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JULY 2014

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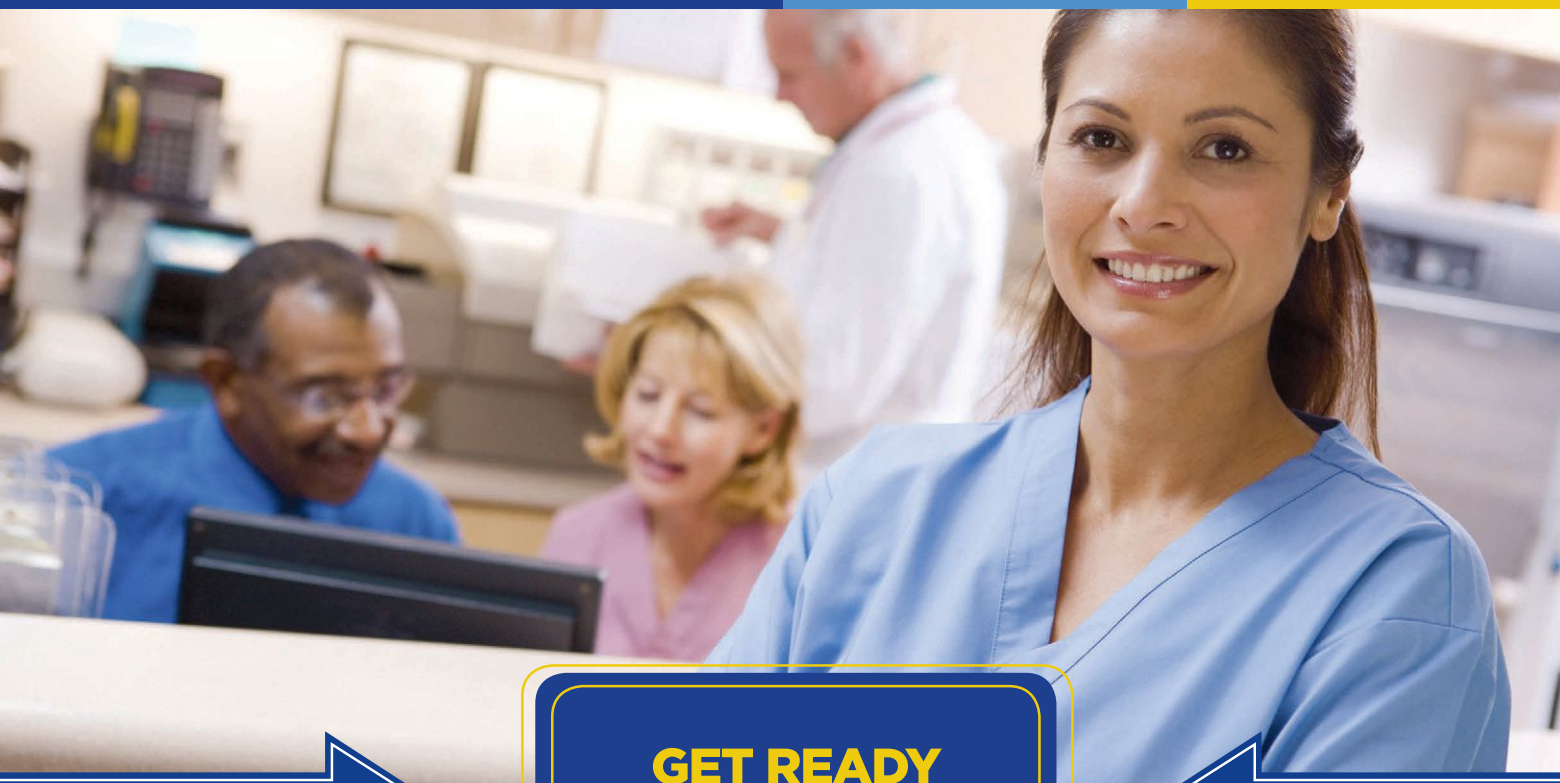

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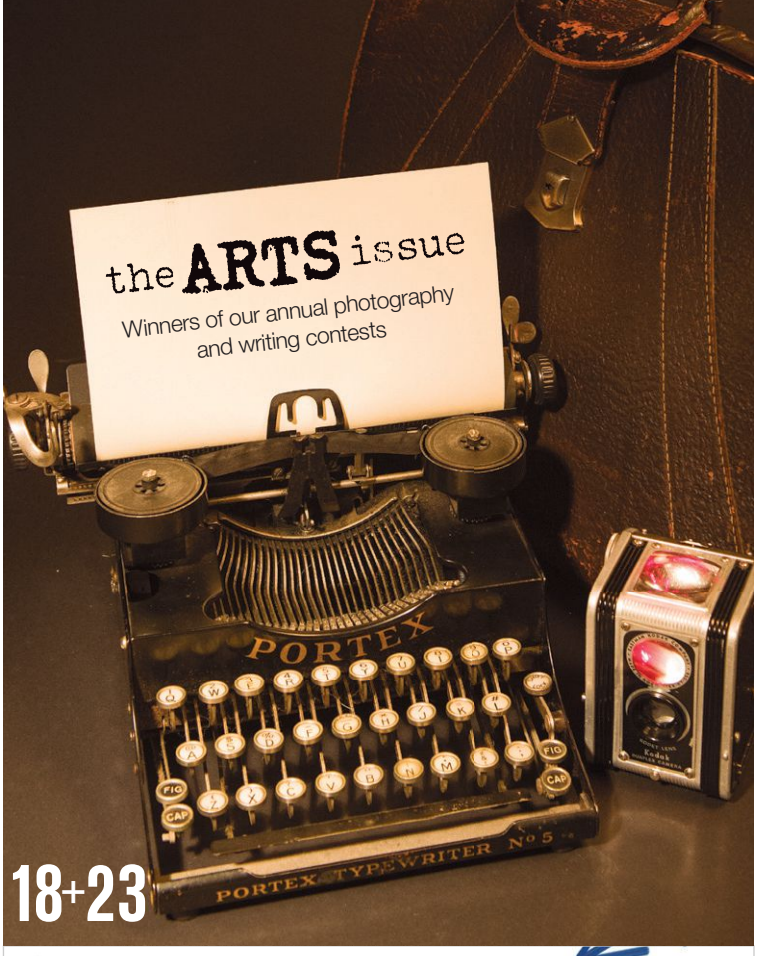

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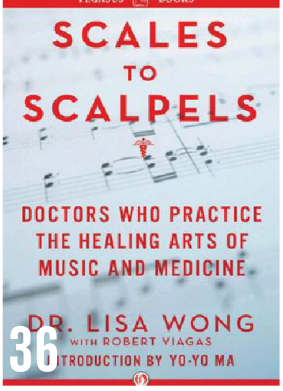

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PHOTO BY SCOTT WALKER

Charles R. Meyer, M.D., Editor in Chief

Confessions of a bookaholic

Frequently bound by their clinical rituals, doctors need to stretch their minds, and reading does just that for me.

A looming pile of unread magazines sitting on my desk speaks to me, reproving me for choosing other pleasures rather than keep up with their deluge of words: *New Yorkers, Atlantics* and the occasional alumni weekly. But the harshest voice is that of the *New York Review of Books* (NYRB). Christened "daunting" by my book-loving son, it brings tabloid-size pages of dense, intellectual commentary on the printed word and page-length ads for books by multiple presses. Yet the pain elicited by the untouched NYRBs isn't so much the ponderous content or even the number of words. It's what it represents—the entire world of books.

Yes, I'm here to complain about books. Masquerading as vehicles for education and uplift, books are really nefariously subversive, quietly challenging us to "read me." From my bedroom bookshelves they stare out at me, the read ones challenging me to remember what they said, the unread ones asking why I haven't got to them. My "buy one, give one away" resolution has gone nowhere, and space is getting tighter on the shelves.

The clarion call from books to the book-obsessed used to be easier to tolerate, limited to bookstore excursions where you just had to quickly resist the catchy dust jackets before scurrying out the door. But then along came Amazon, simplifying book buying for all but the Internet ignorant, followed by the Kindle, with which you can stuff your "to-be-read" queue with a few quick clicks. And, eerily, Amazon seems to know what will tickle my click finger.

Medical school should have cured me of my book obsession. Four years of lugging around heavy textbooks, which then took up seemingly permanent residence on my shelves, should have fostered a lasting aversion. But the nonmedical stuff keeps beckoning me. I'm not sure what fuels this troublesome habit. I don't think I think I'm smarter the more books I read, and certainly the growth of my fund of knowledge dwindles with each birthday despite how many books I read. I don't belong to any book clubs, and the number of people with whom I discuss books is quite small. Perhaps it truly is a compulsion like checking all the doors or washing your hands repeatedly. If so, drugs might help.

But I'm not really sure I need or want to be cured. I long ago steeled myself against the Barnes and Noble temptress and am usually able to muster good arguments to not buy that book in front of me. And I am convinced, for now at least, that consuming books is good for me. Books can take me to worlds beyond the daily drone of the office. I get to share the mind of someone with a life totally different from mine who has thoughts and ideas that never occur to me.

Frequently bound by their clinical rituals, doctors need to stretch their minds, and reading does just that for me. It's not just knowledge-gathering. It's brain yoga.

So I go back to that stack of NYRBs with a refreshed outlook. Now I see not just pages of turgid prose. I see a Narnia-like closet opening before me, a quiet experience that promises to change me.

Charles Meyer can be reached at meyer073@umn.edu.

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Mayo Clinic's Transform Symposium addresses tough questions, focuses on results and engages attendees to catalyze practical innovation for health and health care.

MAYO CLINIC

A scene from Scott Svare's winning video.

Teens on tanning

Last January, the Minnesota Department of Health challenged teens to educate their peers about the risks of indoor tanning by launching the UVideo Challenge. The winner would receive $1,000 from the Minnesota Dermatological Society.

The top pick was Burnsville High School senior Scott Svare's 30-second spot,"The Truth About Tanning," which superimposed messages about melanoma risk over images, including those of a girl settling into a tanning bed. It and other winning entries were aired locally in May during the season finale of *The Vampire Diaries*. To see them, go to www.health.state.mn.us/uvideo/index.html.

Mayo to host arts in health symposium

The first Regional Arts in Healthcare Symposium will take place at Mayo Clinic in Rochester November 16-17. Arts in Health: Patients, Providers and the Community is for both health care professionals and artists. It will feature workshops, PechaKucha (presentations in which 20 slides are shown in 20 seconds) and networking opportunities.

Harvard pediatrician Lisa Wong, M.D., will be the keynote speaker. She is author of *Scales to Scalpels: Doctors Who Practice the Healing Arts of Music and Medicine* (see book review p. 36). Gary Christenson, M.D., chief medical officer of the University of Minnesota's Boynton Health Service, and Paul Scanlon, M.D., medical director of the Mayo Clinic Dolores Jean Lavins Center for Humanities in Medicine, will be the plenary speakers.

The symposium is sponsored by the Global Alliance for Arts and Health and Mayo Clinic Lavins Center for Humanities in Medicine. For information, contact humanitiesrochester@mayo.edu.

Victoza®—a force for change in type 2 diabetes.

A 52-week, double-blind, double-dummy, active-controlled, parallel-group, multicenter study. Patients with type 2 diabetes (N=745) were randomized to receive once-daily Victoza® 1.2 mg (n=251), Victoza® 1.8 mg (n=246), or glimepiride 8 mg (n=248). The primary outcome was change in A1C after 52 weeks.

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VICTOZA®
liraglutide (rDNA origin) injection

Indications and Usage

Victoza® (liraglutide [rDNA origin] injection) is indicated as an adjunct to diet and exercise to improve glycemic control in adults with type 2 diabetes mellitus.

Because of the uncertain relevance of the rodent thyroid C-cell tumor findings to humans, prescribe Victoza® only to patients for whom the potential benefits are considered to outweigh the potential risk. Victoza® is not recommended as first-line therapy for patients who have inadequate glycemic control on diet and exercise.

Based on spontaneous postmarketing reports, acute pancreatitis, including fatal and non-fatal hemorrhagic or necrotizing pancreatitis has been observed in patients treated with Victoza®. Victoza® has not been studied in patients with a history of pancreatitis. It is unknown whether patients with a history of pancreatitis are at increased risk for pancreatitis while using Victoza®. Other antidiabetic therapies should be considered in patients with a history of pancreatitis.

Victoza® is not a substitute for insulin. Victoza® should not be used in patients with type 1 diabetes mellitus or for the treatment of diabetic ketoacidosis, as it would not be effective in these settings.

Victoza® has not been studied in combination with prandial insulin.

Important Safety Information

Liraglutide causes dose-dependent and treatment-duration-dependent thyroid C-cell tumors at clinically relevant exposures in both genders of rats and mice. It is unknown whether Victoza® causes thyroid C-cell tumors, including medullary thyroid carcinoma (MTC), in humans, as human relevance could not be ruled out by clinical or nonclinical studies. Victoza® is contraindicated in patients with a personal or family history of MTC and in patients with Multiple Endocrine Neoplasia syndrome type 2 (MEN 2). Based on the findings in rodents, monitoring with serum calcitonin or thyroid ultrasound was performed during clinical trials, but this may have increased the number of unnecessary thyroid surgeries. It is unknown whether monitoring with serum calcitonin or thyroid ultrasound will mitigate human risk of thyroid C-cell tumors. Patients should be counseled regarding the risk and symptoms of thyroid tumors.

Do not use in patients with a prior serious hypersensitivity reaction to Victoza® or to any of the product components.

Postmarketing reports, including fatal and non-fatal hemorrhagic or necrotizing pancreatitis. Discontinue promptly if pancreatitis is suspected. Do not restart if pancreatitis is confirmed. Consider other antidiabetic therapies in patients with a history of pancreatitis.

When Victoza® is used with an insulin secretagogue (e.g. a sulfonylurea) or insulin serious hypoglycemia can occur. Consider lowering the dose of the insulin secretagogue or insulin to reduce the risk of hypoglycemia.

Renal impairment has been reported postmarketing, usually in association with nausea, vomiting, diarrhea, or dehydration which may sometimes require hemodialysis. Use caution when initiating or escalating doses of Victoza® in patients with renal impairment.

Serious hypersensitivity reactions (e.g. anaphylaxis and angioedema) have been reported during postmarketing use of Victoza®. If symptoms of hypersensitivity reactions occur, patients must stop taking Victoza® and seek medical advice promptly.

There have been no studies establishing conclusive evidence of macrovascular risk reduction with Victoza® or any other antidiabetic drug.

The most common adverse reactions, reported in ≥5% of patients treated with Victoza® and more commonly than in patients treated with placebo, are headache, nausea, diarrhea, dyspepsia, constipation and anti-liraglutide antibody formation. Immunogenicity-related events, including urticaria, were more common among Victoza®-treated patients (0.8%) than among comparator-treated patients (0.4%) in clinical trials.

Victoza® has not been studied in type 2 diabetes patients below 18 years of age and is not recommended for use in pediatric patients.

There is limited data in patients with renal or hepatic impairment.

In a 52-week monotherapy study (n=745) with a 52-week extension, the adverse reactions reported in ≥ 5% of patients treated with Victoza® 1.8 mg, Victoza® 1.2 mg, or glimepiride were constipation (11.8%, 8.4%, and 4.8%), diarrhea (19.5%, 17.5%, and 9.3%), flatulence (5.3%, 1.6%, and 2.0%), nausea (30.5%, 28.7%, and 8.5%), vomiting (10.2%, 13.1%, and 4.0%), fatigue (5.3%, 3.2%, and 3.6%), bronchitis (3.7%, 6.0%, and 4.4%), influenza (11.0%, 9.2%, and 8.5%), nasopharyngitis (6.5%, 9.2%, and 7.3%), sinusitis (7.3%, 8.4%, and 7.3%), upper respiratory tract infection (13.4%, 14.3%, and 8.9%), urinary tract infection (6.1%, 10.4%, and 5.2%), arthralgia (2.4%, 4.4%, and 6.0%), back pain (7.3%, 7.2%, and 6.9%), pain in extremity (6.1%, 3.6%, and 3.2%), dizziness (7.7%, 5.2%, and 5.2%), headache (7.3%, 11.2%, and 9.3%), depression (5.7%, 3.2%, and 2.0%), cough (5.7%, 2.0%, and 4.4%), and hypertension (4.5%, 5.6%, and 6.9%).

Please see brief summary of Prescribing Information on adjacent page.

1013-00018617-1 December 2013

Victoza® (liraglutide [rDNA origin] injection)
Rx Only
BRIEF SUMMARY. Please consult package insert for full prescribing information.

WARNING: RISK OF THYROID C-CELL TUMORS: Liraglutide causes dose-dependent and treatment-duration-dependent thyroid C-cell tumors at clinically relevant exposures in both genders of rats and mice. It is unknown whether Victoza® causes thyroid C-cell tumors, including medullary thyroid carcinoma (MTC), in humans, as human relevance could not be ruled out by clinical or nonclinical studies. Victoza® is contraindicated in patients with a personal or family history of MTC and in patients with Multiple Endocrine Neoplasia syndrome type 2 (MEN 2). Based on the findings in rodents, monitoring with serum calcitonin or thyroid ultrasound was performed during clinical trials, but this may have increased the number of unnecessary thyroid surgeries. It is unknown whether monitoring with serum calcitonin or thyroid ultrasound will mitigate human risk of thyroid C-cell tumors. Patients should be counseled regarding the risk and symptoms of thyroid tumors *[see Contraindications and Warnings and Precautions]*.

INDICATIONS AND USAGE: Victoza® is indicated as an adjunct to diet and exercise to improve glycemic control in adults with type 2 diabetes mellitus. **Important Limitations of Use:** Because of the uncertain relevance of the rodent thyroid C-cell tumor findings to humans, prescribe Victoza® only to patients for whom the potential benefits are considered to outweigh the potential risk. Victoza® is not recommended as first-line therapy for patients who have inadequate glycemic control on diet and exercise. Based on spontaneous postmarketing reports, acute pancreatitis, including fatal and non-fatal hemorrhagic or necrotizing pancreatitis has been observed in patients treated with Victoza®. Victoza® has not been studied in patients with a history of pancreatitis. It is unknown whether patients with a history of pancreatitis are at increased risk for pancreatitis while using Victoza®. Other antidiabetic therapies should be considered in patients with a history of pancreatitis. Victoza® is not a substitute for insulin. Victoza® should not be used in patients with type 1 diabetes mellitus or for the treatment of diabetic ketoacidosis, as it would not be effective in these settings. The concurrent use of Victoza® and prandial insulin has not been studied.

CONTRAINDICATIONS: Do not use in patients with a personal or family history of medullary thyroid carcinoma (MTC) or in patients with Multiple Endocrine Neoplasia syndrome type 2 (MEN 2). Do not use in patients with a prior serious hypersensitivity reaction to Victoza® or to any of the product components.

WARNINGS AND PRECAUTIONS: Risk of Thyroid C-cell Tumors: Liraglutide causes dose-dependent and treatment-duration-dependent thyroid C-cell tumors (adenomas and/or carcinomas) at clinically relevant exposures in both genders of rats and mice. Malignant thyroid C-cell carcinomas were detected in rats and mice. A statistically significant increase in cancer was observed in rats receiving liraglutide at 8-times clinical exposure compared to controls. It is unknown whether Victoza® will cause thyroid C-cell tumors, including medullary thyroid carcinoma (MTC), in humans, as the human relevance of liraglutide-induced rodent thyroid C-cell tumors could not be determined by clinical or nonclinical studies. In the clinical trials, there have been 6 reported cases of thyroid C-cell hyperplasia among Victoza®-treated patients and 2 cases in comparator-treated patients (1.3 vs. 1.0 cases per 1000 patient-years). One comparator-treated patient with MTC had pre-treatment serum calcitonin concentrations >1000 ng/L suggesting pre-existing disease. All of these cases were diagnosed after thyroidectomy, which was prompted by abnormal results on routine, protocol-specified measurements of serum calcitonin. Five of the six Victoza®-treated patients had elevated calcitonin concentrations at baseline and throughout the trial. One Victoza® and one non-Victoza®-treated patient developed elevated calcitonin concentrations while on treatment. Calcitonin, a biological marker of MTC, was measured throughout the clinical development program. The serum calcitonin assay used in the Victoza® clinical trials had a lower limit of quantification (LLOQ) of 0.7 ng/L and the upper limit of the reference range was 5.0 ng/L for women and 8.4 ng/L for men. At Weeks 26 and 52 in the clinical trials, adjusted mean serum calcitonin concentrations were higher in Victoza®-treated patients compared to placebo-treated patients but not compared to patients receiving active comparator. At these timepoints, the adjusted mean serum calcitonin values (~1.0 ng/L) were just above the LLOQ with between-group differences in adjusted mean serum calcitonin values of approximately 0.1 ng/L or less. Among patients with pre-treatment serum calcitonin below the upper limit of the reference range, shifts to above the upper limit of the reference range which persisted in subsequent measurements occurred most frequently among patients treated with Victoza® 1.8 mg/day. In trials with on-treatment serum calcitonin measurements out to 5-6 months, 1.9% of patients treated with Victoza® 1.8 mg/day developed new and persistent calcitonin elevations above the upper limit of the reference range compared to 0.8-1.1% of patients treated with control medication or the 0.6 and 1.2 mg doses of Victoza®. In trials with on-treatment serum calcitonin measurements out to 12 months, 1.3% of patients treated with Victoza® 1.8 mg/day had new and persistent elevations of calcitonin from below or within the reference range to above the upper limit of the reference range, compared to 0.6%, 0% and 1.0% of patients treated with Victoza® 1.2 mg, placebo and active control, respectively. Otherwise, Victoza® did not produce consistent dose-dependent or time-dependent increases in serum calcitonin. Patients with MTC usually have calcitonin values >50 ng/L. In Victoza® clinical trials, among patients with pre-treatment serum calcitonin <50 ng/L, one Victoza®-treated patient and no comparator-treated patients developed serum calcitonin >50 ng/L. The Victoza®-treated patient who developed serum calcitonin >50 ng/L had an elevated pre-treatment serum calcitonin of 10.7 ng/L that increased to 30.7 ng/L at Week 12 and 53.5 ng/L at the end of the 6-month trial. Follow-up serum calcitonin was 22.3 ng/L more than 2.5 years after the last dose of Victoza®. The largest increase in serum calcitonin in a comparator-treated patient was seen with glimepiride in a patient whose serum calcitonin increased from 19.3 ng/L at baseline to 44.8 ng/L at Week 65 and 38.1 ng/L at Week 104. Among patients who began with serum calcitonin <20 ng/L, calcitonin elevations to >20 ng/L occurred in 0.7% of Victoza®-treated patients, 0.3% of placebo-treated patients, and 0.5% of active-comparator-treated patients, with an incidence of 1.1% among patients treated with 1.8 mg/day of Victoza®. The clinical significance of these findings is unknown. Counsel patients regarding the risk for MTC and the symptoms of thyroid tumors (e.g. a mass in the neck, dysphagia, dysphea or persistent hoarseness). It is unknown whether monitoring with serum calcitonin or thyroid ultrasound will mitigate the potential risk of MTC, and such monitoring may increase the risk of unnecessary procedures, due to low test specificity for serum calcitonin and a high background incidence of thyroid disease. Patients with thyroid nodules noted on physical examination or neck imaging obtained for other reasons should be referred to an endocrinologist for further evaluation. Although routine monitoring of serum calcitonin is of uncertain value in patients treated with Victoza®, if serum calcitonin is measured and found to be elevated, the patient should be referred to an endocrinologist for further evaluation. **Pancreatitis: Based on spontaneous postmarketing reports, acute pancreatitis, including fatal and non-fatal hemorrhagic or necrotizing pancreatitis, has been observed in patients treated with Victoza®. After initiation of Victoza®, observe patients carefully for signs and symptoms of pancreatitis (including persistent severe abdominal pain, sometimes radiating to the back and which may or may not be accompanied by vomiting). If pancreatitis is suspected, Victoza® should promptly be discontinued and appropriate management should be initiated. If pancreatitis is confirmed, Victoza® should not be restarted. Consider antidiabetic therapies other than Victoza® in patients with a history of pancreatitis.** In clinical trials of Victoza®, there have been 13 cases of pancreatitis among Victoza®-treated patients and 1 case in a comparator (glimepiride) treated patient (2.7 vs. 0.5 cases per 1000 patient-years). Nine of the 13 cases with Victoza® were reported as acute pancreatitis and four were reported as chronic pancreatitis. In one case in a Victoza®-treated patient, pancreatitis, with necrosis, was observed and led to death; however clinical causality could not be established. Some patients had other risk factors for pancreatitis, such as a history of cholelithiasis or alcohol abuse. **Use with Medications Known to Cause Hypoglycemia:** Patients receiving Victoza® in combination with an insulin secretagogue (e.g., sulfonylurea) or insulin may have an increased risk of hypoglycemia. The risk of hypoglycemia may be lowered by a reduction in the dose of sulfonylurea (or other concomitantly administered insulin secretagogues) or insulin **Renal Impairment:** Victoza® has not been found to be directly nephrotoxic in animal studies or clinical trials. There have been postmarketing reports of acute renal failure and worsening of chronic renal failure, which may sometimes require hemodialysis in Victoza®-treated patients. Some of these events were reported in patients without known underlying renal disease. A majority of the reported events occurred in patients who had experienced nausea, vomiting, diarrhea, or dehydration. Some of the reported events occurred in patients receiving one or more medications known to affect renal function or hydration status. Altered renal function has been reversed in many of the reported cases with supportive treatment and discontinuation of potentially causative agents, including Victoza®. Use caution when initiating or escalating doses of Victoza® in patients with renal impairment. **Hypersensitivity Reactions:** There have been postmarketing reports of serious hypersensitivity reactions (e.g., anaphylactic reactions and angioedema) in patients treated with Victoza®. If a hypersensitivity reaction occurs, the patient should discontinue Victoza® and other suspect medications and promptly seek medical advice. Angioedema has also been reported with other GLP-1 receptor agonists. Use caution in a patient with a history of angioedema with another GLP-1 receptor agonist because it is unknown whether such patients will be predisposed to angioedema with Victoza®. **Macrovascular Outcomes:** There have been no clinical studies establishing conclusive evidence of macrovascular risk reduction with Victoza® or any other antidiabetic drug.

ADVERSE REACTIONS: Clinical Trials Experience: Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in the clinical trials of a drug cannot be directly compared to rates in the clinical trials of another drug and may not reflect the rates observed in practice. The safety of Victoza® has been evaluated in 8 clinical trials*:* A double-blind 52-week monotherapy trial compared Victoza® 1.2 mg daily, Victoza® 1.8 mg daily, and glimepiride 8 mg daily; A double-blind 26 week add-on to metformin trial compared Victoza® 0.6 mg once-daily, Victoza® 1.2 mg once-daily, Victoza® 1.8 mg once-daily, placebo, and glimepiride 4 mg once-daily; A double-blind 26 week add-on to glimepiride trial compared Victoza® 0.6 mg daily, Victoza® 1.2 mg once-daily, Victoza® 1.8 mg once-daily, placebo, and rosiglitazone 4 mg once-daily; A 26 week add-on to metformin + glimepiride trial, compared double-blind Victoza® 1.8 mg once-daily, double-blind placebo, and open-label insulin glargine once-daily; A double-blind 26-week add-on to metformin + rosiglitazone trial compared Victoza® 1.2 mg once-daily, Victoza® 1.8 mg once-daily and placebo; An open-label 26-week add-on to metformin and/or sulfonylurea trial compared Victoza® 1.8 mg once-daily and exenatide 10 mcg twice-daily; An open-label 26-week add-on to metformin trial compared Victoza® 1.2 mg once-daily, Victoza® 1.8 mg once-daily, and sitagliptin 100 mg once-daily; An open-label 26-week trial compared insulin detemir as add-on to Victoza® 1.8 mg + metformin to continued treatment with Victoza® + metformin alone. *Withdrawals:* The incidence of withdrawal due to adverse events was 7.8% for Victoza®-treated patients and 3.4% for comparator-treated patients in the five double-blind controlled trials of 26 weeks duration or longer. This difference was driven by withdrawals due to gastrointestinal adverse reactions, which occurred in 5.0% of Victoza®-treated patients and 0.5% of comparator-treated patients. In these five trials, the most common adverse reactions leading to withdrawal for Victoza®-treated patients were nausea (2.8% versus 0% for comparator) and vomiting (1.5% versus 0.1% for comparator). Withdrawal due to gastrointestinal adverse events mainly occurred during the first 2-3 months of the trials. *Common adverse reactions:* Tables 1, 2, 3 and 4 summarize common adverse reactions (hypoglycemia is discussed separately) reported in seven of the eight controlled trials of 26 weeks duration or longer. Most of these adverse reactions were gastrointestinal in nature. In the five double-blind clinical trials of 26 weeks duration or longer, gastrointestinal adverse reactions were reported in 41% of Victoza®-treated patients and were dose-related. Gastrointestinal adverse reactions occurred in 17% of comparator-treated patients. Common adverse reactions that occurred at a higher incidence among Victoza®-treated patients included nausea, vomiting, diarrhea, dyspepsia and constipation. In the five double-blind and three open-label clinical trials of 26 weeks duration or longer, the percentage of patients who reported nausea declined over time. In the five double-blind trials approximately 13% of Victoza®-treated patients and 2% of comparator-treated patients reported nausea during the first 2 weeks of treatment. In the 26-week open-label trial comparing Victoza® to exenatide, both in combination with metformin and/or sulfonylurea, gastrointestinal adverse reactions were reported at a similar incidence in the Victoza® and exenatide treatment groups (Table 3). In the 26-week open-label trial comparing Victoza® 1.2 mg, Victoza® 1.8 mg and sitagliptin 100 mg, all in combination with metformin, gastrointestinal adverse reactions were reported at a higher incidence with Victoza® than sitagliptin (Table 4). In the remaining 26-week trial, all patients received Victoza® 1.8 mg + metformin during a 12-week run-in period. During the run-in period, 167 patients (17% of enrolled total) withdrew from the trial: 76 (46% of withdrawals) of these patients doing so because of gastrointestinal adverse reactions and 15 (9% of withdrawals) doing so due to other adverse events. Only those patients who completed the run-in period with inadequate glycemic control were randomized to 26 weeks of add-on therapy with insulin detemir or continued, unchanged treatment with Victoza® 1.8 mg + metformin. During this randomized 26-week period, diarrhea was the only adverse reaction reported in ≥5% of patients treated with Victoza® 1.8 mg + metformin + insulin detemir (11.7%) and greater than in patients treated with Victoza® 1.8 mg and metformin alone (6.9%).

Table 1: Adverse reactions reported in ≥5% of Victoza®-treated patients in a 52-week monotherapy trial

	All Victoza® N = 497	Glimepiride N = 248
Adverse Reaction	(%)	(%)
Nausea	28.4	8.5
Diarrhea	17.1	8.9
Vomiting	10.9	3.6
Constipation	9.9	4.8
Headache	9.1	9.3

Table 2: Adverse reactions reported in ≥5% of Victoza®-treated patients and occurring more frequently with Victoza® compared to placebo: 26-week combination therapy trials

Add-on to Metformin Trial			
	All Victoza® + Metformin N = 724	Placebo + Metformin N = 121	Glimepiride + Metformin N = 242
Adverse Reaction	(%)	(%)	(%)
Nausea	15.2	4.1	3.3
Diarrhea	10.9	4.1	3.7
Headache	9.0	6.6	9.5
Vomiting	6.5	0.8	0.4
Add-on to Glimepiride Trial			
	All Victoza® + Glimepiride N = 695	Placebo + Glimepiride N = 114	Rosiglitazone + Glimepiride N = 231
Adverse Reaction	(%)	(%)	(%)
Nausea	7.5	1.8	2.6
Diarrhea	7.2	1.8	2.2
Constipation	5.3	0.9	1.7
Dyspepsia	5.2	0.9	2.6
Add-on to Metformin + Glimepiride			
	Victoza® 1.8 + Metformin + Glimepiride N = 230	Placebo + Metformin + Glimepiride N = 114	Glargine + Metformin + Glimepiride N = 232
Adverse Reaction	(%)	(%)	(%)
Nausea	13.9	3.5	1.3
Diarrhea	10.0	5.3	1.3
Headache	9.6	7.9	5.6
Dyspepsia	6.5	0.9	1.7
Vomiting	6.5	3.5	0.4
Add-on to Metformin + Rosiglitazone			
	All Victoza® + Metformin + Rosiglitazone N = 355	Placebo + Metformin + Rosiglitazone N = 175	
Adverse Reaction	(%)	(%)	
Nausea	34.6	8.6	
Diarrhea	14.1	6.3	
Vomiting	12.4	2.9	
Headache	8.2	4.6	
Constipation	5.1	1.1	

Table 3: Adverse Reactions reported in ≥5% of Victoza®-treated patients in a 26-Week Open-Label Trial versus Exenatide

	Victoza® 1.8 mg once daily + metformin and/or sulfonylurea N = 235	**Exenatide 10 mcg twice daily + metformin and/or sulfonylurea** N = 232
Adverse Reaction	(%)	(%)
Nausea	25.5	28.0
Diarrhea	12.3	12.1
Headache	8.9	10.3
Dyspepsia	8.9	4.7
Vomiting	6.0	9.9
Constipation	5.1	2.6

Table 4: Adverse Reactions in ≥5% of Victoza®-treated patients in a 26-Week Open-Label Trial versus Sitagliptin

	All Victoza® + metformin N = 439	**Sitagliptin 100 mg/day + metformin** N = 219
Adverse Reaction	(%)	(%)
Nausea	23.9	4.6
Headache	10.3	10.0
Diarrhea	9.3	4.6
Vomiting	8.7	4.1

Immunogenicity: Consistent with the potentially immunogenic properties of protein and peptide pharmaceuticals, patients treated with Victoza® may develop anti-liraglutide antibodies. Approximately 50-70% of Victoza®-treated patients in the five double-blind clinical trials of 26 weeks duration or longer were tested for the presence of anti-liraglutide antibodies at the end of treatment. Low titers (concentrations not requiring dilution of serum) of anti-liraglutide antibodies were detected in 8.6% of these Victoza®-treated patients. Sampling was not performed uniformly across all patients in the clinical trials, and this may have resulted in an underestimate of the actual percentage of patients who developed antibodies. Cross-reacting anti-liraglutide antibodies to native glucagon-like peptide-1 (GLP-1) occurred in 6.9% of the Victoza®-treated patients in the double-blind 52-week monotherapy trial and in 4.8% of the Victoza®-treated patients in the double-blind 26-week add-on combination therapy trials. These cross-reacting antibodies were not tested for neutralizing effect against native GLP-1, and thus the potential for clinically significant neutralization of native GLP-1 was not assessed. Antibodies that had a neutralizing effect on liraglutide in an *in vitro* assay occurred in 2.3% of the Victoza®-treated patients in the double-blind 52-week monotherapy trial and in 1.0% of the Victoza®-treated patients in the double-blind 26-week add-on combination therapy trials. Among Victoza®-treated patients who developed anti-liraglutide antibodies, the most common category of adverse events was that of infections, which occurred among 40% of these patients compared to 36%, 34% and 35% of antibody-negative Victoza®-treated, placebo-treated and active-control-treated patients, respectively. The specific infections which occurred with greater frequency among Victoza®-treated antibody-positive patients were primarily nonserious upper respiratory tract infections, which occurred among 11% of Victoza®-treated antibody-positive patients; and among 7%, 7% and 5% of antibody-negative Victoza®-treated, placebo-treated and active-control-treated patients, respectively. Among Victoza®-treated antibody-negative patients, the most common category of adverse events was that of gastrointestinal events, which occurred in 43%, 18% and 19% of antibody-negative Victoza®-treated, placebo-treated and active-control-treated patients, respectively. Antibody formation was not associated with reduced efficacy of Victoza® when comparing mean HbA_{1c} of all antibody-positive and all antibody-negative patients. However, the 3 patients with the highest titers of anti-liraglutide antibodies had no reduction in HbA_{1c} with Victoza® treatment. In the five double-blind clinical trials of Victoza®, events from a composite of adverse events potentially related to immunogenicity (e.g. urticaria, angioedema) occurred among 0.8% of Victoza®-treated patients and among 0.4% of comparator-treated patients. Urticaria accounted for approximately one-half of the events in this composite for Victoza®-treated patients. Patients who developed anti-liraglutide antibodies were not more likely to develop events from the immunogenicity events composite than were patients who did not develop anti-liraglutide antibodies. *Injection site reactions:* Injection site reactions (e.g., injection site rash, erythema) were reported in approximately 2% of Victoza®-treated patients in the five double-blind clinical trials of at least 26 weeks duration. Less than 0.2% of Victoza®-treated patients discontinued due to injection site reactions. *Papillary thyroid carcinoma:* In clinical trials of Victoza®, there were 7 reported cases of papillary thyroid carcinoma in patients treated with Victoza® and 1 case in a comparator-treated patient (1.5 vs. 0.5 cases per 1000 patient-years). Most of these papillary thyroid carcinomas were <1 cm in greatest diameter and were diagnosed in surgical pathology specimens after thyroidectomy prompted by findings on protocol-specified screening with serum calcitonin or thyroid ultrasound. *Hypoglycemia* :In the eight clinical trials of at least 26 weeks duration, hypoglycemia requiring the assistance of another person for treatment occurred in 11 Victoza®-treated patients (2.3 cases per 1000 patient-years) and in two exenatide-treated patients. Of these 11 Victoza®-treated patients, six patients were concomitantly using metformin and a sulfonylurea, one was concomitantly using a sulfonylurea, two were concomitantly using metformin (blood glucose values were 65 and 94 mg/dL) and two were using Victoza® as monotherapy (one of these patients was undergoing an intravenous glucose tolerance test and the other was receiving insulin as treatment during a hospital stay). For these two patients on Victoza® monotherapy, the insulin treatment was the likely explanation for the hypoglycemia. In the 26-week open-label trial comparing Victoza® to sitagliptin, the incidence of hypoglycemic events defined as symptoms accompanied by a fingerstick glucose <56 mg/dL was comparable among the treatment groups (approximately 5%).

Table 5: Incidence (%) and Rate (episodes/patient year) of Hypoglycemia in the 52-Week Monotherapy Trial and in the 26-Week Combination Therapy Trials

	Victoza® Treatment	**Active Comparator**	**Placebo Comparator**
Monotherapy	**Victoza®** (N = 497)	**Glimepiride** (N = 248)	**None**
Patient not able to self-treat	0	0	—
Patient able to self-treat	9.7 (0.24)	25.0 (1.66)	—
Not classified	1.2 (0.03)	2.4 (0.04)	—
Add-on to Metformin	**Victoza® + Metformin** (N = 724)	**Glimepiride + Metformin** (N = 242)	**Placebo + Metformin** (N = 121)
Patient not able to self-treat	0.1 (0.001)	0	0
Patient able to self-treat	3.6 (0.05)	22.3 (0.87)	2.5 (0.06)
Add-on to Victoza® + Metformin	**Insulin detemir + Victoza® + Metformin** (N = 163)	**Continued Victoza® + Metformin alone** (N = 158*)	**None**
Patient not able to self-treat	0	0	—
Patient able to self-treat	9.2 (0.29)	1.3 (0.03)	—
Add-on to Glimepiride	**Victoza® + Glimepiride** (N = 695)	**Rosiglitazone + Glimepiride** (N = 231)	**Placebo + Glimepiride** (N = 114)
Patient not able to self-treat	0.1 (0.003)	0	0
Patient able to self-treat	7.5 (0.38)	4.3 (0.12)	2.6 (0.17)
Not classified	0.9 (0.05)	0.9 (0.02)	0
Add-on to Metformin + Rosiglitazone	**Victoza® + Metformin + Rosiglitazone** (N = 355)	**None**	**Placebo + Metformin + Rosiglitazone** (N = 175)
Patient not able to self-treat	0	—	0
Patient able to self-treat	7.9 (0.49)	—	4.6 (0.15)
Not classified	0.6 (0.01)	—	1.1 (0.03)
Add-on to Metformin + Glimepiride	**Victoza® + Metformin + Glimepiride** (N = 230)	**Insulin glargine + Metformin + Glimepiride** (N = 232)	**Placebo + Metformin + Glimepiride** (N = 114)
Patient not able to self-treat	2.2 (0.06)	0	0
Patient able to self-treat	27.4 (1.16)	28.9 (1.29)	16.7 (0.95)
Not classified	0	1.7 (0.04)	0

*One patient is an outlier and was excluded due to 25 hypoglycemic episodes that the patient was able to self-treat. This patient had a history of frequent hypoglycemia prior to the study.

In a pooled analysis of clinical trials, the incidence rate (per 1,000 patient-years) for malignant neoplasms (based on investigator-reported events, medical history, pathology reports, and surgical reports from both blinded and open-label study periods) was 10.9 for Victoza®, 6.3 for placebo, and 7.2 for active comparator. After excluding papillary thyroid carcinoma events *[see Adverse Reactions]*, no particular cancer cell type predominated. Seven malignant neoplasm events were reported beyond 1 year of exposure to study medication, six events among Victoza®-treated patients (4 colon, 1 prostate and 1 nasopharyngeal), no events with placebo and one event with active comparator (colon). Causality has not been established. **Laboratory Tests:** In the five clinical trials of at least 26 weeks duration, mildly elevated serum bilirubin concentrations (elevations to no more than twice the upper limit of the reference range) occurred in 4.0% of Victoza®-treated patients, 2.1% of placebo-treated patients and 3.5% of active-comparator-treated patients. This finding was not accompanied by abnormalities in other liver tests. The significance of this isolated finding is unknown. **Vital signs:** Victoza® did not have adverse effects on blood pressure. Mean increases from baseline in heart rate of 2 to 3 beats per minute have been observed with Victoza® compared to placebo. The long-term clinical effects of the increase in pulse rate have not been established. **Post-Marketing Experience:** The following additional adverse reactions have been reported during post-approval use of Victoza®. Because these events are reported voluntarily from a population of uncertain size, it is generally not possible to reliably estimate their frequency or establish a causal relationship to drug exposure: Dehydration resulting from nausea, vomiting and diarrhea; Increased serum creatinine, acute renal failure or worsening of chronic renal failure, sometimes requiring hemodialysis; Angioedema and anaphylactic reactions; Allergic reactions: rash and pruritus; Acute pancreatitis, hemorrhagic and necrotizing pancreatitis sometimes resulting in death.

OVERDOSAGE: Overdoses have been reported in clinical trials and post-marketing use of Victoza®. Effects have included severe nausea and severe vomiting. In the event of overdosage, appropriate supportive treatment should be initiated according to the patient's clinical signs and symptoms.

More detailed information is available upon request.
For information about Victoza® contact: Novo Nordisk Inc., 800 Scudders Mill Road, Plainsboro, NJ 08536, 1-877-484-2869
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VICTOZA®
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Premeds and *poetry*

An English instructor and physician expose undergraduate students to **the relationship between art and medicine**.

BY KIM KISER

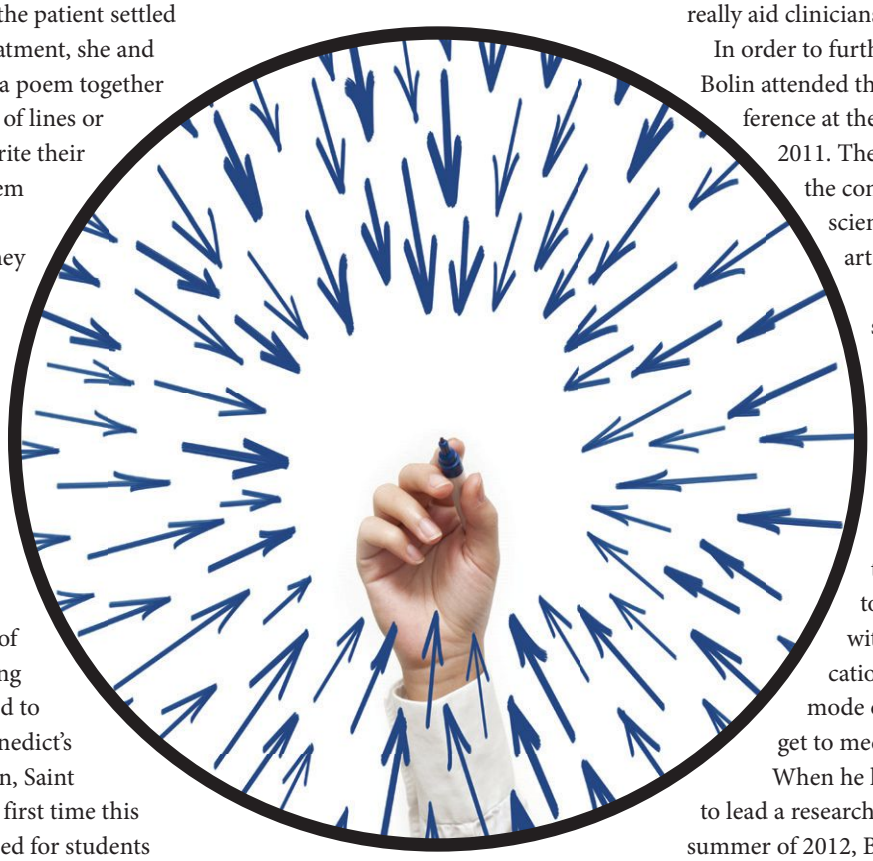
Once a week, during the fall of her junior year at the College of St. Benedict in Collegeville, Minnesota, Hannah Christensen would make the 30-minute drive to St. Cloud to meet with a young woman who was undergoing nocturnal hemodialysis. As the patient settled in for her eight-hour treatment, she and Christensen would read a poem together and then, using a couple of lines or an image as a prompt, write their own verses and share them with each other.

During those visits, they learned about each others' lives, experiences and feelings. "I got to see her as a person and not just a patient," says Christensen, who will start classes at the University of Minnesota Medical School Twin Cities this fall.

Christensen was part of a pilot of a creative writing course that will be offered to undergraduates at St. Benedict's and its partner institution, Saint John's University, for the first time this fall. The course is designed for students who are pursuing health care careers. "The goal is to immerse them in the writing life, so it will help them communicate more precisely with patients in the future," says Christopher Bolin, M.F.A., an English instructor who developed and will teach the course.

Few opportunities for undergrads

Bolin says he became interested in the connection between medicine and the humanities while he and his wife, a physician's assistant, were studying creative writing in graduate school at the University of Iowa. "We both noticed some areas of crossover, particularly when it comes to communicating about a difficult health condition," he says. "It became clear that a lot of what we learned in the MFA program using the workshop model would really aid clinicians."



In order to further explore this area, Bolin attended the Examined Life Conference at the University of Iowa in 2011. The conference focuses on the connection between the science of medicine and the art of writing.

"I looked around and saw programs for medical students, residents, attending physicians, but there seemed to be a dearth of programming for undergraduates," he says. "I thought there was every reason to have undergrads start with this kind of arts education, to orient them to this mode of thinking before they get to medical school."

When he had the opportunity to lead a research project during the summer of 2012, Bolin and two students, one of whom was Christensen, reviewed research that showed how incorporating the humanities into medicine could reduce hypertension and decrease pain among patients, improve their overall health and,

in some cases, reduce costs. They also looked at how programs that married the arts and health care, most of which were aimed at patients and health care providers, worked. From there, they developed a course outline.

Hannah Christensen

Bolin also reached out to Tom Leither, M.D., medical director of CentraCare's Kidney Program and the father of a former classmate. Bolin explained his idea for teaching premed and other students about poetry and creative writing, and then having them share what they learned with patients.

Christopher Bolin

Leither liked the idea and paired his young patient with Christensen to test it in the fall of that year. "Dialysis patients are ideal for this experiment," he says. "They have very significant chronic disease burden and they have time: 12 to 24 hours per week sitting, getting their dialysis treatment, fighting boredom. They have a lot going on in their physical and emotional lives and can potentially benefit from introspection and enhanced agility in being able to organize their feelings into thoughts and express those thoughts in spoken and written words."

More meaningful words

This fall, six students will take the course. In the classroom, they will learn about the value of the humanities in medicine and how to connect creative writing to medical practice. In addition, they will learn about metaphor and imagery and how to express themselves more precisely. "Metaphor is tricky," Bolin says. "It breaks down easily if you're not incredibly precise, and if you're not precise, your patients won't understand their conditions."

Students will then be paired with patients with whom they will share the lessons they learn in class. (Leither says he plans to pair students with patients in the dialysis unit. He also hopes to involve patients from the CentraCare Coburn Cancer Center and residents of a local nursing facility.) Both student and patient then will write poetry based on those lessons.

The objectives of the program, when met, can be mutually beneficial. For students, the goal is to become better able to describe what happens to the body when it is diseased, how a treatment works and what a patient might expect. For patients, it's to be able to more precisely describe what's happening to their body, whether they're experiencing pain and what it feels like, and how they are feeling emotionally.

"Communication is vitally important to healing, and its one of the most essential parts of being a health care provider," Leither says. "All of our education seems to be so focused and so 'exclusive' in being directed toward the skills you need to pursue the science of your career, sometimes to the exclusion of things like the humanities, communication and art." He believes learning such skills as undergraduates will ultimately produce physicians who are better communicators.

Christensen, who graduated in May with a degree in philosophy and who hadn't done any creative writing previously, says working with the young woman in the dialysis unit gave her insight into what patients go through—an experience she thinks will help her in her studies. "As a medical student and provider, it will help me keep in mind the way patients experience things as people. They're not just dealing with disease processes. They're dealing with something that affects their quality of life and how they live their lives." **MM**

Kim Kiser is an editor of *Minnesota Medicine*.

PHOTO BY LORI HAMILTON

A piece created by Hamline student Josie Slater.

Public health and art students share lessons

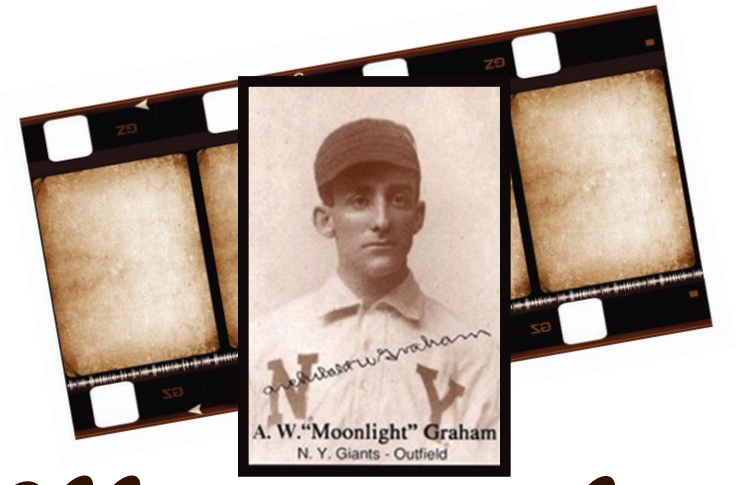
Public health and art students at Hamline University in St. Paul had a chance to learn how their fields intersect last spring.

Sixteen participated in a new class, in which they learned about neuroscience and took part in art activities. They developed their observational and analytical skills by writing about pieces of art including some from the Minneapolis Institute of Arts, the New York University School of Medicine, the British Library and the Center for the History of Medicine at Harvard University. They also did group painting and tried responding to questions with drawings rather than words. In addition, they learned about installing art exhibits in settings where safety and infection control are concerns.

As part of their final project, students created a lesson plan. They also exhibited some of their work at Hamline.

After they finished the course, about half chose to do internships at Children's Hospitals and Clinics Minnesota and Shriners Hospitals for Children in St. Paul, where they worked with patients and their siblings to create art.

"This immersive experience allows [students] to connect public health concepts as they gain experience in the hospital," says Nicola Demonte, who created the class and is teaching a second session this summer. –K.K.



Illuminating "Moonlight"

Mayo film tells the real story of a baseball player-turned-physician.

BY JEANNE METTNER

When Archibald Graham, M.D., was immortalized in the 1989 movie *Field of Dreams,* most viewers were unaware that Dr. Archie "Moonlight" Graham actually existed. In the movie, Burt Lancaster plays an aging physician who briefly played major league baseball. The idea that a baseball player would enter the major leagues only to leave almost immediately to become a small-town physician might seem beyond reality. But Graham did exist—and there is far more to his story than was portrayed in the fictionalized, feature-length drama.

This summer, as part of its Heritage Film Series, Mayo Clinic will tell the real story of the Minnesota athlete-physician when it releases the documentary *The Real Moonlight Graham: A Life Well-Lived.* Mark Flaherty, who produced and directed the 35-minute film, says its release coincides with several baseball-related milestones: the 25th anniversary of *Field of Dreams*, the 175th anniversary of baseball in the United States and Minnesota's hosting of the All Star Game this summer at Target Field.

Each year since 2003, as part of its Heritage Film Series, Mayo has made films that help people connect with Mayo history. Last year, it did a documentary about Dave Madden, who had an iron lung. While they were discussing that film, Paul S. Mueller, M.D., chair of Mayo's General Internal Medicine Division, brought up the fact that Dr. Graham was Madden's uncle and that he had visited Mayo frequently for training. Mueller said it might be nice to do a film on Graham, who practiced in Chisholm, Minnesota. The documentary, which was made at Mayo, was funded with a $75,000 grant from the Tull Family Foundation.

From ball field to medical field

The early part of Graham's life has become the stuff of folklore—thanks in part to *Field of Dreams* and W. P. Kinsella's book *Shoeless Joe*, on which the movie is based. Graham grew up in North Carolina, graduated from the University of North Carolina, then enrolled in medical school at the University of Maryland. During college and medical school, he played baseball, spending several seasons on minor league teams in addition to his college teams. Shortly after graduating from medical school in May of 1905, he signed on with the New York Giants.

As *Field of Dreams* depicts, he played in just one major league game, and he never got to bat. "The movie is inaccurate in some respects because it downplays Graham's athleticism; in reality, he was a gifted ball player who basically had to choose between playing baseball and practicing medicine," says Mueller, who has been researching Graham's life for several years. "The Giants were World Series Champions at the time, so his being on the bench was not so much because he lacked talent; it was because he was young and somewhat inexperienced."

The following year, Graham received his medical license and began his practice. In 1909, he took a job with Rood Hospital in

Chisholm. "When he arrived, Chisholm was in the process of recovering from a huge forest fire that had practically wiped out the city in 1908, so there was much work to be done to get the community back on its feet," Mueller says.

Committed to community

Graham never left Chisholm. In 1915, he married Rochester native and Chisholm teacher Alecia Madden. The two became pillars of the community. The City of Chisholm hired Graham to be its school physician, and he was instrumental in bringing the immunization rate to 100 percent, educating residents about good handwashing and other hygiene measures, and advocating for public health and city improvements such as a proper sewage system and garbage and manure disposal. He also helped many individually. "There are scads of stories about how he helped get people eyeglasses, get transportation to their medical appointments and even get to the Twin Cities for surgery or therapy," Mueller says.

Graham also was a lifelong learner. He often went to Rochester for continuing education courses and to observe surgical procedures. "To me, that's one of the most telling examples of his commitment to medicine because in those days, these educational expenses came out of your own pocket; no one gave you a stipend for CME," Mueller says.

Graham examining children at Washington School in Chisholm circa 1937.

PHOTO COURTESY OF MAYO CLINIC

Building a legacy

Graham's dedication to his community made a lasting impression on his fellow Chisholm residents, who referred to him simply as "Doc" until his death in 1965. The documentary includes their recollections as well as those of Graham's younger patients, some of whom became physicians themselves. Among those following in Graham's footsteps are William Rupp, M.D., the current CEO of Mayo Clinic in Florida, and Charles Gornick, M.D., director of electrophysiology at the Minneapolis Heart Institute at Abbott Northwestern Hospital.

In *Field of Dreams*, the obituary of Dr. Graham read to Ray Kinsella (played by Kevin Costner) and Terrance Mann (played by James Earl Jones) was the actual one written by Chisholm *Tribune-Press* publisher Veda Ponikvar, which appeared in the August 31, 1965, edition. A portion of it reads:

The greatness of any community can be measured by the contributions of its citizenry along the journey of life. For Chisholm, an era of rich and purposeful living slipped into another shadow of twilight with the passing of the beloved and deeply respected Dr. Archibald Graham …

He was the champion of the oppressed, the grand marshal of every football, basketball and baseball game. … He believed in the community, and the parents and children believed in him. … He remembered everyone by name and in his travels took signal pride in telling about a town called Chisholm and its cradle of people of many tongues and creeds.

For the old and young of this little mining town who knew Doctor Graham…, his era was a historic, unique sort of legend. There will never be another quite like his. **MM**

Jeanne Mettner is a frequent contributor to *Minnesota Medicine*.

See the movie

The documentary *The Real Moonlight Graham: A Life Well-Lived* will premiere at Mayo Clinic's Geffen Auditorium on July 8 and run for one week. It will also be shown October 6 through 10 as part of the clinic's Heritage Days and will be screened at various venues in Rochester and in Chisholm, Minnesota, where Archibald Graham, M.D., spent his medical career. The film will be released on DVD in mid-July and be available for purchase at Mayo Clinic stores: http://store.mayoclinic.com/productList.cfm?mpc=6.

The lure *of the* arts

How a diversion became a new direction for one medical student.

BY CARMEN PEOTA

One of a series of photographs of Ho-Shia Thao taken by former University of Minnesota medical student Lan Luu. Both Luu and Thao were Fisch Art of Medicine award recipients.

PHOTO BY LAN LUU

For each of the past 10 years, a handful of medical students at the University of Minnesota have received Fisch Art of Medicine Student Awards—small grants to explore an arts interest. Most find that dedicating a few hours a week to their avocation is a welcome diversion from the demands of medical school and take to heart the lesson that the grant program's founder, Robert Fisch, M.D., intends they learn: that physicians need an outside interest if they are to maintain their well-being and do well in medicine over the long term.

That has been the case for all but one of the recipients over the years (see p. 16 to read about this year's group). Ho-Shia Thao found his passion for the arts so strong it pulled him in another direction altogether.

On a whim

If all had gone according to plan, Thao would have used his award to take dance lessons and then graduated from medical school in May along with the rest of the University of Minnesota's class of 2014. But all did not go according to plan, and Thao was not among those receiving diplomas last spring. "It's a little bittersweet," he concedes, taking a deep breath before launching into the story of how and why he decided to become a dancer rather than a doctor.

The Brooklyn Center native had been heading toward medicine since his undergraduate years at Brown University. He had shadowed physicians and done research, written his senior thesis on a topic tangentially related to medicine (Hmong women's perception of the body) and spent a year working in a Rhode Island hospital. He applied to and was accepted into the University of Minnesota Medical School and started in 2010, fully intending to become a physician.

And he likely would have had his sister not asked him to take a modern dance class with her midway through his first year. The idea of a break from the grind of study appealed to him, and on a whim, Thao agreed. Neither had ever studied any kind of dance. "Originally, it was just the means to explore something—not medicine—or so I thought," he explains.

Thao, however, found himself not just enjoying the class but loving it. "I remember feeling that I wanted to understand it more," he says. "I wanted to understand movement and expression."

He spoke with the instructor, who recommended he learn some fundamentals. Ballet would provide him with the foundation he was seeking. He soon found himself spending many evenings in classes at The Cowles Center for Dance and the Performing Arts in downtown Minneapolis. "Before I knew it, I was falling in love with that art form," he says.

Thao also found he had a natural facility for dance. Although he had never before done anything physically demanding other than play a little volleyball, his body seemed well-suited to dance. He progressed quickly. "When people see me, they assume I've been dancing for a long time," he says. "They're always very surprised that I haven't."

He decided to apply for a Fisch award, thinking he would use it to take dance classes over the summer and return to medical school in the fall. "I really thought that because dance had revitalized and energized me, it would be a great way to be motivated [to study]," he says. "Little did I know it was going to become something so much more than that."

New York, New York

Rather than satiate Thao's appetite for his newfound art form, the summer of dancing simply whetted it. He applied for and was granted a leave of absence from medical school and then headed to New York, where he found a day job as a project manager for a pharmaceutical company and took as many ballet lessons as he could afford at night. "The beautiful thing about

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New York City is that there are dance classes at any time of the day and into the evenings," he says.

An instructor took Thao under his wing, and at the age of 24, he began to hone his technical skills in classical ballet. "He saw potential in me, regardless of my age," Thao says of the instructor, acknowledging that he was getting into ballet at an age when many professionals were retiring or contemplating doing so. One year proved not to be enough either to perfect his skills or to quell his desire, so he extended his leave.

Thao returned to Minnesota in 2013 to do his second year of medical school. But he also signed on with the Bloomington-based Continental Ballet. "That's really when the trouble started for me," he says.

He found himself pulled in two directions. He would attend a rehearsal or a performance and then run back to campus to go to the path lab or the library to catch up on recorded lectures. By mid-year, he was exhausted. "You obviously can't do both ballet and medical school full time—or at least I really can't," he says. "They both require so much daily maintenance and focus, and all your energy and time."

Thao says it soon became clear to him that he had to make a terribly difficult decision. "I couldn't dedicate myself to one [pursuit] without really losing the other, which really crushed me."

After consulting many people and considering his options, he concluded he had only a very small window of time in which to pursue dance. He withdrew from medical school and moved back to New York, where he's found another day job—this time working for a property management company—and is studying dance in preparation for the upcoming audition season.

Thao knows many are skeptical about his career choice. "Yeah. It's pretty bold," he says. And he doesn't encourage others to do what he's done. But he's learned he can't straddle two separate career paths and feels he's on the right one for now. "I think for me, I fell into something I was supposed to be doing," he says. **MM**

Carmen Peota is an editor of *Minnesota Medicine*.

NKAUJ SHOUA VANG / UNIVERSITY OF MINNESOTA

1. The culmination of the Fisch Art of Medicine Student Award program is a celebration in which awardees share their talents. 2. The 2013-14 winners with Robert Fisch, M.D., (left) and program emcee Jon Hallberg, M.D. (right) 3. Fisch (center) with his wife, Karen Bachman, and Hallberg enjoying a performance. 4. Lydia Hartsell performing spoken word. 5. Jarrod Yamanaka doing hand-balancing.

Medical students find myriad ways to *express their creativity*

Ho-Shia Thao was one of the recipients of the Fisch Art of Medicine Student Awards who shared their talents at a celebration of the 2013-2014 awardees at the Weisman Art Museum in Minneapolis on April 30.

As the audience witnessed, the range of art forms pursued by medical students this year was wider than ever. Among those on display were hand balancing (a circus art requiring the upper-body strength of a gymnast), magic and spoken word as well as filmmaking, dance, music, painting and photography (see full list below).

In a reference to that variety in his closing remarks, Robert Fisch, M.D., quoted Pablo Picasso, who said, "What is art? What isn't?" He also reminded the audience that he encourages students to open new doors and "exclude nothing."

Fisch and his wife, Karen Bachman, established the award in 2007 to enable medical students to pursue a creative interest. To make a donation to the fund, contact Sandy Majerus, University of Minnesota Foundation, 612-624-4429.

THE 2013-2014 FISCH ART OF MEDICINE STUDENT AWARDEES

Mohamed Ahmed Abdi PIANO

Hannah Carlson-Donohoe DANCE (ZOUK)

Lydia Hartsell WRITTEN AND SPOKEN WORD

Lan Luu PHOTOJOURNALISM

Lauren McPherson FLUTE

Amanda Murphy PAINTING

Ho-Shia Thao DANCE (BALLET)

Viviane Tchnong FILM (DOCUMENTARY)

Chad Thompson THEATER

Elliot Twiggs MAGIC

Jarrod Yamanaka HAND BALANCING

Wandering Eyes

The winners of our annual competition

In 2011, one of the judges of our photo contest, professional photographer Steve Wewerka, started a project, in which he took at least one photo a day with his iPhone instead of his fancier SLR camera. The idea was to challenge himself to see and capture the amazing images around him every day, whether at home or on the road. He called it "Wandering i."

Clearly Wewerka isn't the only one with wandering eyes. As you'll see below, many physicians and medical students are wandering the world with camera in hand and eyes wide open, snapping photos along the way. Yet as student photographer Kristin Comstock exemplifies, exotic travel isn't a necessary ingredient of a good photograph. She snapped her second-place-winning photo in Granite Falls, Minnesota, after a day of work.

This year, nearly 30 medical students, residents and practicing physicians submitted some of what their wandering eyes captured to our annual photo contest. Thanks to all who took the time to share their beautiful images with us. And thanks to Wewerka and Kathy Forss, *Minnesota Medicine's* art director, who judged them.

Note: The winning photos will be on display at the MMA's Annual Conference September 19-20.

PHYSICIAN
First place

Her Kitchen

PHOTOGRAPHER: Alex Sneiders, M.D., urologist, Mayo Clinic Health System, Owatonna and Faribault

WHAT INSPIRED THIS PHOTO: While on a recent trip to Havana, Cuba, I was invited into this lady's apartment. She was very gracious with her time and allowed me to shoot a series of portraits. This one best captures the clean, inviting atmosphere and her openness. It also illustrates the living conditions in Cuba.

WEWERKA: The detail really pulls the viewer into her world. The woman's eyes suggest the tale of her life. The camera angle is at her level and it feels like we are sitting across the table having a conversation.

PHYSICIAN
Second place

Once Upon a Time

PHOTOGRAPHER: Michelle Hoff, D.O., family physician, Park Nicollet Melrose Center

WHAT INSPIRED THIS PHOTO: I was on a photo safari in the Serengeti of Tanzania. The photo was taken at 4 a.m. It was a clear night with a low moon. I actually had my camera laying on the ground for the long exposure to capture the stars.

Taking the photo was actually a bit anxiety-producing. It was dark out, and this was not a gated, secure area. You could hear the animals, and they were the type that hunted at night. I had planned this trip as something to look forward to after my life had hit rock bottom. It was a pictorial lesson that amidst chaos and fear, you can find peace and beauty when you take the time to care for yourself.

WEWERKA: The rich colors in the sky and the illumination on the tree make this image mesmerizing.

You can see Steve Wewerka's "Wandering i" and other photos at www.SteveWewerka.com/WanderingIProject.htm

PHYSICIAN
Third place

Edinburgh

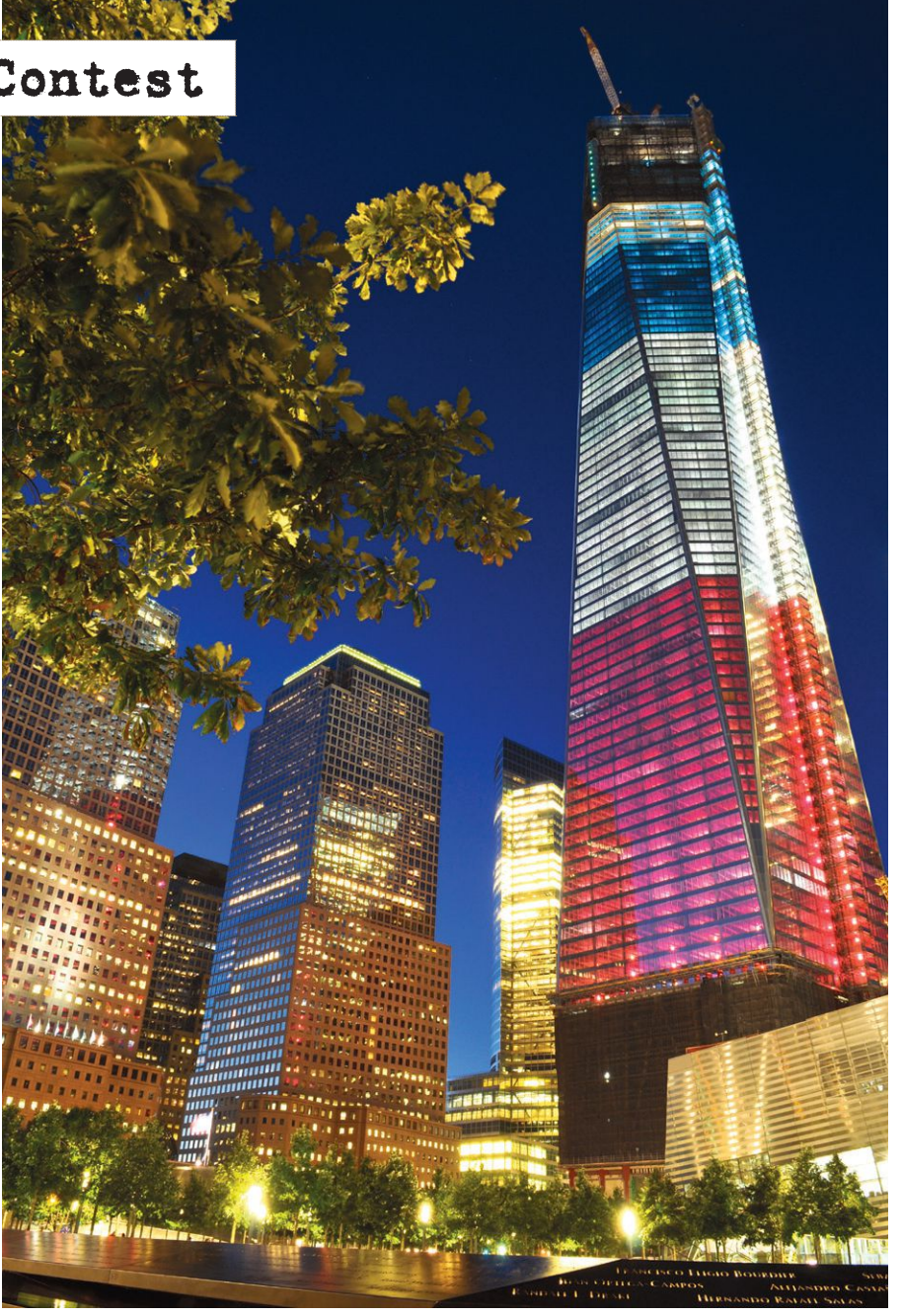
PHOTOGRAPHER: Alex Sneiders, M.D., urologist, Mayo Clinic Health System, Owatonna and Faribault

WHAT INSPIRED THIS PHOTO: This classical view of the City of Edinburgh was naturally enhanced by the fireworks. The setting sun combined with the early fireworks display was in and of itself inspiring. The exposure for this image was tricky. I ended up with one exposure for the cityscape and a second for the fireworks.

WEWERKA: The composition is very close to perfect.

2014 Photo Contest

RESIDENT
First place



Freedom Tower

PHOTOGRAPHER: Lauren Orr, M.D., PGY-1 general surgery, Mayo Clinic

WHAT INSPIRED THIS PHOTO: I was visiting the 9/11 Memorial during the anniversary week of the national tragedy. The memorial itself was a sobering sight, but as dusk fell and the patriotic lights of the adjacent Freedom Tower began to shine, hope and pride became the dominant emotions.

WEWERKA: Wonderful use of color. Good compositional balance. Technically, night shots are challenging.

RESIDENT
Second place

A Flamingo's Heart

PHOTOGRAPHER: Siu-Hin Wan, M.D., PGY-3 internal medicine, Mayo Clinic

WHAT INSPIRED THIS PHOTO: The vibrant colors of flamingos are naturally fascinating, but among the flock, this particular one caught my eye. Despite the presumed extroversion of these fascinating creatures, this image captures the grace, balance and sensitivities of these beautiful birds.

WEWERKA: The simplicity of the composition and use of color make this a strong image. It also successfully applies the rule of thirds, using three elements.

RESIDENT
Third place

Ancient Wall

PHOTOGRAPHER: Lauren Orr, M.D., PGY-1 general surgery, Mayo Clinic

WHAT INSPIRED THIS PHOTO: In a rare moment when no tourists were in sight at the Great Wall of China, I felt transported to another era, as if I were seeing the wall exactly as it appeared centuries ago.

WEWERKA: Great use of composition by applying a very strong leading line to pull the viewer deep into the image.

STUDENT
First place

Ehrfurcht

PHOTOGRAPHER: Alyssa Larish, MS4, University of Minnesota Medical School

WHAT INSPIRED THIS PHOTO: Literally translated, the word *ehrfurcht* means "reverence or awe" in German. This photo was taken in Salzburg between thunderstorms. The perfect light and humid air created an unexpectedly still moment. I was able to pause and capture it.

WEWERKA: I love images that create the feeling of depth. A strong foreground subject or the main subject strategically placed in the background pulls the viewer's eye deep into the image. I also am drawn to symmetry. This image touches on both symmetry and the illusion of depth by staggering the three spires in the foreground to provide balance.

2014 Photo Contest

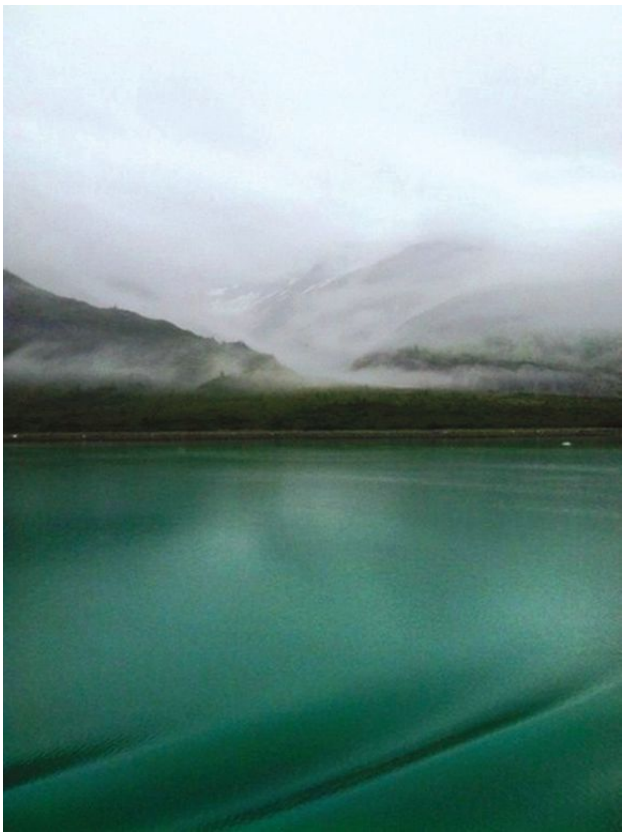
STUDENT
Second place

Simple Life

PHOTOGRAPHER: Kristin Comstock, MS4, University of Minnesota Medical School

WHAT INSPIRED THIS PHOTO: Shortly after moving to Granite Falls for my Rural Physician Associate Program rotation, I decided to venture out and explore the town and surrounding area. Although there wasn't much to see, it was easy to fall in love with what was there.

WEWERKA: What really makes this image for me is the use of color and the simplicity of minimalism.



STUDENT
Third place

Tranquility

PHOTOGRAPHER: Sarah Fleming, MS1, University of Minnesota Medical School, Twin Cities

WHAT INSPIRED THIS PHOTO: This was taken during the summer of 2012 in Glacier Bay, Alaska. The melting of the glaciers make the color of the water unlike any other body of water I have ever seen. The immense wild landscape and almost iridescent water transports you to a new world.

Gliding over the impeccably calm and striking waters of Alaska, I was mesmerized by the landscape unfolding in front of me. Fog cascaded down through the pristine untouched wilderness, blanketing the shore in a dewy sheen. My emotions mirrored my view—quiet, clear and free.

WEWERKA: What pulled me into this image was the color.

PHOTO BY KATHRYN FORSS

Write on!

The winners of our annual writing contest

Since 2003, *Minnesota Medicine* has been encouraging physicians, residents and medical students to put their thoughts and experiences on paper and submit them to our writing contest.

This year, they responded with a record number of submissions (35 altogether). They told stories of memorable patients, reflected on international experiences, elaborated on why they practice medicine, and even mused about their encounters with technology.

We would like to thank everyone who entered and shared with us experiences and memories that touched their lives. It was more difficult than ever to pick winners.

In the following pages, you'll find this year's top entries:

"Breathe," a poem by Andrea Westby, M.D., a family physician in Perham, Minnesota

"Consummate Morality," an essay by Sean Schulz, D.O., a family medicine resident in the University of Minnesota Smiley's family medicine residency program

"Placeholder," an essay by Lil Johnson, a fourth-year medical student at the University of Minnesota

We also selected a number of pieces that deserved honorable mention. We will be publishing them in the coming months.

Honorable mention

"A FATEFUL WINTER'S NIGHT" by Abby Gardner, M.D., an internal medicine resident at Hennepin County Medical Center

"MY FINAL ELECTRONIC SIGNATURE" by Sapna Sadarangani, M.D., a second-year infectious diseases fellow at Mayo Clinic

"BLOOD ON MY PEARLS" by Elizabeth Haller, a third-year student at Mayo Medical School

"LEAKY PIPES" by Melissa McCoy, a third-year student at the University of Minnesota Medical School

"ONE VERSION OF THE TRILOGY" by Charles Bransford, M.D., a general internal medicine and hospice and palliative care physician with Stillwater Medical Group

"A MEMORABLE CASE" by James Monge, M.D., a retired surgeon in Duluth

2014 Writing Contest

PHYSICIAN Winner

PHOTO BY THRUHIM PHOTOGRAPHY

Andrea Westby, M.D.

Family physician, Perham Health, Perham, Minnesota

ON WHY I WRITE

I write in my head all the time (on bike rides or runs, during yoga, while driving); but only occasionally do I remember the words when I'm near a notebook or computer.

Mostly I write for myself—to help me process my experiences, thoughts and emotions. But I also write for my patients, family and friends. We as physicians have this really cool job. We have this privilege—to be with people during the most intense parts of their lives. We are with them during the birth of their children; we rejoice in their marriages and partnerships; we celebrate their accomplishments at work or school. We also share in the suffering—the diagnosis of disease, the death of a loved one, the end of a relationship. People share really amazing stuff with us, and I hope I'm able to honor these gifts in my writing.

ON MY INSPIRATION FOR THIS PIECE

This piece was written about a patient I had during my second year in practice. She had so many things happening to her and yet she still managed to be this really grounded, accepting, loving woman throughout her pregnancy. Her labor was really intense (I almost missed the birth because I was at my niece's birthday party an hour away), and her son's birth was really dramatic (he needed resuscitation after delivery). The whole time she was so calm and just in love with him. It was so beautiful. There was so much emotion and intensity that I felt I had write it down.

Breathe

By Andrea Westby, M.D.

I don't know if I can do this.
My daughter is almost 11.
The test turns positive.
Breathe.

Cold gel, the flip flop of my heart, waiting
To hear the faster flip flops of a tiny heart
Holding my breath, and then it sounds
Now I can breathe.

The images black and white
Not sure what I am seeing
Is that a face?
Is he healthy?
Breathe.

What do you mean you have found someone else?
I don't know if I can do this alone.
How can you leave me?
Breathe.

The date gets closer.
Uncomfortable.
I can't sleep.
All I can do is breathe.

Wait, your doctor isn't here yet.
She's on her way.
The pain is so intense when it comes
Breathe.

Take a deep breath, hold it
And push.
His heart rate dropping, keep pushing.
Head emerges, she places him on my chest.
Come on baby, just breathe.

It seems like an eternity
when he finally opens his mouth
Cries a tired cry
I close my eyes.
And breathe.

RESIDENT Winner

PHOTO BY STEVE WEWERKA

Sean Schulz, D.O.

University of Minnesota Smiley's family medicine residency program

ON WHY I WRITE

I've been writing my whole life but had been in the trenches of science and scantron tests for so many years that I'd lost a lot of my skills. A friend recently started painting every night instead of watching TV. That inspired me to start writing almost every night. This past year has been like my own personal renaissance period.

Writing is cathartic in a lot of ways. There are many difficult thoughts that come to you during your years of medical training, and there are not a lot of ways to sort out your feelings.

ON MY INSPIRATION FOR THIS PIECE

I went to Kenya at the beginning of my fourth year of medical school. It was not the best timing, as my (now) wife and I were getting married in two weeks and moving from California to Oregon. We had no money, but the idea of postponing my dream of going on a medical mission worried me. I worried I would become comfortable and lose my desire to venture out into the unknown and really push my limits. I had to do it then.

The trip had its ups and downs, and in the end I was left with many conflicting ideas. I'm still not sure what the overall impact was—whether good or bad. Yet I'm grateful for the opportunity, as it helped me better define what my next international medical trip should consist of. After speaking to physicians about trips they have taken, I now think the key is to find one that aims to make a lasting impact and in which volunteers train health care workers from the communities they are helping. Being well-funded and well-supplied is also helpful.

Consummate Morality

By Sean Schulz, D.O.

Charcoal-blue clouds floated over the Great Rift Valley, ready to shower rain onto the umbrella of Acacia trees, their moss green color a contrast to the burnt umber ground. I sipped my beer and felt the cooling rush of the impending storm. It was welcome, as the day had been sweltering. My shirt stuck to my skin. The bottle, too, was sweating. Its label—a black elephant embroidered in yellow—had beads flowing over it. The elephant's white tusks reminded me of the ivory trade in *Heart of Darkness*. And there I was—not in the Congo but Kenya, traveling around the eye of Africa in the jungles surrounding Lake Victoria. I'd come thinking of myself as the anti-Kurtz. I'd offer the best parts of myself in order to help others. But helping wasn't going to be enough. I needed to save others, and not in the metaphysical sense. I'd come to save lives.

Perhaps we all look back at our former selves with incredulity, unable to comprehend the level of naivety we possessed, but I never expected to feel that way in such a short amount of time.

Save lives. The thought sounds absurd now. I'm not even sure how one would save a life, unless it involves pulling someone from the crumbling edge of a precipice. Now I wonder if I even did any good there. Because "good" is so hard to define when there is potential to add years to or subtracting them from someone's life.

The fact that I tried to do something should be enough to put my mind at ease. But I am haunted by all those lives I tried to better, now knowing it would never be enough. I feel I was reckless, like perhaps in my earnestness to do more, I broke the oath I'd taken to "do no harm."

The sick woman. The one who brought her two kids in to be screened and immunized. The woman who sweated through her clothes, heaved with each breath and looked as if she might pass out at any moment.

She had ignored me when I'd asked about her, deflecting the attention back to her children instead. She only wanted them to be cared for. She had waited in line for hours just so they could see a doctor, and she would not have them ignored. I passed

Consummate Morality

(continued from previous page)

the children on to my colleague, so I could take her vitals. Tachycardic, febrile, hypotensive. All signs that she either had an overwhelming bacterial infection or malaria, and I did not have the tools necessary to differentiate. I hedged my bets and gave her anti-malarials and antibiotics with a bag of IV fluid for good measure.

She didn't show up the next day like we had planned. Her kids had received their immunizations and mebendazole, and that had brought a smile to her face. She was a mother. A good one.

I'll never know if she lived.

I was never so comfortable with mortality as I was there—both my own and others'. Everyone seemed so alive, even with their death only a sunset away. Kenya could be so apathetic about death and yet so celebratory about life. I saw it firsthand when an aid worker's child died of malaria. The Kenyan woman had been desperate to help, even with a 2-month-old in tow. Everyone mourned, of course, but it was not the gut-wrenching, soul-torturing wallowing I'd expected. There was a belief that everything was preordained, yet it didn't appear they thought of death as God's "plan," either. No one believed it served a greater purpose. It was more an acceptance that things were the way they were; whether it was God or nature, it didn't matter. Everyone woke each morning with a death sentence. My attempts to change their date with destiny felt increasingly futile.

During my short time in the country, I grew accustomed to handing out death sentences. Like a medic on the beaches of Normandy, I helped those I could help and left others to their graves: The man with uncontrolled hypertension, without hope of management. The child born with nonfunctional legs, not likely to make it past his 10th birthday. The man with the rotting, infected hand. The 11-year-old girl with AIDS. What she had, no one talked about. No one ever would.

She would die of a taboo.

I took another sip of Tusker beer and looked at my soon-to-be-wife, who sipped her lager like she'd earned it. She turned to me with her glorious smile. I smiled back, we clinked bottles and laughed—the type of laugh that is too loud and too hearty. The laughter of exhaustion and unspoken sorrow, matched with the elation of sharing it with the one you love.

We sat in silence watching the storm engulf the valley. I wondered where the animals went when it rained. I pictured them basking in it, the hyenas and giraffes dancing because they knew water brings life. And life is worth celebrating no matter how terrible it may be sometimes.

My fiancé reached over and placed a gentle hand on my shoulder. I must have looked troubled because she gave me a look that said "It will be O.K." There was solace in her jade and amber eyes. I was able to see in her what I'd hoped to see in myself. The hard work painted on her face was a mural of selfless sacrifice. I felt the tension in my mind loosen, as the tight connections between thoughts suddenly became fluid again. We had come to do good and there had to be some good in that. I'd never been so in love with her before as I was in that moment. I settled back into my chair and the storm cleansed the Rift Valley and myself.

The next morning, as the creaky Toyota van climbed along the rim of the valley taking us back to our former lives, I couldn't help but feel that we'd left the best of us down there. Our ideal selves. Our consummate morality. Specters with unattainable dreams. The people we had hoped to be, aspired to be, but who never really existed. We weren't gods. We were mortals who did our best. Whether it was right or wrong remains a mystery. The land and the people would forget we were ever there.

In the end, the truth would only exist in our memory.

STUDENT
Winner

PHOTO BY KATHRYN FORSS

Lil Johnson

Fourth-year student, University of Minnesota Medical School

ON WHY I WRITE

I write so I can sleep at night. I take all the crap racing through my brain all the time and dump it onto something else—make it the paper's weight to bear.

I have loved to read since as far back as I can remember. I always wanted to be able to write creative stories like the ones I read, so I started writing at a very young age. It turns out I don't have much of an imagination, so I can't come up with something from nothing. But I can write about real life.

ON MY INSPIRATION FOR THIS PIECE

I wrote half the piece as a reflection for a course I was taking. The second half I wrote a few days after I said goodbye to the patient in the story. It was a good way to get it out of my head. When I write, I'm not thinking of anything specific. I just start and it all flows out.

Placeholder

By Lil Johnson

I stare down at the blank strip of yellow paper. Reminiscent of a cigarette, odd thought. Oh crap, what am I supposed to be doing? I'm sitting in a large circle of my classmates. We're doing some kind of soul-searching exercise in a course we've dubbed "feelings class." My ADD takes over, and I look around as my peers are quiet, thoughtful, busy writing messages on their pieces of yellow paper. I have gathered this much: This strip is to serve as a bookmark … we're supposed to write something on either side … something to remind us of … what we're doing here … what we're pursuing. Too embarrassed to whisper to my neighbor and admit I wasn't paying attention, I decide I better come up with something. I look down at the paper, the cigarette shape. I think of my father.

I remember sitting on the floor after the funeral, surrounded by photos spanning decades of my father's life, drinking them all in. This is all I have left: him sitting at a typewriter, black and white, handsome and young, cigarette sticking out of the side of his mouth; showing me how to fish, a little girl looking up to her dad, cigarette at his lips. I look at every photo, hundreds. Smoke, after smoke, after smoke. Some may say he did it to himself. I think back to the last conversation we had.

He's angry, fired up about something called "pre-existing conditions." He's emotional, talking about a health care system gone wrong, about the poor treatment of fellow human beings. He tells me to not just be a doctor, but to be a good doctor. I promise him I will. I think about all the physicians I've seen whom I've thought were inadequate, lazy, underwhelming. I'm convinced I will be better than them, I wouldn't be doing this if I didn't know I could be better …

It becomes clear I don't understand the assignment and I'm running out of time. I commit to my yellow paper the thoughts I have at that moment. On one side I write: "Treat them as if they are all him." On the other: "He is always watching you."

A year later I find myself in a patient's room. No longer asked to soul-search on pieces of construction paper, I sit at a computer half-listening to what this patient is saying. Don't get me wrong, I was listening, about a half-hour ago. But now this elderly man who stares off into the distance, rather than looking at me, is recounting the most mundane details of his life. I mean, do I really have to know the exact dimensions of the area surrounding his bed for which he sprayed pesticide to kill the bed bugs? I'm the med student who is never rude, who lets the patients talk forever, but this is getting ridiculous, even for me.

I do the thing they told us never to do, something I thought was common sense for anyone with a beating heart—I walk toward the door as the patient is still talking. What else could I do? He was never going to stop talking! But then he stops me, recounting a dream he had recently, a dream about an owl, and how that means death. He begins to cry, this elderly man, who has been stoic this entire time. He tells me how a dear friend of his just passed, how he thinks about himself going too. He continues to look past me instead of at me, but he accepts the tissue I hand him lamely. A heavy feeling of guilt presses on my chest. I take death seriously, I'm listening now. "He is always watching you." "Treat them as if they are all him."

At this moment, I'm embarrassed and ashamed. I listen until he is done talking, until he is actually done. I do what I can for him, then I walk him out

Placeholder

(continued from previous page)

toward the exit. He leaves with the parting words, "You're a good doctor." With a heavy heart and a lump in my throat I think, "No, I'm not, I'm so sorry. But I promise next time I will be."

Six months later, I get my chance. I'm at the veteran's hospital. Every man reminds me of my father. There's the ring he used to wear. The cowboy boots he loved. The white hair parted just so. The story he used to tell. A man gets admitted with complications from his multiple cancers. He is very ill; he has spent much time here. I sit with him on his bed and laugh about life, trying to keep things upbeat. His family walks in, first his wife with her brave face on, then his daughter. The daughter takes me aback. In her face I see my own, the look I tried to hide for years, every time my dad was hospitalized, and every time I thought I would lose him. The look of premature loss, of abandonment, of regret. I get choked up just seeing her. I know her all too well. I can't deal with this pain, I've got to get out of here. I use the excuse that I will leave him now so he can visit with his family, and I run away like I always do. Keeping my distance, keeping things buried deep where they should be. Because the pain never heals, you can only smother it. It's like that diabetic foot ulcer. The one I talked about with the patient, but never unwrapped to look at. Run away, keep your distance, don't get too emotionally involved, absolutely never cry.

I get a new patient. Yellow from head to toe, feces and urine of colors they never should be. This is going to be bad. He is smiling at me, optimistic that I will take good care of him and figure out what is wrong. I smile back, hiding the sense of doom I feel from my face. I don't want to say anything I shouldn't. We can barely make it through the formalities of the history and physical without stopping to chat about "the good old days," or horses, or westerns, or my dad, or his daughter. If they weren't the exact same age, I'd swear this was my father reincarnated. I tell him I'm glad we got stuck together, he squeezes my hand and tells me he wishes we had met under different circumstances.

A doctor comes in, pulls the fragile curtain closed, a humble barrier from the other vets in the room. He brings the news that it's likely cancer, and if it is, there's no cure. A man-to-man conversation, voices deep, faces serious. I sit back and observe. My patient thanks him; he is glad to finally have an answer. Then I'm left alone with him.

With a gentle voice, I ask him if he's O.K. I guess it's safe to cry now, and he does. He's much too young to die; he loves life. What about his mom—who will take care of her? What about his daughter, how will she bear this? I ask him if he will call his family. He shakes his head. He won't scare them before he has a definitive answer. Really? So no one is coming? I think about how I have an important test soon that I'm unprepared for. How nothing I do during this rotation will matter if I don't pass that test. There's so little time to study. But … I can't leave him alone with this news of impending death so fresh. I face the pain head on, and sit with him for hours. We talk about everything and nothing—you'll find all your answers at church, horses will teach you common sense, chickens are the key to happiness. We laugh; he cries.

We spend every day like this, every day that no one comes for him because no one knows he's here, or how serious this is. Eventually, I'm able to convince him that if I were his daughter, I'd want to know. I tell him the story of my dad, and how I've always been grateful that I knew he was dying so I could say goodbye. He calls her, and she comes the next day. I keep my distance, not for me, but for them.

Then it's time for me to move on to a new rotation, a new hospital, new patients. His eyes widen when I tell him it's my last day. He tells me how pleased he is to have met me, and he thinks everything happens for a reason. He gives me a book. It's well-worn, loved. I ask him how I'll get it back to him. We look at each other with sad eyes, understanding. He simply says I can keep it. We both know he will no longer be alive by the time I'm done reading it. There is a cowboy on the cover, my father, my patient. A sweet message written inside so I'll never forget him. He tells me I can see him anytime, just drive straight north 150 miles and give a stranger his name—they will lead me straight to him. I smile and nod at his unspecific directions, we both know this is the last time we'll see each other.

I can remember the last time I saw my dad. I was being driven to the airport; he was waving from the door. He didn't come on purpose. We promised we would see each other again, but if that were true why couldn't we stop crying?

I get choked up and tell my dearest patient it's been an absolute pleasure, and that I'll keep him in my prayers. We shake hands for much too long; I can't let go. He's not your father Lil, he's someone else's.

I let go.

I make it through the hospital, make the long trek past all the handicapped parking spaces at the VA, get into my car, door securely closed, and then the tears, oh the tears. You would think my windows were some kind of protection from the world, as if I'm really alone and it's safe to let go. I can't help it. The ulcer, the wound, is exposed, never healed. I cry the whole drive home.

Dear patient, find my father when you go. You would get a kick out of each other. Tell him all about me, and how I cared for you. He never got to see me become a doctor. I know he would be proud.

"Treat them as if they are all him." **MM**

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Your MMA membership team covers the state working for the physicians of Minnesota.

Handling all your membership needs, including:

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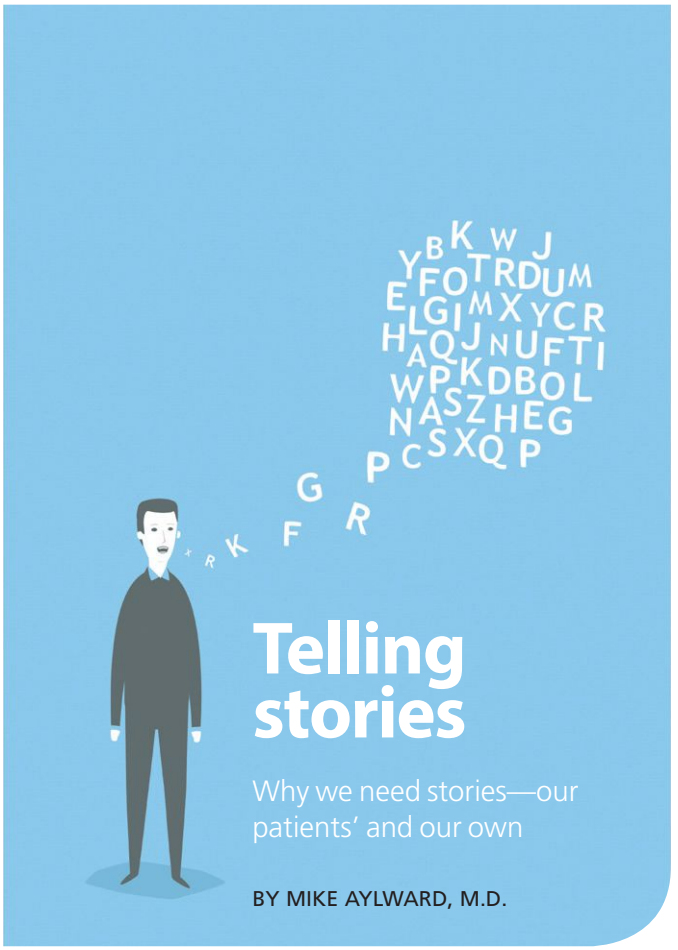


Telling stories

Why we need stories—our patients' and our own

BY MIKE AYLWARD, M.D.

Let me start with a story …

"You've had two children," I said, "a blood test is nothing compared to that." The patient said she would try, but she didn't think she could do it. When she had been a child in this very clinic; her mother had left the room and one of the nurses held her down and gave her a shot. Ever since, she had been terrified of needles. Unfortunately for her, she needed a blood test to work up her symptoms, to assess whether her fatigue was from her children, or from anemia or an underactive thyroid. She said she would try, but she couldn't do it.

Really? I talked to the resident physician who had seen her—we both agreed that eventually she would need to suck it up and get the test. It really wasn't that big a deal.

A few days later, the pounding in my right ear began. It happened in the evening, while watching TV. It was a rhythmic wooshing sound, accompanied by pressure, like my ear drum was being pushed in and out by a plunger. I went to bed and the wooshing went with me. I felt for my carotid to see if it correlated with my pulse. It didn't. At least, I don't think it did. Regardless, I knew I had pulsatile tinnitus, and my quick-and-dirty in-the-middle-of-the-night list of things that cause this included aneurysms, brain tumors, nerve tumors, degenerative neurological diseases and arterial dissections. Not pleasant company. I checked Dr. Google to see if he could give me some less scary and more plausible possibilities. I tell my patients to avoid Dr. Google, and I just reaffirmed why.

The pounding came back the next day during afternoon clinic. I became preoccupied with the list of things I'd rather it not be to the point of not paying attention to the resident presentations of patients. Half listening, I looked up an ear, nose and throat doctor. By the time I had made the appointment, the pounding was gone.

I saw the physician the next day. Everything looked normal on his examination. He said if he were me he'd want an MRI just to be sure. Being me, I agreed.

The next morning was the first day of my vacation, and it kicked off with a trip to the MRI scanner. I had a podcast on my iPhone queued up—Radiolab, the "Blood" episode. An MRI is commonly described as a donut. It's really not so much a donut as a gray cylindrical coffin that your head and upper body slide into. To keep me from moving, I was outfitted with a cage over my face that had an angled mirror on it so I could look down my body and out of the tube. A muted knitted picture of a flower juxtaposed nicely with the large red emergency panic button that deactivated the magnet once large metal objects began getting sucked into it. My head and shoulders slid into the scanner.

I start to think about all the protons in my body snapping to and fro. The cage feels closer. My podcast mumbles, indecipherable in the background. I wonder if this is what a schizophrenic feels like. My heart begins to race. I try to swallow, but it gets stuck—that stuck that you get when you wake up at night gasping, with spit in your wind-pipe and your tongue glued to the roof of your mouth. Except I can't sit up because my head is bolted to a board inside of a giant vibrating cylindrical coffin-shaped magnet. I try deep breathing. It doesn't work. Screw this, I need to get out. I squeeze the bulb in my hand, shout out and the bed slides out; the techs come in, the mask comes off and I sit bolt upright, breathing heavily, heart pounding. Holy crap, so that's what it is like. How does anyone do this? Two minutes down, 48 minutes to go. I try one more time with the same results. I can't do this.

I reschedule the MRI for three days later, this time armed with two pills of diazepam, 5 mg each, more commonly known as Valium. I feel the anxiety in my belly, but I don't care. I close my eyes, slide into the tube, visualize the stars Vega, Deneb and Altair—the summer triangle in the sky. I think about the Milky Way flowing between these stars, and how this will look on my vacation to Lake Itasca the next day. The scan ends. I get up, a little sleepy. The MRI is normal. The Milky Way is brighter and more clear than I imagined.

When I get back from vacation, the patient with the fear of needles is on the resident schedule. I now understand her fear, how it leads to panic, how it consumes her mind and body, and how it really is a big deal. To her because she wants to feel better and to me because she is my patient.

One of the cool things about working at a big university is being able to dabble in areas that only roughly approximate medicine. Last fall, I participated in a three-day digital storytelling workshop with other faculty from across the university. Going into it, I had no idea what digital storytelling was. Having made my own digital story (the transcript being the story you just read), I think digital storytelling is a medium that lives somewhere at the intersection of photography, audio documentary, spoken word and movies. Theoretically, the juxtaposition of spoken words, written words, images and sounds tell a story in a way that any one of those media cannot. I'm not sure that is actually true, but it got me thinking about storytelling.

The telling of stories is in the wheelhouse of medicine, after all. People have based whole careers on the concept of narrative medicine. But short of that, we tell stories all the time. Most people think of patient stories—the narrative arc that starts with a chief complaint and ends with a succinct encapsulation of the biopsychosocial issues at play in a given disease presentation. We tell patient stories in other ways, too. "I saw this patient with [insert ludicrously rare disease here]" or "I can't believe they did [insert a shocking lapse in judgement/ethics/luck here]." Patient stories serve as cautionary tales, inspirational anecdotes or maps revealing a hidden acorn of wisdom. Medicine has multiple genres of stories beyond the patient story—the doctor-as-patient story, the medical error story, the this-job-is-really-hard story, the system story, the reform story. It's medicine, not the library, that is, in fact, the tallest building in the world.

That said, some view the idea of stories or storytelling as a means of disseminating wisdom as childish. Yes, we know not to cry wolf, or that races are won by being slow and steady, or that we ought not to enter houses built of candy, whipped cream and gingerbread. But improving length of stay metrics, patient satisfaction scores, preventable adverse events or medical errors, they say, lies in the domain of statistics, quality improvement methodology, systems changes and culture. Storytelling has no role here. But I disagree.

One of the hospital committees I serve on has been exploring the idea of using stories to change culture. For example, whenever there is a near miss (or an actual adverse event), a root-cause analysis is carried out that parses the steps that occurred before, during and after that event. It's a useful way of deconstructing situations to get at the core issues.

> "I have yet to see a root-cause analysis finding go viral. Medicine may have something yet to learn from Aesop, folklore or even YouTube."

However, medicine is so complex that there are usually multiple contributing factors in a given adverse event that are not easy to remedy. Changing these factors often requires more than changing an order set or setting up a system. It requires cultural change. This is where storytelling can come into play. Behind closed doors, the events leading up to a near miss are told in a story-like fashion. Anyone who hears the story will never forget it, and most of us come away thinking, "That could have been me." And yet those stories rarely, if ever, are told outside those closed-door meetings. I understand confidentiality concerns. But the core splinters of truth that stay with you after you hear these stories are independent of the patient or their caregivers. Stories provide the context around isolated factoids and a cadence for sharing them. I have yet to see a root-cause analysis finding go viral. Medicine may have something yet to learn from Aesop, folklore or even YouTube.

There is one other type of story we are beginning to explore in our med-peds residency program—that of moral distress. The most challenging situations a physician encounters come at the confluence of responsibility, decision making and uncertainty. We are entrusted by our patients and society to make decisions and be responsible. It differentiates us from all other health care providers. In the end, the buck stops with us. This confluence brings with it self-doubt, sleepless nights, waffling and questioning. All the tests and repeated physical exams, literature reviews, discussions with consultants and colleagues, family meetings and time with the patient always come back to That One Question: Am I doing the right thing?

Being human, we can only do our best, communicate well, let the principles of medicine, ethics and the patient guide us. We tell each other, and I think it's true, that when we stop having moral distress, it is time to donate our stethoscopes. But then you have to see the next patient. And write your notes. And do the discharge summaries. And teach. And so on.

For residents, it can be harder. They have less experience to draw from, and they are sometimes in a position of being witness but without the ability to influence the decisions. And so two of my colleagues created MPreSS—Med Peds Residents Sharing Stories. The idea is to provide a safe place to talk about these things, no matter what they are. To decompress, process, and share and cope. Perhaps eventually to write or record.

We all need a time for stories, and sometimes they are our own. **MM**

Mike Aylward directs the internal medicine-pediatrics residency program at the University of Minnesota. This was originally published in his blog http://minnesotamedpeds.wordpress.com/

To view Mike Aylward's digital story, use the QR code or go to http://minnesotamedpeds.wordpress.com/

MEDICAL THEMES IN DOWNTON ABBEY

The Wangensteen Library bases an exhibit on the PBS series.

TEXT BY EMILY HAGENS AND LOIS HENDRICKSON
PHOTOS BY KATHRYN FORSS

Tucked away on the fifth floor of the BioMedical Library at the University of Minnesota is a collection that offers a fascinating glimpse into medical history. The library's more than 70,000 rare medical, botanical and natural history books include ground-breaking works from nursing, pharmacy, dentistry, public health and medicine. It also has a small collection of artifacts. Visitors who arrive by chance, who attend history of medicine lectures next door or who are part of a visiting class, are often stunned by the breadth and depth of materials found in the Wangensteen Historical Library of Biology and Medicine. Even though the library is open to everyone, convincing people to go out of their way to engage with its holdings can be difficult.

Recently, we decided to see if we could attract the public by using *Downton Abbey*, PBS's wildly successful Edwardian drama, as the basis for an exhibit. The show tells the story of the challenges of an aristocratic family, beginning with the sinking of the Titanic (1912) and continuing through World War I and into the early 1920s. Our idea was to pair some of our books and artifacts with medical storylines in the show to highlight important aspects of early 20th-century medicine.

As viewers know, medicine figures prominently in *Downton Abbey*. The characters—both the upper-class Crawley family as well as those employed at their Yorkshire country estate—face gut-wrenching tragedies as well as smaller problems. We saw an opportunity to explore medical topics and eventually chose to organize our exhibit around four themes: medicine in the home, the family doctor, war injuries and civilian involvement in war medicine.

Our exhibit, *Downton Abbey: Behind the Scenes of Health and Illness*, opened on October 21, 2013, and ran through May 16, 2014. Hundreds of people including medical professionals, fans of the show and history buffs saw it. Here we share some of the highlights.

For thousands of years, the majority of medical care took place in the home and at the hands of loved ones and other nonprofessional healers, especially in small communities. Although European universities began graduating physicians in earnest in the medieval and early modern periods, at the time of *Downton* women were still responsible for knowing the remedies for everyday injuries and illnesses.

Most women who headed English households had books that offered advice about running the home. In addition to including recipes, menus and lists of duties for different household staff (such as butlers and valets), they outlined care for medical ailments—from bleeding to dislocated joints. One such book was the *Book of Household Management* by Isabella Beeton (1861).

Diet was considered a critical part of health maintenance, and scientific analysis was just then possible because of more sophisticated equipment and testing abilities. Mrs. Beeton's and other books included charts on the caloric value of foods, so readers could make informed decisions about how to feed their families.

It was a happy coincidence that the producers of *Downton Abbey* used Mrs. Beeton's book, as the Wangensteen Library had recently acquired a beautiful first-edition copy.

Although much medical care was done in the home, the family physician was a respected member of the community in the early 20th century. In *Downton Abbey*, Dr. Clarkson appears periodically to offer sage advice or remedies for minor injuries and serious concerns. Dr. Clarkson was a generalist, and for most of the first two seasons, we see him working alone, caring for patients with both minor and major illnesses. He is shown capably caring for Lavinia, Cora and Mr. Carson during the influenza pandemic and being the first point-of-contact for Mrs. Hughes when she has a breast cancer scare and Mrs. Patmore when she needs her cataracts removed.

The increasing need for specialized medical knowledge is seen as the seasons of *Downton* progress. In one episode, for example, we see the cook, Mrs. Patmore, having her cataracts surgically removed by a specialist in London. Cataract surgery was uncommon in early 20th century England and would have been out of reach financially for someone like Mrs. Patmore, without the help of her employer.

One of the most interesting of the themes in *Downton Abbey* are the tenuous relationships between different types of healers. In the first season, we see this as newcomer Isobel Crawley, a trained nurse, and Violet, the acerbic, elderly dowager countess, politely argue about the nature of the severe rash on butler Mr. Molesley's hands. Isobel insists that it is erysipelas, but Violet primly announces that it is simply a rue allergy (based on her knowledge of Mr. Molesley's father's garden). Respected Dr. Clarkson settles the argument, agreeing with Violet's diagnosis.

In a later episode, in one of the most painful scenes, Dr. Clarkson and Dr. Philip Tapsell, a London obstetrician, clash over how best to care for the youngest Crawley daughter, Sybil, during childbirth. Summoned by Lord Grantham because of his expertise, Dr. Tapsell is renowned among the upper class. In the end, we see Dr. Clarkson's knowledge of the patient being more relevant to her care than Dr. Tapsell's knowledge of disease.

During this era, there was debate within the medical community about the shift toward reliance on specialists. Historian Dorothy Porter described physician Milton C. Winternitz's contention in the 1920s that "technological advances in medicine had divided up the physical organism of the patient, creating unnecessary proliferation of medical specialties. Medicine had been diverted from the patient to his pathology."* Eventually, with the advent of Britain's National Health Service in 1948, "the GP was to take on a new role … as a health promoter" instead of an individual's primary healer.

*Porter D, "Introduction," Social Medicine and Medical Sociology in the Twentieth Century. Atlanta: Rodopi, 1997:12.

The Wangensteen's next exhibit, *Visualizing the Body: Celebrating 500 years of Andreas Vesalius, Renaissance Art and Medical Revolution*, opens August 4 and runs to May 8, 2015. A half-day symposium coinciding with the exhibit is scheduled for October 24. It is open to all. To find out more about the Wangensteen Library or the symposium, go to z.umn.edu/whl.

Throughout history, wars have been an impetus for advancement of the science of medicine. World War I stimulated the development of psychiatry, orthopedics, and plastic and thoracic surgery. The injuries that soldiers received varied from the temporarily debilitating, such as Thomas's hand and Matthew's spine injuries, to the severe and life-threatening, such as William's lung injury and Mr. Lang's shell shock. As in *Downton Abbey,* hospitals were organized in private homes, as well as municipal and religious buildings. **MM**

Emily Hagens is a Ph.D. candidate in the Program for the History of Science, Technology and Medicine at the University of Minnesota. For her dissertation, she is using medical recipe books to examine nonprofessional medical practice in 16th century Italy. Lois Hendrickson is the interim curator at the Wangensteen Historical Library of Biology and Medicine.

Why doctors play

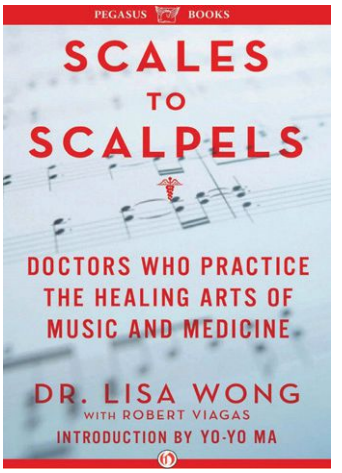
The story of Boston's Longwood Symphony Orchestra.

REVIEW BY CHARLES R. MEYER, M.D.

Many years ago, in the basement of Fairview Southdale Hospital, a ragtag group of physicians gathered on Sunday nights to play music. Dubbed the "Doctor's Band," it drew its members from all specialties and from a wide range of ages. Luckily for most of us, there were no auditions and no expectations about quality of musicianship. We scrounged our music mostly from the Chatfield Brass Band lending library and, playing mostly marches, the musician physicians dusted off their skills and gradually got to the point where the cacophony became a reasonable facsimile of what the composers intended. We eventually escaped our subterranean practice room and played a few gigs, usually for friendly audiences like the medical staff and spectators at the Edina July 4 parade. Our most prestigious appearance was on a float that passed the review stand of the Norwegian ambassador in a parade in downtown Minneapolis. We weren't great, but we were enthusiastic.

Recruiting for the band was surprisingly easy. Seemingly every doctor I spoke to had played an instrument, and many were willing to break it out of the closet and try again.

Music and medicine are bedfellows. And that's what the founders of the Longwood Symphony Orchestra (LSO) in Boston found. In 1982, they scoured Longwood Avenue, the main drag of Boston's medical district, for health care professionals with a passion for playing music and struck pay dirt. Now every Thursday night, 100 participants leave their jobs as pediatricians, neurosurgeons or anesthesiologists, travel to the Boston Latin school and pull out a violin, trombone or bassoon to make music with their fellow LSOers. Unlike our decidedly amateur group in the hospital basement, the LSO boasts many players who at one point had to choose between a career as a physician or as a professional musician. Combining "two ancient archetypes: the healer and the troubadour," LSO musicians play for diverse crowds in diverse settings—from nursing homes to the New England Conservatory's Jordan Hall. Many of their concerts generate sizeable revenue that they donate to charity, thus fulfilling one of the group's goals of giving back to the community.



Scales and Scalpels: Doctors Who Practice the Healing Arts of Music and Medicine, Lisa Wong, M.D. with Robert Viagas, Pegasus Books, 2014

So what could motivate this proliferation of talented, time-starved professionals to spend time each week making music? Much of Lisa Wong's book tries to answer that question. In her many profiles of LSO members, themes recur. Music and medicine demand many of the same skills. According to Wong, "Ensemble musicians are making multiple high-level decisions at every moment—decisions about rhythm, pitch, harmony, tempo—constantly adjusting to who is playing and what is going on around them. Physicians, too, are making decisions about the intonation of the body, the rhythm of the heart, the pitch, harmony and tempo of a patient's life. Both endeavors require emotional intelligence and close collaboration in order to achieve success. They demand focus, intent listening and communication. When you're playing in a chamber ensemble or treating a patient, there can be no success without a key ingredient: empathy."

Music heals everyone—physicians and patients. Says pediatrician Susan Pauker, one of the physicians profiled in the book, music "helps me to do my job. It refills my tank in a way that allows me to give to patients. I give all day long …, and this is a chance for me to receive healing. When we played at my mom's assisted-nursing home, she and all her friends there were crying because they were so moved. They said, 'Come back tomorrow.' That was a big deal. That's healing."

Wong extensively explores the burgeoning field of music therapy, from the mini-application of Susan Pauker singing "Row, Row, Row your boat" to assess a child's development to the current use of music in the treatment of autism spectrum disorders to "engage and foster their capacity for flexibility, creativity, variability and tolerance of change in order to balance the more structured and behaviorally driven education required in school settings" to the prediction of oboist neurologist Michael Barnett that someday a "music prescription" will be written for specific diseases.

Musicians and physicians share a special bond, a motif to which Wong returns again and again, and which anyone who has gone to medical school or played in a musical group understands.

Most members of our physicians' band have stashed their instruments back in the case, but I have continued to play my trumpet. Recently, a 79-year-old patient told me about playing "Bugler's Holiday."

I asked him, "Did you hit the high C at the end?"

His eyes twinkled, "Yup, you get it." MM

Charles Meyer is editor in chief of *Minnesota Medicine.*

Legislative studies

New health care laws call for convening committees, reporting on issues

BY DAN HAUSER

When it comes to health care legislation, sometimes the effect is felt immediately, as with prohibiting minors from using tanning devices and restricting e-cigarette use (both of these will happen August 1). Other times, the changes are more drawn out. This session, legislators passed several health care bills that call for the formation of committees and additional study.

Here's a rundown.

Medical cannabis task force

As part of the medical cannabis bill signed into law this spring, a 23-member task force will study, among other things, the impact of the new program in Minnesota. The group's first meeting will take place before August 1.

The task force eventually will be made up of four legislators, three health care providers, four consumers or patients enrolled in the registry program (including at least two parents of patients under 18 years of age), one licensed pharmacist, four law enforcement officers, four substance abuse treatment providers, and the commissioners of health, human services and public safety. The public members of the group will be appointed by the governor.

The task force will hold hearings to evaluate the impact of the use of medical cannabis as well as Minnesota's and other states' activities involving the drug. They also will offer analysis of the program's design and implementation; the impact on the health care provider community; patient experiences; the impact on the incidence of substance abuse; access to and the quality of medical cannabis and medical cannabis products; the impact on law enforcement and prosecutions; public awareness and perception; and any unintended consequences.

The group will provide legislative leaders with a report on the design and implementation of the registry program by February 1, 2015. Then it will submit an impact assessment and cost assessment every two years.

Health care workforce commission

Responding to concerns about the adequacy of Minnesota's health care workforce in the coming years, legislators established the Legislative Health Care Workforce Commission, which will make recommendations on how to strengthen the state's health care workforce.

The commission, which is made up of five members of both the House and Senate, is to report to the Legislature by December 31, 2014, on key issues including current and anticipated shortages by provider type and region, and evaluation of the incentives available to retain a skilled workforce.

The commission is also supposed to identify causes of and potential solutions to the anticipated primary care workforce shortage, including training and residency slot shortages, income disparities between primary care and non-primary care physicians, and negative perceptions of primary care among students.

Health care homes advisory committee

The commissioner of human services will convene an advisory committee to study the implementation of health care homes across the state, consumer engagement, and potential improvements to the health care home statutes, rules and oversight.

The committee will include primary care physicians and other providers, mental health providers, nursing and care coordinators, academic researchers, consumers, and representatives from

certified health care home clinics across the state, health plan companies, state agencies, employers and quality improvement organizations in Minnesota. At least 25 percent of the committee members will be consumers or patients who are enrolled in health care homes.

The commissioner is expected to appoint the advisory committee this month.

Chronic pain study

The Minnesota Department of Health will gather information on chronic pain treatment performed by physicians and certified registered nurse anesthetists. The report, which is due to the Legislature by January 15, 2015, should include information on the number and type of procedures performed within the last three years; the types of professionals providing the treatments; and the location and type of facility where the procedures are being performed. The report is a result of the debate and confusion over who could provide chronic pain treatments that occurred during the APRN scope-of-practice discussion this past session.

Health care contracting privacy study

Department of Human Services officials will study the impact of applying the same data-governance rules that currently apply to state and municipal governments to all private entities that contract with government agencies. The effect of such a change will be that all contracts—including those between physicians and health plans to treat individuals enrolled in public health insurance programs such as MinnesotaCare or Medical Assistance—be made entirely public. The report is due to legislators by December 21, 2014.

Prescription Monitoring Program reports

The Minnesota Board of Pharmacy and the Prescription Monitoring Program (PMP) Advisory Task Force will report to the Legislature by December 14, 2014, on whether to 1) require all prescribers to use the PMP when prescribing or considering prescribing, and pharmacists to use it when dispensing or considering dispensing, a controlled substance; 2) allow for the use of the PMP to identify potentially inappropriate prescribing patterns; and 3) encourage access to appropriate treatment for prescription drug abuse through the PMP.

The Board of Pharmacy and the PMP Advisory Task Force will also study the impact of the PMP on reducing doctor-shopping. That report is due to the Legislature by December 15, 2016.

All-payer claims database work group

The Commissioner of Health will convene a work group to develop recommendations on the parameters for future allowable uses for the state's all-payer claims database (APCD). The group will also investigate what type of governing body should guide the release of data, what type of funding or fee structure would be needed to support expanded use, and what privacy and security protections are needed.

The work group will include two members recommended by the Minnesota Medical Association, two recommended by the Minnesota Hospital Association, two by the Minnesota Council of Health Plans, one member who is a data practices expert from the Department of Administration, three who are academic researchers with expertise in claims database analysis, two representing state agencies determined by the commissioner, one representing the Minnesota Health Care Safety Net Coalition, and three representing consumers. The group will report to the Legislature by February 1, 2015.

News briefs

Additional health care laws

In addition to the MMA's legislative priorities, the Legislature passed several other bills that pertain to health care in Minnesota. Here's a quick review of some of them.

Diversion of Controlled Substances: Under a new law, employers of licensed health care practitioners must report to those practitioners' licensing boards if they have knowledge that a practitioner has diverted narcotics or other controlled substances for personal use. This law is designed to address the problem of a physician, nurse or other provider being fired by their employer but not being reported to their licensing board.

Funding for Regenerative Medicine: The Legislature provided $4.5 million to fund a partnership between the University of Minnesota and Mayo Clinic for regenerative medicine research, clinical translation and commercialization. The partners also will work with representatives from private industry who have expertise in this area. Going forward, the initiative will receive $4.35 million annually.

Dense Breast Notification: Under provisions that were incorporated into the Health and Human Services omnibus policy bill, facilities that perform mammograms will be required to alert patients if their tests indicate that the patient has heterogeneously dense or extremely dense breasts based on the Breast Imaging Reporting and Data System established by the American College of Radiology.

Efforts to Combat Synthetic Drug Use: Continuing an ongoing legislative effort to fight the growing use of synthetic drugs, lawmakers and the governor approved new measures to shut down retailers selling these dangerous products. The state's Board of Pharmacy is authorized to issue cease-and-desist orders to retailers selling non-FDA-approved chemicals whose effects mimic those of Schedule I and II drugs. The bill also provides for a public education campaign to raise awareness of the risk of synthetic drug use.

Minnesota named the healthiest state for seniors

For the second year in a row, Minnesota has been named the healthiest state for seniors.

A report by America's Health Rankings analyzes seniors' health on a national and state-by-state basis across 34 measures. It draws on data from more than a dozen government agencies and research organizations. The report indicated Minnesota had:

- The highest percentage (68.2 percent) of able-bodied seniors
- The highest percentage (89.6 percent) of seniors with prescription drug coverage
- The fourth-lowest number (1,585) of premature deaths per 100,000 population.

The findings weren't all good, however. Some areas of concern:

- Obesity among Minnesota seniors increased from 23.7 percent in 2013 to 26.3 percent in 2014
- Health disparities persist—59.2 percent of Minnesota seniors with a college education reported excellent or very good health, while only 25.2 percent of those with less than a high school education reported excellent or very good health
- Minnesota ranked 37th in community support for impoverished seniors (dollars per adult 65 or older in poverty).

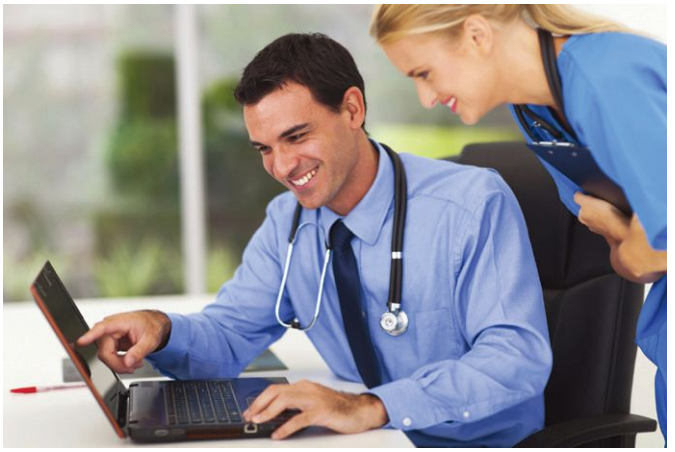
Farris Timimi, M.D.

Digital branding topic of Annual Conference talk

Farris Timimi, M.D., medical director of the Mayo Clinic Center for Social Media, will discuss creating and managing your digital brand at this year's Annual Conference, September 19 and 20, at Madden's on Gull Lake in Brainerd.

A digital brand is what patients see online (social media, patient review sites, etc.). Timimi will discuss how it can help or hurt your practice. He also will address the top three things physicians do online that can pose a liability risk and how to minimize that risk.

For more on the Annual Conference, visit www.mnmed.org/AC2014.



Minnesota docs contribute $21 billion to state economy

Minnesota's more than 13,000 physicians play a vital role in the state's economy by supporting more than 143,000 jobs and generating $21 billion in economic activity, according to an economic impact study released in mid-April by the American Medical Association.

"Through the care we provide our patients, physicians have a tremendous impact on keeping Minnesotans among the healthiest people in the nation. But as this study shows, our role goes well beyond providing care. We also play a significant role in the state's overall economy," says MMA President Cindy Firkins Smith, M.D. "This data really illustrate that doctors are strong economic drivers in this state and the nation as a whole."

The study, prepared by Alexandria, Virginia-based IMS Health, estimated the total economic impact of patient care offered by physicians at the national level and for each of the 50 states and Washington, D.C., based on output, jobs, wages and benefits, and state and local tax revenue.

In Minnesota, each physician supported:

- An average of 10.67 jobs, and contributed to a total of 143,356 jobs statewide
- An average of $1.56 million in economic output, and contributed to a total of $21 billion in economic output statewide
- An average of $890,000 in total wages and benefits, and contributed to a total of $11.9 billion in wages and benefits statewide
- Supported $68,016 in local and state tax revenues, and contributed to a total of $913.4 million in local and state tax revenues statewide.

The study focused on the roughly 720,000 physicians who primarily engage in patient care activities (as opposed to research or teaching). Nationally, these physicians support $1.6 trillion in total economic output ($2.2 million per physician) and 10 million jobs (an average of 13.84 jobs per physician).

The study also found:

- Physicians support $775.5 billion in wages and benefits at the national level
- Physicians contribute $65.2 billion in total state and local taxes nationally (or $90,449 in local and state tax revenue per physician).

Upcoming MMA Events

Event	Date	Location
Resident Roundtable Discussion on Grassroots Advocacy	July 28	MMA Office
Single Payer Forum	August 19	U of M Continuing Education and Conference Center, St. Paul
Annual Conference	September 19-20	Madden's on Gull Lake, Brainerd
Pre-Diabetes Conference	October 7	Ramada Plaza Minneapolis
Quality Measurement Summit	October 25	TBD

Check MMA's website (www.mnmed.org/events) for more information and registration.

Mimi Oo from the African and American Friendship Association for Cooperation and Development Inc. asks a question about getting more doctors from overseas licensed in the United States.

Discussing Minnesota Disparities

About 75 physicians, residents, medical students and public health workers gathered in June to discuss Minnesota's problematic health care disparities and to help inform the MMA's efforts to encourage and support physician leadership in reducing racial and ethnic health disparities. The event, titled "Closing the Gap: Addressing Minnesota's Health Disparities," featured keynote speaker Edward Ehlinger, M.D., Minnesota Commissioner of Health, and a panel of physicians, who shared their perspectives on working with underserved and minority populations.

MMA seeking volunteers for committees

The MMA is seeking volunteers to serve on its committees for three-year terms beginning January 1, 2015. The application deadline is July 15.

As a committee member you can influence the MMA's direction, acquire leadership skills and network with physicians who care about the same issues as you.

The committees are: Administration and Finance; Ethics and Medical-Legal Affairs; Health Care Access, Financing and Delivery (formerly Medical Practice and Planning); Membership and Communications; Public Health; and Quality.

Membership only takes three to six evenings a year. You can attend in person or remotely by an audio or video connection.

For specific committee assignments, visit the website at www.mnmed.org/committee.

The application process varies for each committee. If you are interested, send an email mma@mnmed.org and indicate the committee in which you are interested. An MMA staff person will follow-up with you.


Richard Lindstrom, M.D.

Bloomington member is tops in ophthalmology

MMA member Richard Lindstrom, M.D., has been named the fourth-most influential person in the field of ophthalmology internationally, and the most influential in the United States, by the United Kingdom-based publication *The Ophthalmologist*.

Lindstrom is a founder and attending surgeon at Bloomington-based Minnesota Eye Consultants. He is also an adjunct professor emeritus in the University of Minnesota's department of ophthalmology and an internationally recognized leader in corneal, cataract, refractive and laser surgery.

The publication accepts nominations from around the globe and issues its "Power 100" list each year based on a rigorous judging process.


Dave Renner


Terry Ruane


Kathleen Baumbach


Mandy Rubenstein


Donald Jacobs, M.D.


Barbara Daiker

MMA in action

Cindy Firkins Smith, M.D., MMA president, **Dave Renner**, director of state and federal legislation, **Terry Ruane**, director of membership, marketing and communications, and **Kathleen Baumbach**, manager of physician outreach, visited the Mankato Clinic in late May to provide physicians with a legislative wrap-up and discuss current health care issues.

Baumbach and Ruane attended the Transition to Practice event for residents and fellows at the University of Minnesota in mid-May. Baumbach and **Mandy Rubenstein**, manager of physician outreach, also hosted a social gathering for residents and fellows at Pinstripes in Edina.

Renner, Smith, MMA president-elect **Don Jacobs**, M.D., and **Teresa Knoedler**, MMA policy counsel, attended the AMA House of Delegates in Chicago along with the MMA's Minnesota delegation in mid-June. Renner also provided a legislative update to the Grand Itasca Clinic and Hospital in Grand Rapids in June.

Eric Dick joined the Minnesota Orthopaedic Society for its Annual Meeting in mid-May in Minneapolis, where he shared an update on the legislative session and discussed issues of importance to physicians, particularly orthopaedic surgeons.

Rubenstein and **Patrick Zook**, M.D., met with the Central Minnesota Clinic Managers group in St. Cloud in May. Zook talked about the Circle of Health's Medication Safety program and Rubenstein discussed the MMA's Speaker Series and Annual Conference.

Brian Strub, manager of physician outreach, participated in career day at the Hmong College Prep Academy in St. Paul in mid-May. There, he shared information about the MMA's Medical Student Section and talked about the education and training required to be a physician.

In June, Strub and **Barbara Daiker**, manager of quality, attended the "Hot Topics in Pediatrics" conference, hosted by the Minnesota Chapter of the American Academy of Pediatrics, in Bloomington. Daiker also served on a review panel to certify Health Information Exchange service providers in late May. In mid-June, Daiker moderated a session at the Minnesota e-Health Summit.

VIEWPOINT

The art of medicine

Cindy Firkins Smith, M.D.

When I was a medical student, much was said about the "art of medicine." The implication was that while medicine is based on science, the application of that science is an art. That has always seemed the case for me. The physician with the most encyclopedic fund of knowledge is not always the one who can best apply it. A good surgeon knows anatomy, masters the technical skills and capably does surgery. A brilliant surgeon uses his knowledge and training to create and innovate; he is the artist. A pediatrician who counsels the family of a critically ill child and calms their fears, an oncologist who relays the risks and benefits of a therapeutic regimen or the urologist who encounters an anatomic aberration and adapts. All are artists.

Yet, some say the idea of medicine as an art is outdated; that with the emphasis on applying evidence-based protocols, practicing medicine is sometimes nothing more than checking boxes.

So are they right? Has the artistry involved in building a relationship with the patient been supplanted by a list of symptoms plugged into a computer that spits out a differential diagnosis rank-ordered by likelihood? If so, will human physicians go the way of the dodo? I don't think so; but to test my theory, I went to the place most likely to supply our replacement—the app store: *Is there a doctor-substitute app?*

A search of "doctor" in the app store yields a number of games, phone battery doctors, and inexplicably, a celebrity guessing game featuring Justin Bieber (Doctor Love, maybe?). There were a couple of sites that connect patients with virtual physicians. For $40, "Doctor on Demand" lets you consult with a real doctor about your medical issue. The reviewers loved it. The majority of them got the antibiotic prescription they wanted after a simple email without the hassles of an actual physical exam.

"iTriage" appears closest to a doctor substitute. You type in your symptoms and it supplies a differential diagnosis. Typing in "headache," I learned that common causes included tension and cluster headaches, migraine, sinusitis and anxiety disorder. Other causes ranged from essential hypertension, porphyria and PMS to "critical" ones like brain tumor, hypertensive emergency and encephalitis. I was given 58 possible diagnoses. If my headache was caused by anxiety, it just got worse. The site also allowed a search of conditions, medications, procedures, health news, local doctors and health care facilities. Interested in anoscopy? iTriage described it and listed physicians who performed it, possible complications and average costs, and linked me to images and YouTube videos. It also allowed me to share what I learned with my friends and family, presumably so they would all know I had a special interest in anoscopy.

The bottom line is that art, like science, changes over time but is always needed. Any computer can spit out a list, but it takes a physician to sift, separate, translate, communicate and humanize the possibilities. That is the art. Thankfully, there is a little bit of Michelangelo in us all.

Art, like science, changes over time but is always needed.

Breast Density Legislation

Implications for Patients and Primary Care Providers

BY DEBORAH J. RHODES, M.D., AND AMY LYNN CONNERS, M.D.

Minnesota recently became the 16th state to require facilities that perform mammograms to notify patients if they are found to have dense or extremely dense breasts, as this may make it more difficult to detect a cancer or put them at increased risk for cancer. This article outlines the new law and describes the classification system for breast density, the implications for breast density on screening mammography, and the relationship between breast density and cancer. It also provides guidance for patients who have dense breast tissue regarding supplementary screening.

On May 21, Minnesota became the 16th state to enact a breast density notification law. The new law, which was included in a broader omnibus health care bill, states that mammography patients must be notified in writing if they are found to have dense or extremely dense breast tissue, as this may make it more difficult to detect and place them at increased risk for breast cancer.

This law has implications for women and for physicians and other health care providers. Although radiologists have for years routinely reported breast density information in the mammography report, such information has not been included in the federally mandated letter sent to patients following a mammogram. Starting August 1, facilities will be required to include this information in the letter. The purpose of this article is to assist those who will be discussing the implications of breast density with women and participating in shared decision-making with them regarding supplemental breast cancer screening.

What is Breast Density?

The breast is composed of fat and fibroglandular tissue, which includes both epithelial tissue (ducts and lobules) and connective tissue. There is wide variability among women in the ratio of fat to fibroglandular tissue in their breasts. Breast density is a measure of breast tissue composition based on mammographic appearance. Dense breasts have proportionately more fibroglandular tissue visible on a mammogram than nondense breasts. Fat is radiologically lucent and appears dark on a mammogram, whereas fibroglandular tissue is radiologically dense and appears light on a mammogram.[1]

Classification of Breast Density

Breast tissue ranges from predominantly fatty to extremely dense. There are various methods of classifying breast density, but the most common one is the American College of Radiology's Breast Imaging Reporting and Data System (BI-RADS), which classifies breast density into four categories (Table 1).[2] Dense breasts are described as either heterogeneously or extremely dense. Radiologists reading mammograms estimate the amount of fibroglandular tissue within the breast and must include one of four descriptors in their mammography report (Figure 1). There is no correlation between density and breast size, texture or fibrocystic changes.

In editions of the BI-RADS Atlas prior to 2013, percentages (increments of 25%) were associated with the categories.[3] The percentages were eliminated in the 2013 edition to emphasize the subjective nature of estimating breast density and the masking effect of dense fibroglandular tissue on the mammographic depiction of noncalcified cancers.

There is considerable variation in estimating breast density.[2,4] Quantitative methods exist but are not used in routine clinical practice.

According to data from the Breast Cancer Surveillance Consortium, a network of seven mammography registries in the United States, there has been very little change in the distribution of mammograms over the four density categories since 1996. In 2009, 10% of mammograms were classified as fatty, 43% were classified as having scattered areas of fibroglandular density, 39% were heterogeneously dense and 8% were extremely dense.[5] Therefore, approximately 47% of screening mammograms in the United States are classified as dense.

Implications of Breast Density on Mammography Screening

Breast density increases the likelihood of both false-negative and false-positive mammography findings.

TABLE 1

Breast Composition Categories*

a) The breasts are almost entirely fatty.

b) There are scattered areas of fibroglandular density.

c) The breasts are heterogeneously dense, which may obscure small masses.

d) The breasts are extremely dense, which lowers the sensitivity of mammography.

*Defined by the American College of Radiology's Breast Imaging Reporting and Data System (BI-RADS) 2103 Atlas

False Negatives

The sensitivity of mammography is lower in women with dense breasts than in those with fatty breasts. In an evaluation of 329,495 mammograms, the sensitivity of mammography in women with extremely dense breasts was 63% compared with 87% in women with fatty breasts.[6] Other studies have demonstrated mammography sensitivities as low as 30% in women with dense breasts.[7-9] The decreased sensitivity is the result of the masking effect of density. Because the X-ray attenuation characteristics of tumors can be indistinguishable from the surrounding density, tumors that occur in areas of dense tissue can be occult or difficult to discern on mammography (Figures 2a, 2b).

The masking effect also explains the higher rate of interval cancers seen in women with dense breasts.[8] Boyd et al. found the odds ratio of a cancer detected less than 12 months after a negative screening examination was 17.8 (95% CI, 4.8 to 65.9) in women with extensive breast density as compared with those with density in less than 10% of the breast.[10]

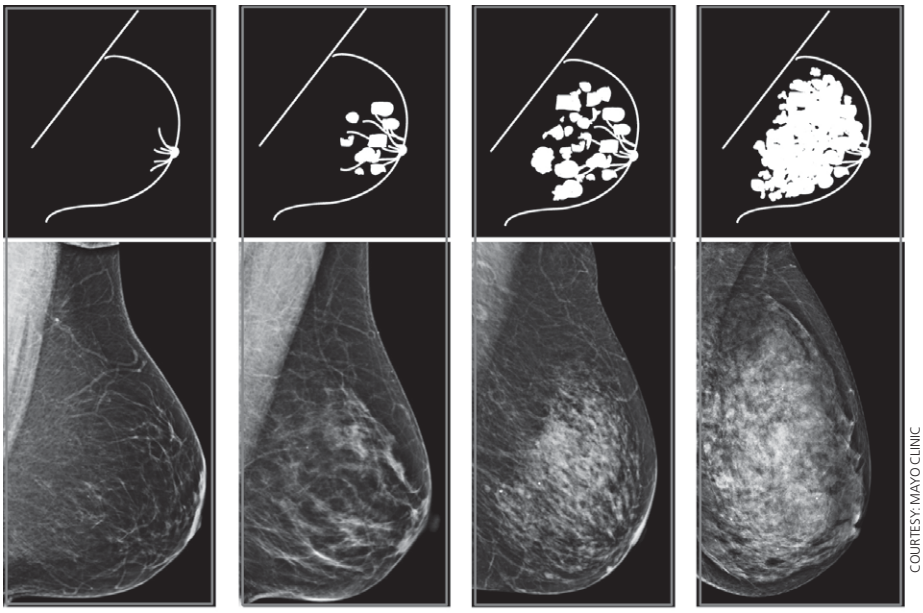
The masking effect of breast density on mammography is of particular concern to younger women, as they are more likely than older women to have dense breasts.[11] Dense breast tissue is the primary reason for mammography's failure to detect cancer among women ages 40 to 49 years.[12, 13]

False Positives

Breast density is associated with reduced specificity of mammography. Kerlikowske et al. found that the cumulative probability of a false-positive mammography result (leading to additional mammogram, ultrasound or MRI imaging, and sometimes biopsy) after 10 years of annual screening exceeded 60% for women ages 40 to 49 years with heterogeneously or extremely dense breasts vs. 5.5% for women in that same age group with fatty breasts.[14] Studies have reported a three-fold increase in the risk of a false-positive mammogram finding in women with dense breasts as compared with those with fatty breasts.[11,15]

FIGURE 1

Examples of the Four Density Categories (Schematic plus Mammography)



The breasts are almost entirely fatty. | *There are scattered areas of fibroglandular density.* | *The breasts are heterogeneously dense, which may obscure small masses.* | *The breasts are extremely dense, which lowers the sensitivity of mammography.*

COURTESY: MAYO CLINIC

Breast Density and Breast Cancer Risk

The association between mammographic breast density (MBD) and breast cancer risk has been investigated in more than 60 studies.[16,17] These studies differ in their classification of breast density and in the cut-off points delineating women with dense breasts from controls. Nevertheless, the association between breast density and breast cancer risk is strong and independent of the influence of other risk factors.

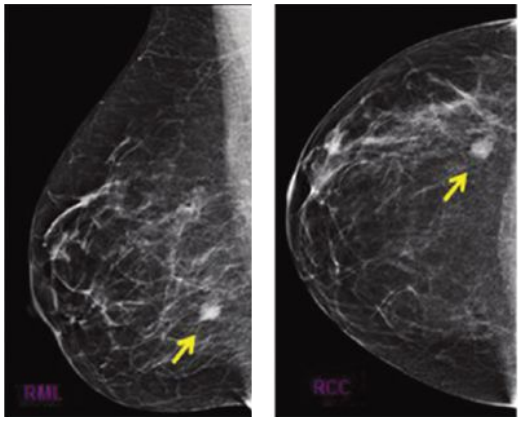
A meta-analysis of 42 studies found that the relative risk of breast cancer was 1.79 (95% CI, 1.48 to 2.16) in women with 5% to 24% density; 2.11 (1.70 to 2.63) for women with 25% to 49% density; 2.92 (2.49 to 3.42) for women with 50% to 74% density; and 4.64 (3.64 to 5.91) for women with >75% density.[16] Boyd et al. reported an odds ratio of 4.7 for women with >75% mammographic density relative to those with <10% density (95% CI, 3.0, 7.4)[10] after adjusting for age, body mass index (BMI) score, age at menarche, parity, number of live births, age at first birth, menopausal status, age at menopause, hormone therapy use and breast cancer in first-degree relatives.

Only age and BRCA mutation status are associated with larger relative risks of breast cancer than MBD when comparing the highest to the lowest categories of density. The increased cancer risk associated with breast density has been shown to persist at least eight years after measurement.[10] Because MBD is a common attribute in the population and the relative risk is large, a significant proportion of breast cancers can be attributed to breast density: Estimates of attributable risk range from 12% to 21% for cancers detected at the time of mammography screening to 40% to 50% for cancers detected in between screenings.[1]

Breast cancer risk prediction models that incorporate breast density have been developed, but they improve the discriminatory power of existing models only incrementally and are not used routinely in clinical practice.[18]

FIGURE 2A

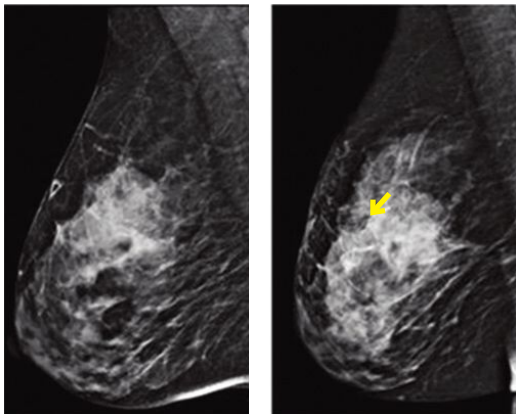
Tumor in Nondense Breast



Tumor clearly visible on both mammogram views.

FIGURE 2B

Tumor in Dense Breast



COURTESY: MAYO CLINIC

The mammogram on the left shows a dense breast with a palpable abnormality (the triangle-shaped mark on the skin). The mammogram on the right was taken after the palpable mass was biopsied and a metal marker placed; the marker (arrow) shows the location of the mammographically occult tumor.

In addition to overall risk, high breast density is associated with larger tumor size,[19,20] high histologic grade, lymphovascular invasion, advanced stage and positive lymph nodes.[20-22] MBD also may be associated with increased local recurrence and risk of a second primary breast cancer.[23,24] Two large retrospective studies found no association between high breast density and breast cancer-specific survival.[25]

Association between Breast Density and Other Breast Cancer Risk Factors

Mammographic breast density is correlated with multiple breast cancer risk factors. The strongest associations are seen with age and BMI.[18,26,27] However, even after adjusting for these and other breast cancer risk factors, there remains a robust and independent association between MBD and breast cancer risk.

At a population level, age is inversely related to MBD, but age is not a sufficient surrogate for MBD because of considerable individual variation. Twin studies have shown that inherited factors explain 63% of the variation in density in the population at any given age.[28] Nevertheless, the proportion of women with MBD decreases with each subsequent decade of life after initial screening (74% for women ages 40 to 49; 57% for women ages 50 to 59; 45% for women ages 60 to 69; and 36% for women ages 70 to 79).[29]

MBD is inversely associated with BMI as well as weight gain after age 18.[30]

MBD is also influenced by reproductive and hormonal factors. MBD is inversely associated with parity.[10,31] Use of hormone therapy for at least one year has been shown to increase MBD in approximately 16% to 20% of women, with average increases of 3% to 5% for those using estrogen and progestin and 1.6% for those using estrogen alone.[32-35] MBD has been shown to decline with cessation of hormone therapy.[36] Among women with extremely dense breasts, use of combination hormone therapy compounded their breast cancer risk: Among women 55 to 59 years of age with extremely dense breasts, the five-year risk of breast cancer was 4.2% for those who use estrogen plus progestin (95% CI, 3.7% to 4.6%), 3.0% among those who use estrogen only (95% CI, 2.6% to 3.5%) and 2.4% for those who do not use hormone therapy (95% CI, 2.0% to 2.8%).[32] Therefore, postmenopausal women with very high MBD should consider the added risk of breast cancer when making decisions about hormone therapy and especially combination hormone therapy.

TABLE 2

Impact of Breast Density

Mammography sensitivity decreases
Mammography specificity decreases
Interval cancer risk increases
Breast cancer risk increases
Risk of larger tumor size at diagnosis increases
Risk of positive lymph nodes at diagnosis increases
Risk of advanced-stage disease* increases
No apparent effect on survival

**Risk increases further in women with dense breasts who use postmenopausal hormone therapy*

Discussing Breast Density with Patients

There are two issues physicians need to discuss with patients who have dense breasts. One is the impact of breast density on breast cancer detection and risk (Table 2). Women need to understand the limitations of mammography so they report breast changes or concerns even after having a "negative" mammogram. Understanding the impact of MBD on breast cancer risk may also assist them in making health decisions, such as whether to use hormone therapy.

The second issue to discuss is supplemental screening. In discussing this, phy-

Talking Points for Physicians

- Having dense breast tissue is common, but it increases the chance that a cancer won't be visible on a mammogram; a patient with dense breasts may have a higher risk of developing breast cancer than one who doesn't have dense breasts.
- If a woman notices a change in her breasts, even if her mammogram is normal, she should be evaluated promptly. Focused mammogram and ultrasound can be used to look more closely at an area of concern.
- Supplemental screening tests don't replace the mammogram, but they can be used to help the radiologist better see through dense tissue.
- A supplemental screening test may find a cancer that isn't visible on a mammogram. It may also show findings that are not cancer and may lead to biopsies and/or additional breast imaging studies. Insurance may or may not pay for the supplemental screening tests.
- There are some types of breast cancer for which early detection may not improve survival. There are other types that may not be life-threatening; finding these means a patient will receive treatment that won't prolong her life. At this time, we are unable to identify which cancers may not require treatment.
- We do not yet know whether supplemental screening can save lives. More research is needed to compare the available tests and to determine if they benefit women with dense breasts.

sicians should make sure patients understand these points:

- The goal of supplemental screening of the dense breast is to detect tumors obscured by MBD.
- The impact of supplemental screening on breast cancer mortality is unknown. No studies have examined the impact of supplemental screening of women with dense breasts on breast cancer mortality. The correlation between breast cancer survival and tumor size and lymph node status has fueled the assumption that earlier detection of breast tumors through additional screening will improve the chance of survival, but advances in the understanding of tumor biology have identified associations between molecular signatures and survival that may be less dependent on time of detection.[37] Because studies of supplemental screening with mortality as an endpoint would take decades to complete, intermediate endpoints will likely be used to assess its effectiveness.
- Supplemental screening may result in overdiagnosis. Overdiagnosis, or the detection of a cancer that would otherwise not go on to cause symptoms or death, is a growing concern.[38] The magnitude of overdiagnosis as a result of mammographic screening is controversial, with estimates ranging from 10% to 31%.[38-41] However, there is little doubt that supplemental screening will lead to an increase in overdiagnosis.
- Supplemental screening may increase the risk of false-positive findings. Most supplemental screening modalities lead to a higher rate of false-positive findings and biopsies, with the exception of tomosynthesis, which has been shown to decrease the false-positive rate.[42-45]

Currently there is no consensus in the radiology community about whether supplemental screening is warranted or which modality offers the best risk-to-benefit ratio. Ultimately, the decision to pursue supplemental screening will depend on the patient's perception of the risks of overdiagnosis and false-positive findings versus the potential benefit of detecting cancers that may be masked by MBD.

Supplemental Screening Options

Currently, there are three main options (with several others being studied and in development) for supplemental screening of women who do not qualify for screening MRI. No trial has directly compared these modalities, and most breast imaging facilities do not offer all of them.

Digital breast tomosynthesis. With digital breast tomosynthesis, a series of thin-resolution X-ray images are aggregated to generate a 3D image of the breast, reducing artifact caused by overlapping dense tissue seen on traditional 2D images. Digital breast tomosynthesis is the only supplemental screening modality that has been shown to reduce rather than increase the number of false-positive findings associated with mammography. However, the increased diagnostic yield is lower than that reported for other supplemental screening modalities. With tomosynthesis, there is a small increase in radiation exposure, although techniques under development may allow for imaging at the same dose as traditional mammography.

Screening ultrasound. Unlike targeted ultrasound performed for diagnostic purposes, screening ultrasound scans the entire breast using either a hand-held or automated transducer. Screening ultrasound is associated with the highest risk of false-positive findings among the supplemental modalities. One advantage is the absence of radiation exposure.

Molecular breast imaging. Molecular breast imaging (MBI) provides a functional breast image based on preferential uptake of 99mTc-sestamibi in tumors relative to normal tissue, independent of breast density. Unlike imaging done with older-generation scintillating gamma cameras, MBI directly converts gamma ray energy to electronic signal through solid-

state cadmium zinc telluride detectors. MBI has the highest reported supplemental cancer detection rate of the three modalities in blinded clinical trials, although no direct comparison has been performed. MBI requires an injection and is associated with more radiation exposure than mammography, although it is still within an acceptable range for a screening modality. MBI has been extensively studied at Mayo Clinic Rochester and is the recommended modality for supplemental screening at this site; but access to MBI is limited in other parts of Minnesota.[9,46,47]

Physicians and patients should consider the available evidence regarding the relative diagnostic performance of supplemental screening options, including diagnostic yield, false-positive rate and biopsy rate (Table 3). Important additional considerations include patient preferences and comfort, radiation exposure, availability of tests, radiologist expertise, insurance coverage and cost. It is particularly important to caution patients that supplemental screening may not be covered by their insurance.

It should be noted that MRI has a high sensitivity for the detection of cancer in dense breast tissue.[45] However, screening MRI is not recommended for women with MDB unless they have additional risk factors.[48] Annual screening MRI is indicated, regardless of MBD, for women with any of the following risk factors:

- Having a lifetime risk of breast cancer of 20% to 25% or greater, according to risk assessment tools based on family history
- Having a *BRCA1* or *BRCA2* gene mutation
- Having a first-degree relative with a *BRCA1* or *BRCA2* gene mutation, but not having had genetic testing themselves
- Having received radiation therapy to the chest between the ages of 10 and 30 years
- Having Li-Fraumeni syndrome, Cowden syndrome or Bannayan-Riley-Ruvalcaba syndrome, or a first-degree relative with one of these syndromes.

When eligibility for screening MRI is in question, referral to a breast specialty clinic or medical geneticist should be considered.

TABLE 3

Comparison of Supplemental Screening Modalities

MODALITY	SUPPLEMENTAL CANCER DETECTION RATE PER 1,000 SCREENED	RECALL RATE RELATIVE TO MAMMOGRAPHY ALONE	BIOPSY RATE	OTHER CONSIDERATIONS
Tomosynthesis	1.9 to 2.8[1,2]	Decreased by 3.2%[5] to 17.2%[1]	Not reported	Effective radiation dose: 1.2 mSv
Ultrasound	3.5 to 4.4[3,6,7]	Increased by 15.1%[3]	7.8%[3]	No radiation exposure
Molecular Breast Imaging	8.8[4,8]	Increased by 6.6%[8]	2.9%[8]	Effective radiation dose: 2.0 mSv

1. Ciatto S, Houssami N, Bernardi D, et al. Integration of 3D digital mammography with tomosynthesis for population breast-cancer screening (STORM): a prospective comparison study. Lancet Oncol. 2013;14(7):583-9.

2. Skaane P, Bandos AI, Gullien R, et al. Comparison of digital mammography alone and digital mammography plus tomosynthesis in a population-based screening program. Radiology. 2013;267(1):47-56.

3. Berg WA, Zhang Z, Lehrer D, et al. Detection of breast cancer with addition of annual screening ultrasound or a single screening MRI to mammography in women with elevated breast cancer risk. JAMA. 2012;307(13):1394-404.

4. Rhodes D, Hruska C, Conners A, Tortorelli C, Maxwell R, O'Connor M**.** Low-dose molecular breast imaging with Tc-99m sestamibi for screening in women with mammographically dense breasts [abstract]. Radiological Society of North America Annual Meeting. Chicago; 2011.

5. Rose SL, Tidwell AL, Bujnoch LJ, Kushwaha AC, Nordmann AS, Sexton R Jr. Implementation of breast tomosynthesis in a routine screening practice: an observational study. AJR. Am J Roentgenol. 2013;200(6):1401-8.

6. Corsetti V, Ferrari A, Ghirardi M, et al. Role of ultrasonography in detecting mammographically occult breast carcinoma in women with dense breasts. Radiol Med. 2006;111(3):440-8.

7. Tohno E, Ueno E, Watanabe H**.** Ultrasound screening of breast cancer. Breast Cancer. 2009;16(1):18-22.

8. Rhodes DJ HC, Conners AL, Jones K, Tortorelli C, Toledano A, O'Connor MK**.** Low-Dose Molecular Breast Imaging with Tc-99m Sestamibi for Screening in Women with Mammographically Dense Breasts. Radiologic Society of North America 2013.

Conclusion

Because Minnesota law now requires mammography facilities to notify women if they have dense breasts, physicians should be prepared to discuss the implications of breast density on breast cancer detection and risk and to participate in shared decision-making with patients who may require supplemental screening.

Along with talking to patients about mammography and breast cancer, they should stress the fact that supplemental screening should be done in addition to, not instead of, annual mammography. And they should encourage premenopausal women to schedule their screening mammogram during the first and second weeks of the menstrual cycle instead of during the third and fourth weeks, as breast tissue is less radiographically dense during this time.[49] They also should encourage women to become familiar with what is normal for their breasts and report any changes, and to make healthy lifestyle choices in order to reduce their risk for breast cancer. These include maintaining a healthy weight,[50,51] exercising regularly,[52] limiting alcohol intake[53] and limiting postmenopausal hormone use.[54-56]

Minnesota's new law offers an opportunity to engage women in important discussions about their health. **MM**

Deborah Rhodes is in the department of medicine and Amy Lynn Conners is in the department of radiology at Mayo Clinic in Rochester.

REFERENCES

1. Boyd NF, Martin LJ, Yaffe MJ, Minkin S**.** Mammographic density and breast cancer risk: current understanding and future prospects. Breast Cancer Research. 2011;13(6):223.

2. D'Orsi CJ, Sickles EA, Mendelson EB, Morris EA et al. ACR BI-RADS® Atlas, Breast Imaging Reporting and Data System. Reston, VA, American College of Radiology; 2013.

3. American College of Radiology (ACR) Breast Imaging Reporting and Data System Atlas (BI-RADS Atlas). Reston, Virginia: American College of

Radiology; 2003.

4. Spayne MC, Gard CC, Skelly J, Miglioretti DL, Vacek PM, Geller BM**.** Reproducibility of BI-RADS breast density measures among community radiologists: a prospective cohort study. Breast J. 2012;18(4):326-33.

5. National Cancer Institute**.** Breast Cancer Surveillance Consortium. 2009.

6. Carney PA, Miglioretti DL, Yankaskas BC, et al. Individual and combined effects of age, breast density, and hormone replacement therapy use on the accuracy of screening mammography. Ann Intern Med. 2003;138(3):168-75.

7. Kolb TM, Lichy J, Newhouse JH**.** Comparison of the performance of screening mammography, physical examination, and breast US and evaluation of factors that influence them: an analysis of 27,825 patient evaluations. Radiology. 2002;225(1):165-75.

8. Mandelson MT, Oestreicher N, Porter PL, et al. Breast density as a predictor of mammographic detection: comparison of interval- and screen-detected cancers. J Natl Cancer Inst. 2000;92(13):1081-7.

9. Rhodes DJ, Hruska CB, Phillips SW, Whaley DH, O'Connor MK**.** Dedicated dual-head gamma imaging for breast cancer screening in women with mammographically dense breasts. Radiology. 2011;258(1):106-18.

10. Boyd NF, Guo H, Martin LJ, et al. Mammographic density and the risk and detection of breast cancer. N Engl J Med. 2007;356(3):227-36.

11. Carney PA, Miglioretti DL, Yankaskas BC, Kerlikowske K, Rosenberg R, Rutter CM, et al. Individual and combined effects of age, breast density, and hormone replacement therapy use on the accuracy of screening mammography. Annals of Internal Medicine. 2003;138(3):168-75.

12. Buist DS, Porter PL, Lehman C, Taplin SH, White E**.** Factors contributing to mammography failure in women aged 40-49 years. J Natl Cancer Inst. 2004;96(19):1432-40.

13. Bailey SL, Sigal BM, Plevritis SK**.** A simulation model investigating the impact of tumor volume doubling time and mammographic tumor detectability on screening outcomes in women aged 40-49 years. J Natl Cancer Inst. 2010;102(16):1263-71.

14. Kerlikowske K, Zhu W, Hubbard RA, et al. Outcomes of screening mammography by frequency, breast density, and postmenopausal hormone therapy. JAMA Intern Med. 2013;173(9):807-16.

15. Yankaskas BC, Cleveland RJ, Schell MJ, Kozar R**.** Association of recall rates with sensitivity and positive predictive values of screening mammography. AJR Am J Roentgenol. 2001;177(3):543-9.

16. McCormack VA, dos Santos Silva I**.** Breast density and parenchymal patterns as markers of breast cancer risk: a meta-analysis. Cancer Epidemiol Biomarkers Prev. 2006;15(6):1159-69.

17. Huo CW, Chew GL, Britt KL, et al. Mammographic density-a review on the current understanding of its association with breast cancer. Breast Cancer Res Treat. 2014;144(3):479-502.

18. Vachon CM, van Gils CH, Sellers TA, et al. Mammographic density, breast cancer risk and risk prediction. Breast Cancer Res. 2007;9(6):217.

19. Ghosh K, Brandt KR, Sellers TA, et al. Association of mammographic density with the pathology of subsequent breast cancer among postmenopausal women. Cancer Epidemiol Biomarkers Prev. 2008;17(4):872-9.

20. Aiello EJ, Buist DS, White E, Porter PL**.** Association between mammographic breast density and breast cancer tumor characteristics. Cancer Epidemiol Biomarkers Prev. 2005;14(3):662-8.

21. Roubidoux MA, Bailey JE, Wray LA, Helvie MA**.** Invasive cancers detected after breast cancer screening yielded a negative result: relationship of mammographic density to tumor prognostic factors. Radiology. 2004;230(1):42-8.

22. Yaghjyan L, Colditz GA, Rosner B, Tamimi RM**.** Mammographic breast density and subsequent risk of breast cancer in postmenopausal women according to the time since the mammogram. Cancer Epidemiol Biomarkers Prev. 2013;22(6):1110-7.

23. Cil T, Fishell E, Hanna W, Sun P, et al. Mammographic density and the risk of breast cancer recurrence after breast-conserving surgery. Cancer. 2009;115(24):5780-7.

24. Buist DS, Abraham LA, Barlow WE, et al. Diagnosis of second breast cancer events after initial diagnosis of early stage breast cancer. Breast Cancer Res Treat. 2010;124(3):863-73.

25. Maskarinec G, Pagano IS, Little MA, Conroy SM, Park SY, Kolonel LN**.** Mammographic density as a predictor of breast cancer survival: the Multiethnic Cohort. Breast Cancer Res. 2013;15(1):R7.

26. Byrne C, Schairer C, Wolfe J, et al. Mammographic features and breast cancer risk: effects with time, age, and menopause status. J Natl Cancer Inst. 1995;87(21):1622-9.

27. Boyd NF, Rommens JM, Vogt K, et al. Mammographic breast density as an intermediate phenotype for breast cancer. Lancet Oncol. 2005;6(10):798-808.

28. Boyd NF, Martin LJ, Rommens JM, et al. Mammographic density: a heritable risk factor for breast cancer. Methods Mol Biol. 2009;472:343-60.

29. Checka CM, Chun JE, Schnabel FR, Lee J, Toth H**.** The relationship of mammographic density and age: implications for breast cancer screening. AJR Am J Roentgenol. 2012;198(3):W292-5.

30. Samimi G, Colditz GA, Baer HJ, Tamimi RM**.** Measures of energy balance and mammographic density in the Nurses' Health Study. Breast Cancer Res Treat. 2008;109(1):113-22.

31. Li T, Sun L, Miller N, Nicklee T, et al. The association of measured breast tissue characteristics with mammographic density and other risk factors for breast cancer. Cancer Epidemiol Biomarkers Prev. 2005;14(2):343-9.

32. Kerlikowske K, Cook AJ, Buist DS, et al. Breast cancer risk by breast density, menopause, and postmenopausal hormone therapy use. J Clin Oncol. 2010;28(24):3830-7.

33. Greendale GA, Reboussin BA, Slone S, Wasilauskas C, Pike MC, Ursin G**.** Postmenopausal hormone therapy and change in mammographic density. J Natl Cancer Inst. 2003;95(1):30-7.

34. Vachon CM, Sellers TA, Vierkant RA, Wu FF, Brandt KR**.** Case-control study of increased mammographic breast density response to hormone replacement therapy. Cancer Epidemiol Biomarkers Prev. 2002;11(11):1382-8.

35. McTiernan A, Chlebowski RT, Martin C, et al. Conjugated equine estrogen influence on mammographic density in postmenopausal women in a substudy of the women's health initiative randomized trial. J Clin Oncol. 2009;27(36):6135-43.

36. Rutter CM, Mandelson MT, Laya MB, Seger DJ, Taplin S**.** Changes in breast density associated with initiation, discontinuation, and continuing use of hormone replacement therapy. JAMA. 2001;285(2):171-6.

37. Comen EA, Norton L, Massaque J**.** Breast cancer tumor size, nodal status, and prognosis: biology trumps anatomy. J Clin Oncol. 2011;29(19):2610-2.

38. Bleyer A, Welch HG**.** Effect of three decades of screening mammography on breast-cancer incidence. N Engl J Med. 2012;367(21):1998-2005.

39. Kalager M, Adami HO, Bretthauer M, Tamimi RM**.** Overdiagnosis of invasive breast cancer due to mammography screening: results from the Norwegian screening program. Ann Intern Med. 2012;156(7):491-9.

40. Gotzsche PC, Nielsen M**.** Screening for breast cancer with mammography. The Cochrane Database Syst Rev. 2009(4):CD001877.

41. Zackrisson S, Andersson I, Janzon L, Manjer J, Garne JP**.** Rate of over-diagnosis of breast cancer 15 years after end of Malmo mammographic screening trial: follow-up study. BMJ. 2006;332(7543):689-92.

42. Ciatto S, Houssami N, Bernardi D, et al. Integration of 3D digital mammography with tomosynthesis for population breast-cancer screening (STORM): a prospective comparison study. Lancet Oncol. 2013;14(7):583-9.

43. Skaane P, Bandos AI, Gullien R, et al. Comparison of digital mammography alone and digital mammography plus tomosynthesis in a population-based screening program. Radiology. 2013;267(1):47-56.

44. Berg WA, Blume JD, Cormack JB, et al. Combined screening with ultrasound and mammography vs mammography alone in women at elevated risk of breast cancer. JAMA. 2008;299(18):2151-63.

45. Berg WA, Zhang Z, Lehrer D, et al. Detection of breast cancer with addition of annual screening ultrasound or a single screening MRI to mammography in women with elevated breast cancer risk. JAMA. 2012;307(13):1394-404.

46. Rhodes D, Hruska C, Conners A, Tortorelli C, Maxwell R, O'Connor M**.** Low-dose molecular breast imaging with Tc-99m sestamibi for screening in women with mammographically dense breasts [abstract]. Radiological Society of North America Annual Meeting. Chicago; 2011.

47. Hruska CB, Phillips SW, Whaley DH, Rhodes DJ, O'Connor MK**.** Molecular breast imaging: use of a dual-head dedicated gamma camera to detect small breast tumors. AJR Am J Roentgenol. 2008;191(6):1805-15.

48. Saslow D, Boetes C, Burke W, et al. American Cancer Society guidelines for breast screening with MRI as an adjunct to mammography. CA Cancer J Clin. 2007;57(2):75-89.

49. White E, Velentgas P, Mandelson MT, et al. Variation in mammographic breast density by time in menstrual cycle among women aged 40-49 years. J Natl Cancer Inst. 1998;90(12):906-10.

50. Huang Z, Hankinson SE, Colditz GA, Set al. Dual effects of weight and weight gain on breast cancer risk. JAMA. 1997;278(17):1407-11.

51. Reeves GK, Pirie K, Beral V, Green J, Spencer E, Bull D; Million Women Study Collaboration**.** Cancer incidence and mortality in relation to body mass index in the Million Women Study: cohort study. BMJ. 2007;335(7630):1134.

52. Eliassen AH, Hankinson SE, Rosner B, Holmes MD, Willett WC**.** Physical activity and risk of breast cancer among postmenopausal women. Arch Int Med. 2010;170(19):1758-64.

53. Key J, Hodgson S, Omar RZ, et al. Meta-analysis of studies of alcohol and breast cancer with consideration of the methodological issues. Cancer Causes Control. 2006;17(6):759-70.

54. Schairer C, Lubin J, Troisi R, Sturgeon S, Brinton L, Hoover R**.** Estrogen-progestin replacement and risk of breast cancer. JAMA. 2000;284(6):691-4.

55. Beral V, Million Women Study Collaborators**.** Breast cancer and hormone-replacement therapy in the Million Women Study. Lancet. 2003;362(9382):419-27.

56. Rossouw JE, Anderson GL, Prentice RL, et al. Risks and benefits of estrogen plus progestin in healthy postmenopausal women: principal results From the Women's Health Initiative randomized controlled trial. JAMA. 2002;288(3):321-33.

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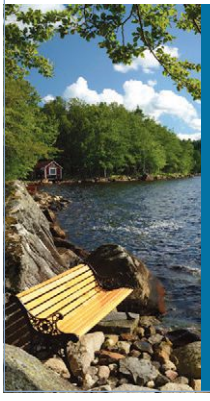

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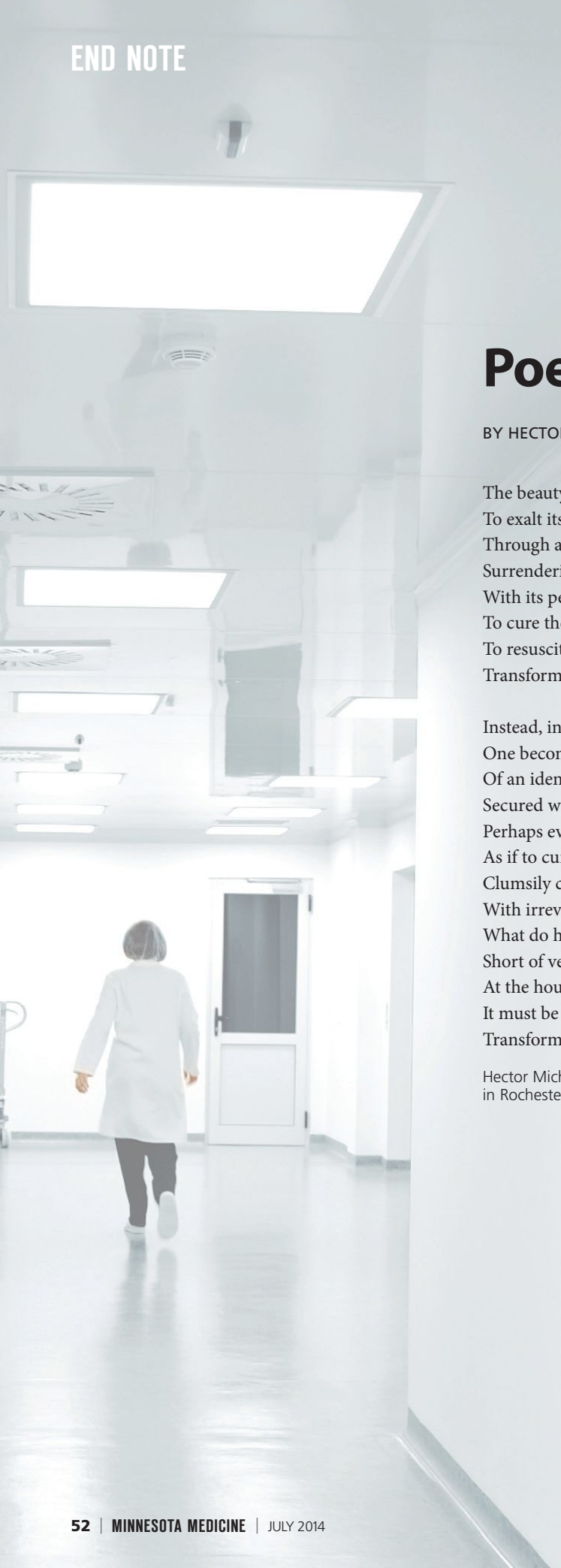

Poetry and medicine

BY HECTOR I. MICHELENA, M.D.

The beauty and magnificence of life, with its tenderness and concealed frailty,
To exalt its miracles and unfold its mysteries,
Through assertive verb and liberating, redeeming composition,
Surrendering one's being to the nameless, uncertain institution of art,
With its penalties of solitude, poverty, and the gamble of perpetual anonymity
To cure the emptiness of inner sightlessness, to cure the anguish of existence,
To resuscitate the dead souls,
Transform hopelessness into clarity through beauty, if only for a fleeting instant

Instead, in an act of meagre bravery but instinctive survival,
One becomes a physician,
Of an identifiable, classifiable institution,
Secured with salary, schedule, books and treatment algorithms,
Perhaps even a title, and an ephemeral seepage from anonymity
As if to cure something, irrespective of its damaged condition,
Clumsily conjecturing the underpinnings of beauty, of perfection
With irreverence, some science and plenteous arrogance,
What do human pain, fear and disgrace care about science and arrogance?
Short of verb or composition, there may be redemption:
At the hour of pain, of fear, of disgrace,
It must be the poet, the artist within, at the bedside of the sick
Transforming hopelessness into clarity through beauty, if only for a fleeting instant

Hector Michelena is with the Division of Cardiovascular Diseases at Mayo Clinic in Rochester.

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