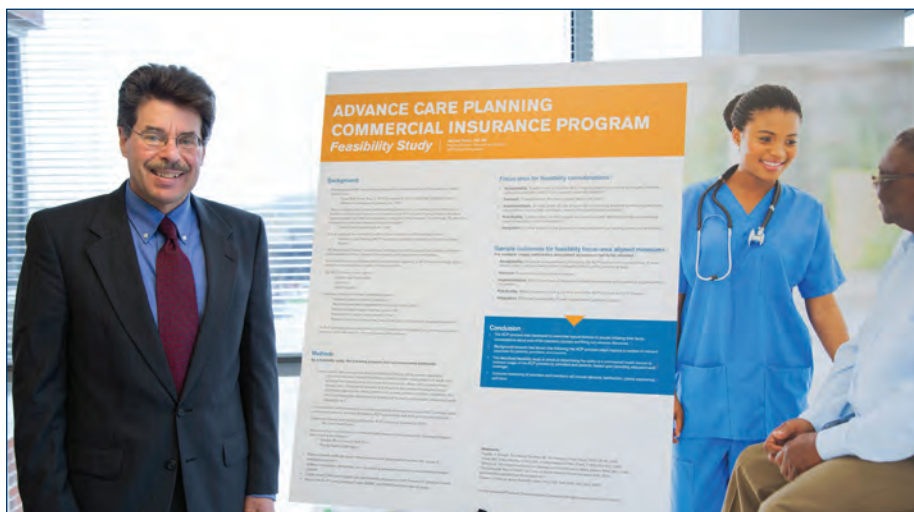
GHC-SCW’s structure as a staff model health plan was another major point in favor of establishing an ACP program there, according to Dr Ostrov. It was just a matter of allocating existing resources.

“We had the resources to make phone calls to people to say, ‘We have a new advance care planning service that your doctor recommends for all patients. Would you like to talk more about this when you come in?’ We had the ability to dedicate time in the staff’s office schedule so that the nurse [a trained facilitator] could meet with people for an hour or more,” he said.

Initially, GHC-SCW contacted patients age 60 and older, who were coming for physicals or a “Welcome to Medicare” visit about advance care planning. Today, it has 9 facilitators on staff, and patients 18 and older can schedule an appointment with a facilitator through their GHC clinic.

In 2013, Dr Ostrov left GHC-SCW to become the chief medical officer (CMO) at Agrace Hospice and Palliative Care in Madison and Janesville. As a health care agency devoted to treating patients with life-limiting illness, he recognized immediately that Agrace was a natural fit for implementing an ACP program.

Doctor Ostrov served as cochair of Agrace’s implementation team when the organization became one of HCW’s participating organiza-



Michael Ostrov, MD, MS, medical director of network and quality at WPS Health Solutions in Madison, was honored with the Society’s 2016 Physician Citizen of the Year Award for his efforts in advancing the conversation with regard to advance care planning and end-of-life care in Wisconsin.



Honoring Choices
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In just 4 years, HCW has grown to include 29 participating organizations across Wisconsin. It’s estimated that more than 10,000 individuals have discussed their future medical decisions, including end-of-life preferences, with trained HCW facilitators. For more information, visit www.honoringchoiceswi.org.

tions later that year. At HCW’s “Sharing the Experience” conference in 2014, Agrace reported on its success with its Community Advance Care Planning presentations, during which Agrace facilitators engaged with many multigenerational families.

But it was in Dr Ostrov’s next leadership role that he said he had a “light bulb” moment. In February 2015, he joined WPS as medical director and realized there was another barrier yet to be breached—making advance care planning a service covered by insurance.

“If you really wanted to have this [advance care planning] happen in a large way, what the doctors do in their offices has to be respected. It has to be compensated,” he said.

So, Dr Ostrov and a team at WPS worked to make that happen, and in September 2015, WPS became one of the first health insurance organizations in the country to begin paying for ACP

services. The following month, the Centers for Medicare and Medicaid Services (CMS) included advance care planning reimbursement in its 2016 Physician Fee Schedule Final Rule. It went into effect January 1, 2016. Doctor Ostrov said that prior to the actions by WPS and then CMS, hospitals and other health care entities absorbed the cost of building and sustaining an ACP system.

Other barriers to advance care planning continue to exist, but through the determined efforts of Dr Ostrov, and many others like him, advance care planning has thrived in Wisconsin.

When his sister developed colon cancer, Dr Ostrov said that the circumstances surrounding her end-of-life care were vastly different compared to his dad. For one thing, the family had time on its side.

“We were able to pull the family together, particularly once we had involved hospice, and had the right kinds of conversations as new things kept occurring that helped her decide what to do and what not to do and feel good about it,” Dr Ostrov said. “We felt like we were much more on top of what the choices were and how to make them, as opposed to just being in the reactive mode.”

Because advance care planning isn’t just filling out a form—it’s all about the conversation.

• • •

The name “Honoring Choices Wisconsin” is used under license from the Twin Cities Medical Society Foundation.

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Systems Change and Local Alliances to Address Community Challenges

John J. Frey III, MD, Medical Editor

In the past few decades, public policy and family and patient advocacy have increased the visibility of mental health problems in our communities. One of the effects of the Affordable Care Act (ACA) has been to insist on what is often termed “parity” for mental health services within insurance plans and programs. Simply put, mental health services—with particular emphasis on substance abuse—are no longer add-ons or marginal services but should be central to patient care. Payment has been a formidable obstacle to dealing with one of the most challenging aspects of community health and one of the most difficult daily problems for primary care clinicians. Even though common sense says that prevention should save money and lives, the costs and savings of increasing mental health services are still not clear 4 years after the ACA went into effect.¹

Even with financial changes, lack of access to mental health services continues to plague patients. Much of the responsibility for managing mental health problems falls to primary care clinicians, where models of collaborative behavioral health allow patients to receive both counselling and medical management for the majority of their problems at the point of primary care service.² However, the management of severe depression and schizophrenia is often challenging beyond the capability of most nonpsychiatrists and requires substantial social services for patients.

Molfenter and colleagues describe a systems approach to organizing county-level human services and community and contracted mental health agencies with a quality improve-

ment strategy for decreasing psychiatric readmissions. Their change model demonstrated substantial decreases in 30-day readmissions in targeted counties in the state over a 4-year period.³ Their model encouraged counties to choose from a variety of approaches that best fit the mix of needs and resources. All but 2 of

Molfenter’s study did to address community-wide health problems rather than compete with each other for market share. One nationally recognized recent example of communities and health systems collaborating for success was the city of Milwaukee winning the White House Healthy Communities Challenge in 2015

Encouraging student self-reflection and self-assessment rather than leaving it up to their busy teachers and the Dean’s office seems like a step forward in adult learning and good preparation for the rest of their lives.

the 23 participating counties showed year-to-year decreases in readmissions.

While participation was voluntary, counties with the highest readmission rates were encouraged to participate. Their process and their results show how data from state hospitals and the public health department can help frame the problem while reliance on local partnerships and actions found appropriate solutions. One of the suggestions for making the ACA more successful in improving access and controlling costs is to encourage state experimentation that recognizes regional differences in everything from resources to culture. One wishes that regional health systems could act as collaboratively as the counties in

for the largest increase in percentage of eligible people enrolled in the insurance exchange of the Affordable Care Act of any large city in America.⁴ Competition has a place, but collaboration can get a lot more done.

Another alliance that might improve long-term health is outlined in the article from Traun and colleagues,⁵ where they interviewed pediatricians about attitudes and approaches to children and adolescents who were overweight or obese. While physicians felt they were adept at recognizing at-risk children and were aware of the clinical tools and patient education in their offices, they acknowledged that more work with families and community resources would help them and their patients be more success-

ful at weight control. Certainly the county-level data on childhood obesity is available, and pediatricians might take a similar approach as the mental health community to increase countywide collaborations between clinicians and what Truan and colleagues call “meaningful community connections with local organizations and advocates” in addressing an issue that we know is as much social as biomedical. Systems change will be necessary for success here, too.

A brief report by Morris et al reviews a survey of physicians statewide who raise some concerns about the value of electronic health records in documenting obesity and obesity management—primarily having sufficient time to do it.⁶ While respondents knew of office- and hospital-based ways of educating patients about obesity, they admitted that they felt discouraged about whether they would make a difference. While the survey had a low return rate, it likely reflects the frustration clinicians feel and the lack of clear evidence-based interventions for obesity in their patients—a problem over which they have little control.

The Infamous Letter

The “dean’s letter” (which now goes by a much longer and more descriptive title) is the first of a long list of letters that others will write for us and about us during our professional careers. Job references, promotions, awards, and other life changes require some type of personal view of who we are and whether we are qualified for what we have applied or for what we have been nominated. My generation’s evaluations and letters were secretly written and transmitted. On one of my clinical rotations, I remember the chief of service greeting me with, “Frey, oh yes, I have heard of you ...” and not in a complimentary tone, either. So, it is quite a breakthrough for students not only to see, but to contribute to their letter in an experiment at the Medical College of Wisconsin by Holloway and colleagues.⁷ The Dean’s office used the student contributions to the Unique Characteristics section of their letter to construct the final draft. I am sure the deans could separate chutzpah from the overly modest. Encouraging student self-reflection and self-assessment rather than

leaving it up to their busy teachers and the Dean’s office seems like a step forward in adult learning and good preparation for the rest of their lives.

A brief report by Adsit and colleagues⁸ found that more than half of the cancer clinics in a statewide survey did not address smoking cessation with patients. Most, but not all, assessed smoking at each visit. These data are surprisingly consistent with national data showing that 40% of cancer clinics do not offer treatment for smokers. Fortunately, the investigators offered, and all clinics accepted, a plan for academic detailing of tobacco cessation programs with the hope that it will increase their counseling and interventions with patients.

Finally, 2 surgical case reports highlight both unexpected and highly problematic conditions that should be considered in patients with usual presentations of coronary artery disease⁹ or in patients whose liver transplant is functioning less well than expected.¹⁰ In the first instance, the patient had lived almost twice as long as the norm for patients with his risk factors and his anatomical findings for a coronary anomaly. He should consider himself very fortunate, since others with the same anomaly were described in autopsies. In the case of liver transplants, which are increasing across the country, screening patients for portal steals prior to transplant should change the surgical approaches and decrease the risk of a failed transplant. With the high costs of transplant surgery and medical management, increasing success rates will be better on many fronts.

...

Editor’s Note: *The WMJ is fortunate to welcome Sarina Schrager, MD, as associate medical editor, as well as 3 new members to the journal editorial board. Doctor Schrager, who has served on the editorial board since 2008, is a professor of Family Medicine at the University of Wisconsin School of Medicine and Public Health. Vijay Aswani, MD, PhD, is an internist/pediatrician with Marshfield Clinic; William J. Hueston, MD, is a family physician and senior associate dean for academic affairs at the Medical College of Wisconsin; and Richard H. Strauss, MD, is a pediatric intensivist with Gundersen Health System in La Crosse. With the increasing interest in the*

journal and the increasing number of manuscripts we have been seeing, we welcome their involvement.

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Reducing Psychiatric Inpatient Readmissions Using an Organizational Change Model

Todd Molfenter, PhD; Tim Connor, MS, MA; James H. Ford II, PhD; John Hyatt; Dan Zimmerman

ABSTRACT

Introduction: Thirty-day hospital readmission rates have become a quality indicator for many regulators and payers, but published accounts of reducing these rates across a patient population are lacking.

Objective: This article describes and evaluates the Wisconsin Mental Health Readmissions Project, which aimed to reduce psychiatric inpatient 30-day readmission rates in Wisconsin.

Methods: Nineteen county human services boards representing 23 of Wisconsin's 72 counties and 61% of the state's residential admissions participated in a statewide quality improvement collaborative from January 1, 2010 to December 31, 2013. Participants applied a standardized organizational change model, called NIATx, in the context of a multicounty quality improvement collaborative to reduce 30-day readmission rates. Readmission rates were tracked through national and state databases, using 2009 as a baseline, and analyzed using a chi-square analysis to test the proportion of means. The study team compared readmission rates of Wisconsin counties that participated in the statewide collaborative with those that did not.

Results: Between 2009 and 2013, the 30-day readmission rates in Wisconsin declined significantly for counties that participated in the project when compared to those that did not (2009-2013) [$\chi^2(4) = 54.503$, $P < .001$], based on a 2.5% decline for participants vs a 0.7% decline for nonparticipants.

Conclusions: Reductions to behavioral health inpatient readmission rates beyond individual case examples have been difficult to document. This analysis evaluates a method that Wisconsin behavioral health providers applied as part of a multicounty program addressing readmission rates. The findings highlight quality improvement program design elements and interventions to consider in reducing inpatient behavioral health readmissions, as well as the need for further research on this complex systems issue.

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INTRODUCTION

Unplanned hospital readmissions have been set forth as a national¹ and international^{2,3} indication of poor quality of care. The Patient Protection and Affordable Care Act, the US Department of Health and Human Services, and the Centers for Medicare and Medicaid Services all list 30-day inpatient readmission rates as a quality measure.⁴

Evidence suggests that 9% to 48% of all inpatient readmissions are preventable.⁵ A troubling sign for the psychiatric field is that 40% to 50% of patients discharged for depression and schizophrenia are readmitted within a year of discharge.⁶ Patients with schizophrenia and other psychotic disorders also have the second highest 30-day inpatient readmission rate of all the major diseases, at 22.3%.⁷

Multiple factors contribute to psychiatric hospital inpatient readmission rates, and demographic and clinical characteristics alone have had limited efficacy in explaining readmission behavior.⁶ Several studies have suggested that poor organizational processes contribute to hospital

readmissions. These studies have identified poor processes for medication adherence management, patient education, and follow-up care after discharge as strong predictors of inpatient psychiatric admissions.^{8,9}

Even with knowledge of the processes that can reduce psychiatric readmission rates, implementing new processes can be difficult in health care.¹⁰ Attempts to prevent hospital readmissions, beyond individual organizational efforts, have had limited impact on readmission rates across a statewide network of providers.¹¹

One method for improving performance across a network of providers is through a quality improvement collaborative

that applies an evidence-based organizational change model.¹² The Wisconsin Mental Health Readmissions Project used this approach. The aim of this analysis is to evaluate the project's possible effects on 30-day readmission rates for mental health issues.

METHODS

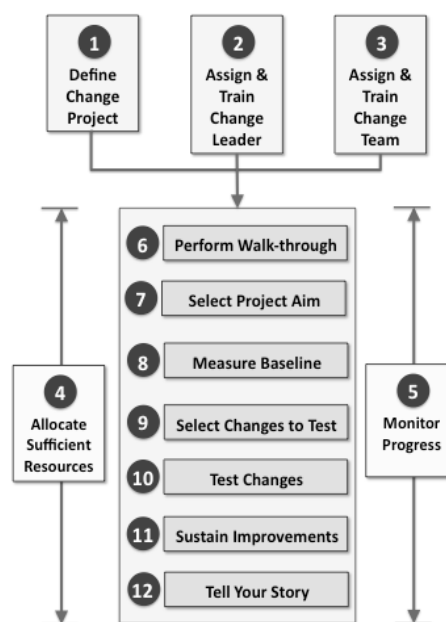
This project was not submitted for institutional review board approval because it was designed as a quality improvement project. In the 30-day readmissions rates reported, no patient health information was used, no surveys were collected, and all data was reported using aggregate public health data.

The intervention consisted of creating a multiorganizational quality improvement collaborative to implement a standardized organizational change model. In Wisconsin, county human services boards provide community mental health services either directly or through contractual arrangements with providers. From 2010 to 2013, 19 county human services boards representing 23 of Wisconsin's 72 counties and 61% of the state's residential admissions participated in a statewide collaborative to reduce 30-day psychiatric inpatient admissions. A self-selection sampling strategy was used, with the Wisconsin Department of Health Services (DHS) inviting the county boards to participate in the project. Participation was voluntary with no admission fee, but counties with large populations or high readmission rates were encouraged to participate. The project's target patient population was psychiatric involuntary and voluntary inpatient admissions at risk of 30-day readmission upon discharge. The Center for Health Enhancement Systems Studies at the University of Wisconsin-Madison managed the collaborative and provided training and support for use of the NIATx (formerly the Network for the Improvement of Addiction Treatment) organizational change model.

The NIATx model was developed and tested at the Center for Health Enhancement Systems Studies in 2 large national trials (Figure 1).^{13,14} It is based on the following practices: (1) develop a measurable aim; (2) obtain executive sponsor support for the aim; (3) conduct a patient simulation (or walk-through) of the hospital discharge process; (4) seek encouragement and ideas from outside the organization; (5) select an influential internal change agent to lead the change project; and (6) conduct pilot tests or plan-do-study-act (PDSA) rapid cycles to try out changes until the aim objective is met. Comparing data before, during, and after the PDSA cycles validates the effectiveness of the changes tested.

Administrators and clinical service providers at the mental health services sites typically formed a change team that would meet every 1 to 2 weeks and used the NIATx model to implement new practices to impact psychiatric readmissions rates. Each site assigned a change leader, who was typically a clinical supervisor, to manage the project, and an executive sponsor, who typi-

Figure 1. NIATx Organizational Change Model



cally was the director (or chief executive officer) of the organization, to oversee but not directly participate in the change process.

The Wisconsin Mental Health Readmissions Project used a multicounty quality improvement collaborative structure to provide education and support for implementing the NIATx organizational change model. The collaborative structure runs on an annual cycle that begins with an in-person kickoff meeting, continues with coaching support and peer networking while change teams conduct their projects, and concludes with a summation meeting. The kickoff meeting introduces the NIATx organizational change model and promising practices to test (Table 1). In initial years (2010-2011), the promising practices presented were evidence-based practices taken from the literature. In subsequent years, additional practices that counties had successfully used were added to this list.

After the kickoff meeting, the county change teams participate in monthly phone consultations with an expert coach, periodic face-to-face meetings with an expert coach, and monthly all-participant educational and networking calls. Coaches are individuals who have experience leading a change team using the NIATx model and who received a half-day of coach training. During coaching consultations, coaches help organizations think through key issues, provide technical assistance on using the NIATx model to test the changes being considered, and monitor the project's progress. The vast majority of the change team activity occurs independently within their organization.

The summation meeting at the end of the year is open to both participating and nonparticipating providers. The meeting

Table 1. Strategies to Prevent Psychiatric Hospital Readmissions

Treatment Phase	Practices
During Stay	<p>Apply evidence-based practices to increase engagement (eg, motivational interviewing, contingency management).</p> <p>Develop a crisis plan.</p> <p>Use multidisciplinary case conferences to review high acute cases and determine post-discharge needs.</p> <p>Develop discharge objectives at admission.</p>
Discharge Process	<p>In the discharge session, patient meets with the social worker and nurse to review appointments, crisis plan, community resources, and medications.</p> <p>Warm hand-off to outpatient services.</p>
Post-discharge	<p>Case manager meets with patient 24 hours after discharge or phone follow-up within 48 hours of discharge.</p> <p>Reduce wait time to outpatient services.</p>
Pre-readmission (For Patients Seeking Care)	<p>Utilize sub-acute crisis beds for observation and assessment.</p> <p>Implement crisis line.</p> <p>Develop process where patients presenting to emergency department with mental health issues can be seen by mental health providers the next day.</p> <p>Give crisis response team member a smart phone to reduce the time needed to respond to police officer calls and to create a single point of entry.</p>

provides a forum for the participating counties to exchange ideas with peers about their change projects' efforts to reduce 30-day readmission rates. The logic model of the described approach is that the NIATx model is used to implement new practices and the new practices are then supposed to affect readmission rates.

Data Sources

The DHS Mental Health Patient Utilization databases provided demographic information and 30-day readmission rates for each county board area by year for 2009-2013, with 2009 serving as the baseline year. These data track mental health services utilization trends in the state. They also provide the foundation for the National Outcome Measures data reported to external agencies such as the Substance Abuse and Mental Health Services Administration (SAMHSA). SAMHSA's Unified Reporting System for 2009-2013¹⁵ provided the most recently available US data, with Wisconsin data removed from the dataset.

Measures

The Unified Reporting System data definitions are applied to inpatient demographic statistics related to age, gender, and race/ethnicity. The performance measure of 30-day readmissions is based on inpatient admissions that occurred within 30 days of discharge divided by inpatient discharges. This measure includes the following publicly served patients: all voluntary and involuntary civil inpatient admissions, including emergency detentions (Chapter 51); inpatient admissions in local, county-owned or

contracted hospitals, as recorded in the Human Services Reporting System Mental Health module; and inpatient admissions to the 2 state mental health institutes (Mendota and Winnebago). Not included in the data are emergency department hospital admissions that did not lead to an inpatient psychiatric admission, and medically managed inpatient admissions. The inpatient admissions have been unduplicated within and across the Human Services Reporting and mental health institutes' data systems. If a patient has multiple readmissions within 30 days, all readmissions are counted in the rate.

Analysis

To clarify the effect of the NIATx organizational change model used in the context of a multiorganizational collaborative, we compared readmission rates for counties that participated in the Wisconsin Mental Health Readmissions Project with those that did not. All participating counties were part of the collaborative and received technical assistance regarding the NIATx model. A chi-square analysis evaluated changes in 30-day readmission rates in counties that participated in the collaborative and those that did not from 2009 to 2013.

The programmatic changes the counties made were documented using 2 sources: qualitative data collected by the technical assistance coaches during their monthly phone calls, and self-report data from summary reports the counties generated for this project at the end of each year of the collaborative. The Eisenhardt Iterative Process of Building Theory from Case Study Research¹⁶ was used to document the changes applied to reduce readmissions.

RESULTS

From 2009 through 2013, 45.7% of the state's psychiatric inpatient admissions were female (54.3% male). The breakdown by race was white=75.3%, black=16.7%, Hispanic 5.1%, American Indian=2.6%, Asian=.2%, and Pacific Islander=.1%. The average patient age for inpatient psychiatric admissions was 30. The breakdown by age was <18=16.5%, 18-25=21.5%, 26-35=19.8%, 36-49=22.7%, 50-69=16.5%, and ≥70, 3.1%.

The decline in the 30-day readmission rates for the counties that participated in the project was 4.3% (decreasing from 12.4% to 8.1%) or a 34.8% change. For those counties not participating in the project, the percentage decline was .53% (decreasing from 7.53% to 7.0%) or a 7% change (Figure 2). The chi-square analysis found the proportion of readmissions from counties participating in the project compared to counties that did not participate changed significantly from 2009 through 2013 [$\chi^2(4) = 54.503$, $P < .001$]. In this analysis, the changes from 2011 to 2012 [$\chi^2(1) = 5.316$, $P = .021$] and 2012 to 2013 [$\chi^2(1) = 16.584$, $P < .001$] also were significant, while the changes to readmission rates from 2009 to 2010 and 2010 to 2011 were not. The average improvement in 30-day readmission rates of counties participating in the

project from baseline year to year 1 was -1.05%, from baseline year to year 2 was -1.53%, and from baseline year to year 3 was -3.14%.

The project sought to include larger counties. The 3 counties with the most discharges participating in the project were Brown (Green Bay) (n=517), Milwaukee (n=3694), and Waukesha (west Milwaukee suburbs) (n=737). From 2009 through 2013, these counties experienced decreases in 30-day readmission rates of 2.1%, 1.5%, and 1.8% respectively (Table 2). Key changes applied in 2 or more of these 3 counties included (1) implementing a discharge session where the patient meets with a social worker and nurse to review postdischarge appointments, crisis plan, community resources, and medications; (2) scheduling a patient meeting with a crisis manager postdischarge; (3) engaging patients in outpatient therapy postdischarge; (4) training police officers on how to manage crisis situations and whom to contact (in the case of admissions); and (5) providing short-term crisis beds to divert inpatient admissions. Over the course of the project, all county organizations adopted use of postdischarge services, and 17 of the 19 participating county organizations adopted crisis beds.

DISCUSSION

Counties participating in the quality improvement collaborative showed a greater reduction in their 30-day readmissions than those that did not. The NIATx organizational change model used by the counties has been associated with performance improvement in other multiorganizational change initiatives.^{13,14,17,18} This is the first effort, however, to report on use of the NIATx organizational change model to address psychiatric hospital readmissions. This demonstration project builds on the research demonstrating the use of state multiorganizational quality improvement collaboratives^{19,20} and describes how this method, combined with an evidence-based organizational change model, can be applied to address inpatient psychiatric readmissions. NIATx 200, another analysis of the use of the NIATx orga-

Figure 2. 30-Day Readmission Rates

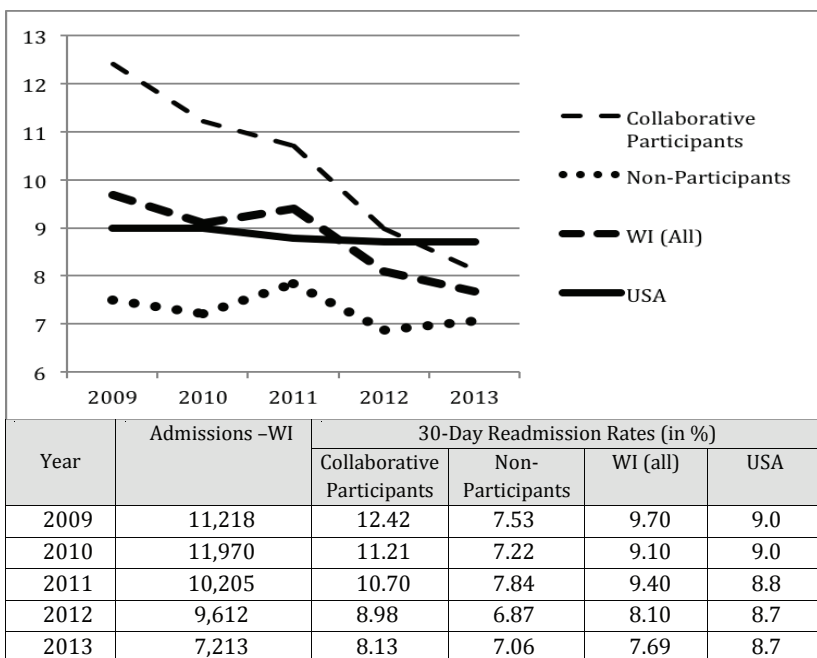


Table 2. County Human Services Board Statewide Collaborative Participants

County (City/Area)	Year Began	2013 Discharges	30-Day Readmission Rate the Year Prior to Participation	2013 30-Day Readmission Rates	Change From Year Prior to Participation to 2013
Brown (Green Bay)	2012	782	13.7%	11.6%	-2.1%
Dodge	2010	96	12.5%	5.2%	-7.3%
Door	2012	18	10.3%	5.6%	-4.7%
Iowa/Grant	2010	44	8.0%	2.3%	-5.7%
Jefferson	2011	68	11.5%	5.9%	-4.6%
Lacrosse	2010	43	4.5%	2.3%	-2.2%
Lafayette	2012	14	4.8%	14.3%	+9.5%
Marathon/Lincoln/Langlade (Wausau)	2011	503	3.0%	2.8%	-.2%
Milwaukee	2010	889	13.9%	12.4%	-1.5%
Outagamie	2013	260	5.0%	6.9%	+1.9%
Rock	2011	211	8.4%	2.4%	-6.0%
Sauk	2013	36	6.3%	2.8%	-3.5%
Shawano	2013	9	5.5%	0%	-5.5%
Sheboygan	2012	96	11.6%	9.4%	-2.2%
St. Croix	2012	69	5.6%	1.4%	-4.2%
Washburn	2012	4	0%	0%	0%
Waukesha (West Milwaukee Suburbs)	2010	517	8.0%	6.2%	-1.8%
Winnebago	2012	266	8.4%	7.9%	-.5%
Wood (Stevens Point)	2010	481	10.3%	8.7%	-1.6%

nizational change model applied in a multiorganizational collaborative, tested which elements of the technical assistance had the greatest impact: coaching, learning sessions (in-person education sessions), or group conference calls.²¹ The study found coaching and learning sessions achieved significant effects, with coaching

having the greatest impact.¹³ The group conference calls were not found to be effective and should be considered optional in the replication of this approach.

In other studies, psychiatric readmission rates have been related to system characteristics associated with size of service agency, geographic proximity to inpatient services, and accessibility to treatment services.^{22,23} Within the collaborative, county population and poverty level, number of county psychiatric inpatient discharges, existence of an inpatient psychiatric hospital in the county, and whether or not the county directly provided treatment services was compared against the bivariate variable of whether a county's 2009-2013 30-day readmissions rate change was above or below the state average of -1.4%. In this logistic regression, none of these system characteristics had a significant effect on the change in 30-day readmission rates.

However, at baseline, the NIATx counties had nearly a 5% greater 30-day readmission rate than the non-NIATx counties (12.42% vs 7.53%). A pronounced difference in the 2 cohorts is the size of the population served. The NIATx counties had, on average, 232 hospital admissions/year as compared with the non-NIATx counties at 84 hospital admissions/year. The smaller patient volumes and typically tighter budgets of the non-NIATx counties produced an environment where practices that yielded lower readmission rates were already in place at baseline.

In the collaborative, the counties employed practices found to reduce readmission in other studies and demonstrations such as postinpatient stay follow-up services, communication between inpatient and outpatient services,²⁴ and adding crisis acuity beds to circumvent referral to inpatient services.²⁵ Postresidential care follow-up with low-intensity services and improved communication between residential and other health care providers also have affected readmission rates in general health care, underscoring the potential generalizability of the reported approach.²⁶ Two promising practices that most smaller counties used and larger counties tended to adopt as part of this project are described below.

*24-hour follow-up after inpatient discharge.*²⁷ The Shawano County inpatient team worked on changes to provide postdischarge services following inpatient stays. The evidence-based and case examples from previous projects supported use of postdischarge follow-up, and the project listed postdischarge follow-up as a promising practice to consider, but noted variation in the timing, delivery, and content of follow-up activities. The Shawano County change team used PDSA cycles to test the following approaches: follow-up within 24 hours vs no follow-up, face-to-face follow-up vs phone, and use of a set script for follow-up vs no script. Their teams conducted the PDSA cycles with 5 to 10 patients each to determine which changes seemed most effective within their local environment, then monitored

the effectiveness of the selected changes over time. The changes they settled on were scheduling a face-to-face meeting and using a specific script within 24 hours of discharge. The expanded follow-up for discharged patients increased units of continuing care services provided from 414 units in 2012, on 119 admissions (3.5 units per admission), to 834 units in 2013, on 146 admissions (5.7 units per admission).

In another example, the Milwaukee County change team reduced readmissions from 20% to 11% by having a team member make face-to-face contact with a patient within 24 hours of discharge. This change was so successful that it is now standard policy.

*Establish a diversion program for crisis patients that provides lower acuity, less costly alternatives to inpatient mental health care for clinically appropriate patients.*²⁵ A walk-through of the crisis line phone system and staffing helped the Rock County change team increase "mobile" responses to mental health emergencies. Assigning paraprofessionals to answer the phones freed crisis workers to respond to emergencies in the field. Providing an in-person assessment at the emergency scene allowed for earlier intervention and increased options that diverted patients from psychiatric hospitalization. This set of changes resulted in a 74% increase in response to mobile requests (from 42 to 73 requests a month), a 36% decrease in psychiatric admissions (from 50 to 32 a month), and improved relationships with local law enforcement and the hospital.

These changes are not new to the literature on reducing readmissions, but they had not been tested previously by many of the county participants. When applied in this context, these practices reduced readmissions in the specific counties. The structural aspects of the NIATx organizational change model that facilitated an environment conducive to change were establishing executive sponsor and change leader roles. The process elements the sites and coaches described as important were conducting an initial walk-through of the process being addressed and using PDSA change cycles. The promising practices shared with participants were standardized (eg, postdischarge follow-up); however, implementation of these practices was guided by the results of the iterative PDSA tests. Participating counties did face barriers in implementing these processes. Counties were constantly challenged to find the time for change teams to meet, implement the changes, and collect the data to evaluate the impact of changes made. Counties or other entities wanting to improve upon readmission rates could consider applying the practices described in this evaluation. With this approach they could test ways to improve their preadmission activities, discharge planning, and postdischarge services.

The summative effect of the NIATx program and other environmental conditions occurring in the state was that readmission

statewide rates began at 9.70% during 2009 (the program's baseline year) and declined to 7.69% in 2013. From 2009 through 2013, a chi-square analysis found the proportion of readmissions from all Wisconsin counties, as compared to other states, changed significantly from 2009 through 2013 [$\chi^2(4) = 14.480$, $P < .002$].

Limitations

Various issues can influence inpatient psychiatric readmission rates, and the effects of this project represent some of many factors influencing readmission rates in Wisconsin. The trial could not control for all factors that might affect these rates.

The self-selection sampling strategy could introduce bias into the sample. It should be noted that the non-NIATx group was below the NIATx and the national average at baseline. Hence, some of the improvements could be attributed to the "regression to the mean" effect.²⁸ Yet, this phenomenon is more likely to be present with single-point data, rather than the serial data that was used in this study.²⁹ To better understand the influence of self-selection, an analysis of the patient demographic characteristics at baseline (2009) showed that the Wisconsin Mental Health Readmissions patient sample was significantly younger (34.1 years in NIATx vs 36.5 years in non-NIATx), had a higher percentage of females (46.5% in NIATx vs 43.7% in non-NIATx), was less affluent (\$50,616 average household income in NIATx vs \$51,350 in non-NIATx), and was more diverse (30.0% non-white in NIATx vs 10.6% in non-NIATx). More ethnically diverse populations have demonstrated higher readmission rates,⁶ suggesting the county human services boards participating in the project had greater challenges in addressing readmissions rates based on demographic mix of that sample. All the same, self-selection is a major confounder in that if all Wisconsin counties were randomized to the non-NIATx and NIATx groups, with equal representation of high and low utilizers, the results may not have been as pronounced as reported in this analysis.

Also, the data are based on administrative datasets, which have been found in some instances to be inaccurate.³⁰ That is likely not the case here, since the Wisconsin dataset is a long-term dataset reviewed by external agencies, and the data definitions used in the dataset remained unchanged during the time period reported in the analysis. Lastly, data are not presented on how much each change practice listed in Table 1 affected readmission rates. This project was not intended to measure the changes made with that precision, but to determine if the overall approach had an effect. In addition, organizations were encouraged to choose and test the changes they thought would be most effective. This method of practice selection introduces selection bias in testing the individual practices and, coincidentally, puts the emphasis of testing the intervention effect on the change model vs the specific changes.

CONCLUSIONS

Reducing expensive psychiatric inpatient readmissions remains a persistent challenge in Wisconsin and other states. Readmissions represent declining patient health and can be burdensome for caregivers and families. Many local efforts over the years have worked to reduce unnecessary psychiatric inpatient readmission practices in other states, but examples demonstrating statewide reductions based on a method or policy have not been identified. The findings reported from the Wisconsin Mental Health Readmissions Project provide insights into how a quality improvement collaborative to implement a standardized change model can help county boards implement a series of improvements and achieve reductions in 30-day psychiatric readmission rates. For other states or provider networks, future applications of this approach should attempt to replicate these findings and achieve similar results over a shorter time frame.

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Results of Student-Generated ‘Unique Characteristics’ on the Medical Student Performance Evaluation

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ABSTRACT

Importance: The Medical Student Performance Evaluation (MSPE)—formerly called the dean’s letter—is an important tool for residency program directors to use in assessing student qualifications for both invitation to interview and construction of their rank order list. Many institutions are now allowing students to construct their own Unique Characteristics (UC) section for the MSPE. This study addresses the results of allowing students to construct their own UC.

Objectives: The goal of this study was to allow students to voice their thoughts regarding their participation in the construction of the UC section of the MSPE. The survey evaluated student attitude toward, value of, and support for the UC section.

Method: We conducted a cross-sectional survey of all fourth-year medical students at the Medical College of Wisconsin during the 2014-2015 academic year. Responses were received from 66% of students (133 out of 199). We developed a question bank to cover the aims of the study—to assess student perceived value, experience writing, and support for the UC section.

Results: There was agreement among students that their participation will positively affect their candidacy for interview selection and success in the match. Overall significance of regression model $P = .001$, $R^2 = .60$. Additionally, students believed they had an advantage over applicants at other schools without the opportunity to draft their UC. Other findings included that men found the task more challenging, psychiatry applicants were least satisfied with the character count, and emergency medicine applicants voiced the lowest value for the UC section.

Conclusions: The present study supports, in general terms, the utility and value of students drafting their own UC section of the MSPE. Future investigations should focus on expanding to other schools, comparing public to private institutions, and refining the interspecialty comparisons.

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INTRODUCTION

The dean’s letter, officially known as the Medical Student Performance Evaluation (MSPE), has been a standard element of the medical student residency application since at least 1970.¹⁻³ Considerable efforts have been made to create a uniform dean’s letter across all medical schools because of multiple reports declaring that it held minimal value to predict future performance due to inconsistent format and vague remarks.⁴⁻⁶ A set of guidelines were implemented by the Association of American Medical Colleges (AAMC), most recently in 2002, to improve the significance of and standardize the MSPE.⁶

In recent years, there has been less importance placed on the MSPE. According to the 2012 National Residency Match Program Program Director Survey, the MSPE was ranked eighth of 31 criteria in selecting applicants for interview.⁷ Increasing student involvement in constructing the MSPE may enhance its function in the application process.

The MSPE is composed of 6 sections: Identifying Information, Unique Characteristics (UC), Academic History, Academic Progress, Summary, and Appendices. The UC section allows medical students to disclose nonacademic qualifications for residency and provide a narrative about any challenges or hardships faced during medical school. In particular, students’ participation in extracurricular activities, research, community service, and campus life enrichment are highlighted in the UC section.⁶ Prior to the AAMC guidelines, this content was reserved for a section of the dean’s letter dedicated to activities and research projects.

A previous survey (n = 103) by the principal investigator found

that 47% of schools currently allow their students to help write the UC, while another 28% would consider offering this opportunity. Thus, 75% are at least agreeable to the idea of students crafting their own UCs. Despite the extent of student participation, there are no reports of students' opinions on their inclusion in this process. Prior to the Medical College of Wisconsin (MCW) Class of 2015, senior medical students played a limited role in writing the UC section. Instead, the content was collected from an activity transcript that was updated annually by students. Starting with the Class of 2015, students were to share their extracurricular activities in 6 categories limited to 750 characters each. The categories were Research, Publications, Presentations, Leadership, Community Service, and Organization Memberships. To ensure accuracy, the Dean's offices verified activities.

This study used a survey to evaluate student attitude, value, and support of their participation in the construction of the UC section. Beyond performance in courses and clerkships, the US Medical Licensing Examination and personal statements, students have little voice when applying to residency. Their involvement increases the student role, and this study evaluated their opinion of the increased engagement.

METHODS

Study Design/Population

This was a cross-sectional survey of all fourth year medical students at MCW during the 2014-2015 academic year. Students were identified by gender as suggested by MCW faculty, based on anecdotal experiences that women seem less likely to "self-promote." In addition, students were identified by their choice of specialty.

Survey Development

The authors developed a question bank to cover the aims of the study—to assess student perceived value of, experience writing, and support for the UC. The pool of questions was reduced to 20 questions reworded as statements. A group of second-year MCW students reviewed the survey for readability and rigor, and it was then edited. Prior to its release, the associate dean for Student Affairs/Diversity provided an independent review of the survey for institutional review board (IRB) purposes. This project was determined exempt by the MCW IRB for human subjects research. The final survey asked students to report agreement with each statement on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). It was designed to be completed in 5 to 10 minutes.

Study Procedure

The survey was distributed via e-mail by the Office of Academic Affairs on October 27, 2014. Automatic reminders were sent out for 4 consecutive weeks and the survey closed on December 1, 2014. Student e-mail addresses were procured through the Office

of Student Affairs. Responses were kept anonymous except to analysts who had access to the Association of American Medical Colleges identification number (AAMC ID) to determine responders versus nonresponders. The only identifying information asked in the survey was gender and choice of specialty.

Analysis Plan

Survey responses were collected on SPSS Survey Manager 7, and the raw data was extracted to SPSS 21.0 (IBM Corporation, Armonk, New York) for statistical analysis.

Kruskal-Wallis analysis of variance (ANOVA) was used to compare student responses split by gender and specialty. Follow-up pairwise differences in median scores were determined with Mann-Whitney *U*-tests. Principal components analysis with a Varimax rotation was used to group items into components. Inter-item reliability analysis assessed the internal consistency of the responses via Cronbach's alpha. Multivariate linear regression determined which of the 19 survey items predicted the outcome: "My drafting of the UC will have a positive effect on my candidacy for interview selection and success in the match," labeled as item 20.

The specialties were categorized into anesthesiology, emergency medicine, family medicine, internal medicine, pediatrics, psychiatry, surgery, and "other" (medicine-pediatrics, neurology, obstetrics/gynecology, ophthalmology, orthopedic surgery, otolaryngology, pathology, physical medicine and rehabilitation, radiation oncology, radiology, surgery, and urology).

RESULTS

A total of 131 students (78 male and 53 female) out of 199 completed the survey, which yielded a response rate of 66% of the total class. Table 1 reports the percentages and medians/interquartile ranges (IR) for all 131 survey responses to the individual items. The highest percent agreement, which includes agree and strongly agree, was obtained on 3 statements: item 2, regarding satisfaction with the categories of the UC (76%); item 9, regarding the UC as an important part of the MSPE (71%); and item 15, regarding appreciating the opportunity to emphasize what the respondent felt were the important aspects of the application (70%).

Two items yielded statistically significant differences when split by gender, with men rating a slightly higher agreement level than women. (Note: Given that median [IR] scores are often numerically identical for groups with statistically significant differences in medians, percent agreement scores also are reported below to more easily detect the differences in score distributions.) For item 11, 47% of men (median [IR] = 3.0 [1.0]) and 30% of women (3.0 [2.0]) agreed that they drafted the UC of their MSPE so that it pertained to their specialty of choice ($P = .047$). For item 17, 17% of men (3.0 [1.0]) and 6% of women (2.0 [1.0]) agreed that the UC should be eliminated from the MSPE ($P = .013$).

Table 1. Percentages and Medians (Interquartile Ranges) for Medical Student Performance Evaluation (MSPE) Items (N=131) Based on a 5-point Likert Scale

Item	Strongly Disagree % =1	Disagree % =2	Neither Agree nor Disagree % =3	Agree % =4	Strongly Agree % =5	Median (IR)
1. I was satisfied with the amount of guidance provided to develop the UC of my MSPE.	2	18	27	37	15	4.0 (1.0)
2. I was satisfied with the categories of the UC.	1	6	18	59	17	4.0 (0.0)
3. I was satisfied with the character limit for each category of the UC.	2	14	18	50	17	4.0 (1.0)
4. Writing the UC was a challenge.	1	13	27	43	17	4.0 (1.0)
5. I would have appreciated more instruction for constructing the UC of my MSPE.	0	17	29	40	15	4.0 (1.0)
6. I am aware that not all students construct their UC of the MSPE.	2	18	16	47	17	4.0 (1.0)
7. Drafting the UC of my MSPE gave me an advantage over students at other schools without the same opportunity.	2	12	42	34	10	3.0 (1.0)
8. All medical students should draft the UC of their MSPE.	4	14	46	25	11	3.0 (1.0)
9. The UC is an important part of the MSPE.	2	7	21	56	15	4.0 (1.0)
10. The UC is an important part of the residency application.	3	9	23	56	9	4.0 (1.0)
11. I drafted the UC of my MSPE so that it pertains to my specialty of choice.	2	26	32	34	7	3.0 (2.0)
12. My drafting of the UC offered no benefit to my residency application.	5	37	36	18	4	3.0 (1.0)
13. The UC is an unimportant part of the residency application.	5	50	23	18	4	2.0 (1.0)
14. I was excited to be involved in constructing the UC of my MSPE.	10	25	35	23	7	3.0 (2.0)
15. I appreciated the opportunity to emphasize what I felt were the important aspects of my application.	3	11	17	56	14	4.0 (1.0)
16. Drafting the UC of the MSPE was a burden.	2	19	36	31	12	3.0 (1.0)
17. The UC should be eliminated from the MSPE.	14	43	31	9	3	2.0 (1.0)
18. Students should be able to choose whether or not they participate in the construction of the UC of their MSPE.	4	12	26	45	13	4.0 (1.0)
19. I would have preferred to have the Dean's offices prepare the UC section of my MSPE.	9	32	30	20	9	3.0 (2.0)
20. My drafting of the UC will have a positive effect on my candidacy for interview selection and success in the match.	0	5	34	42	20	4.0 (1.0)

Abbreviations: UC, Unique Characteristics.

The specialties with the highest response rate frequency were internal medicine (15%), pediatrics (13%), anesthesiology (12%), and surgery (12%). The following 4 items had statistically significant differences when split by specialty: item 3, "I was satisfied with the character limit for each category of the UC" ($P=.018$); item 7, "drafting the UC of my MSPE gave me an advantage over students at other schools without the same opportunity" ($P=.005$); item 9, "the UC is an important part of the MSPE" ($P=.045$); and item 14, "I was excited to be involved in constructing the UC of my MSPE."

For item 3, there were significant pairwise differences between anesthesiology (4.0 [1.0]) and psychiatry (3.0 [2.5]) ($P=.008$) and pediatrics (4.0 [0.5]) and psychiatry ($P=.005$). In both pairs, students applying to psychiatry were less satisfied with the character limit. For item 7, there were significant pairwise differences between anesthesiology (4.0 [2.0]) and emergency medicine (3.0 [1.0]) ($P=.001$). For item 9, there were significant pairwise differences between emergency medicine (3.0 [2.0]) and pediatrics (4.0 [0.0]) ($P=.002$). No pairwise differences were generated for item 14.

The principal components analysis with a Varimax rotation extraction of the 19 items yielded 4 components accounting for 63% of the variance as reported in Table 2. The 4 components

could be best described as (A) Drafting the UC (9 items), (B) importance of UC (5 items), (C) challenges of UC (3 items), and (D) participation in UC (2 items).

The inter-item reliability analysis used to measure the internal consistency of the 19 items was Cronbach's $\alpha=0.89$. The reliability for the 4 components of the principal component analysis was as follows: component A ($\alpha=0.88$), component B ($\alpha=0.86$), component C ($\alpha=0.55$), and component D ($\alpha=0.24$).

The 19 items were entered as predictor items in a multivariate linear regression for item 20, "My drafting of the UC will have a positive effect on my candidacy for interview selection and success in the match." Item 20 was chosen because it most accurately approximates the goal of the MSPE and the match. A statistically significant regression model ($P=0.001$, $R^2=0.60$) yielded 5 significant predictors as reported in Table 3. The 3 best predictors (items 1, 7, and 15) were in the largest component of the principal components analysis: drafting the UC.

DISCUSSION

Overall, the majority of students were satisfied with the amount of instruction and logistics of the UC and appreciated the opportunity to emphasize what they felt were the important aspects of

Table 2. Principal Components Analysis of Medical Student Performance Evaluation (MSPE) Items

Component	Item	Component A	Component B	Component C	Component D
A	8. All medical students should draft the UC of their MSPE.	0.86	0.21	0.03	0.11
	7. Drafting the UC of my MSPE gave me an advantage over students at other schools without the same opportunity.	0.83	0.27	0.01	0.01
	14. I was excited to be involved in constructing the UC of my MSPE.	0.79	0.23	-0.01	-0.08
	19. I would have preferred to have the Dean's offices prepare the Unique Characteristics section of my MSPE.	-0.68	-0.19	0.42	0.22
	15. I appreciated the opportunity to emphasize what I felt were the important aspects of my application.	0.67	0.28	-0.16	0.06
	1. I was satisfied with the amount of guidance provided to develop the UC of my MSPE.	0.57	0.29	-0.21	0.40
	2. I was satisfied with the categories of the UC.	0.56	0.40	0.01	0.32
	16. Drafting the UC of the MSPE was a burden.	-0.56	-0.28	0.51	0.04
	11. I drafted the UC of my MSPE so that it pertains to my specialty of choice.	0.46	0.02	0.36	0.09
B	13. The UC is an unimportant part of the residency application.	-0.10	-0.82	0.03	0.02
	12. My drafting of the UC offered no benefit to my residency application.	-0.23	-0.80	0.27	0.00
	10. The UC is an important part of the residency application.	0.45	0.69	0.17	0.04
	9. The UC is an important part of the MSPE.	0.53	0.64	0.05	0.04
	17. The UC should be eliminated from the MSPE.	-0.41	-0.61	0.40	0.15
C	5. I would have appreciated more instruction for constructing the UC of my MSPE.	-0.20	-0.01	0.81	-0.08
	4. Writing the UC was a challenge.	-0.07	-0.08	0.74	0.19
	6. I am aware that not all students construct their UC of the MSPE.	0.22	-0.01	0.49	-0.19
D	18. Students should be able to choose whether or not they participate in the construction of the UC of their MSPE.	-0.13	-0.18	-0.04	0.69
	3. I was satisfied with the character limit for each category of the UC.	0.25	0.15	0.09	0.66

Abbreviations: UC, Unique Characteristics.

Table 3. Multivariate Linear Regression for Item 20^a Onto 19 Medical Student Performance Evaluation (MSPE) Items

Predictor Item	Beta	Sig (p)
1. I was satisfied with the amount of guidance provided to develop the UC of my MSPE.	.289	.001
15. I appreciated the opportunity to emphasize what I felt were the important aspects of my application.	.246	.001
7. Drafting the UC of my MSPE gave me an advantage over students at other schools without the same opportunity.	.225	.005
13. The UC is an unimportant part of the residency application.	-.171	.006
3. I was satisfied with the character limit for each category of the UC.	.163	.009

^a Item 20: "My drafting of the UC will have a positive effect on my candidacy for interview selection and success in the match."Overall statistical significance and goodness-of-fit of linear regression model: $P = .001$, $R^2 = .60$.

Abbreviations: UC, Unique Characteristics.

their application. However, students also indicated they would have appreciated more instruction and should be able to choose whether or not they participate in the construction of the UC. This was the first year MCW students drafted their own UC.

There was agreement among students that their participation will positively affect their candidacy for interview selection and success in the match. Additionally, they believed they had an advantage over students at other schools without the opportunity to draft their UC.

The survey results don't support the idea that women are less inclined to self-promote than men. Drafting the UC was

a greater challenge for men. The only other significant difference between men and women was in their disagreement that the UC should be eliminated from the MSPE. Generally, women and men agreed across 90% of the items on the MSPE, indicating that gender does not influence the importance, challenges, or participation in the UC and has only minor effects on drafting the UC.

Students applying to psychiatry residencies were less satisfied with the character count compared to anesthesiology and pediatrics groups, who reported sig-

nificantly higher satisfaction levels. They also were the only specialty group to disagree with the character count.

Students who chose emergency medicine least agreed with the statements that drafting the UC provided an advantage over students without the same opportunity and that the UC is an important part of the MSPE. They also least agreed that the UC is an important part of the MSPE, suggesting some relation between applicant character and the specialty to which they apply.

Four reliable components were created from the MSPE items, suggested that the instrument is fundamentally capturing data

on student attitudes toward drafting the UC, the importance and challenges of the UC, and their participation. The large numbers of items in the drafting component (9 of 19) and the 3 of 5 drafting predictor items for candidacy suggest that not only was the evaluation emphasizing this drafting component in the content of the items, but that student responses are aligned with it as well.

CONCLUSION

The present study supports, in general terms, the utility and value of students drafting their own UC section of the MSPE. Future investigations should focus on expanding to other schools, comparing public to private institutions, and refining the inter-specialty comparisons. Increasing student input may provide better candidate representation and satisfaction in the residency application process, and ultimately improve match rates.

This study has several limitations, the first being that it only examined the experiences of a single medical school. Additionally, the study reflects student perceptions regarding the UC section rather than their actual experience regarding its

effectiveness. Future studies should examine match outcomes in addition to these student perceptions. The authors have a plan to expand the study to other schools.

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A Qualitative Pilot Study of Pediatricians' Approach to Childhood Obesity

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ABSTRACT

Importance: Over the past 3 decades, rates of childhood obesity have tripled. Given the gravity of this health concern, it is important that physicians intervene early. However, physicians continue to underdiagnose and undertreat childhood overweight and obesity.

Objective: The aim of this pilot study was to identify current tools and strategies used by pediatricians in regard to childhood obesity, as well as to reassess barriers to success, and to uncover areas for improvement.

Design: One-on-one interviews were conducted with pediatricians during the summer of 2013. Seven of the interviews occurred in person, and 10 occurred via telephone. Each interview lasted 30 to 60 minutes. All interviewees (n = 17, 13.2% response rate) were Wisconsin pediatricians, representing 7 different health systems.

Main Outcomes: Themes relating to pediatrician's experiences in addressing and managing childhood obesity.

Results: Pediatricians interviewed in this survey are comfortable identifying and diagnosing pediatric obesity with the widespread use of electronic health records. They have several tools and strategies at their disposal for the treatment and management of obesity, but do not often achieve the desired outcome of achieving healthy body weight. Most of them lack connections to community resources and the ability to effectively communicate with referral systems outside of their clinic, such as with dietitians.

Conclusions: Building stronger connections between physicians and dietitians, as well as between physicians and the local community, may allow physicians to feel more empowered when it comes to managing childhood obesity.

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INTRODUCTION

The worldwide occurrence of pediatric obesity continues to be a major health concern.¹ In the United States, it is currently estimated that approximately 17% of children and adolescents are overweight or obese.² There is a growing body of evidence indicating that early intervention is critical to the success of obesity interventions³ and parents believe that primary care physicians are the most appropriate professional to intervene regarding the weight of their child.⁴ Therefore, primary care clinicians play a valuable role in initiating early interventions and must be empowered to do so. In 2007, the American Academy of Pediatrics released its recommendations for the prevention, assessment, and treatment of childhood obesity.⁵

Studies have shown that the majority of primary care physicians are not following the recommendations,^{6–11} suggesting that barriers exist to implementing recommended strategies. Those barriers have been well-studied and include individual, practice-based, and environmental barriers, such as lack of knowledge, lack of time, and lack of proper reimbursement.^{12–15} Many such studies were conducted prior to the widespread implementation of electronic health records (EHR) and did not include experiences specific to pediatricians in Wisconsin.

The aim of this pilot study was to establish an updated understanding of physician's perspectives of pediatric obesity in Wisconsin and to identify areas for future investigation. This was accomplished by conducting in-depth interviews with primary care physicians, asking about their experiences identifying, addressing, and managing overweight and obese children.



CME available. See page 139 for more information.

Table 1. Summary of Physician Responses

Identification and Diagnosis	Physician/Patient Interaction	Referrals	Community
Tools and Strategies			
Growth charts Body mass index percentile Electronic health records	Family-based interventions Patient education	Multidisciplinary approach Dietitians Fitness clinics	Schools YMCA Weight Watchers Specialist
Barriers			
Emotional topic Family perception	Lack of evidenced-based approach Behavior change is difficult Patient access to care	Insurance reimbursement Patient compliance Lack of follow-up	Individual Family Socioeconomic/Cultural Environmental Time constraints (see Table 2)
Suggestions for Improvement			
Emphasize data Sensitive language Build relationships	Motivational interviewing Insurance-based incentive programs	Communication between health care providers Formalized systems	Resources for community engagement Public health/advocacy

At each step in the identification, treatment, and management of childhood obesity, physicians have tools/strategies available to them. Along the spectrum, multiple barriers hinder effective care to varying degrees. Of the respective categories, community has the most numerous and ingrained barriers with very limited tools and improvement suggestions.

METHODS

Recruitment

Physicians were recruited from a list of 169 health professionals who had hosted medical students on University of Wisconsin School of Medicine and Public Health pediatric rotations. Members of this list were excluded from consideration if they were retired, were practicing outside of Wisconsin, were no longer participating in patient care, or were working with special populations unrelated to primary care of the general population. After these exclusions, 129 physicians met the inclusion criteria. These 129 physicians were then randomized and contacted by e-mail (if available online) and phone. A total of 17 physicians agreed to participate (17/129 = 13.2% response rate).

Data Collection and Analysis

Seventeen interviews were completed using open-ended questions and prompts. The interview included questions related to direct patient care, the role of other health care professionals, and community involvement. All participants were board certified in pediatrics and used EHR for patient care. Participants represented 7 different health systems in Wisconsin, 4 of which were located in Dane County. Ten of the interviews occurred via telephone and 7 occurred as in-person interviews. Each interview was conducted by the same interviewer (BT), and all interviews were transcribed electronically during the interview by a second member of the research team. Interviews were conducted in private and lasted 30 to 60 minutes. Identifying information was removed from all transcripts after the interview was complete. Both the interviewer and interviewee reviewed the transcripts for accuracy.

The transcribed data was analyzed qualitatively using the Grounded Theory method.¹⁶ After familiarization with the transcripts, 2 teams of researchers met separately to create a classification system for the data based on recurrent themes. The teams then came together and refined their classification systems into 1 final system. All transcripts were annotated and indexed separately by 2 coders according to the agreed upon classification system. The coders then met to reach a consensus regarding the coding of each individual transcript. Summaries of emerging themes were created.

Study design and methods were reviewed and approved by the University of Wisconsin-Madison Institutional Review Board and were determined to be exempt.

RESULTS

The physicians' responses were grouped into 4 inclusive categories: (1) identification/diagnosis of pediatric overweight and obesity; (2) physician/patient interaction; (3) health care referrals; and (4) community (Table 1). In each of these areas, physicians described tools and strategies allowing them to be successful, as well as barriers that made obesity management more difficult. They also detected areas for potential improvement in the future. Overall, physicians were confident with identifying and diagnosing obesity, but did not believe that their management strategies were effective in reducing obesity in their patients. Community engagement was minimal.

Identification/Diagnosis of Pediatric Overweight and Obesity

Tools and Strategies: The physicians' responses indicated that

EHRs provided helpful tools for addressing and diagnosing obesity. The physicians specifically used EHR-based growth charts to track and demonstrate trends in body mass index percentile, as well as a visual aid for patients and families to address the topic of obesity, if necessary.

Barriers: The emotional aspect of obesity could make initial conversations with the patient and family quite difficult. Furthermore, addressing obesity could be complicated if parents were uncomfortable with the topic or if they did not perceive their child's weight as a problem.

Keys to Success: Normalization of the conversation about weight at a young age, sensitive language, and strong relationships with families.

Physician/Patient Interaction

Tools and Strategies: The physicians' responses indicated that parents play a fundamental role in their child's behavior/lifestyle, and that whole family interventions were essential. Physicians used counseling strategies such as recommending less sugar-sweetened beverages and juice, switching to skim milk, more fruits and vegetables, eating meals at home rather than eating out, general cooking tips, exercise prescriptions, less screen time, and the use of mobile applications, such as Calorie Counter and Diet Tracker (www.myfitnesspal.com).

Barriers: Physicians noted that managing obesity in the health care system is difficult due to a multitude of barriers that hinder care, including the biological factors of obesity, the complexity of behavioral change, insurance reimbursement issues, a lack of evidence-based approaches, and other logistics, such as access to health care, location of follow-up, and time commitment.

Keys to Success: Family-based approach, motivational interviewing, insurance-based health incentives, and consistent/close follow-up.

Health Care Referrals

Tools and Strategies: The physicians believed that a multidisciplinary, team-based approach is needed to effectively manage childhood obesity. Useful team members cited by physicians included a wide array of health care professionals, such as nurses, dietitians, exercise physiologists, physical therapists, psychologists, and other physician specialists, such as endocrinologists or cardiologists. Many physicians believed that dietitians were the most useful team member due to their expertise in nutrition counseling. Some physicians referred to those with whom they had positive experiences in the past. Other physicians lacked positive experiences with dietitians and cited barriers, such as off-site location and low patient adherence to follow-up. Many physicians also referred their high-need patients to the UW Pediatric Fitness Clinic, a tertiary care center for childhood obesity located in Madison, Wisconsin. Some physicians' responses indicated that

the fitness clinic served as a positive, multidisciplinary approach to managing and treating obesity, whereas others believed that more evidence of efficacy was needed.

Barriers: The physicians indicated that insurance reimbursement was a significant barrier to providing necessary referrals to health care professionals. Patient and family compliance also was believed to be a barrier because patients tended to be "no shows" for their appointments with dietitians and with the fitness clinic. As previously mentioned above, lack of professional cohesion with a local dietitian was also a barrier.

Keys to Success: Consistent bidirectional communication with referral members, especially dietitians.

Community

Tools and Strategies: The physicians generally acknowledged that schools, YMCAs, and Weight Watchers groups were community resources that potentially could be useful in the management of obesity outside of the health care system. Overall, physicians believed that the public's knowledge and awareness of obesity has increased.

Barriers: The physicians mentioned various individual, family, socioeconomic, time, and environmental barriers that existed outside of the health care system, which may hinder the effective management and treatment of pediatric obesity. Many physicians believed that the locus of control for successful treatment was outside of their domain and was more dependent on the individual patient, the family, the communities in which they lived, or society as a whole. Also, physicians typically were not aware of specific community-based organizations and resources for obesity. A list showing the depth of what physicians perceive to be barriers specific to the community is shown in Table 2.

Keys to Success: Increased connections between community organizations focused on pediatric obesity and pediatricians.

DISCUSSION

The first purpose of our pilot study was to establish the current landscape as it relates to pediatric obesity in Wisconsin. That landscape can be summarized as follows. The pediatricians in our sample are generally comfortable discussing obesity with their patients and their families. They note that the EHR-based tools and strategies available to them for identification and diagnosis of childhood overweight and obesity have greatly improved identification. Despite this, these physicians believe that the current strategies are not effective in treating obesity, and community connections remain tenuous.

The second aim of this pilot study was to uncover areas for future investigation. Therefore, the following discussion will focus on 4 areas where improvement in patient outcomes might

Table 2. Perceived Community Barriers are Rooted in Multiple Foundational Social Units

Individual	Family	Socioeconomic/Cultural	Environmental	Time
Lifestyle	Family dynamic	Financial limitations	Food access	Time commitment
Self-esteem	Family history	Cultural perceptions	Transportation	Appointment compliance
Psychosocial	Family perception	Safety of neighborhood	School vending machines	
Patient knowledge			School meals	

be accomplished, as suggested by the physicians in our study.

First, physicians emphasize the importance of a family-based approach. Pediatricians recognize that children often do not have control over their own food and physical activity choices. Past studies agree that interventions for childhood obesity should include parents, making it possible for the child to follow a healthy role model.^{17,18} Family-based interventions that focus on behavioral change achieve the greatest success.¹⁹

Second, the study participants suggest a shift towards motivational interviewing techniques when speaking with patients about obesity. Motivational interviewing is a nonconfrontational counseling approach in which the physician's role is to help identify reasons for a patient's condition and then facilitate an internal discussion about their condition.²⁰ Most of the physicians in our study used patient education as the primary technique to counsel patients regarding obesity. Past studies have shown that motivational interviewing is a better tool than patient education when attempting to accomplish behavior change.^{21,22} Unfortunately, pediatricians are not always trained in motivational interviewing, which presents an opportunity for further education.

A third area for improvement, according to the pediatricians in our study, relates to the lack of communication that occurs between physicians and dietitians. Among those physicians who had the most confidence in the dietitians with whom they worked, some themes were identified. Such pediatricians had built close working relationships with their preferred dietitian, including consistent bidirectional communication. In addition, these dietitians were generally on site. Many of the pediatricians who had less positive experiences with dietitians had difficulty locating dietitians with expertise in pediatric patient populations. Negative experiences also stemmed from lack of communication, both on the part of the physician and the dietitian. This represents a potential need for a system where the referring physician can easily identify dietitians who are experts in treating and managing childhood obesity and, in turn, build strong interprofessional relationships for the benefit of the patient.

The fourth barrier, according to our study population, is the lack of connectedness between the health care system and its local community. When discussing obesity, there is a pervasive belief among pediatricians that "I can only do so much," and that most of the responsibility of promoting healthy lifestyles

lies on the family and the rest of society. In short, there is a sense of low physician effectiveness and presumed futility when treating childhood obesity. In order for physicians to feel effective when managing obesity they must have tools and strategies that exist outside of health systems, where their patients spend most of their daily lives. Some efforts are being made to establish community-based treatment strategies that are backed by evidence.¹⁸ It may not be sufficient that pediatricians are aware of community resources such as local schools and YMCAs, because patients may benefit from more formal connections between health care and the community. By establishing meaningful community connections with local organizations and advocates, physicians will become empowered to overcome the environmental determinants of obesity. These health care-community connections may be sought out by physicians themselves, or by other staff members trained as liaisons.²³

One limitation of this pilot study is the low response rate (13.2%), as physicians more interested in obesity may be more likely to respond. Additionally, the purpose of the inquiry was to generate a general, qualitative understanding of physician experiences, not to suggest specific interventions for pediatric obesity.

The strengths of this pilot study consist of the inclusion of physicians from a diverse number of health systems. Also, specific response themes existed in our data, suggesting that even in a skewed study population, there was some internal consistency and saturation of themes. Another strength of this study is that it provides an update to past studies by directly exploring the current beliefs of physicians in Wisconsin, asking them which areas of identification, treatment, and management of childhood overweight and obesity are sufficient for them to achieve success, and which are not.

In conclusion, the pediatricians in our study report that they are comfortable addressing the issue of overweight and obesity in children, but have not experienced consistent success in reduction of those patient's body weight. In recent years, tools and strategies to improve identification and diagnosis have allowed pediatricians to become confident in these areas. This pilot study suggests that in order to continue to become more effectual, we must explore improvements in several areas. These areas include implementation of family-based interventions, a shift toward the use of motivational interviewing, improvement in physician-dietitian communication systems, and strengthening the con-

nection between health systems and their community resources. By doing these things, the physicians who were interviewed in this pilot study suggest that they might be able to improve outcomes related to pediatric obesity.

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Quiz: A Qualitative Pilot Study of Pediatricians' Approach to Childhood Obesity

EDUCATIONAL OBJECTIVES

Upon completion of this activity, participants will be able to:

1. Identify current state and national obesity trends.
2. Diagnose obesity and identify appropriate obesity treatment methods.
3. Describe the current perspective of Wisconsin pediatricians regarding pediatric obesity.

PUBLICATION DATE: June 2, 2016

EXPIRATION DATE: June 2, 2017

QUESTIONS

1. Which of the following statements most accurately describes current statistics regarding pediatric and adult obesity in the United States?
 - ☐ Twelve percent of children and nearly half of adults are overweight or obese.
 - ☐ Twelve percent of children and two-thirds of adults are overweight or obese.
 - ☐ Seventeen percent of children and nearly half of adults are overweight or obese.
 - ☐ Seventeen percent of children and two-thirds of adults are overweight or obese.
 - ☐ Twenty-five percent of children and two-thirds of adults are overweight or obese.

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You may earn CME credit by reading the designated article in this issue and successfully completing the quiz (>75% correct). Return completed quiz to *WMJ* CME, 330 E. Lakeside St, Madison, WI 53715 or fax to 608.442.3802. You must include your name, address, telephone number and e-mail address. You will receive an e-mail from wmj@wismed.org with instructions to complete an online evaluation. Your certificate will be delivered electronically.

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2. In which of the following areas did the pediatricians represented in this study feel least effective when addressing obesity in their patients?
 - ☐ Discussing a new diagnosis of obesity in pediatric patients.
 - ☐ Connecting patients to community organizations focused on exercise and nutrition.
 - ☐ Providing patient education regarding strategies for weight loss.
 - ☐ Using their electronic health record as a tool to facilitate diagnosis.
 - ☐ Referring patients to on-site dietitians for nutrition counseling.
3. When it comes to strategies for counseling patients regarding behavior change, which of the following statements would be supported most by the current evidence?
 - ☐ Patient education is more effective than motivational interviewing.
 - ☐ Motivational interviewing is more effective than patient education.
 - ☐ Patient education and motivational interviewing are equally effective.
 - ☐ Neither patient education or motivational interviewing are effective.
4. According to the physicians interviewed, which of the following statements is false?
 - ☐ An onsite dietitian resulted in a more positive physician-dietitian relationship.
 - ☐ Consistent bidirectional communication between physician and dietitian was important to the physicians interviewed.
 - ☐ Family-based strategies for behavior change appeared most effective when addressing obesity in children.
 - ☐ Overall, physicians felt moderately effective in treating pediatric obesity.
 - ☐ Most physicians felt they were unable to connect patients with community organizations focused on exercise and nutrition.

Physician Use of Electronic Health Records in Obesity Management

George L. Morris III, MD; Kayla Chapman, BS; David Nelson, PhD, MS; Jennifer Fink, PhD, MS; Renee Walker, DrPH; Ron A. Cisler, PhD, MS

ABSTRACT

Objective: To assess Wisconsin physician knowledge, attitudes, and practices in obesity management.

Methods: The Wisconsin Medical Society distributed an e-mail survey to 12,372 members with questions on obesity causes, barriers to documentation, and training in obesity management.

Results: A total of 590 surveys (4.7%) were completed. Physicians had an accurate fund of knowledge. Reasons given for failure to document obesity were lack of reimbursement, lack of effective treatment, and discomfort in discussing obesity. Only 14% of responding physicians were optimistic about their patients achieving sustained weight loss and only 7% believed they have been successful at treating obesity. Training was infrequent in obesity management.

Conclusions: Survey respondents indicated that additional training and effective tools would help treat obesity. Strategies should be developed that improve physician effectiveness in obesity management.

INTRODUCTION

Despite a positive relationship between obesity reduction and physician acknowledgement of the issue, obesity does not often appear on a patient's problem list in the electronic health record.¹ However, when obesity is entered into the problem list, there is a greater likelihood of intervention.^{2,3} Although recent reports indicate that obesity is rising, physicians are providing less weight counseling.⁴ A review of the electronic health records in a large health care organization recently found that as many as 65% of recorded body mass indexes (BMI) ≥ 30 were not accompanied with a diagnosis of obesity in the problem list.⁵

In order to develop an intervention to improve obesity manage-

ment, we surveyed Wisconsin physicians to determine their knowledge, use of electronic health records, problem list inclusion, training, and factors that influenced their referral for obesity management.

METHODS

Survey Design

We designed a 29-item survey based on 4 key aspects of obesity diagnosis and management: knowledge (3 items); practices in weight management (13 items); attitudes and opinions about obesity (2 items); and training in obesity management (4 items). A description of each of these aspects follows. Seven items asked for demographic information.

Oversight for this project was provided by the Institutional Review Board (IRB) of Aurora Health Care (IRB Assurance No. 14-05ET).

Procedures

The survey was e-mailed to 12,372 physician members of the Wisconsin Medical Society (Society) and asked recipients to follow a link to a digital solutions website (Informz, Saratoga Springs, New York) to complete the survey. Two reminder e-mails were sent 1 and 2 weeks later, thanking those who had already responded and encouraging those who had not responded to complete the survey.

Physician responses were collected in Informz in November 2013. Deidentified data was exported from Informz to an Excel spreadsheet.

Data Analysis

Basic descriptive analyses were performed and percentage of responses for each survey question computed. Where appropriate, response percentages in the tables are rank-ordered from highest to lowest.

RESULTS

A total of 590 physicians responded to the survey, representing a 4.7% response rate. Demographic and practice-based characteristics are provided in Table 1.

Physicians were fairly knowledgeable about obesity and reported a variety of documenting practices and management approaches

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(Table 2). Significant time and resource limitations were reported, as well as little prior training or success with continued weight management. A majority (51%) of respondents reported wanting additional training in obesity management, whereas 22% preferred no additional training options (Table 3).

DISCUSSION

Effective obesity treatment requires understanding physician knowledge, attitudes, and practices in treating overweight or obese individuals. Respondents provided useful initial information regarding the knowledge, practices, and challenges faced by physicians in managing weight with their patients. Respondents, perhaps being interested in the topic of weight control, identified key aspects of weight gain and obesity. In particular, they identified nutrition and physical activity as important elements, but also responded positively—although less frequently—to the possibility that genetics, family situations, and socioeconomic status are important factors. They appeared engaged in the management of obesity as they reported documenting obesity at much higher rates than measured in the general electronic health record.⁵ They identified availability, accessibility, effectiveness, and coverage as limiting factors and indicated that patient acceptance of therapy was limiting. Physicians reported not knowing what tools they could use for patient education and identified little preparation or training for dealing with weight issues and their significant disease consequences.

These data illustrate not only what practices are in use, but also the types of barriers that may reduce physician effectiveness in weight management. Physicians review BMI in the medical chart less than half the time. A possible reason is that although provider counseling and lifestyle modification produce positive results, numerous barriers such as time, reimbursement, and poor guidelines impede this from being done on a more regular basis.⁶ Electronic health records could be designed to incorporate nutrition and activity metrics and display these data in an easily interpretable graphic fashion, allowing physicians to review with patients in their time-limited visits.

The limitations of this study predominantly lie with the markedly low response rate from this pool of 12,372 physician members of the Wisconsin Medical Society. The e-mail addresses available to the Society are from membership registration and, though renewed annually, the low open and access response may suggest that not all these e-mails reach a member's primary e-mail or that physician's time to complete these surveys is limited. Those physicians completing the survey would likely represent a motivated and interested subset of the state's physicians who took the time to complete the survey. Lacking prior physician surveys of this e-mail nature on obesity limits our ability to state this conclusion with certainty. However, the demographics of respondents were similar when compared to the physician population of the state. Therefore, we need to consider these results preliminary and find new ways to engage physicians in discussing overweight and obesity with their patients.

Table 1. Demographic Characteristics of the Sample of Respondents

Characteristic	No. (%)
Age (n = 547)	
18-24	0 (0)
25-34	79 (14)
35-44	121 (22)
45-54	148 (27)
55-64	145 (27)
65-74	39 (7)
75 or older	15 (3)
Sex (n = 547)	
Male	306 (56)
Female	241 (44)
Race^a (n = 542)	
White	467 (86)
Asian	49 (9)
Black or African-American	7 (1)
American Indian or Alaska Native	5 (1)
Hispanic/Latino	3 (1)
Native Hawaiian or Other Pacific Islander	1 (0)
Other	19 (4)
Medical specialty (n = 549)	
Family medicine	151 (28)
Internal medicine	100 (18)
Pediatrics	47 (9)
Surgery	38 (7)
Obstetrics/gynecology	35 (6)
Psychiatry	19 (3)
Other	159 (29)
Practicing physician (n = 542)	
Yes	494 (91)
No	48 (9)
Years practicing medicine (n = 546)	
0-5	108 (20)
6-10	63 (12)
11-20	123 (23)
More than 20	252 (46)
Practice uses electronic health record (n = 548)	
Yes	516 (94)
No	28 (5)
Other	4 (1)

^aRace characteristics add up to greater than the sample because individuals were able to make multiple selections.

CONCLUSIONS

The medical and public health significance of our findings pertain to improving obesity diagnosis and management. Survey respondents acknowledged limited access to treatment options and expressed need for additional training and effective tools to help treat obesity. Further strategies are needed to integrate weight management into primary prevention. Improving physician effectiveness in weight management may be an integral part of addressing increasing rates of obesity.

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Table 2. Responses From the Wisconsin Physician Survey Assessing Knowledge, Skills and Attitudes Regarding Obesity Diagnosis and Management

Variable	Percentage	Variable	Percentage
Knowledge About Factors That Influence Obesity (N = 574)		Sufficient Tools Available to Assist in Counseling Efforts (N = 566)	
Diet	98	Yes	31
Activity level	96	No	46
Genetics	87	Not sure	22
Lack of knowledge about nutrition	84	Consultants Available For Referral (N = 564)	
Depression	84	Yes	64
Family influence	83	No	21
Stress/anxiety	81	Not sure	15
Motivation	80	Referral Sources For the Consultation of Obese Patients (N = 516)	
Endocrine and metabolic disorders	79	Dietitian	84
Society status/education	73	Bariatric surgeon	43
Physical environment	71	Exercise/fitness specialist	21
Income	66	Nonsurgical referral for weight reduction (weight management program, primary care physician, endocrinologist)	18
Body Mass Index (kg/m²) Range Respondents Consider Obese (N = 566)		Intense behavioral interventionist	9
15-19	0	Physical therapist	7
20-24	1	Reasons For Not Always Referring Overweight and Obese (N = 552)	
25-29	7	Patients to Consultation	
30-35	81	Consultation is not reimbursed	36
> 36	11	Consultation is too expensive	28
Percentage of Patient Population Respondents Consider Obese (N = 572)		Consultation is not available	25
0-5	0	Patient anger, refusal, denial, lack of interest	23
6-10	2	Consultation does not help	17
11-20	17	I prefer to do it myself	12
21-50	71	Embarrassment/difficult topic	7
> 50	9	Not pertinent to the visit	7
Time Spent Addressing Obesity During Subsequent Visits (N = 577)		I do not know how	5
I have no time available	8	I always refer overweight and obese patients	4
1-3 minutes	38	Interest in Receiving Training in Obesity Management (N = 551)	
4-6 minutes	32	Yes	51
7-10 minutes	14	No	22
11-15 minutes	4	Not sure	26
> 15 minutes	4		
Common Factors Addressed During Obesity Discussions (N = 564)			
Nutrition	93		
Physical activity	92		
Motivation	54		
Resources (finances, parks, gyms, access to healthy food, etc)	53		
Behavioral issues	47		
Psychological issues	41		
Living conditions (crime, violence, residence)	18		
None	2		

Table 3. Likert Scale^a of Physician Responses on Training and Ability to Address Obesity

	1 (Never/Not at all/None)	2	3	4	5 Always/Very Significant
Review of body mass index before patient visit (N = 574)	4%	9%	13%	37%	36%
Add obesity to the problem list (N = 572)	8%	14%	19%	29%	30%
Inform patient of obesity diagnosis (N = 544)	15%	17%	27%	19%	22%
Time to address obesity (N = 566)	11%	37%	35%	11%	6%
Readdress obesity during subsequent visits (N = 544)	7%	19%	32%	29%	13%
Refer patient for consultation (N = 565)	17%	43%	28%	10%	2%
Optimism that obese patients can sustainably lose weight (N = 566)	13%	41%	33%	10%	4%
Degree of success in treating obese patients (N = 558)	19%	47%	27%	5%	2%
Medical school training received in obesity counseling (N = 552)	43%	36%	16%	4%	2%
Residency training received in obesity counseling (N = 550)	42%	32%	16%	7%	3%

^aMeasured frequency of referral or follow-up/level of optimism or success/amount of training from 1 (never/not at all/none) to 5 (always/very significant).

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A Survey of Baseline Tobacco Cessation Clinical Practices and Receptivity to Academic Detailing

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ABSTRACT

Background: Thirty percent of all cancers are directly attributable to smoking, yet tobacco cessation treatment is not commonly provided at cancer clinics.

Objectives: To assess current tobacco cessation practices among Wisconsin cancer clinics and to measure their receptivity to onsite training and technical assistance to increase their delivery of evidence-based tobacco cessation treatment.

Process: An online survey to assess current tobacco use identification and treatment clinical practice at 16 Wisconsin cancer clinics affiliated with the Wisconsin Oncology Network.

Outcomes: Fifteen clinics responded to the survey and 11 agreed to onsite academic detailing. Most clinics reported that they identify tobacco users, but fewer advised smokers to quit or provided evidence-based tobacco cessation treatments.

Implications: Less than half of Wisconsin cancer clinics consistently seize the oncology visit to address tobacco use, and the majority of cancer clinics are receptive to onsite academic detailing to increase the frequency and effectiveness of their tobacco cessation interventions.

BACKGROUND

Thirty percent of all cancer mortality and 80% of lung cancers are directly attributable to smoking.¹ In 2014, the US Surgeon General listed bladder and kidney, cervical, colorectal, esophageal, laryngeal, acute myeloid leukemia, liver, lung, oral and pharyngeal, pancreatic, stomach, and uterine as cancers induced by smoking.¹ A cancer diagnosis may serve as a tobacco cessa-

tion teachable moment. A recent large prospective study found that patients with a cancer diagnosis (n=772) had higher smoking quit rates at 2 and 4 years (31% and 43% respectively) than smokers without a cancer diagnosis (20% and 34%, respectively).² While these findings demonstrate a prevention opportunity, historically, tobacco cessation treatment has been infrequently addressed and delivered at cancer treatment clinics.³

In response to these findings, in 2010 the National Cancer Institute (NCI) surveyed all NCI-supported cancer centers. That survey showed that while 60% of cancer centers offer some form of tobacco use treatment, the treatment was often confined to 1 disease subpopulation, such as lung cancer patients.⁴ The NCI

concluded that tobacco dependence treatment must become a higher priority and issued a call to action for all cancer centers in the United States to address this topic.^{4,5} Similarly, the American Association of Cancer Research⁶ and the National Comprehensive Cancer Network Guidelines⁷ now strongly encourage that all cancer patients who use tobacco be provided with evidence-based tobacco cessation. While many have called on cancer centers to better address tobacco dependence among their patients who smoke, little recent data has indicated whether these calls to action are having an impact.

In this article, we assess current tobacco cessation treatment practices in Wisconsin cancer clinics and assess their willingness to receive training and technical assistance (“academic detailing”) to improve their delivery of evidence-based cessation treatments to their patients who use tobacco.

METHODS

In January 2014, as part of a quality improvement project, a collaboration was established between the University of Wisconsin Carbone Cancer Center and the University of Wisconsin Center

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Table 1. Sixteen Wisconsin-Based Cancer Clinics/Practices Surveyed About Their Tobacco Dependence Treatment Performance

Aspirus Regional Cancer Center, Wausau
Aurora Cancer Care, Wauwatosa
Aurora Healthcare Network, Green Bay, Marinette, Oshkosh, Sheboygan, Summit, Two Rivers
Bellin Memorial Hospital, Green Bay
Columbia St. Mary's Cancer Center, Milwaukee
Dean Clinic Hematology and Oncology, Madison
Fox Valley Hematology and Oncology, Appleton
Gundersen Health System, La Crosse
Holy Family Memorial Cancer Care Center, Manitowoc
Marshfield Clinic, Marshfield
Medical College of Wisconsin, Milwaukee
Mercy Health System Hematology/Oncology Clinic, Janesville
ProHealth Care, Waukesha
St. Vincent Regional Cancer Center, Green Bay
UW Cancer Center Johnson Creek, Johnson Creek
UW Cancer Center Riverview, Wisconsin Rapids

for Tobacco Research and Intervention (UW-CTRI), with a goal of electronically surveying clinics participating in the Wisconsin Oncology Network (WON) regarding tobacco cessation treatments provided to patients with cancer who smoke. WON is a consortium of 19 academic- and community-based cancer practices in Wisconsin, Illinois, and South Dakota. Only the 16 Wisconsin-based WON practices were approached for this project (Table 1). The 16 practices serve both rural and urban areas. Additionally, these sites serve a varied number of patients representing from 160 to 7000 new cancer diagnoses each year, with an annual combined total of 20,000 cancer diagnoses.

Receptivity to Academic Detailing

UW-CTRI Outreach staff contacted each of the WON cancer clinics that responded to the survey, with an offer to provide onsite tobacco cessation technical assistance, including an assessment of current practices that identify and treat patients who use tobacco; and an invitation to collaboratively develop a tobacco cessation training and technical assistance plan to meet their specific needs and clinic workflow.

Academic detailing is tailored, onsite training and technical assistance to assist clinicians and systems with integration of evidence-based tobacco use identification, interventions, and treatment. Our past research has indicated the positive impact of academic detailing on tobacco cessation treatment in 49 primary care clinics in Wisconsin.⁸ This technical assistance is designed to increase the quantity and quality of delivery of tobacco use treatments delivered to tobacco users visiting cancer clinical sites. Examples of training and technical assistance include building tobacco dependence treatment protocols into electronic health records (EHR) and clinical workflow; tobacco dependence treatment continuing medical education clinician and staff training; collaborative planning related to clinic workflow, clinical support, and staff education; providing evidence-based tobacco

dependence treatment resources (eg, Wisconsin Tobacco Quit Line materials, clinical practice guideline) to the cancer practices; and, training cancer clinic staff to provide patient tobacco cessation counseling, as well as incorporating patient referral to the Wisconsin Tobacco Quit Line. While we focus on cancer clinic receptivity to tobacco cessation academic detailing in this paper, the academic detailing work with the Wisconsin cancer clinics is ongoing. The next phase of this project will be to repeat the baseline survey with the cancer clinics to measure tobacco cessation intervention practice change.

RESULTS

Baseline Survey

Of the 16 cancer practices that were e-mailed an invitation with a link to the online survey, we received responses from 15, for a baseline response rate of 94%. Of the 15 clinics that completed the baseline survey, 11 (73%) accepted the offer for tobacco cessation training and technical assistance from UW-CTRI. Survey results demonstrated marked differences across the responding WON cancer clinics regarding their stage of incorporating evidence-based tobacco dependence treatment. Only 6 of 15 clinics reported that they knew the smoking prevalence of their patients. Among these 6, smoking prevalence estimates ranged from 16% to 30%. Among the 15 clinic responders, 10 reported that they assess smoking at every clinic visit (Figure 1). A smaller proportion (8 of 15) assess patients for all tobacco use at every visit, and only 2 of 15 assess secondhand smoke exposure at every visit. Six of the cancer clinics reported that they have created and utilize a tobacco use registry (an EHR-based tool to compile a list of all tobacco users within the clinic), with 2 reporting that they used it for preventive services patient outreach. One of the cancer practices did not have a tobacco use registry, and 7 sites were unsure if they had a tobacco use registry (Figure 2). As shown in Table 2, the types and intensity of tobacco cessation interventions also varied markedly across the cancer practices. In general, clinics regularly advised their patients to quit, but were much less likely to consistently provide specific cessation assistance such as a referral to the free services provided by the Wisconsin Tobacco Quit Line. The Wisconsin Tobacco Quit Line is funded by the Wisconsin Department of Health Services Tobacco Prevention and Control Program, and managed by UW-CTRI.

DISCUSSION

This Wisconsin-based quality improvement initiative targeting oncology clinics had 2 chief findings. First, few of these clinics reported that they regularly delivered evidence-based tobacco cessation treatments to their patients who smoke. Second, most of these oncology clinics are receptive to onsite academic detailing (training and technical assistance) with a goal of increasing the frequency and effectiveness of tobacco cessation interven-

tions. These Wisconsin cancer clinics were similar to cancer clinics nationally with regard to their limited delivery of tobacco dependence treatment. Nationally, only about 60% of cancer clinics offer some form of tobacco dependence treatment.⁴ In Wisconsin, cancer clinics reported that they sometimes offer tobacco dependence treatment to approximately 54% of their patients who use tobacco.

The disappointingly low level of consistently providing tobacco cessation interventions in oncology clinics represents a missed opportunity to help patients quit tobacco use.⁹ The identification and documentation of smoking and tobacco use status is a crucial first step to being able to provide an evidence-based tobacco cessation treatment intervention for patients who use tobacco. Surveys of cancer clinics have identified some of the barriers to providing evidence-based tobacco cessation treatment to oncology patients. These include lack of time, tobacco cessation not being a priority during a cancer diagnosis or treatment visit, lack of awareness of tobacco dependence treatment guidelines and resources, and lack of reimbursement.^{3,4} In addition to its long-term health risks, tobacco use poses a particularly acute danger for this population given the effect smoking has on cancer recovery, recurrence, and outcomes.¹⁰ Oncology clinics provide a critical opportunity for patients who use tobacco to receive evidence-based tobacco cessation interventions, and this opportunity is often missed.

This survey of Wisconsin cancer clinics also provides evidence that most oncology clinic staff are open to receiving training and technical assistance to increase their rates of providing tobacco dependence interventions, and systematic academic detailing can provide such support.⁸ We plan to conduct a follow-up survey with these cancer clinics to assess the change in their tobacco dependence treatment services.

This baseline assessment of tobacco cessation clinical interventions at Wisconsin cancer practices has several limitations. First, only 1 contact person at each cancer practice (the WON member representative) was invited to complete the baseline survey, resulting in a potential response bias. Second, responding

Figure 1. Clinic Sites Reporting Smoking Assessment (n = 15)

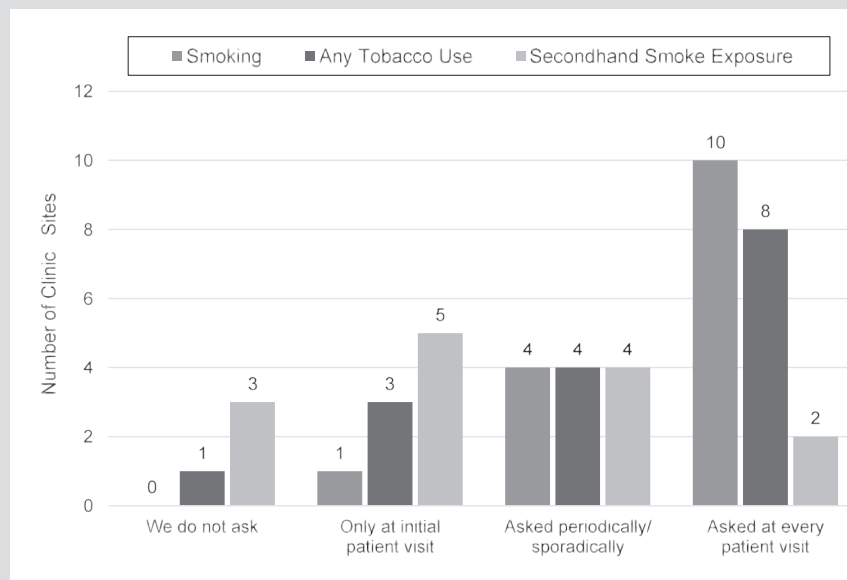


Chart shows responses to the question: "In general, how often are smoking, tobacco use and exposure to secondhand smoke assessed among your oncology clinic patients?"

Figure 2. Clinics Reporting on Tobacco Use Registry (n=14)

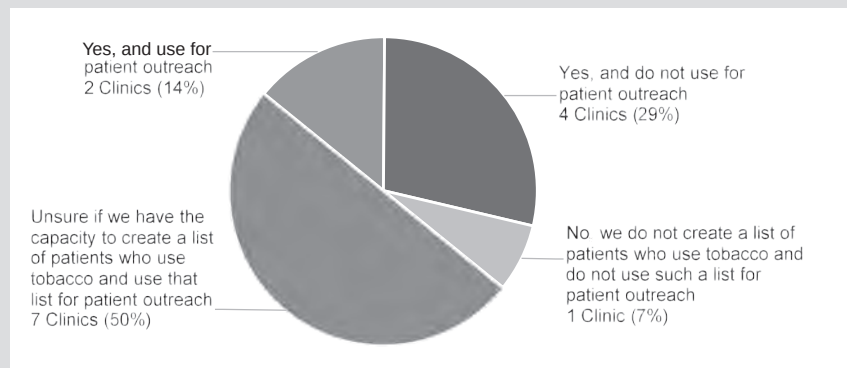


Chart shows responses to the question: "Does your clinic have the capacity to create a list of patients who use tobacco and is it used for outreach to these patients regarding tobacco cessation (eg, a tobacco use registry)?"

to the baseline survey was optional for the cancer clinics resulting in a potential underresponding of tobacco control activities. Finally, the baseline survey did not collect information on attitudes about and knowledge of evidence-based tobacco cessation interventions in an oncology clinic, and such attitudes and knowledge may influence how and why clinics did or did not respond to this baseline tobacco cessation intervention practices survey.

In summary, few Wisconsin oncology clinics consistently provide evidence-based tobacco cessation interventions to their patients who use tobacco. While this survey identified a substantial lost opportunity, the high rates of interest in receiving

Table 2. For Patients Who are Identified and Documented as Smokers or Tobacco Users, How Often Do You Provide the Following interventions? (n = 13 clinics)

Question	Always	Sometimes	Infrequently	Never	Don't Know	Total Responses
Advise the patient to quit.	5 (38%)	8 (62%)	0	0	0	13
Assess the patient's willingness to quit.	6 (46%)	7 (54%)	0	0	0	13
Provide tobacco cessation medication to interested patients.	5 (39%)	6 (46%)	2 (15%)	0	0	13
Provide tobacco cessation counseling to interested patients.	4 (31%)	8 (62%)	1 (8%)	0	0	13
Refer interested patients to internal (clinic or health care system) tobacco cessation services.	2 (15%)	8 (62%)	1 (8%)	0	2 (15%)	13
Refer interested patients to local/community tobacco cessation resources.	1 (8%)	7 (54%)	2 (15%)	0	3 (23%)	13
Refer interested patients to the Wisconsin Tobacco Quit Line (800-QUIT NOW).	3 (23%)	4 (31%)	3 (23%)	0	3 (23%)	13

training and technical assistance in this area suggests that this lost opportunity can be readily addressed.

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Portal Steal Syndrome After Full-Size Deceased Donor Liver Transplantation

Anahita Dua, MD; Lisa McElroy, MD; Abby Wochinski, MD; Johnny C. Hong, MD; David C. Cronin, MD, PhD

ABSTRACT

Successful liver transplantation typically results in an immediate decrease in intrahepatic resistance accompanied by an initial increased hepatopedal portal flow. Within a short period of time, the portal hypertension resolves and the variceal shunts involute. However, in situations in which intrahepatic vascular resistance to venous flow remains elevated, significant hepatofugal portal flow may continue through persistent mesenteric shunts. This situation, portal steal, can result in decreased perfusion of the liver graft leading to graft dysfunction, failure, and potentially recipient death. This report details a case and the surrounding literature to highlight appropriate diagnosis and management in these patients.

INTRODUCTION

Shunting of blood flow through spontaneous portosystemic connections commonly develops in patients with portal hypertension and can be identified in up to 19% of patients awaiting liver transplantation.¹ With progressive cirrhosis and the associated increased resistance to intrahepatic venous blood flow, mesenteric venous flow becomes hepatofugal through the splenic and/or left renal and coronary veins.²⁻⁵ If this pathologic flow pattern is not identified and appropriately managed, patients undergoing orthotopic liver transplantation are at increased risk of morbidity and mortality. Successful liver transplantation typically results in an immediate decrease in intrahepatic resistance accompanied by an initial increased hepatopedal portal flow. Within a short time

period, the portal hypertension resolves and the variceal shunts involute. However, in situations in which intrahepatic vascular resistance to venous flow remains elevated, significant hepatofugal portal flow may continue through persistent mesenteric shunts.³⁻⁵ This situation, portal steal, can result in decreased perfusion of the liver graft leading to graft dysfunction, failure, and potentially recipient death.⁵

Portal vein steal syndrome has been described in situations of small liver volumes (live donor grafts and reduced-size or split liver grafts).² Here we report the diagnosis, management, and outcome of a patient with this syndrome who was diagnosed after a full-size deceased donor liver transplantation, review the current literature, and discuss best practice guidelines for prevention, evaluation, and management of this condition.

CASE REPORT

A 51-year-old obese woman with end-stage liver disease secondary to alcohol-induced cirrhosis presented for evaluation. Her past medical history included portal hypertension, esophageal varices, ascites, and hepatic encephalopathy. She underwent liver transplantation with a physiologic Model for End-Stage Liver Disease (MELD) score of 31 using a donation after cardiac death liver graft. The transplantation technique included portosystemic veno-venous bypass and cava replacement (Figure 1A-B). She remained hemodynamically stable throughout the transplant. The graft remained soft with excellent portal vein and hepatic artery perfusion by gross examination.

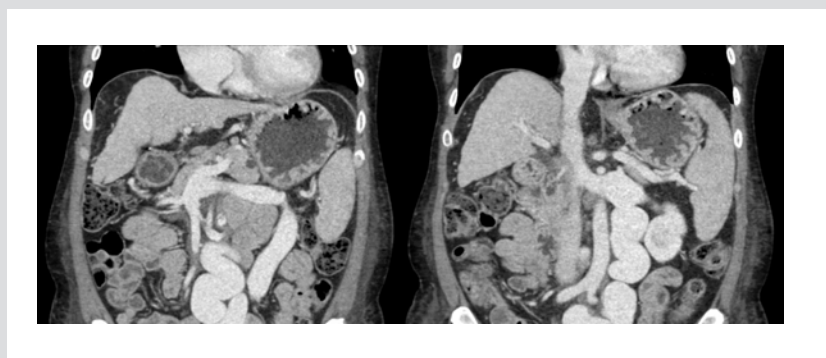
Immediate postoperative bedside duplex Doppler ultrasonography demonstrated bidirectional flow in the right and left portal veins and normal hepatic artery flow characteristics. Post-transplant day 1 (POD 1), laboratory evaluation demonstrated significant liver graft dysfunction with persistent elevation in alanine transaminase (ALT) and aspartate transaminase (AST) (Table 1). She was returned emergently to the operating room (OR) for evaluation of the graft and liver biopsy. Intraoperative duplex

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Figure 1A-B. Computed Tomography (CT) Scan Prior to Liver Transplantation



CT scan prior to liver transplantation demonstrating a large inferior mesenteric vein and splenorenal shunt.

Table 1. AST and ALT Lab Value Trends

Date	Pre-op 10/30	Post- transplant 10/31	POD 1 After Ligation of IMV 11/1	11/2	11/3	11/4	11/5	11/6	11/7	11/8
AST (10 - 32 U/L)	98	6671	3656	1426	632	226	104	55	40	34
ALT (8 - 33 U/L)	73	2844	2486	1413	939	554	373	244	181	135

Abbreviations: POD, postoperative day; IMV, inferior mesenteric vein; AST, aspartate transaminase; ALT, alanine transaminase.

Doppler ultrasound demonstrated hepatofugal and bidirectional flow in the portal vein. Portal venogram through a catheter placed in the proximal inferior mesenteric vein demonstrated persistent retrograde flow through the inferior mesenteric vein (IMV) and splenic vein. The portosystemic shunt was interrupted by ligation of the IMV. Post ligation intraoperative venogram demonstrated normal intrahepatic portal flow with no evidence of retrograde flow in the IMV or splenic vein (Figure 2B). She tolerated the procedure well, with normalization of liver enzyme values postoperatively (Table 1) and was eventually discharged to home with excellent graft function.

DISCUSSION

Portal steal syndrome results from persistent diversion of portal flow away from the liver through meso-systemic collaterals after liver transplantation. In patients who require transplant, the potential for portal steal syndrome should be identified prior to liver transplantation so that large and/or hemodynamically significant collateral vessels may be interrupted (ligation or coil embolization) during the initial transplant operation. Two distinct but occasionally coincidental issues related to this portal steal phenomenon can increase its likelihood, namely ischemia/reperfusion injury causing damage to the liver with increased resistance to

flow or large shunts in the recipient causing diversion of portal blood flow away from the liver. Postoperative occurrence because of persistence of a large spontaneous shunt can result in graft failure due to reduced and/or reversed portal perfusion and a reduction in hepatotrophic factors.⁵ Table 2 depicts risk factors for portal steal syndrome.⁶⁻⁹ Persistent shunts can be difficult to identify and may require a multimodal approach during the intraoperative period to ensure complete ligation and adequate graft flow.¹⁰ Prophylactic intraoperative exploration, evaluation, and ligation of large collateral splenorenal shunts (> 10 mm) appears to be the most effective way to prevent portal steal syndrome.⁵⁻¹⁰

Splenorenal shunts larger than 10 mm at their transition into the left renal vein have a high likelihood of portal steal and require operative intervention to ensure adequate liver transplant flow.⁵ Lee and colleagues reviewed 44 cirrhotic patients with large spontaneous splenorenal shunts (> 10 mm in diameter).⁵ All patients underwent living donor liver transplant with ligation of the left renal vein at the time of

transplantation. Although portal flow increased after ligation of the left renal vein, 9.1% of patients demonstrated an elevated serum creatinine level after ligation.⁵ The authors concluded that preemptive ligation of the left renal vein at the time of liver transplantation prevented a portal steal phenomenon.⁵ Avoiding graft hyperperfusion by excessive portal hypertension is equally as important as preventing portal steal through large spontaneous collaterals.⁵ Horrow et al³ described a large spontaneous splenorenal shunt following orthotopic liver transplant, in an allograft with 10% macrosteatosis and a cold ischemic time of 9 hours and 26 minutes.³ The routine sonography on POD 1 showed a patent anastomosis, but there was notable low portal venous flow. On POD 2, their patient had elevated liver function tests and a repeat sonography demonstrated bidirectional flow in the portal vein similar to our patient. The patient underwent reoperative surgery and an intraoperative sonogram showed the splenorenal shunt with hepatofugal flow, confirming steal from the liver.³ After ligation of the splenorenal shunt, intraoperative sonography showed marked improvement in portal flow with velocities of 15-20 cm/sec as with our patient. Liver biopsy showed ischemia-reperfusion injury. The patient left the operating room, but died later that day.³

Vessels smaller than 10 mm may involute and hence do

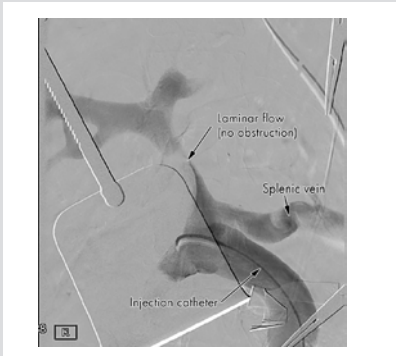
not always require surgical intervention beyond liver transplantation.⁵ Kim et al⁷ described 19 patients with venous variceals following liver transplantation, of which 13 patients underwent intraoperative transvenous embolization resulting in 100% improvement in portal vein inflow.⁷ Of their cohort, 6 patients underwent percutaneous transvenous embolization, but 33% showed technical failure and persistent portal steal. At 8-month follow-up, varices involuted in 13 patients, decreased in caliber 4, and remained unchanged in 2 patients.

Portal hemodynamics change dramatically following liver transplantation, and multiple studies have detailed the impact that shunting has on this dynamic. Jiang et al⁸ examined differences in portal hemodynamics between whole liver transplantation and living donor liver transplantation and noted that the portal venous flow in patients with portal hypertension showed a high perfusion state after living donor liver transplant (LDLT) and, in contrast to the whole liver transplantation, portal venous pressure elevation after LDLT delaying the time necessary to close the collateral circulation.⁸ Sainz-Barriga et al⁹ prospectively evaluated intraoperative portal hemodynamics of 103 whole and partial liver transplants and found that portal vein flow and hepatic artery flow did not immediately return to normal values after liver transplantation.⁹ Clinical outcomes of patients who underwent management of large collaterals to manage portal steal syndrome are summarized in Table 3.^{3,5,7,10,11}

Aucejo et al¹² in an analysis of liver transplant recipients showed the utility of preoperative flow measurement by computed tomography (CT) for identifying potentially problematic shunts.¹² However, this may not find all collaterals as some shunts tend to be underperfused and tortuous in nature during the preoperative assessment. Kim et al⁷ showed that intraoperative venography can significantly improve outcomes by quickly identifying newly engorged shunts, while still in the OR allowing early ligation before a threat to the graft occurs. Furthermore, intraoperative venography is not constrained by the tortuosity of the vessel.

Smaller collaterals may become troublesome in the postoperative period as they can be missed by traditional imaging modalities and may mature into larger vessels during the postoperative period. Moon et al¹⁰ showed that intraoperative portofluoroscopy

Figure 2A. Preligation Intraoperative Mesenteric Venogram



Preligation intraoperative mesenteric venogram demonstrating retrograde flow in the splenic and inferior mesenteric veins. Laminar flow characteristics are seen within the inferior mesenteric vein.

Figure 2B. Postligation Intraoperative Mesenteric Venogram



Postligation intraoperative mesenteric venogram demonstrating prompt hepatopedal flow in both the right and left branches. The injection catheter within the inferior mesenteric vein is seen distal to the ligation site.

Table 2. Risk Factors for Recipient Portal Steal Syndrome

Portal hypertension: Large varices/shunts, chronic liver failure.
Macrosteatosis.
Low liver mass: Living donor liver transplant, split livers.
Donation after cardiac death: Prolonged warm ischemia time.
Receiving a living donor liver transplant.

as an adjunct to intraoperative ultrasonography (IOUS) and visual inspection can dramatically improve identification of potentially problematic collaterals and assist in the ligation of collaterals that would be missed otherwise. Intraoperative portofluoroscopy has the added benefit of providing accurate measurement of portal flow.¹⁰

Judicious ligation of shunts is necessary and requires sound clinical judgment as overly aggressive ligation can overwhelm the portal system. Initial studies suggest both the safety and efficacy of this practice to reduce graft failure rates from poor portal perfusion, re-operative intervention, and the need for postoperative angiography.

Portal steal syndrome is most common among patients with preoperative portal vein hypertension such as those with cirrhosis. While all liver transplant recipients may be affected, it appears to impact those with LDLT the most. Specific signs and symptoms of posttransplant portal vein steal syndrome are poorly reported, but tend to mimic signs and symptoms of acute rejection including poor clinical course, elevated liver function tests (LFT), and elevated total bilirubin. Doppler ultrasound may show bidirectional or hepatopedal flow in the portal vein.

Identifying the potential for portal steal prior to liver transplantation is essential for patients undergoing transplant. We suggest utilizing imaging modalities such as magnetic resonance

Table 3. Summary of Publications Detailing Patients with Portal Steal Syndrome

Author	Mean Age	Study Size	Presenting Symptoms	POD No.	Treatment	Graft Saved	Mortality
Lee (2006) ⁵	51 (26-64)	44	PV diameter 9.2 +/- 3.3, reduced PV flow, absent DUS signal in 7, hepatofugal DUS signal in 3, hepatopetal flow in all grafts, elevated T bili in all grafts.	1 day - 3 months	Ligation of LRV	43 alive at 17 mo follow-up	1/44
Moon (2007) ¹⁰	48.8 (+/- 7.5)	5	Insufficient portal inflow and PV stenosis on DUS. MDCT showed stenosis, congestion, of L PV anastomosis. Elevated T bili.	3 Intra-operative 2 POD 4-5	Intraoperative Cine-portogram and ligation of patent collaterals	5 Saved	0/5
Kim (2009) ⁷	46 (+/- 14.0)	19	Not reported.	46.4	Percutaneous transvenous embolization (6), intraoperative transvenous embolization (13).	17 Saved 2 Lost	3/19
Shirouzu (2009) ¹¹	33	1	Acute rejection, jaundice, coagulopathy, massive ascites, cholestasis, encephalopathy.	10	Proximal ligation of collateral splenorenal shunt w/o splenectomy or splenic artery ligation.	Saved	0/1
Horrow (2010) ³	51	1	DUS showing bidirectional flow, deteriorating clinical cond., elevated LFTs.	2	Ligation of SSRS	Saved	1/1

Abbreviations: POD, postoperative day; PV, portal vein; DUS, Doppler ultrasonography; MDCT, multidetector row computerized tomography; LFTs, liver function tests.

imaging (MRI) and multi-phase CT to identify collaterals that may cause reversal of flow. Angiography should be the gold standard as this will also specifically identify those splenorenal shunts that are >10 mm at their transition into the left renal vein and hence have a high likelihood of portal steal. Once these have been identified, ligation or coil embolization during the initial transplant operation should be performed. Overall, we recommend prophylactic intraoperative exploration and ligation of these collateral splenorenal shunts (>10 mm) as this appears to be the most effective way to prevent portal steal syndrome.⁵⁻¹⁰

CONCLUSION

The differential diagnosis of immediate liver graft dysfunction should include a high index of suspicion for postoperative portal steal syndrome. The most effective therapy to avoid this complication may be the prophylactic ligation of potentially problematic shunts. This requires a multimodal approach and sound surgical judgment. The keys to successful outcomes postoperatively are having a high index of suspicion for portal vein steal syndrome to enable early recognition, regular ultrasound screening, and prompt institution of surgical therapy in order to salvage patients with portal vein steal syndrome.

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High-Risk Variant of a Rare Coronary Anomaly

Bryan K. Austin, MD, MS; Milind S. Shah, MD, FACC

ABSTRACT

A 61-year-old man presented with typical chest pain and was treated via acute coronary syndrome protocol. Findings on his initial diagnostic evaluations prompted cardiac catheterization. His angiographic findings were suspicious for anomalous coronary artery origin. Advanced imaging confirmed an aberrant course of the left coronary artery, with the vessel arising from the right aortic sinus of Valsalva. It was identified that the patient possessed all known high-risk features associated with this anomaly, findings not previously documented in a living adult. The patient ultimately underwent surgical revascularization to mitigate his risk for sudden cardiac death.

INTRODUCTION

The rarest of coronary anomalies, the origin of the left main coronary artery from the right aortic sinus of Valsalva (RASV), also happens to be the most lethal. This variant, which accounts for only 1.3% of all anomalies, is notorious for precipitating sudden cardiac death, with approximately half of the instances discovered postmortem.^{1,2} The course of the anomalous left main coronary artery (ALMCA) is what dictates the degree of risk, with interarterial passage between the aorta and pulmonary trunk accounting for most fatalities.³ Other established high-risk features include acute angle take-off, intramural segment, and slit-like ostium.^{4,5} Here we describe a male in his seventh decade of life who presented with typical symptoms, was found to have ALMCA arising

from the RASV with evidence of all 4 high-risk features, and later underwent successful surgical revascularization. To our knowledge this is the first description of a living adult patient with this anomaly possessing all of the high-risk features.

CASE PRESENTATION

A 61-year-old, hypothyroid, dyslipidemic, nonsmoking, white man with no prior history of cardiovascular disease presented to the emergency department with 3 to 4 weeks of progressive exertional substernal chest pressure and associated dyspnea.

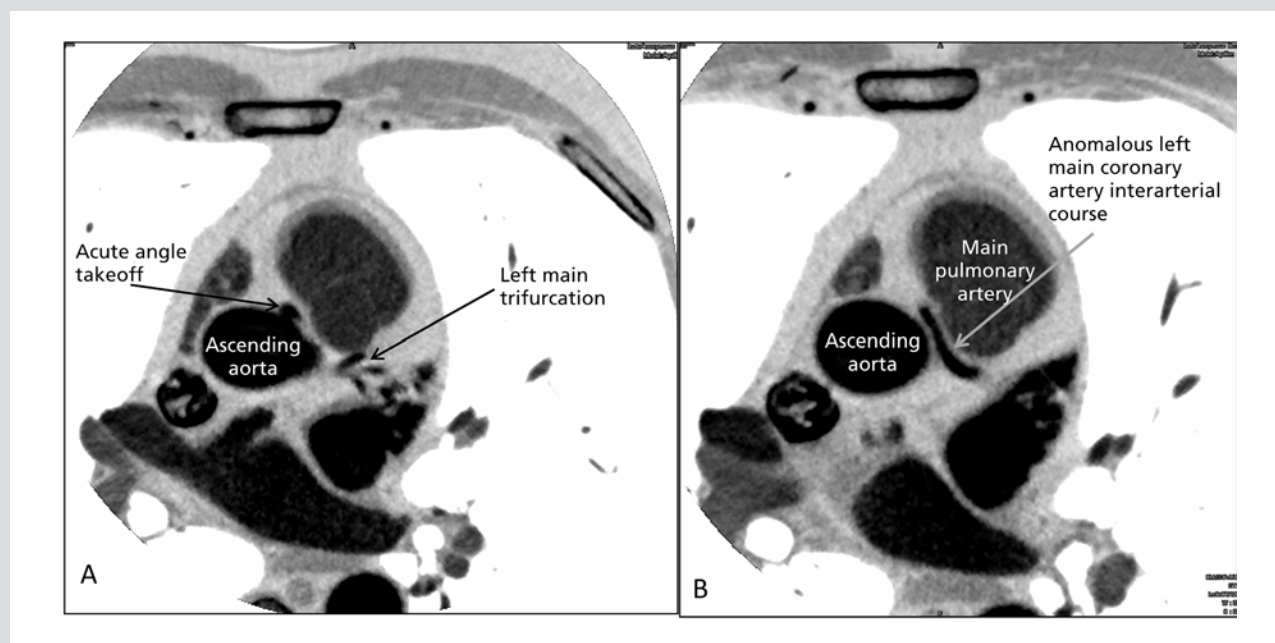
Symptoms were most notable with lawn mowing and were relieved by rest. His initial electrocardiogram demonstrated right ventricular hypertrophy by voltage along with right axis deviation. Chest radiograph was inconspicuous. The chest pain was relieved with sublingual nitroglycerin. Heparin infusion was initiated, and the patient was admitted to the hospital with a diagnosis of unstable angina. Cardiac isoenzymes remained negative, and transthoracic echocardiogram was notable for mild right ventricular enlargement and mildly diminished right ventricular systolic function with normal estimated pulmonary artery systolic pressure. Left ventricular size and function were within reference ranges, and there were no regional wall motion abnormalities; no valvular disease was evident. Myocardial perfusion study was recommended by the consulting cardiologist, and a regadenoson nuclear scan was performed that revealed a small reversible defect in the inferolateral wall. Quantified ejection fraction was 55% to 60%. The patient subsequently underwent coronary angiography, and the dominant right coronary artery (RCA) was found to be free of any significant coronary artery disease. There was great difficulty in selectively engaging the left coronary artery, necessitating an aortogram, which disclosed an anomalous origin arising near the right coronary cusp. Despite using conventional coronary catheters, less than ideal opacification of the vessel was achieved. No high-grade obstruction was observed, but a coronary computed tomography angiogram was requested for further clarification.

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Figure. Cardiac-Gated Computed Tomography



(A) Origin and acute angle takeoff of anomalous left main coronary artery arising from the right aortic sinus of Valsalva. (B) Interarterial course of anomalous coronary artery between main pulmonary artery and aorta.

tion of the artery's course. The scan confirmed the aberrant left coronary artery, arising from the RASV, just inferior to the RCA. The vessel exhibited an acute angle takeoff (Figure [A]), then followed an interarterial course in the epicardial fat pad between the pulmonary artery and aorta (Figure [B]) before trifurcating into a left anterior descending (LAD), ramus intermedius (RI), and left circumflex (LCX) coronary artery. The LAD was free of significant atherosclerotic changes, but distal to the ostium of the first diagonal branch and first septal perforating branch there was a segment of intramural bridging. The nondominant LCX and RI were disease-free. Due to the patient's lifestyle-limiting chest discomfort and increased risk for sudden cardiac death, he was offered coronary artery bypass grafting (CABG). He successfully underwent double bypass, with the left internal mammary artery grafted to the mid-LAD and reversed saphenous vein graft to the first obtuse marginal branch of the LCX. The patient's course was notable only for postoperative atrial fibrillation, which resolved prior to discharge on postoperative day 6.

DISCUSSION

Patients with ALMCA arising from the RASV typically present with syncope, dyspnea, angina, acute myocardial infarction, or alternatively they are identified at autopsy. Symptoms usually occur with physical exertion or shortly thereafter. An interarterial

course of the aberrant vessel enhances the risk profile, as does the presence of acute angle takeoff, intramural segment, and slit-like ostium. The postulated mechanism of ischemia is compression of the ALMCA by adjacent great vessels during times of cardiovascular exertion, resulting in myocardial ischemia.³ Other established high-risk features also are thought to constrain coronary perfusion.^{4,5} In 2006, Lorenz et al⁶ performed an extensive literature review of the interarterial course of this anomaly. Upon examination of over 4 decades of data, they identified 104 cases of ALMCA arising from the RASV, but were unable to identify any surviving adult possessing all 4 of the high-risk features associated with sudden cardiac death.⁶ A review of the literature published since 2006 resulted in similar findings, implying that this patient is unusual because of his advanced age at initial presentation, and unique due to his possession of all 4 high-risk features.

Of the 4 high-risk features described, slit-like ostium is the most difficult feature to document, even via the gold standard of coronary angiography. It has been reported that the presence of a slit-like orifice or membrane across the ostium can cause significant difficulty in engaging the ostium of the anomalous coronary, a finding exhibited by our patient. This patient's inferolateral wall perfusion defect at the time of presentation is difficult to explain given his coronary anatomy. His myocardial scan may have been a false positive. Four months following his CABG, he underwent

stress echocardiography as part of a preoperative evaluation prior to inguinal hernia repair, and this was negative.

Most patients with ALMCA arising from the RASV present with symptoms or sudden death early in life, with a mean age of reported cases in the literature of 33 years.⁶ Additionally, to date, no living case of ALMCA arising from the RASV with all 4 high-risk features has been described. The patient presented here is unique in both age at presentation and in having all 4 high-risk features for cardiac ischemia and sudden death. Fortunately, the anomaly was correctable surgically, and the patient continues to do well.

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Proceedings From Innovations in Health Care: A Quality Improvement and Research Forum

The following abstracts were presented as posters during “Innovations in Health Care: A Quality Improvement and Research Forum,” held during the Wisconsin Medical Society’s 2016 Annual Meeting, April 2 in Madison, Wisconsin. Medical students, residents and physicians presented their research in the areas of Health Care Delivery, Accessing and Finance; Health Care Ethics; and Healthy Care Quality and Population Health. The abstracts denoted with an asterisk (*) were selected as the “most promising research” by attendees.

HEALTH CARE DELIVERY, ACCESSING AND FINANCE

To Examine the Effects of the Implementation of a Medical Scribe on the Productivity and Efficiency of a Primary Care Physician*

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Background: Many physicians have a practice that uses an ambulatory electronic health record (EHR) system. The use of medical scribes, however, is not as widespread, and few studies have been done to assess the effects of medical scribes on productivity in the primary care setting.

Methods: A health care system located in the Midwest implemented a pilot project that involved employing medical scribes for use by a family medicine physician. Data were collected and analyzed from the 12 months prior to the 3 months after employing the medical scribe.

Results: On average, after implementation of the medical scribe, the patients seen per hour increased 11.3%, relative value units (RVU) per visit decreased 1.5%, and RVU per hour increased 9.4%.

Conclusions: Implementation of a medical scribe increased patient volume but did not lead to a significant increase in direct revenue for the primary care physician.

Cost-Effectiveness, Regionalization of NICUs, and Alternative Preventive Options*

Kofi B. Fosu, BA, MD candidate; University of Wisconsin School of Medicine and Public Health, Madison, Wis

Background: Technological innovation is a major contributor to rising health care costs in the United States. Managing the use of such technologies may be desirable to control such expenditures. Economic evaluation using cost-effectiveness analysis (CEA) can be a useful approach. This study evaluates the cost-effectiveness of neonatal intensive-care units (NICUs) with other alternative health care interventions, and explores whether regionalization of NICUs can help improve health outcomes.

Methods: CEA was used to compare NICUs, tocolytic agents, prenatal care, and teenage family planning services. Cost-effectiveness was measured using incremental cost per life saved and incremental cost per low birth weight (LBW) birth averted.

A preliminary regression model was used to evaluate how neonatal mortality varied among NICUs. Data were collected on neonates admitted to 14 level III NICUs in Wisconsin and Wisconsin residents to Duluth, Minnesota. Data on neonatal mortality were obtained from the Wisconsin Department of Health Wisconsin Interactive Statistics on Health (WISH) database. NICU volume (2003-2004) and

proportion of very low birth weight (LBW) infants at each unit provided as proxies to model regionalization.

Results: NICUs were the most effective and most costly option. Teenage family planning services were the most cost-effective program when reduction in neonatal mortality was the outcome measure. Tocolytic agents were the most cost-effective method when reduction in LBW births was the outcome measure.

Volume and proportion of LBW patients were negatively correlated with mortality ($P = .089$ and $P = .03$, respectively), suggesting regionalization of NICUs may be favorable.

Conclusions: Although NICUs “rank among the most expensive services of all hospital care” they remain necessary as one of the only postpartum interventions available for neonates. Such a combination of effectiveness and cost presents policymakers with a difficult dilemma, highlighting the need for accurate economic appraisals in evaluating varying health improvement services. Hopefully, such evaluation can inform and facilitate decision-making to provide meaningful solutions to rising health care costs.

Validation and Implementation of Portable Audiometric Screening for Ototoxicity

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Background: Cancer patients receiving chemotherapeutic medications may experience hearing loss due to the ototoxic effects of the medications administered, thus making ototoxicity monitoring done by audiologists necessary throughout their treatment. These additional appointments present increased costs to the patients, increased time

spent traveling between clinics, increased time spent in waiting rooms, and an increased likelihood of missed follow-up monitoring. Portable automated audiometry applications have recently been developed for devices such as iPads, which would allow patients to avoid the challenges listed, as they would undergo point-of-care ototoxicity testing within cancer centers and be referred for further testing only when absolutely necessary.

Methods: Commercially available tablet-based automated audiometric applications were trialed in an outpatient audiology clinic. Patients presenting for formal audiometric evaluations had hearing thresholds obtained using 1 of 3 tablet-based audiogram applications and results were compared to those hearing thresholds from conventional audiometry testing. This allowed us to assess the reliability and validity of the tablet-based application compared with conventional audiometry testing.

Results: Descriptive analysis showed that of the 3 automated audiometric applications trialed, the Eartrumpet application provided the most accurate hearing thresholds when compared to conventional audiometry testing. Thirty-five patients were enrolled using Eartrumpet and 93% of threshold values were within 10dB of the conventional test thresholds. Thirty-five patients also were enrolled using the Hearing Test application. However, only 73% of threshold values were within 10dB of the conventional test thresholds. Finally, 37 patients trialed the Audiogram application, resulting in 77% of threshold values within 10dB.

Conclusions: Portable tablet-based audiometric testing applications, specifically the EarTrumpet application, may represent promising tools for point-of-care ototoxicity screening. Further testing in patients receiving ototoxic chemotherapeutic treatments is planned to discern if point-of-care screening is accurate and feasible in this specific patient population.

Same-Day Cancellations in Elective Surgeries: What Do They Cost?

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Background: The purpose of this project is to review methods that have been employed to

reduce same-day cancellations and examine the rate of same-day elective surgical cancellations at Clement J Zablocki VA Medical Center. The eventual goal is to determine the cost to the hospital, and others, that these cancellations have and to suggest improvements to prevent these cancellations.

Methods: The data gathered was from in-person interviews with hospital staff and from a surgical service cancellation rate report from July 1, 2014 to July 1, 2015.

Results: The results of this study showed that there was an overall 15% (9% unavoidable plus 6% avoidable) cancellation rate, which is above the national average of 9.9%. The cost from lost staff hours on a same-day cancelled case was determined to be about \$420/hour. The total costs of a same-day cancelled orthopedic cases was anywhere from \$2020 to \$3320.

Conclusions: One of the weaknesses of this VA data is that it lacked the information to determine when the cancellations were made from the time of scheduled surgery, so it couldn't be determined whether the cancellation was made on the same day or if it was cancelled several days beforehand. However, due to the significant potential cost of these cancellations, it should be recommended that the recording method for tracking cancelled elective surgical cases be edited to more accurately determine the cost to the institution of these cancellations. Once the true cost is determined, a cost-effective solution can be put forward to help correct the problem.

Advance Care Planning Commercial Insurance Program, Feasibility Study

Michael Ostrov, MD, MS, J. Phil Colmenares MD, MPH; WPS Insurance Company, Madison, Wis

Background: As the focus on end-of-life care has increased, it has become apparent that special conversations by trained facilitators, called advance care planning (ACP), will be instrumental to getting individuals to fill out advance directives and to communicate their wishes to their families ahead of catastrophic health events. Research has confirmed the beneficial outcomes of having these conversations. Coverage of these conversations and coordination with palliative and hospice care have not been addressed within the general insured population. WPS developed a pro-

gram to address these gaps and scale up coverage to all insured.

Methods: WPS worked with established pathways in the Wisconsin Medical Society's Honoring Choices Wisconsin program to coordinate with trained facilitators. Internally, the insurer modified the claims system to process claims correctly and made modifications to the insurance certificates to allow for this coverage. Plans are underway for coordination with the other major end-of-life supportive care measures, palliative care, and hospice care.

Results: As of the end of 2015, coverage for ACP was put in place. Methods for identifying people likely to benefit in the near term from ACP have been developed. Outcomes have yet to be measured.

Conclusions: Research has established the value of ACP. Developing a program to provide insurance coverage for ACP as well as coordination with coverage of other end-of-life supportive care, will be instrumental in scaling up utilization of these services in an optimal fashion. The feasibility of the initial steps to enable commercial insurance coverage for a general population have now been accomplished.

HEALTH CARE ETHICS

Assessing the Risk of Donor-Derived Malignancy From Donors With Primary Malignant Glioma

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Background: The mismatch of organ demand vs. supply in the United States has resulted in a critical shortage of donor kidneys. Here we assess the transmission risk associated with kidneys from donors with glioblastoma multiforme (GBM) and highlight their role in addressing the organ crisis.

Methods: We reviewed data spanning 1985 to 2001 and involving 268 organs from 69 GBM donors from the United Network for Organ Sharing (UNOS), registries in the UK, England, Wales, and Northern Ireland (UEWI), and the Australia and New Zealand Registry (ANZDOR) with a mean follow-up between 36 and 60 months. We compared 1200 potential cases of GBM out of 8000 cases

of primary brain tumors, based on a prevalence of 15.1% and compared that to 23 confirmed extraneural metastasis (ENM) of GBM in a study by the Armed Forces Institute of Pathology (AFIP). We compiled 161 instances of ENM and compared the differential frequencies of metastasis to various tissues.

Results: There were zero reported cases of donor-derived tumor transmission (DDT) in the recipients of 115 total organs from donors with GBM, according to combined data from UNOS and UEWI. There were zero reported cases of DDT in the recipients of 153 organs from 46 donors with GBM between, according to ANZDOR data. Comparing an estimated 1200 patients with GBM to 23 histology-confirmed ENM yielded a 1.9% rate of ENM. Of 161 instances of ENM, 36%, 34%, 14%, 13%, and 3% were found in lymphatic lung, bone, hepatic, and renal tissue, respectively.

Conclusions: The data synthesized here highlights a possibly overestimated risk of tumor transmission following kidney transplantation from a donor with GBM. In the face of an increasingly critical organ shortage and given the sobering loss of quantity and quality of life for waitlist patients, our threshold for the acceptable risk for GBM donor kidneys cannot remain static.

The Role of the Physician in Advance Care Planning

Amanda Lam, BA, MD candidate, UWSMPH, Madison, Wis

Background: The American Medical Association Code of Medical Ethics states that “physicians should routinely engage their patients in advance care planning.” The focus on the ACP process instead of completion of a legal document is effective for various patient populations and increases the congruence of a patient’s desired care with the actual treatments received. This research identifies ACP quality measures, areas for ACP improvement, and barriers and catalysts to ACP implementation.

Methods: PubMed search terms: “Advance Care Planning” [MeSH] OR “advance care planning,” “Attitude of Health Personnel” [MeSH], “Respecting Choices” OR “Honoring Choices.” Article types: Systematic Reviews, Randomized Controlled Trial.

Quality measures: National Quality Forum, Institute for Healthcare Improvement, Centers for Medicare and Medicaid Services. The content and resources were reviewed and augmented by members of the Wisconsin Medical Society advisory group and Honoring Choices Wisconsin.

Results: In the 17 groups or solo practitioners reporting on Physician Quality Reporting System (PQRS) Measure 47 Advance Care Plan in 2013, a mean of 52.6% of patients ≥ 65 years old had an advance care plan, discussion, or health care agent documented in the medical record (SD 32.77%). In La Crosse County, Wisconsin, 90% of 400 adults who died in 2007-2008 had an advance directive, which was available in the medical record 99.4% of the time. A common physician catalyst to patients having ACP is the belief that physicians should initiate the discussion. A common physician barrier is difficulty defining the right moment.

Conclusions: Physicians can incorporate ACP into their practice by learning how to (1) start the ACP conversation as part of routine patient care, (2) explore patients’ goals, values, and beliefs related to medical care, (3) integrate ACP into the health care system, and (4) activate an advance directive. Performance improvement continuing medical education in ACP can support physicians in choosing the appropriate interventions and quality measures to track their progress.

HEALTH CARE QUALITY AND POPULATION HEALTH

Consumer Engagement Through Improved Health Literacy

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Background: One of every 3 Americans struggles with health literacy, including understanding how to read a prescription label, following discharge instructions, or effectively using health services. The Wisconsin Health Information Organization (WHIO) collaborated with Wisconsin Health Literacy and

Covering Wisconsin to help newly insured adults, and others likely to have lower health literacy, better understand their role in achieving good health and health care, how the quality of health care may affect their health, and the importance of choosing the right primary care provider.

Methods: The project was conducted in 13 urban and rural counties, plus an 8-county control group. Activities included (1) creating health-literate fact sheets on understanding health insurance, picking a physician, and evaluating health care; (2) training for community organizations to disseminate fact sheets; (3) interactive workshops for consumers; and (4) hospital and health insurer health literacy assessments to identify patient/member education opportunities.

Results: This work is in progress, but to date includes development of 16 fact sheets including “Choosing a Doctor” and “What is Preventive Care?”; staff training at a wide variety of organizations about health literacy and distribution of the fact sheets; health literacy assessments of a hospital, insurance company, and health care quality comparison website; and leading 20 educational workshops with underserved populations, including pre- and postsurveys.

We are in the process of analyzing results, completing a pre- and postintervention survey of the population served by the organizations trained to disseminate the fact sheet, and completing 6-month follow-up of workshop attendees.

Conclusions: This project successfully developed and distributed health materials intended for a broad audience of varied literacy levels and conducted trainings with health care organizations about use of these materials. Early feedback is promising; final data collection and analysis are in process.

Assessing the Health Impact of the Kinnickinnic River Corridor Neighborhood Plan

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Background: The Kinnickinnic (KK) River on Milwaukee’s south side currently is undergo-

ing a transformation led by the Sixteenth Street Community Health Centers (SSCHC). Initial phases of the restoration have begun, and the plan includes restoring the concrete-lined, flood-prone river to a more natural state, with a lower flood risk, a bike path, community gardens, and environmental programming in an effort to create a healthier environment and promote wellness. The purpose of this work is to evaluate the impact of this environmental programming on the health of the community.

Methods: We used ArcGIS to identify SSCHC patients who live within an approximately 1-square-mile neighborhood surrounding the river, and a control population that lives at least 1 mile away from the planned restoration. A baseline community health assessment is being conducted using indicators from the electronic medical record (EMR) and census-level data, and these indicators will be followed over the course of the river revitalization.

Results: Initial results from the baseline assessment show a similar prevalence in adults of overweight (34.3% vs 34.1%), obesity (45.2% vs 46.2%), asthma (12.1% vs 13.2%), depression (8.4% vs 8.8%) and hypertension (28.4% vs 27.3%), as well as similar levels of HbA1c control under 9.0 (73.4% vs 71.8%) between the KK River group and the control group, respectively.

Conclusions: We hypothesize that over time our analysis will show gradational improvements in both the mental and physical health of the community living near the KK River due to improved access to functional green spaces, environmental programming initiatives, a cleaner environment, and improved ecosystem services. This work will add to the body of literature showing the impact of the built environment on health in a low-resource neighborhood, and describes a process through which providers can use EHRs and other technology to evaluate programming and monitor population health.

SEEDS: A Mental Health Treatment Program

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Background: Latina adolescents have the highest rate of depression compared with other girls in the United States and disproportionately high rates of anxiety, suicidal ideation, and suicidal attempts. Since chronic stressors influence mental health adversely, it is necessary to identify stressors that are unique to the Latina experience. The way in which an adolescent copes with a negative stressor can be protective or harmful; therefore, programs aimed at improving coping skills can lead to improved mental health.

The Self-Esteem, Empowerment, Empathy, and Discovery of Self (SEEDS) program seeks to reduce mental health disparities in at-risk Latina youth through establishing a mental health treatment group at a Federally Qualified Community Health Center in Milwaukee, Wisconsin.

Methods: A pilot group therapy intervention (20 weeks) and a second intervention (15 weeks) were conducted weekly by a psychotherapist. Each group was comprised of 12 female participants, 12-17 years, who met the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* criteria for adjustment disorder, anxiety, bipolar disorder, and/or depression and were referred by their health care providers. Validated scales—including Screen for Child Anxiety Related Disorders (SCARED) to measure anxiety, PHQ9 for depression, Rosenberg Scale for self-esteem, and Responses to Stress Questionnaire for coping—were administered pre- and postintervention. Perceived Stress Scale, Bicultural Stress Scale, and a Stigma scale were administered at one time point.

Results: The SEEDS groups demonstrated a significant reduction in the Social Anxiety subscale of SCARED ($P < .005$). Perceived stress was positively correlated with anxiety ($P < .0005$); and inversely with self-esteem ($P < .05$). Though statistically insignificant, the trial demonstrated findings in the expected direction including improved self-esteem, reduced depression, and lowered overall anxiety. Increased stigma was associated with increased depression and anxiety, and lower self-esteem. The Bicultural Stress Scale identified family and discrimination stress as most prevalent.

Conclusions: Findings suggest that SEEDS is

a useful intervention for at-risk Latina youth. Results will be used to improve subsequent SEEDS groups to meet the specific needs of this Latina population.

A Review of Medical Device Regulation from the Perspective of TAVR

Implementation

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Background: Aortic stenosis (AS) is the most common valvular disease in the United States and European Union (EU). Until recently, surgical aortic valve replacement (SAVR) was the only option for patients with aortic stenosis who required an intervention. Transcatheter aortic valve replacement (TAVR) is a less invasive procedure and increases treatment options to patients. The implementation of TAVR varied significantly between the United States and Europe, providing an extraordinary example to explore medical device regulation and its impact on patients.

Methods: A literature review was performed using PubMed and supplemented with Google and government databases from 2002 to 2015, using search criteria including TAVR and medical device regulation in the EU and United States. Fifteen journal articles fit the criteria and were used to examine the reasons for, and discuss the impact of the delayed implementation of TAVR in the United States relative to the EU.

Results: From the organizational set-up of each system, to the rigor of data needed for approval, to the transparency with which each process is conducted, the US and EU systems vary greatly. In broad strokes, the US system can be characterized as more conservative and bureaucratic, and the EU system as faster, using private for-profit companies, but with lower evidence thresholds. It can be estimated that 144,674 patients in the United States may have benefited from TAVR during the 4-year delay period.

Conclusions: Ultimately, we must weigh the cost of delayed approval times with the need for certainty in safety and efficacy. Though it is impossible to say which system is better for patients in the long term, we can learn from

examples like TAVR to continue to optimize all aspects of patient care.

Appropriateness Dimension of Quality*

Phil Colmenares, MD, MPH, Kristin M. Fiore, MBA, Mary A. Umbeck, MSIE, MHA; WPS Health Insurance, Madison, Wis

Background: Over 90% of existing quality measures focus on the underuse of effective care. However, evidence shows that approximately 60% of Medicare spending is tied to supply sensitive care (overuse). Measuring the appropriateness of physician decision making may help highlight the negative impact of overuse on quality. We propose a framework for defining appropriateness across four dimensions: Low Value, Marginal or No Value, Misaligned Value, and Relative Value (Cost-Effective).

Methods: Technical specifications were developed using diagnosis and Current Procedural Terminology (CPT) codes for individual measures as follows:

- Low Value: Members having a low value intervention as a percentage of members who could have had a low value intervention for each of seven low value measures.
- Marginal Value: Rate of marginal interventions per member population.
- Misaligned Value: Members who had advanced care planning as a percentage of members with advanced solid organ cancer.
- Cost-Effective: Members who had a home sleep study as a percentage of members who had any sleep study.

Each measure was run using the Datamart Version 13 WHIO data set for the 2 years ending March 31, 2015. We included commercial, Medicare, and Medicaid claims for members with an imputed primary care provider located in Wisconsin. The mean and 95% confidence interval were calculated for each of the 20 largest Wisconsin health care systems and to create a Wisconsin benchmark.

Results: When the performance of the 20 Wisconsin health providers is compared, there is variation in the results across systems. The best performer scored significantly

higher than the Wisconsin benchmark on 7 measures, while the poorest performer scored significantly lower than the Wisconsin benchmark on 5 measures. Four systems demonstrated performance above the state average on the majority of the measures. Sixteen systems scored at or below the state average on the majority of the measures.

Conclusions: Incorporating claims-based measures of appropriateness may provide a more robust characterization of quality or health care value. Moving forward, the goal is to look for possible associations between traditional quality measures and appropriateness metrics.

Bringing the Team on Board: Using Visual Management Boards as a Quality Improvement Tool

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Background: Government insurers and third-party payers are tracking population health quality measures. We incorporated Lean visual management for our clinic quality measure of breast cancer screening. We integrated care team members to improve current performance, adhere to our previsit planning process, and the goal to improve mammography.

Methods: We created a previsit planning process (PVP) and placed a dry-erase board in the clinic. In rows by primary care physician (PCP), we showed (1) percentage of patients who completed mammograms in the prior month, (2) percentage over the past 12 months, and (3) number of patients due for mammogram and with appointments in the upcoming month. During the office visit, medical assistants (MA) updated the board for those patients seen by the PCP and due for mammography with the action plan—either mammogram ordered, declined, or external result found. Periodically, MA-PCP huddles were observed for adherence, which were recorded on the monthly calendar as a visual audit board. Processes were marked as follows: green for 100% adherence, red for less than 100%, and white for absence of audit.

Results: Our clinic mammography rate increased from 73% to 77% as a rolling 12-month average. The rate of PVP adherence reflected this trend by starting at 16.43% and increased to 66.32% due to our auditing process. Both PCP and MA groups reported with 75% agreement through anonymous surveys that the Lean visual board was an important tool to address gaps in care.

Conclusions: We integrated the care team using a visual board as a central repository to improve our clinical quality metric for mammography. Team feedback led to effective processes by utilizing more concurrent, real-time, patient-centered data for mammography on our visual board and an audit process. This reinforced an efficient PVP. We anticipate higher mammography rates as we move forward with this team-based approach to improving quality measures.

Developing Successful Resident Quality Improvement Projects*

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Background: Quality improvement (QI) education in residency training has become critical for ongoing residency program accreditation, preparation for maintenance of certification requirements, and preparation for employment in a health care environment that demands quality outcomes. However, few reports describe residency training programs that result in resident QI projects that are truly successful and sustainably implemented.

Methods: In 2009, the University of Wisconsin (UW) psychiatry residency program developed a post-graduate year 3 (PGY-3) QI curriculum that now includes a 15.5-hour didactic course, completion of a QI project under the guidance of a QI faculty supervisor over the course of 1 year, presentation of a Morbidity and Mortality case, and participation in a UW Hospital Peer Review meeting. Residents use an internally devel-

oped QI workbook to guide their QI project work. The percentage of resident QI projects to date that have been sustainably implemented was calculated. The QI Knowledge Assessment Tool (QIKAT) was used to assess the effectiveness of the curriculum in increasing resident knowledge and skills in QI in the first 2 cohorts of resident participants. UW Health Sciences Institutional Review Board exemption was granted for this project.

Results: Eighteen of 19 resident QI projects thus far have been sustainably implemented. Our curriculum significantly improved QI knowledge and skills as measured by the QIKAT in the first 16 resident participants ($P=0.0053$).

Conclusions: Residents are able to implement successful QI projects when given appropriate resources. Possible important factors in this success include longitudinal duration of QI rotation, resident protected time, weekly meetings with faculty QI project supervisors, residents being kept accountable via required project presentations, incentivization of QI project work via opportunities for publication and via offering of American Board of Psychiatry and Neurology Maintenance of Certification credit, and development of rotation evaluations that reward sustainability of projects.

Improving Sexual Health Behavior Discussions Between HIV Patients and Providers at an Academic Infectious Disease Clinic

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Background: People living with HIV are at increased risk for acquiring and transmitting sexually transmitted infections (STIs). Clinics have sought to improve secondary prevention of genital and extra genital STIs through the development of screening interventions, however, primary prevention strategies such as provider-initiated prevention counseling remain a major area for improvement.

Methods: Collaborating with providers, patients, and the HIV Community Advocacy Council (CAC), we developed an anonymous, bilingual, and gender-identity inclusive survey assessing (1) demographic data, (2) sexual health behaviors, (3) perceptions of provider

discussions, (4) knowledge on HIV and STI transmission, and (5) attitudes toward sexual health discussions. Patients attending a single, university-affiliated outpatient clinic who were HIV-positive and 18 or older were invited to complete the survey after completion of a routine medical visit.

Results: Between May 1, 2015 and June 30, 2015, 115 patients were invited to complete the survey and 105 (91%) responded. Seventy-two percent of patients reported any sexual activity in the past year, with 84% of this group reporting at least 1 unprotected sexual encounter. For anal receptive sex, 27 of 39 (63%) reported unprotected intercourse, and 57% reported any provider discussion. For anal insertive sex, 21 of 38 (55%) reported unprotected intercourse, with 62% reporting any provider discussion. Including oral and vaginal sex, we observed an overall trend of decreased unprotected sex as reported provider discussions increased. Patients reporting unprotected sex had higher favorable or neutral attitudes towards sexual health conversations (76%) compared to the overall sample (69%).

Conclusions: We identified unprotected anal insertive and receptive intercourse as important areas to focus on improving patient provider discussions. Next steps include matching patient and provider goals, analyzing clinic workflow processes, piloting a lay language nonjudgmental script with the CAC, implementation, and repeating a follow-up survey to monitor our intervention.

Effectiveness of Reach Out and Read in Wisconsin Clinics

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Background: Reach Out and Read improves children's development and health by encouraging parents to share books with their children. Primary care providers give age-appropriate books at well-child visits and provide anticipatory guidance on reading. Reach Out and Read's efficacy is supported by more than 15 independent, peer-reviewed journal articles. This study measured changes in parent attitudes and behaviors around early literacy

following participation in Reach Out and Read in Wisconsin clinics.

Methods: A paper survey of early literacy attitudes and behaviors was administered to parents of children ages 6 months to 5 years in 36 Wisconsin clinics. Ten clinics were established Reach Out and Read sites (intervention group); 26 clinics were in the process of developing Reach Out and Read programs (control group).

Results: Parents at clinics with Reach Out and Read programs were more likely to read with a child before the age of 6 months compared with parents who had not participated (OR=1.58, 95% CI 1.05-2.38). These results were strengthened after exclusion of Dane County clinics (OR=1.77, 1.09-2.88). Parents were more likely to view reading as preparing their children for kindergarten, read more often with their children, and have more books in the home, although these increases were not statistically significant. Paradoxically, the odds of parents reporting reading as a bedtime habit were lower among those who participated in Reach Out and Read.

Conclusions: This study found mixed evidence in support of the effectiveness of the program outside of academic settings. Differences between these results and those from national studies of Reach Out and Read may be related to different assessment methods, differences in program implementation and fidelity, or differences between control and intervention clinic patient populations. We conclude that in community settings in Wisconsin, Reach Out and Read is effective. Further research is needed to determine the extent of this effectiveness.

Morbidity and Mortality of Inferior Vena Cava Filter Placement: Validation of Data Capture in Clinical Data Warehouse

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Background: The purpose of this study is to compare patient data acquired from manual chart review to automated data extraction from the Clinical Data Warehouse (CDW) in order to determine the accuracy of these tools.

Methods: A retrospective review of patients undergoing inferior vena cava (IVC) fil-

ter placement from 2006 to 2013 was performed after institutional review board approval was obtained. Two hundred patients were selected randomly from an institutional quality assurance/quality improvement database. Demographic and filter complication data was extracted manually from the EMR. Complications were validated by reviewing progress notes, imaging, and imaging reports. The CDW data was extracted using CPT and International Classification of Diseases Ninth Revision (ICD-9) codes. EMR and CDW data were compared for accuracy. Time required for manual and automated data retrieval was noted.

Results: One hundred one male and 99 female patients with a mean age of 62 (range 23-101) and mean follow-up of 2.5 years (range 0-9.3) were reviewed. There were 81 permanent, 112 retrievable, and 7 convertible filter placements, with 47 attempted filter retrievals, 5 conversions, and 4 failed retrievals. The complication rates from the EMR were filter strut penetration 13%, IVC occlusion 4.5%, and recurrent pulmonary embolism (PE) 2.5%. From the CDW data, we found a 9% rate of recurrent PE, 1.5% IVC occlusion, and 8% mechanical complications due to vascular device. Comparing the data from the EMR and CDW, patient gender had an agreement kappa with 95% CI of 0.98 (0.95, 1), recurrent PE 0.13 (-0.07, 0.33), mechanical complication 0.13 (-0.03, 0.28) and IVC occlusion 0 (0, 0). Age had a concordance correlation coefficient with 95% CI of 0.981 (0.976, 0.987). There was perfect agreement for filter placement and retrieval dates. Overall time was reduced by 80% using the data extraction software.

Conclusions: i2b2 and the Honest Broker tool are effective methods for data collection and identifying patient cohorts. They significantly decrease time spent on data extraction.

Virtual Surgery Evaluation of Septoplasty and Turbinectomy Contributions to Decreasing Nasal Resistance in a Patient With Chronic Nasal Obstruction

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Background: Septal deviation and inferior turbinate hypertrophy are common causes

of nasal airway obstruction (NAO). Surgical treatment for NAO often involves a combination of septoplasty (to correct the septal deviation) and turbinectomy (to reduce the inferior turbinate). Currently, due to the lack of objective measures to quantify NAO symptoms, these surgeries are recommended based on clinical examination alone, which is prone to observer bias, and consequently results in suboptimal clinical outcomes.

Methods: We applied virtual surgery to systematically investigate the contributions of septoplasty and turbinectomy to decreasing nasal resistance in 1 NAO patient. A 3-dimensional anatomic model representing the nasal cavity was built from presurgery computed tomography scans. Geometry-deforming software (Mimics™ and Sculptor™) were used to create models that systematically varied the nasal septum location and the inferior turbinate size. Computational fluid dynamics techniques were used to simulate nasal airflow and quantify nasal resistance.

Results: Our results revealed that a 1.2-mm reduction along the length of the inferior turbinate decreased nasal resistance by 28% in the left cavity, and that additional inferior turbinate reduction provided almost no further decrease in nasal resistance. As expected, moving the septum towards the left cavity reduced the resistance of the right cavity.

Conclusions: We conclude that, while septoplasty was essential to improve nasal patency in the right cavity, moving the septum to the left did not increase the left cavity resistance significantly. Therefore, aggressive inferior turbinectomy is not recommended for this patient, and the extent of turbinectomy should be simply to provide enough space for moving the septum laterally. This study illustrates how computational modeling and virtual manipulation of the nasal geometry are useful to investigate nasal physiology and for planning surgical approaches that minimize nasal resistance in NAO patients.

In Silico Docking of Alkylphosphocholine Analogs to Human Serum Albumin May Predict Partitioning and Pharmacokinetics

Ray Zhang, BA, MD/PhD candidate, UWSMPH, Madison, Wis

Background: Shown to display prolonged selectivity and retention in 55 in vivo rodent cancer, human cancer, and cancer stem cell models, CLR1404 was selected as a broad-spectrum, tumor-targeting platform to be further evaluated in human clinical trials. Currently, 2 CLR1404 analogs – I¹²⁴-CLR1401 for positron emission tomographic (PET) imaging, and I¹³¹-CLR1404 for therapy and single-photon emission computed tomographic (SPECT) imaging – are enrolled in 5 clinical trials spanning multiple academic research centers, and I¹²⁴-CLR1404 is currently being evaluated in phase II trials as a GBM PET-imaging agent. The fluorescent analogs CLR1501 (green fluorescence) and CLR1502 (near infrared) were created for real-time tumor cell visualization.

Methods: In an effort to understand how the structures of alkylphosphocholine (APC) analogs impact binding and pharmacokinetics, we performed in silico docking analysis, in vitro and in vivo partitioning experiments, and in vivo half-life studies.

Results: Plasma partitioning studies suggest binding of CLR1404 analogs predominantly to albumin. Crystal structure information on structurally similar molecules, and in silico modeling using CLR1404 analogs, suggest high-affinity binding to 7 distinct sites on human serum albumin. We demonstrate through binding assays and pharmacokinetic studies using rodents that high-affinity binding to albumin, along with physicochemical properties, predict distribution and clearance kinetics for CLR1404 analogs more effectively than either alone.

Conclusions: CLR1404 represents a new class of synthetic APC analogs useful as broad spectrum, tumor-selective molecular imaging and therapy agents in human cancers. Combined application of these chemically identical APC-based radioisotopes, and an understanding of the distribution and clearance kinetics, will enable personalized dual-modality cancer therapy by using I¹²⁴-CLR1404 and fluorescent APC for tumor imaging, and for planning follow-up I¹³¹-CLR1404 therapy.

Helping Hands: An HIV Peer Mentoring Program at Sixteenth Street Community Health Centers

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Background: There are approximately 1.1 million people living with HIV/AIDS (PLWHA) in the United States. Studies demonstrate that poor engagement in medical care led to HIV/AIDS-related morbidity and mortality. In Wisconsin, more than 50% of new HIV infections in 2014 occurred in Milwaukee County, with racial and ethnic minorities disproportionately affected. The HIV Department at Sixteenth Street Community Health Centers (SSCHC) has been actively involved in reducing this disparity. The purpose of this project is to increase the quality of the services that the SSCHC HIV Department provides its HIV patients by creating a peer-mentoring program for PLWHA, which will re-engage HIV patients that are intermittent users of the health care system back into treatment. The ultimate goal is to reduce and prevent further transmission of HIV infection.

Methods: In order to evaluate the degree to which the HIV community would be receptive to the idea of a peer-mentoring program, a Community Readiness Assessment (CRA) was conducted. The elements of the CRA included (1) identifying the issue, (2) identifying and clearly defining and delineating the community, (3) preparation of interview questions for key community respondents (HIV positive patients incompletely engaged in care), (4) conduction and transcription of these interviews, (5) scoring of interviews, (6) and member validation and feedback (by HIV positive patients completely engaged in care).

Results: 15 in-depth interviews were conducted and transcribed. Scored results from the CRA are intended to gain an understanding of the HIV community's knowledge of efforts, leadership, community climate, and

resources that address HIV patients unengaged in medical care. Results will be presented to the HIV Department's Consumer Advisory Board members for feedback and validation regarding the main themes affecting the HIV community of the south side of Milwaukee. All of these elements will guide the ongoing development of the Helping Hands program.

Conclusions: Incomplete engagement in HIV care is common in the United States. Helping Hands is a peer-mentoring program envisioned to guide untreated HIV patients towards engagement in care with the help of peers who have been through similar HIV-related experiences.

Use of Interpreter Services in Limited English-Proficient Pediatric Encounters

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Background: Previous research indicates that limited English-proficient (LEP) patients are marginalized within the US health care system. They face difficulties navigating the system and communicating with providers, which may result in adverse health outcomes. With a growing population of Americans who speak languages other than English at home, it is imperative to better understand how interpreter service use impacts the delivery of health care. Although much work has been done on the use of interpreter services in adult populations, there is limited understanding of the use of these services in the pediatric health care setting. We conducted interviews with pediatricians and family practice physicians to understand how and when they use interpreters in pediatric encounters; their perspectives are on facilitators barriers to communicating with LEP pediatric patients.

Methods: We conducted semi-structured interviews with 6 family physicians and 5 pediatricians in the UW Health system. Physicians were recruited via e-mails and letters, and an appointment was set up to interview physicians who expressed interest. The interviews took approximately 30 minutes, during which physicians were asked how they experience LEP pediatric encounters

over a set of 10 semi-structured interview questions. Audiotapes from each interview were transcribed verbatim and coded for analysis. Two coders reviewed the transcripts and proposed codes, and a final list of codes, along with their definitions, was confirmed. Two coders then coded all transcripts using the final list of codes. Themes were developed using content analysis.

Results: Preliminary results suggest a number of important themes at the pediatric patient, patient family, provider, and interpreter levels. Physicians described the ways in which they use particular types of interpreter services (in-person, telephone, video) in pediatric encounters and how the different types compare to one another, including benefits and drawbacks of each type. They identified strategies for using interpreter services and described what quality interpreting looks like to them, including comparisons between linguistic and cultural conduit interpreting. Physicians identified facilitators and barriers to their communication with LEP pediatric patients and their families, such as issues of availability and accessibility of interpreter services.

Conclusions: Physicians identified a number of facilitators and barriers with regard to the use of interpreter services in pediatric encounters. Results were similar to those found when interviewing providers about adult encounters, with the exception that pediatricians expressed a greater obligation to use professional interpreters to protect vulnerable children. By increasing our understanding of the challenges and dynamics among LEP pediatric patients, their families, providers, and interpreters, the themes identified will help to inform efforts to improve the quality of health care delivery provided to LEP patients and families in the UW Health system.



Joseph E. Kerschner, MD

The Value of Veterans Administration Medical Centers in Academic Medicine

Joseph E. Kerschner, MD

Seventy years ago this past January, the United States Department of Veterans Affairs (VA) formed an unprecedented partnership with academic medicine that has contributed to world-class care for generations of veterans. This collaboration dates back to the end of World War II, when the VA faced a severe shortage of physicians. Tens of thousands of veterans returned from that conflict with injuries and illnesses that would require health care for the rest of their lives. At the same time, many physicians were returning from the war without having completed residency training. The solution was the creation of VA-academic affiliations, established under a VA policy memorandum issued in 1946, which authorized clinical and research affiliations between the VA health care system and medical schools to improve the quality of health care at VA medical centers.¹ Over the decades, this collaboration has had a very positive impact on both the health of veterans and that of the entire country.

The effects of the policy decisions 70 years ago and their swift implementation

led to significant local and national changes. Through this historic collaboration, the VA has become the largest single provider of medical training in the country, where more than 22,000 medical students and 41,000 residents receive clinical training annually. What began as a simple idea in a time of great need has developed into an outstanding partnership grounded in the shared missions of education, patient care, and research. Without this partnership, most physicians practicing clinical medicine in the United States would have substantial deficits in their clinical training experience. In addition, since a majority of veterans (estimated at 60% in 2014²) receive some of their medical treatment outside of the VA health care system, having a medical training system with exposure to the special needs of veterans elevates their care both inside and outside the VA system.

Some additional important facts about the VA-academic medicine partnership:

- 70% of physicians rotate through the VA for a portion of their training.
- The VA sponsors about 10% of graduate medical education trainee positions and is the largest provider of health care training in the United States.
- The VA Office of Research and Development (with an annual budget of nearly \$590 million) sponsors veteran-centric research on numerous topics, and many VA researchers have joint appoint-

ments at both VA hospitals and medical schools.

The Medical College of Wisconsin's (MCW) 70-year partnership with the Milwaukee-based VA hospital (now named the Clement J. Zablocki VA Medical Center) began on January 22, 1946, and was among the first of its kind in the United States. MCW's agreement with the Milwaukee VA in 1946 was established 2 days after the enactment of Public Law 79-293, which created the VA's Department of Medicine and Surgery and allowed the VA to expand its physician workforce to meet the needs of veterans returning from World War II.³

Public Law 79-293 and Policy Memorandum #2 enabled the VA to become an integral part of residency training for the nation's physicians. These programs empowered the nation's medical schools to take charge of residency training within the VA; residencies were up and running in Milwaukee by the end of 1946, resulting in half of our medical school's senior class being trained at the local VA hospital.

In 1947, the *Milwaukee Journal* noted that General Omar Bradley, chief administrator at the VA Central Office, had commended the improvement of care within Milwaukee's VA hospital under the leadership of Eben J. Carey, MD, dean of our medical school (MCW's predecessor institution was part of Marquette University at this time), and Lt. Col. Glenn Mullens of the VA hospital staff.⁴ In 1951, the

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Milwaukee Journal reported that the health care provided by the VA had garnered the reputation as the highest quality care offered “anywhere in the world.”⁵ This tradition of excellence at the Zablocki VA has continued to the present day.

Academic medicine and the VA share a commitment to education, research, and patient care. Both are indispensable training centers for the nation’s future health care workforce. Both are essential laboratories of innovation in biomedical and health services research. Both are centers of clinical care devoted to all patients, including the most challenging. And both share a commitment to health equity for all—especially for veterans. Because medical school faculty members are the principal performers of medical research in the United States, faculty status for VA staff also increases VA involvement in biomedical research. Thus, affiliation agreements have facilitated the incorporation of teaching and research functions as formal components of the mission of the VA health care system.⁶

Academic medicine benefits veterans in several ways. Veterans are a special population, often with distinct medical and psychosocial needs. Academic medical centers provide a unique set of essential services (including care for a disproportionate share of special populations), maintain critical standby capacity (such as Level 1 trauma centers and other quaternary care), offer cutting-edge care, and direct the overall training of the future physician workforce.

Last year, approximately \$10 million of research—which was primarily funded by the VA and the National Institutes of Health—was conducted by MCW faculty members at the Zablocki VA. Some of the nation’s most cutting-edge research in traumatic spinal injuries, motor vehicle injuries, blast injuries, and traumatic brain injuries are conducted by MCW researchers in state-of-the-art VA facilities. Additionally, MCW is finalizing a lease for some of its research space on our main campus to bring VA researchers closer to our outstanding core facilities and infrastructure to further enhance research efficiency, productivity, and excellence.

At present, 412 MCW clinical faculty members practice at the Zablocki VA and 74 faculty members are undertaking research there. Additionally, 388 residents and fellows rotate through positions at the Zablocki VA on an annual basis through the Medical College of Wisconsin Affiliated Hospitals, Inc. Additionally, the Zablocki VA provides comprehensive medical/surgical tertiary care and comprehensive mental health services for the eastern half of Wisconsin and the Upper Peninsula of Michigan—all of which is dependent on the collaboration with MCW.

Our collaboration during the past 70 years has provided many advantages and advances for those who have served our country bravely. Michael Erdmann, MD, and the leadership and staff at the Zablocki VA, as well as MCW leaders and faculty, are committed to continuing to improve care for our veterans through enhanced access and innovation. It is the responsibility of current leaders to build upon the work of visionaries such as General Bradley and Dean Carey, through thoughtful dialogue about how to make these improvements to address the special health care needs of our veterans, and how to strengthen the critical educational and research platform that our VA health care system provides to benefit all Americans.

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