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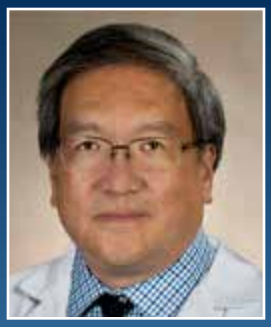
RHODE ISLAND MEDICAL JOURNAL



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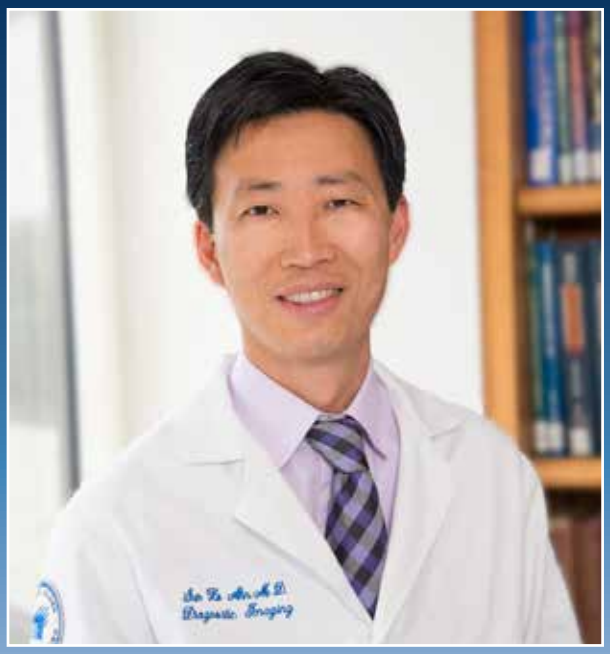

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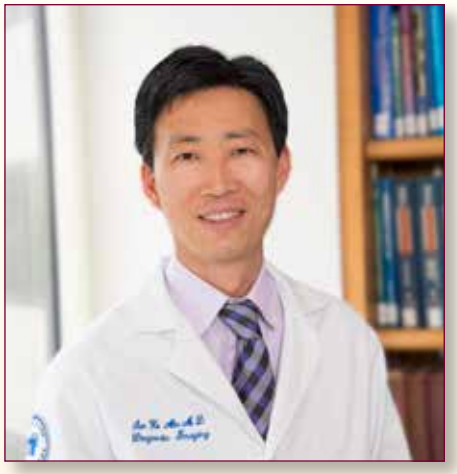

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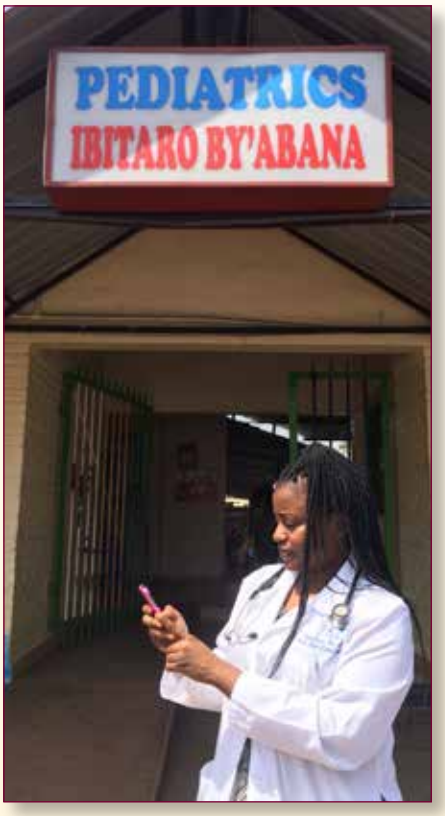

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# THE RHODE ISLAND MEDICAL JOURNAL

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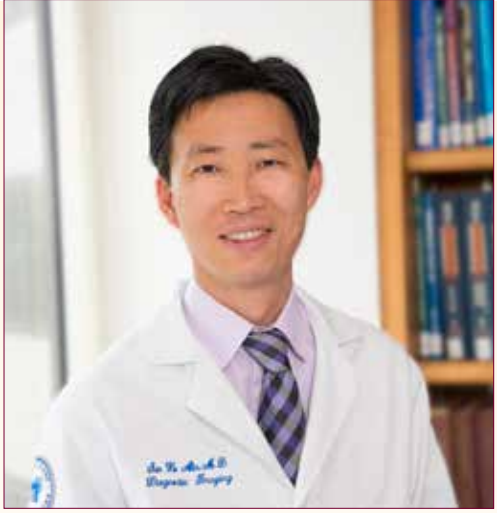
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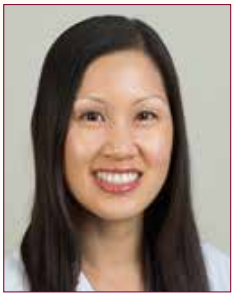
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Patricia Flanagan, MD

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N. Alexander-Scott, MD

Edward V. Lally, MD

## Thanks to RIMJ's Outgoing Associate Editor, Dr. Sun Ho Ahn, and to the Guest Editors of 2016

As the *Rhode Island Medical Journal* enters its Centennial year of 2017, we bid farewell to **SUN HO AHN, MD**, RIMJ's Associate Editor since 2006, whose contributions as peer reviewer and coordinator of the Images in Medicine section has enhanced the mission of the Journal and positioned it for continued success.

We thank Dr. Ahn, Associate Professor of Radiology at the Alpert Medical School, and Director of the Vascular Interventional Radiology (VIR) Fellowship program, for his time, expertise, and good humor. He will be greatly missed.

RIMJ's mission, to report on the advances in medicine and healthcare in Rhode Island, could not be accomplished without the commitment of individuals such as Dr. Ahn, as well as its guest editors and all the contributors in each special section throughout the year.

We extend our gratitude to the RIMJ guest editors of 2016.

Our best wishes for a healthy 2017,
Joseph H. Friedman, Editor-in-Chief
Mary Korr, Managing Editor

**WOUND CARE**
**February 2016**
**PAUL LIU, MD**, Professor and Chairman, Department of Plastic Surgery, Lifespan Hospitals and Alpert Medical School of Brown University; Co-Director Rhode Island Hospital Center for Wound Healing and Hyperbaric Medicine.

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**March 2016**
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**FRED J. SCHIFFMAN, MD**, Sigal Family Professor of Humanistic Medicine, Vice Chair of Medicine, Warren Alpert Medical School.

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**June 2016**
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**August/September 2016**
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**December 2016**
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# White Coats

JOSEPH H. FRIEDMAN, MD
joseph_friedman@brown.edu

I have been thinking about doctors' white coats since I started working at Butler Hospital, where the doctors don't wear them. Later I learned that doctors' white coats in Europe are short-sleeved, in contrast to ours. I was told that short sleeves, in both coats and shirts, reduce infection transmission. It turns out that there are a number of publications evaluating the risks associated with white coats, as well as men's neckties spreading infection. (I didn't find any that compared white coats to street clothes, but assume that most doctors change their street clothes more frequently than their coats, the main cause for infection spread, making that study moot.) It appears that there are no clear-cut data indicating that American doctors are spreading infections more than our European colleagues. There are data, however, that washing the coat less than once a week is definitively associated with infection spread and I am certain that almost every house officer I've worked with over the past several years washes the coat far less, if ever.

There are also many studies on patient and doctor preferences for whether the doctors should wear a white coat at all, whether neckties or other formal attire are more or less desirable, and how scrubs are perceived, compared to white coats or street clothes. The results vary with the medical discipline and the country. In general, patients like their doctors to be well turned out, with some preferring white coats and some not. All patients, when informed about infection risks, chose the clothing that minimizes that risk.

The white coat is highly symbolic, which is why we still wear it. I assume that it was originally used to convey cleanliness, and, being bleachable, was easier to clean than other colors and revealed its cleanliness. That seems to have become less of an issue in the U.S. It now conveys professional standing, and dedication, as evidenced by the "white coat ceremony." I trained at an Ivy League medical school that regarded tradition with extreme reverence. Medical students wore short coats that ended at the thigh and fellows and attendings wore long coats that went below the knees. I am unsure if the authorities in charge then were more chagrined by ignorance and bad judgment than by sloppy or dirty attire and comportment. In that distant day there was no air conditioning and the larger wards had 16 beds. While summers in New York City weren't as hot then as they've become, they were, nevertheless, often very hot and humid. Medical students and doctors were expected to wear their white coats, and men had to wear neckties, no matter what the temperature or humidity. It was forbidden to eat or drink in front of a patient. All patients, excepting children, were called by Mr., Mrs. or Miss; the word, Ms., not yet having been invented. A social gap was intended and enforced. This was considered the "proper" approach to medical care. The white coat was an important part of that divide.

I absorbed this social construct and continue to follow the guidelines. I rarely use first names, and limit this to a few patients I've known for many years or to the occasional teenager I see. I routinely violate HIPAA regulations by calling patients into my office from the waiting room by their surname. These rules entered my DNA long ago.

I work at Butler Hospital, a psychiatric hospital where I am one of only two doctors, the other also a neurologist, who wear a white coat at work. I wear mine every day, all day. Neither the attending level psychiatrists nor the house staff wear white coats. Without any data to offer in support, I nevertheless have viewed this as a mistake. Appearance is important, and, I believe, the white coat lends an air of professionalism that is helpful in treatment. I have often thought about suggesting a simple study to assess my theory, but have not got past the thinking phase.

Psychiatry is no less a medical discipline than surgery, yet it *is* perceived as being quite different. It is considered

less scientific, more grounded in social approaches rather than clear-cut "medical" treatments. It is often considered a less prestigious field than many of the other medical specialties, and, I believe, the choice of not wearing a white coat reinforces the belief that it does have a reduced status. I have not seen any other specialty routinely eschew this symbol of our profession. The "white coat ceremony" symbolizes the importance of this.

I am certain that there are strong reasons that psychiatrists do not wear their white coats and that the choice reflects an attempt to foster a closer therapeutic alliance. Nevertheless, I suspect that this is a mistake. A simple experiment would answer that question. ❖

## Reference

Bearman G, Bryant K, Leekha S, et al. Expert Guidance: Healthcare Personnel Attire in Non-Operating Room Settings. Inf Control Hosp Epideiol 2014; 35(2):107-21.

## Author

Joseph H. Friedman, MD, is Editor-in-chief of the *Rhode Island Medical Journal,* Professor and the Chief of the Division of Movement Disorders, Department of Neurology at the Alpert Medical School of Brown University, chief of Butler Hospital's Movement Disorders Program and first recipient of the Stanley Aronson Chair in Neurodegenerative Disorders.

Disclosures on website



*The FY18 proposed state budget released by Gov. Gina Raimondo on January 19, 2017 includes elimination of upper payment limit payments (federal funds used to ensure Medicaid reimburses hospitals at an amount equal to Medicaid), Medicaid payment reductions, and cuts to inpatient mental health providers. The Hospital Association of Rhode Island continues to analyze the impact of these proposals.*

## HARI Reacts to Governor's Proposed Budget

The Hospital Association of Rhode Island and its members are disappointed the proposed budget includes hospital payment cuts. We will continue to work with the General Assembly and Administration to find lasting solutions that address state fiscal problems while ensuring a financially stable healthcare system.

Hospitals provide nearly $7 billion in economic impact to our state. Elected officials must recognize hospitals are critical to a strong, healthy and stable Rhode Island. We urge them to make the appropriate investments to ensure the safety net is protected for Rhode Island patients.

As officials in Washington, D.C. consider the repeal of the Affordable Care Act, nearly ten percent of our state faces future problems accessing healthcare. In addition, hospitals could struggle with $1.7 billion in cuts on top of the $1 billion in reductions used to fund implementation of the Affordable Care Act.

We urge Governor Raimondo and the General Assembly to protect access to healthcare during this time of uncertainty.

— Michael R. Souza
President, Hospital Association of Rhode Island

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# Complexities to Consider When Patients Choose VSED (voluntarily stopping eating and drinking)

HERBERT RAKATANSKY, MD

Patients who develop progressive fatal diseases such as untreatable cancer or progressive dementia have few options if they decide, that at a predetermined point in their disease, they prefer to die.

Physician assisted suicide (PAS); now legal in 6 states (OR, WA, VT, CA, MT, CO) is not an option in RI. Currently 4 states (NV, NC, UT, WY) do not address the issue. The right of patients to refuse medical treatment, however, even if life saving, has been affirmed by the Supreme Court (based on the 14th amendment) and is accepted by the medical profession.

These patients, facing a terminal illness and preferring death to the perceived mental and physical distress, may elect to stop eating and drinking (voluntary stopping eating and drinking or VSED). Persons who elect that approach will die in 7–14 days. In contrast to PAS, VSED requires no action by the doctor and requires no physical action by the patient.

VSED in a non-terminally ill person might be considered suicide. Some presumably competent and capacitated persons, however, cease oral intake of food and sometime fluids, to protest political or other social policies. Our government recognizes the right of persons to engage in these behaviors even if they lead to death, though it has acted in contrary ways on occasion (ex., Guantanamo). It is established ethics policy that doctors should not force-feed competent, capacitated persons who elect to stop eating and drinking. Insertion of per-oral tubes or IV lines without consent is unethical and illegal.

Interestingly, the Israeli government does not allow prisoners to die as a result of self-starvation. These acts are regarded as "suicide terrorist attacks" and treated as such. The ethics guidelines of the Israeli Medical Association, like The World Medical Association and the AMA, prohibit doctors from participating in forced feedings, putting Israeli physicians in a difficult position. Capital punishment is a similar situation. Ethics standards forbid doctors' participation in any manner. Whether capital punishment is wise and worthwhile is for society to decide and then to carry out, if it wishes, but without any assistance whatsoever from the medical profession. If a government decides that force-feeding is wise and worthwhile then it, too, should be accomplished without any assistance from the medical profession.

Getting back to competent, capacitated persons with terminal or disabling, diseases, who elect VSED – should doctors intervene? Forcibly giving nutrition and fluids via enteral or parenteral means would be a serious violation of our obligations to act always in the best interests of our patients – as they determine them, and a violation of patient autonomy. Placement of an NG tube or an IV line is a medical procedure requiring consent, which, of course, would never be granted.

But doctors could treat the mild discomfort associated with VSED. Thirst and hunger reportedly are not severe after the first day. And these patients have other terminal diseases for which they need appropriate supportive care. However, doctors and other caregivers may have personal values that conflict with VSED and they should not be required to participate.

Consider the case of a Canadian woman with a valid advance directive to withhold food and liquid if she developed advanced dementia. The institution where she was being treated felt that food and water were not medical issues and, additionally, that the patient had changed her mind. A judge decided that, indeed, she had changed her mind because she swallowed when spoon-fed, even though she had advanced dementia and was non-verbal.

If eating is a personal, not a medical, issue what is the responsibility of the institution? Might an institution find itself morally and emotionally uncomfortable with VSED? Could the institution be considered to be complicit in a suicide?

Institutions should have established

policies that that address these issues and include but are not limited to supportive and educational measures for the staff and family, safeguards for the patient (psychiatric consultation, etc.) and ethics committee consultation when requested.

VSED, thus, is an option for competent, capacitated persons with terminal disease to avoid pain and suffering. It may be morally more acceptable to some than PAS and, legally and ethically, VSED has been accepted in other situations. Also VSED requires no physical action by the patient (in contrast to PAS), and no order, prescription or action by a doctor.

What about a patient who has lost the capacity to make medical decisions and has left instructions to cease oral food and water at a specified point in a terminal disease? Can a proxy carry out (or negate) those instructions?

First we must ask whether oral feeding is medical care or personal care. Medicare considers assistance with eating as personal care and will not pay for it. If oral feeding is personal care rather than medical care, the proxy designated to authorize medical care may not have the authority to order VSED (in spite of specific directions in the durable power of attorney). Additionally, state law may limit the health care surrogate's authority (thus defining VSED as medical care). In WI, NH, MO and NY, health care surrogates cannot discontinue oral nutrition.

Since it does not seem to be clear in RI whether oral feeding is personal or medical care, both medical and general legal powers of attorney may be needed to authorize a proxy to implement a patient's directive to initiate VSED. However, we do not know what courts might decide in these cases.

RI law defining the authority of a health care surrogate to intervene regarding nutrition does not mention voluntary eating and drinking in its list of medical interventions. The RI "medical orders for life-sustaining treatment" (MOLST) form does not contain a specific decision-making question about oral feeding but does state:

"Offer food by mouth if feasible and desired" (obviously not desired if the patient has elected VSED). The RI MOLST form thus is ambiguous about whether oral feeding is medical care though it appears to offer the patient the opportunity to elect VSED.

These vexatious issues would best be addressed by a community discussion, with the aim of arriving at a consensus policy for our state. Until then, the multiple moral and legal complexities suggest that doctors advise patients, like the ones mentioned, who are considering VSED to consult an attorney versed in health care law. And institutions, in order to treat these patients appropriately, should formulate and have policies about VSED in place. ❖

## Author

Herbert Rakatansky, MD, FACP, FACG, is Clinical Professor of Medicine Emeritus,The Warren Alpert Medical School of Brown University.

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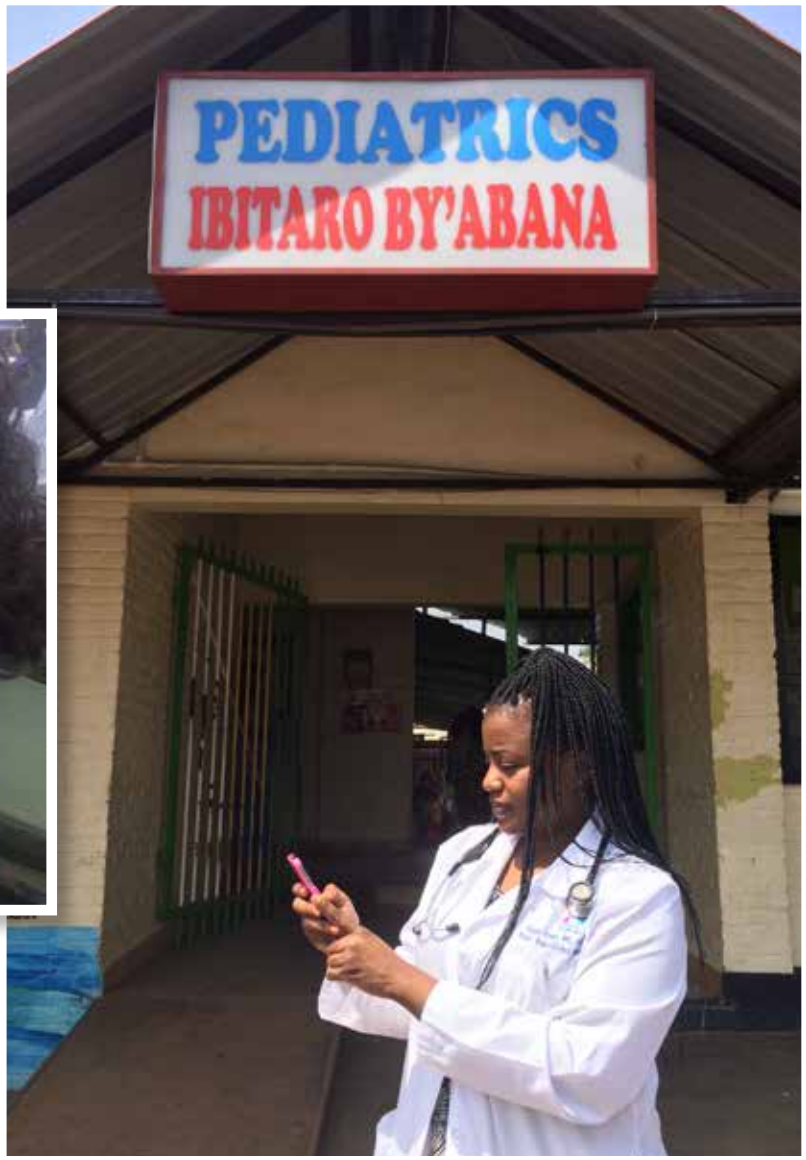
# We are read everywhere

### AMELIA ISLAND, FLORIDA

RIMS member **Megan Ranney, MD, MPH**, paused to view the journal at the AMA State Legislative Strategy Conference, held on Amelia Island January 6–7. Dr. Ranney presented to more than 220 physicians and staff on her research on reducing the toll of firearm injury and the role physicians should play in preventing injury among at-risk groups.




### KIGALI, RWANDA

**Tanya Rogo, MD**, reads the January Centennial issue of RIMJ on her iPhone in front of the pediatric ward of the University Teaching Hospital of Kigali, in Rwanda, where she is working this year for Human Resources for Health. She is Assistant Professor of Pediatrics (Clinical) at the Alpert Medical School and is affiliated with Hasbro Children's Hospital.

### FT. MYERS, FLORIDA

**M. Charles Bakst**, retired *Providence Journal* political columnist, enjoyed reading the Centennial edition of the *Rhode Island Medical Journal*, while on vacation in Fort Myers, FL, between sets at the tennis court.

Wherever your travels take you, be sure to check the latest edition of RIMJ on your mobile device and send us a photo: **mkorr@rimed.org.**

# We are read everywhere

**WASHINGTON, DC**
**Karen Woodbine**, advertising sales representative for RIMJ, takes a moment to read the Centennial issue. Karen was one of an estimated 500,000 marchers who peacefully advocated for women's rights on January 21, 2017, in Washington, DC.

**WASHINGTON, DC**
**Grace Masters**, a student at the University of Massachusetts Medical School in Worcester, reads the January RIMJ on her way to the Women's March on Washington.

Wherever your travels take you, be sure to check the latest edition of RIMJ on your mobile device and send us a photo: **mkorr@rimed.org.**

# Lyme Carditis: A Case Involving the Conduction System and Mitral Valve

LAKIR D. PATEL, BS; JAY S. SCHACHNE, MD, FACC


## ABSTRACT

Lyme disease is the most common tick-borne infection in the Northern hemisphere. Cardiac manifestations of Lyme disease typically include variable atrioventricular nodal block and rarely structural heart pathology. The incidence of Lyme carditis may be underestimated based on current reporting practices of confirmed cases. This case of a 59-year-old man with Lyme carditis demonstrates the unique presentation of widespread conduction system disease, mitral regurgitation, and suspected ischemic disease. Through clinical data, electrocardiograms, and cardiac imaging, we show the progression, and resolution, of a variety of cardiac symptoms attributable to infection with Lyme.


**KEYWORDS:** Lyme, echocardiography, mitral regurgitation, atrial arrhythmia, conduction

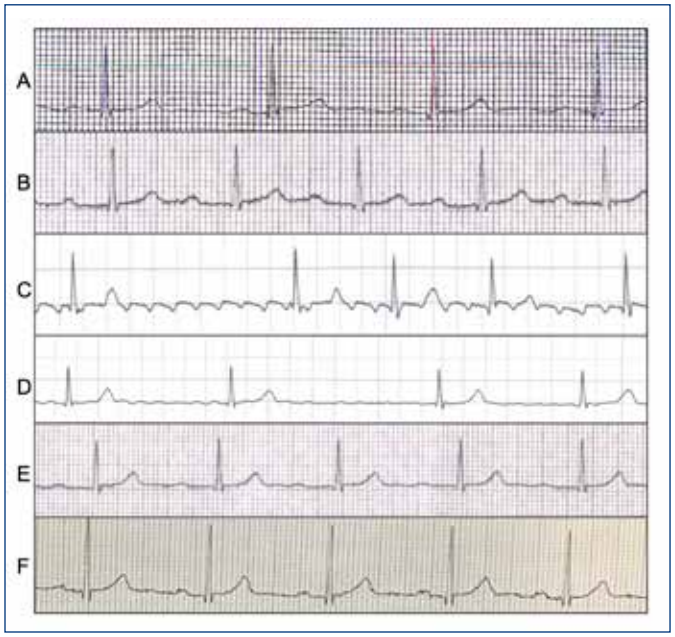
## CASE REPORT

A 59-year-old man without significant past medical history was referred for evaluation of syncope. Six weeks prior to presentation, while vacationing in Cape Cod, the patient noticed an oval-shaped rash below his left knee. At a local clinic he was diagnosed with cellulitis and given a short course of oral cephalexin. Three weeks after the vacation, he awoke in the night to use the bathroom. Thirty minutes later, he found himself on the bathroom floor, not recalling any premonitory symptoms for syncope. In the following weeks, he experienced a sharp decrement in exercise tolerance. An avid marathon runner, this patient was experiencing exertional dyspnea after only a hundred yards of running and, at times, jaw discomfort.

Physical exam was remarkable for a temperature of 98.4 F, heart rate 58 bpm, blood pressure 126/68 mmHg, and 99 percent oxygen saturation. A 2/6 systolic murmur was audible at the cardiac apex. The initial electrocardiogram (ECG) demonstrated first-degree atrioventricular (AV) nodal block with a PR interval of 229 milliseconds (ms) (**Figure 1**). In light of the exertional dyspnea and jaw discomfort, an exercise ECG stress test was performed using the Bruce protocol. After eight minutes of total exercise, stage three intensity reproduced symptoms of dyspnea and induced ECG changes notable for 3mm ST depressions in leads V3-V6 (**Figure 3**). Transthoracic echocardiogram (TTE) revealed preserved left ventricular function, severe mitral regurgitation (3+) and a dilated left atrium (**Figure 2**). Laboratory studies revealed anemia (hgb 10.7gm/dL, hematocrit 32.0%), iron deficiency (iron 24µg/dL, saturation 10%) without any history of melena or hematochezia, and an elevated ESR (80mm/h). The patient was sent for cardiac catheterization to evaluate for coronary disease.

Right and left cardiac catheterization demonstrated no flow-limiting, significant, epicardial coronary disease (**Figure 3**). Left ventriculography confirmed moderately severe mitral regurgitation; right heart pressure recordings showed a prominent V wave (25mm Hg) with a normal wedge pressure. Over the next few days the patient experienced shaking chills and fevers to 101.2 F. Blood cultures in triplicate and a tick panel were ordered, and the patient was scheduled for transesophageal echocardiogram (TEE) to evaluate for

**Figure 1.** Electrocardiograms, Lead II.




**A.** Initial ECG showing 1st degree AV block (PR=229ms).

**B.** Lengthening of PR interval to 298ms.

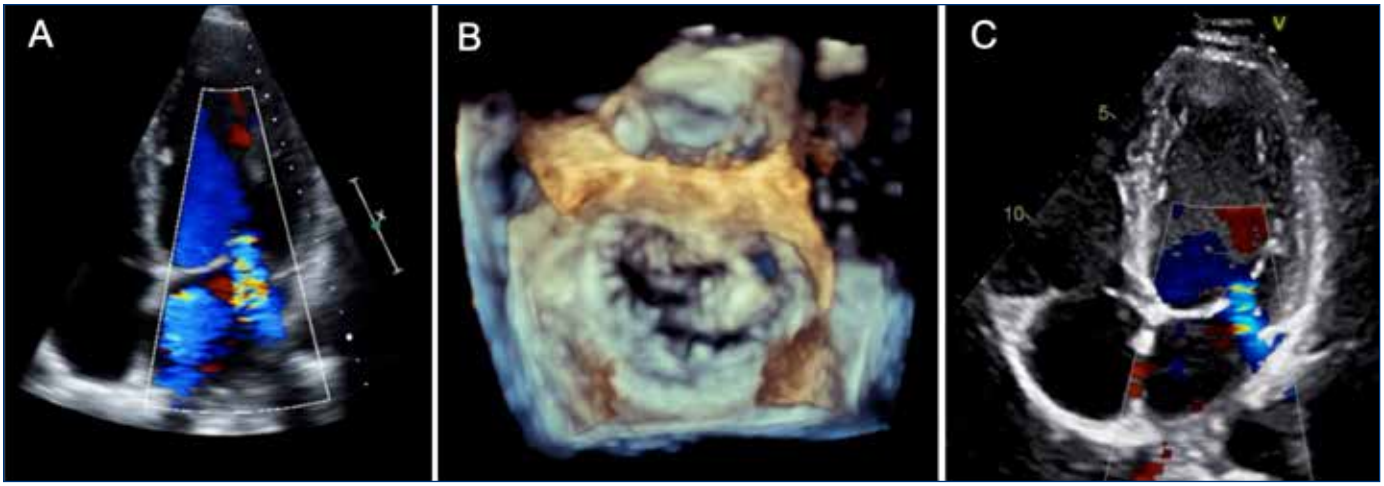
**C.** Atrial flutter with variable ventricular response on hospital day 3.

**D.** Atrial fibrillation on hospital day 4.

**E.** Return to sinus rhythm at discharge.

**F.** Significantly shortened PR interval at follow-up (PR=204ms).

**Figure 2.** Echocardiography images

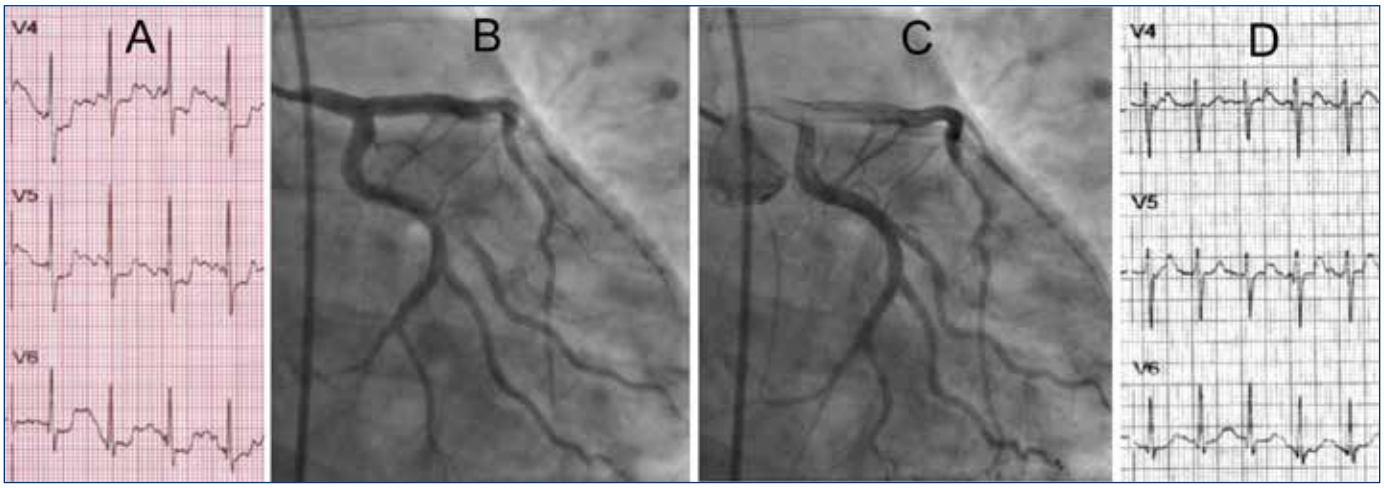



**A**. TTE apical four-chamber view with doppler flow demonstrating mitral regurgitation. Graded as 3+ due to the presence of two regurgitant jets extending to the pulmonary veins.

**B.** 3D TEE view of the mitral valve showing two areas of incomplete valve leaflet coaptation.

**C.** Stress TEE, apical four-chamber view with doppler flow showing significantly improved mitral regurgitation after antibiotic treatment, graded as mild MR.

**Figure 3.** Possible ischemic disease




**A.** ECG stress test upon initial evaluation showing 3mm ST depressions in lateral precordial leads recorded after eight minutes of exercise.

**B, C.** Positive stress test prompted left heart catheterization with coronary angiography which demonstrated no flow-limiting, significant, epicardial coronary disease. Angiograms were reviewed independently by several interventionalists and confirmed no spontaneous coronary artery dissection.

**D.** Repeat ECG stress test after completion of antibiotics shows no ST segment changes after fourteen minutes of exercise.

endocarditis. 3D TEE showed moderate MR with poor coaptation of the mitral valve leaflets and anterior leaflet prolapse, without vegetations (**Figure 2**). A repeat ECG showed lengthening of the PR interval to 298ms (**Figure 1**).

Lyme antibody enzyme immunoassay (EIA) detected significant levels of IgG (24.3; ref range <1), IgM (9.6; ref range <1), and IgA (>9.9; ref range <1) to B. burgdorferi. The patient was admitted to the hospital for intravenous ceftriaxone and telemetry monitoring. On admission, Troponin I measurement and electrolytes were in the normal range. CRP (87.5mg/l) and ESR (73mm/h) were elevated without associated leukocytosis.

During the admission, the patient's heart rhythm alternated between sinus bradycardia with first-degree block (352ms) and atrial flutter with slow, variable ventricular response (**Figure 1**). Occasional periods of atrial fibrillation and three-second sinus pauses were also noted, and he was started on oral anticoagulation. The patient developed symptoms of heart failure with an elevated NT-proBNP of 2212 ng/l and was treated with oral furosemide. Atrial arrhythmias resolved with continued therapy for presumed Lyme carditis. At the time of discharge, the patient was asymptomatic and had been in sinus rhythm for over thirty-six hours with improving first-degree AV block. He was discharged to

complete oral doxycycline for a total treatment course of twenty-one days.

After discharge, the patient remained asymptomatic and resumed exercise without dyspnea. The systolic murmur of MR was less apparent (grade 1/6) and ECGs showed progressive shortening of the PR interval (**Figure 1**). Three weeks after discharge, he tolerated, without dyspnea, Bruce protocol stage-five exercise. Total exercise time was fourteen minutes. No ST changes or atrial arrhythmias were noted. Both rest and stress echocardiography revealed reduced mitral regurgitation (**Figure 2**). Given the lack of arrhythmia and symptoms during the test, the patient was instructed to stop anticoagulation and furosemide. He was not referred to cardiac surgery for valve repair. A few weeks later, the patient successfully completed a local five-kilometer race.

## DISCUSSION

Cardiac symptomology associated with Lyme disease includes syncope, lightheadedness, dyspnea, palpitations, and chest pain. Such manifestations usually present two to five weeks after the erythema migrans rash, and typically involve the electrical conduction system. Only 1.1 percent of Lyme cases reported to the CDC include cardiac manifestations; however, surveillance guidelines have changed such that only cases of second- or third-degree AV block are frequently reported (1). Thus, the true incidence of Lyme carditis may be underestimated as case reports have documented abnormalities ranging from first-degree heart block to myocarditis to acute heart failure (1-3). The case described here is unique in that infection with Borrelia burgdorferi likely involved both the electrical conduction system and the mitral valve.

The most common clinical feature of Lyme carditis is transient atrioventricular nodal block. As the degree of AV block can fluctuate rapidly, current guidelines recommend inpatient telemetry monitoring for any patient with cardiac symptoms, a PR interval longer than 300ms, or second- or third-degree heart block (4). Although this case initially presented with relatively benign ECG findings, telemetry admission because of cardiac symptoms and an increasing PR interval allowed for prompt diagnosis and management of unexpected atrial arrhythmias. Conduction involvement outside the AV node is rare (5-7). In this case, the presence of first- degree AV block, atrial flutter, and atrial fibrillation suggested simultaneous conduction abnormalities of various etiology. AV nodal block and slow ventricular response to atrial arrhythmias suggest conduction disease within the AV junction. Atrial flutter and fibrillation, however, being macro- and micro-reentrant arrhythmias of the atrium, could represent more widespread conduction disease or more likely developed due to left atrial enlargement and mitral regurgitation. Complete conduction recovery with antibiotic treatment occurs in more than ninety percent of Lyme carditis cases (5, 8, 9).

Conduction system disease alone did not explain this patient's acute decrement in exercise tolerance. Mitral regurgitation was diagnosed, given the murmur on exam, regurgitant flow on 2D echocardiography, right heart catheterization, cardiac ventriculography, and leaflet prolapse on 3D TEE. It is highly unlikely that such severe mitral regurgitation, graded 3+ by echocardiography (**Figure 2**), was chronic because the patient had been asymptomatic, engaging in high levels of aerobic exercise without limitations. Initial echocardiography imaging showed dilatation of the left atrium, typically a sign of chronic mitral regurgitation. In this case, six weeks of untreated Lyme carditis, characterized by exacerbated mitral regurgitation with paroxysmal atrial flutter and fibrillation, better explains the left atrial dilation. Stress echocardiography after completed treatment of Lyme carditis demonstrated reduced mitral regurgitation (**Figure 2**). Temporally, this correlated with the patient resuming exercise without dyspnea. Based on these echocardiography findings, we conclude that this case of Lyme carditis involved the mitral valve, contributing to symptoms of dyspnea. No vegetation was detected on TEE, but it is possible local myocardial inflammation worsened regurgitation across the prolapsed mitral valve. Lyme disease is generally not considered a cause of valvular pathology. One case report of Lyme endocarditis, however, described histopathologic detection of Borrelia afzelli DNA in a replaced mitral valve with inflammatory infiltrates and fibrin deposition (10). Autopsy samples from fatal Lyme infections have demonstrated spirochete and macrophage-predominant infiltrates particularly near connective tissues of the AV junction but also in endocardium and myocardium (11). The AV junction lies within the fibrous trigone near the mid-septal mitral orifice (12). In this case, local spirochete invasion and macrophage infiltration from the AV junction to the contiguous mitral valve may have caused significant leaflet edema. Inflamed and edematous leaflets likely explain the poor valve coaptation and mitral regurgitation seen on echocardiography.

The progression of this case started with concern for ischemic disease: the patient experienced exertional dyspnea and jaw discomfort with 3mm horizontal ST depressions during stress testing. ST segment depressions are the most reliable indicator of exercise-induced ischemia, but can also be false positive data (13). Cardiac catheterization ruled out significant epicardial coronary disease. Additionally, full review of the angiography films revealed no evidence of non-occlusive plaque rupture or spontaneous coronary artery dissection within the coronary tree. Alternatively, if the ST changes were true for ischemic disease, sub-endocardial vessels may have been affected. Autopsy samples of Lyme carditis have shown the presence of perivascular inflammation (11). The same macrophage-predominant infiltrate that affected the AV node and mitral valve likely extended locally to small sub-endocardial vessels. Reduced oxygen delivery because of this sub-endocardial vasculitis may have elicited ST depressions during exercise. Repeat exercise stress testing after treatment for Lyme did not produce the same ECG changes,

thus, it is possible that oxygen delivery to the endocardium was restored with resolution of the inflammatory response. Coronary vasculitis from Lyme has not been described in the literature, and ST depressions are rare ECG changes in Lyme carditis (14).

## CONCLUSION

This case is one of the first to describe and illustrate mitral valve involvement and widespread conduction disease in a single case of Lyme carditis. Additionally, the possibility of transient ischemic disease in the case may be explained by a microvasculitis manifestation of Lyme carditis. Although cardiac involvement of Lyme disease is uncommon, clinical implications such as complete heart block and acute heart failure, if left untreated, could be severe and fatal. Additionally, the incidence of Lyme carditis may be underestimated based on current surveillance guidelines and practices. In areas endemic for Lyme, the evaluation of new onset cardiac symptoms, with evidence of conduction disease or valvular pathology, should warrant a work-up for Lyme carditis. Prompt diagnosis and treatment of Lyme carditis may prevent unnecessary and invasive electrophysiological testing or surgical intervention for conduction system and valvular manifestations, respectively.

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# Pediatric Diabetes Outpatient Center at Rhode Island Hospital: The impact of changing initial diabetes education from inpatient to outpatient

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## ABSTRACT

**BACKGROUND:** This study compared outcomes and costs for new-onset Type 1 diabetes mellitus (T1DM) patients educated at the outpatient versus inpatient settings.

**METHODS/DESIGN:** Retrospective study examining the following variables: 1) hemoglobin A1c (HbA1c), 2) severe hypoglycemia, 3) admissions for diabetic ketoacidosis (DKA) or ER visits, and 4) healthcare cost.

**RESULTS:** 152 patients with new-onset T1DM from September 2007-August 2009. There were no differences between outpatient group (OG) and inpatient group (IG) in mean HbA1c levels at 1, 2 and 3 years post-diagnosis (OG 8%, 8.5%, 9.3%; IG 8.3%, 8.9%, 9%, p=0.51). Episodes of severe hypoglycemia, DKA, and ER visits were not different between the two groups. Mean total hospital costs for OG and pure OG were significantly less than IG (OG: $2886 vs. IG: $4925, p<0.001), (pure OG: $1044 vs. IG: $4925, p<0.0001).

**CONCLUSION:** Our study demonstrates that outpatient-based pediatric diabetes education lowers healthcare cost without compromising medical outcomes.

**KEYWORDS:** diabetes education, inpatient, outpatient, HbA1c

## INTRODUCTION

Type 1 diabetes mellitus (T1DM) is the third most prevalent severe chronic disease of childhood in the United States.[1] Children with new-onset T1DM are traditionally hospitalized at diagnosis for patient education.[5,6] The advantages of hospitalization include constant supervision with meal preparation, insulin administration and blood glucose monitoring.[5,6] However, hospitalization may be traumatic for the child,[7] costly to the healthcare system, and may trigger negative parental outcomes including increased work absenteeism, feeling of constantly being monitored and inability to care for other children.[6]

An alternative to hospitalization is outpatient education. Outpatient education enhances a family's adjustment to diabetes and improves skills in self-management.[10] It has gained popularity due to its potential to reduce healthcare costs and psychosocial stress to the family.[6]

Several studies have examined the differences between inpatient and outpatient management of T1DM.[5-7, 8-10, 12] Chase et al. noted that long-term glycemic control, as measured by HbA1c values, was not different in the two groups (p>0.05).[6] Siminerio et al. did not find statistically significant differences in rates of hospital readmissions or emergency room visits for severe hypoglycemia or ketoacidosis, sharing of responsibilities or family functioning.[5] A recent study by Tonyushkina et al. did not show any significant difference in HbA1c at 1 year and 2 years post-diagnosis (p=0.85 and p=0.69, respectively).[2]

Three studies compared cost-effectiveness of inpatient and outpatient care.[3,8,12] Spaulding and Spaulding showed that the cost per patient of initiating insulin treatment in hospital was nine times the cost in a day-care program.[8] Dougherty et al. found that increased costs of health care services with home care were largely offset by parental cost savings.[12] A study by Jasinski et al. showed that total charges per child for hospital care were 4.7 times higher among children in the inpatient group than in the outpatient group (p<0.001).[3]

In a review article comparing inpatient and outpatient management, there were no significant differences in psychosocial/behavioral variables or rates of acute diabetes complications within two years between groups.[9] However, there are insufficient data to conclude that outpatient diabetes education is as good as, or better than, inpatient diabetes education.[9]

At Rhode Island Hospital/Hasbro Children's Hospital (RIH/HCH), an outpatient diabetes program was added for new-onset T1DM patients who are clinically stable, i.e. not in DKA (venous pH<7.3, serum $HCO_3$<15 mg/L, glucose>250 mg/dL). Prior to September 2007, all children with new-onset T1DM were admitted for 3-5 days at Hasbro Children's Hospital at time of diagnosis. Families were educated on the following: 1) basic pathophysiology of DM, 2) types and action of insulin, 3) insulin administration, 4) self-monitoring of blood glucose, 5) carbohydrate counting, 6) hypoglycemia management and 7) sick-day management. They met with the certified diabetes educators and dietitian. After discharge, the diabetes team called the family for blood glucose review and insulin dose adjustments daily or every other day until their initial follow-up appointment four weeks after diagnosis.

In September 2007, we established the Pediatric Diabetes Outpatient Center of Rhode Island Hospital (PDOC), a multidisciplinary team consisting of diabetes educators, a pediatric endocrinologist, dietitian and social worker. Within 24

hours of diagnosis, families come to the PDOC for three days with each session lasting four hours/day. Similar to families educated inpatient, the diabetes team calls the families daily until follow-up four weeks after initial diabetes education.

In both inpatient and outpatient settings, families are given the Understanding Diabetes Handbook by Barbara Davis Center for Childhood Diabetes and the Calorie King book. A pediatric endocrinologist and pediatric endocrinology fellow are available 24 hours a day for diabetes-related concerns or emergencies (hyperglycemia, ketonuria and hypoglycemia). The starting insulin dose is 0.5-1 units/kg/day divided in 2-4 daily injections depending on age and type of insulin regimen. At RIH/HCH, patients at both the outpatient and inpatient centers have the same nurse-educators for the entire diabetes education period. Only the dietitian was different between the two groups. Both inpatient and outpatient dietitians, however, follow the same American Diabetes Association (ADA) guidelines for diabetes education.

The purpose of this study was to compare the effects of inpatient and outpatient initial diabetes education at RIH/HCH in clinically stable patients with new-onset T1DM. We hypothesized that there would be no significant differences in HbA1c in the first 3 years after diagnosis, frequency of severe hypoglycemia, admissions for DKA or ER visits but that outpatient education would cost significantly less.

## METHODS

A retrospective chart review compared the outcomes of patients diagnosed with new onset T1DM prior to and after establishment of the PDOC in terms of: 1) HbA1c in the first 3 years after diagnosis, 2) frequency of severe hypoglycemia, 3) admissions for DKA or ER visits, and 4) diabetes education healthcare cost.

Patients with new-onset T1DM diagnosed from September 2007-August 2009 were identified by review of hospital medical records and the Pediatric Diabetes Database of the Division of Pediatric Endocrinology at RIH. Inclusion criteria for the study were: age ≥ 3 years and mild DM at presentation (venous pH>7.3, with trace or negative urine ketones). Exclusion criteria included: children < 3 years of age, profound developmental delay, DKA, hyperglycemia with moderate or large ketonuria, illness requiring hospitalization and significant psychosocial issues that would interfere with outpatient education (lack of transportation, severe anxiety disorder or mental health issues in the patient, parent or guardian). Patients were divided into those who received all of their education in the outpatient center (pure OG) and those who were admitted for 1 day to clear urine ketones and received most of their education in the PDOC (OG).

These patients were matched by age, sex and metabolic status to new onset T1DM patients who were admitted as inpatients from September 2004 until August 2007 (IG, historical control).

Primary clinical outcome was assessed by quarterly measurements of glycosylated HbA1c. In inpatient setting, HbA1c was measured using the Tosoh Automated Glycohemoglobin Analyzer HLC-723G8 which uses non-porous ion-exchange high performance liquid chromatography (Tosoh Bioscience, Inc., South San Francisco, CA, USA). HbA1c values were measured quarterly in the outpatient setting using Siemens/ Bayer DCA 2000+ Analyzer (WS-DCA2000+, Bayer, Inc., Tarrytown, NY, USA). A mean HbA1c value was calculated for each subject per year of follow-up.

All inpatient and outpatient records for pediatric patients with diabetes mellitus seen by the Division of Pediatric Endocrinology at Rhode Island Hospital between September 2004 and December 2010 were reviewed. For inpatient data/ER visits, records having the ICD (International Classification of Diseases) code 250.xx (Diabetes Mellitus) were included. Admissions not related primarily to diabetes mellitus were excluded (surgical procedures, non-DM related hospitalizations, cystic fibrosis).

To obtain an estimate of the cost-effectiveness of the Outpatient Diabetes Education Center, total hospital charges for the initial admission (excluding physician fees) were averaged for patients in the IG and compared to the average of visit charges for the outpatient group.

### Statistical Analysis

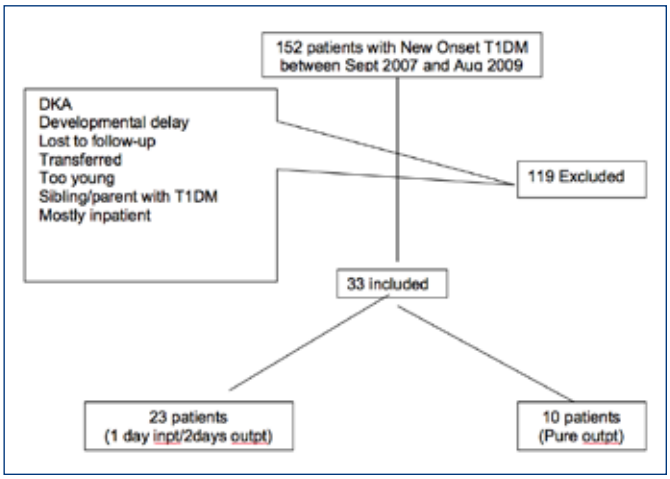
Student t-test analyses were used to test between-group differences. Wilcoxon-signed rank test and univariate analyses were used to compare hospital charges. Analyses were performed with STATA software, version 11.1.

## RESULTS

### Study participants

There were 152 patients with new-onset T1DM identified between September 2007 and August 2009. Thirty-three patients met our inclusion criteria for outpatient education (OG) and 119 patients were excluded (**Figure 1**). Ten patients

**Figure 1.** Sample size and analysis population



of the 33 had all of their education in the PDOC. Twenty-three patients had 1 day of inpatient stay to clear ketonuria but had most of their education in the PDOC. This OG group (n=33) was matched to 33 patients from the IG cohort, who received all of their education in the hospital.

### Clinical and metabolic characteristics at diagnosis

The baseline clinical characteristics of the two groups showed no significant differences in age, sex, weight, height and BMI (**Table 1**). There were no significant differences in pH, bicarbonate, glucose and sodium levels between OG and IG (**Table 2**).

### Metabolic outcome

There were no differences in average glycemic control (mean yearly HbA1c) 3 years post-diagnosis between OG and IG (**Figure 2**). Mean HbA1c were 8.03% (OG) vs. 8.3% (IG), 8.5% (OG) vs. 8.9% (IG), and 9.3% (OG) vs. 9.0% (IG) at 1, 2, 3 years, respectively.

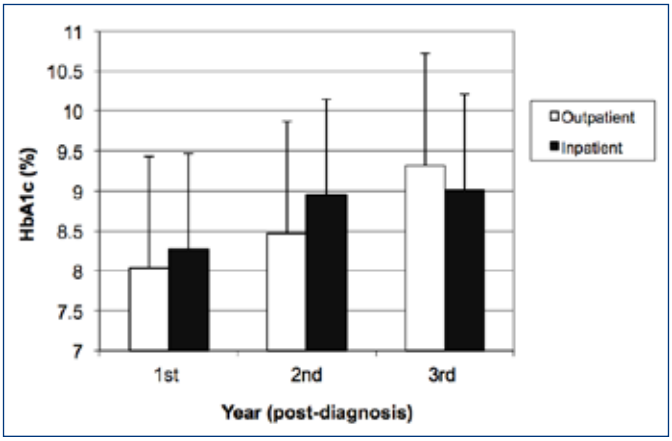
**Table 1.** Baseline clinical characteristics of sample population

| | Outpatient | Inpatient | p-value |
|---|---|---|---|
| **# of cases** | **33** | **33** | |
| Age in years (±SD) | 10.6 ± 2.8 | 10.4 ± 2.9 | 0.163 |
| Sex (M/F) | 14/19 | 15/18 | 0.062 |
| Weight (kg) | 41.6 ± 6.8 | 52.9 ± 8.9 | 0.16 |
| Height (cm) | 149.05 ± 2.8 | 152.8 ± 16 | 0.51 |
| BMI (kg/m$^2$) | 18.8 ± 3.7 | 22.7 ± 1.1 | 0.08 |

**Table 2.** Baseline metabolic characteristics of sample population.

| | Outpatient | Inpatient | p-value |
|---|---|---|---|
| **pH** | 7.4 + 0.05 | 7.39 + 0.03 | 0.49 |
| **Bicarbonate (meq/L)** | 23.5 + 4.9 | 23.7 + 3.3 | 0.89 |
| **Glucose (mg/dl)** | 458 + 142 | 454 + 149 | 0.93 |
| **Sodium (meq/L)** | 134 + 3.4 | 133 + 3.2 | 0.16 |

**Figure 2.** Comparison of HbA1c of Outpatient group and Inpatient group




### Acute DM complications

Over the three-year period, only 1 (3%) out of 33 patients from OG had an episode of severe hypoglycemia presenting as a seizure and 1 (3%) out of 33 patients from IG was re-admitted for DKA.

### Hospital charges

Mean total hospital cost for OG was significantly less than IG (OG: $2886 vs. IG: $4925, p<0.001); this difference was more pronounced when pure OG was compared to IG (pure OG: $1044 vs. IG: $4925, p<0.0001).

## DISCUSSION

This retrospective study shows that outpatient management of new onset T1DM is a safe and cost-effective alternative to inpatient management. We found that outpatient and inpatient management resulted in the same rates of metabolic outcomes and DM complications for up to three years post-diagnosis. Additionally, the mean hospital cost for pure outpatient management was $3,881 less than the mean hospital cost for inpatient management.

A study by Jasinski et al. at Baystate Children's Hospital reported no difference in HbA1c between inpatient and outpatient groups one year from onset.[3] They also found total costs at one year to be significantly less in the outpatient group than in the inpatient group. Our study expands upon their results by showing that rates of DKA and hypoglycemia are also not significantly different between the two groups. We also found that these rates remain similar up to three years post-diagnosis, showing that inpatient and outpatient management do not have significant differences in long-term metabolic outcomes.

A review by Clar et al. identified other studies comparing metabolic outcomes between inpatient and outpatient groups of new-onset T1DM patients, although there are few published studies on this topic.[9] Chase et al. reported no significant differences in HbA1c or diabetes-related hospitalizations between the outpatient and inpatient groups after six years of follow-up.[6] They did not include a cost analysis of the two groups. Siminerio et al. found no differences in metabolic outcomes, hospital readmissions, or overall family functioning between the two groups, but only after a five-week follow-up period.[5] They recommended that a future study should compare long-term metabolic outcomes of the two groups. Our study showed that these same results can persist up to three years while also reducing healthcare costs.

Our results may not be applicable to all healthcare centers. Outpatient education may not be feasible in centers with insufficient outpatient diabetes staffing. Some patients may require inpatient education if they live too far from the hospital to travel there often. Additionally, due to the nature of a retrospective study, some data may be inadvertently biased or missing from the results. Any care that patients may have received outside of Rhode Island Hospital, such

as ER visits for hypoglycemia or DKA, was not included in the study. Some of the blood sugar measurements may have been missing or subjectively identified at some point over the three-year period. A follow-up study to confirm our results should use a prospective design.

## CONCLUSION

Outpatient medical management and education appears to be a safe and effective alternative to hospitalization of newly diagnosed children with mild T1DM and no complicating features. As healthcare systems find more cost-effective ways of delivering care, this will justify the need for third-party payers to increase reimbursement for outpatient diabetes education.

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### Disclosures

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# Chronic Pain in the Emergency Department

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## ABSTRACT

**OBJECTIVE:** To describe the experiences of emergency department (ED) use among a population of Rhode Island Medicaid patients with chronic pain and a recent history of frequent ED use, who were eligible to participate in the Rhode Island Medicaid Pain Management program.

**METHODS:** Qualitative interviews were conducted with twenty-four patients who were either enrolled, or eligible to be enrolled, in a pain management program that is part of a state-funded initiative to reduce ED overuse.

**RESULTS:** Four main themes describe the experiences of these patients seeking ED care: (1) patients perceive that they use the ED appropriately; (2) frustrations in communication with ED providers; (3) helplessness; (4) changes in beliefs and behaviors with care coordination.

**CONCLUSIONS:** Patients enrolled, or eligible to be enrolled, in the Rhode Island Medicaid Pain Management program believe they use the ED for true emergencies, but feel helpless and unable to communicate effectively with ED providers.


**KEYWORDS:** emergency medicine, pain, complementary therapies, Medicaid

## INTRODUCTION

Pain is a common complaint in the emergency department (ED), accounting for 38% to 78% of ED visits.[1,2] ED providers have been criticized for under-prescribing analgesics[3,4] and sub-optimally managing painful conditions in the ED.[5] Historically, national organizations have urged providers to more liberally prescribe opioids for painful chronic conditions.[6]

Yet healthcare providers in general, and emergency physicians in particular, are also increasingly experiencing pressure to decrease provision of opioids for pain, and new Centers for Disease Control and Prevention (CDC) guidelines explicitly discourage opioid prescriptions for chronic pain.[7] Risks associated with opioid use include misuse, addiction, and overdose,[8] and opioid addiction is driving the current epidemic of drug overdoses.[9] Although EDs are responsible for the minority of opioid prescriptions in the United States,[10] EDs may treat a population that is particularly at risk for opioid diversion or misuse,[11,12] with one study reporting indicators of risk of misuse associated with one in ten ED opioid analgesic prescriptions.[11]

Given these competing challenges experienced by ED physicians, it is important to understand how chronic pain patients experience their visits to the ED. Many departments of health and EDs are developing guidelines around the provision of opioids for chronic pain syndromes [13,14] but few studies have examined the perceptions of ED patients with chronic pain.

We sought to understand chronic pain patients' experiences of the ED by interviewing patients enrolled in the Rhode Island Medicaid Pain Management program. The program is offered to members living with chronic pain who have used the ED more than three times in the past year. The program's goals are to connect patients with primary care and to improve pain management. Patients are offered case management and a peer navigator, as well as massage therapy, chiropractic, and/or acupuncture services at no charge to the patients. In 2013, the program targeted 1500 members with chronic pain who are high ED utilizers; 825 patients (55% of those eligible) engaged in the program. As part of a larger analysis of the Pain Management program, we wanted to learn what it is like for these patients when they visit the ED. Rigorously describing these patients' experiences may help inform patient-centered interventions that seek to balance the need for adequate pain relief with concerns about opioid misuse, addiction, and diversion.

## METHODS

### Design

This study consisted of semi-structured interviews and was approved by the New England and Lifespan/Rhode Island Hospital Institutional Review Boards.

### Setting and population

We purposively sampled patients representing a range of engagement in the state Medicaid Pain Management program.

### Protocol

Patients were recruited from one of the Lifespan hospitals' emergency departments or by referral from Pain Management program case managers. Inclusion criteria were that patients were eligible to enroll in the Pain Management program during the time interviews were conducted, from May to September 2014.

### Measurements

All participants were asked, "Can you describe the last time you visited the ED or an urgent care facility for your pain?" Probes included, "Did the ED meet your needs?" and, "Was the visit typical?" These questions were part of a larger semi-structured interview about pain management. The interview guide was created with input from a community advisory board and was pilot-tested with 4 chronic pain patients.

Two research team members, trained in qualitative research methods conducted the interviews, either at hospital-based offices or at a location convenient for the interviewee (e.g., a coffee shop). Interviews lasted about 60 minutes and were audio recorded and transcribed. Interviewees received $100 compensation. The research team collected interview data until saturation had been reached; that is, no new themes were emerging from the data.

### Data analysis

The coding scheme was created by the research team. We used deductive thematic analysis,[15] in this case, informed by the same preexisting research that informed the larger interview guide.[16,17] As such, the research team created a coding structure based on the interview guide, which was refined as interviews were completed. Coding was completed in duplicate by five research team members trained in qualitative analysis; each transcript's coding was discussed by the larger research team and discrepancies were resolved with discussion. Data were entered into NVivo software (Version 10).

## RESULTS

### Characteristics of participants

Twenty-four patients participated in the study, ranging in age from 21 to 64; 62% were female, 64% White, and 26% Latino/ Hispanic, and other. All patients reported musculoskeletal pain; eight also reported concomitant pain-related systemic illnesses (e.g., cancer, diabetic neuropathy). All patients were eligible to participate in the Pain Management program and nineteen patients identified as currently participating. Representative quotes for each theme are listed in **Table 1**.

### Main results

We identified four themes describing the experiences of patients seeking ED care: (1) Patients perceive that they use the ED appropriately and avoid going to the ED unless they are having a true emergency; (2) Frustrations in communication with ED physicians; (3) Helplessness, and (4) Change in beliefs and behaviors with care coordination.

Study participants often reported reluctance to go to the ED, but if they did go, it was within the bounds of what they, or primary care physicians (PCPs), perceived to be an emergency. An emergency tended to be defined as unbearable pain which left patients with no choice but to seek immediate pain relief at the ED. One patient described: "*I try to toughen it up and not even go to them, but if it's at the point where I'm falling on the floor and I'm twitching cuz I'm in so much severe pain, or I'm crying, then, yes, I will go to the urgent care or I will go the emergency room*". – Patient (PA) 26. Many patients expressed in various ways that they felt they were following prescribed rules for when to visit the ED. For example, one patient described that she would only visit the ED of one hospital: "*I don't float around from hospital to hospital, which I go to [named] Hospital and that's it. It ain't like I'm lookin' for anythin' and I'm not lookin' for them to fill any prescriptions. "*—PA01.

A second theme was that patients did not feel that their needs were recognized or acknowledged by ED physicians and nurses. Many patient interviewees expressed frustration that ED providers seemed to suspect them of drug seeking, as expressed by one patient: "*I ain't gonna sit there and beg you for 'em [opioid medications] and overdose on 'em. I'm just doin' it just for my back." He's like, "I understand, but there's a lot of people overdosin' on 'em." I'm like, "Dude, I ain't gonna sit there and overdose."* —PA03. More generally, patients expressed that they wanted someone to address the underlying cause of their pain, but that the ED providers were not taking this desire seriously. One patient described her frustration: *"They say they do, but I think they take the same tests over and over and over. Why they keep taking the same test? Try different tests. It may cost a little bit of money. I understand the insurance don't wanna pay for these tests. How the hell you supposed to know what's wrong with the person, then, if you don't even test that person for that other – them other possibilities?"*—PA15.

A third theme suggested that, overwhelmingly, the chronic pain patients felt helpless. They repeatedly expressed that they were not active participants in decisions about their own healthcare. One patient described how the medications he was given were not working, expressing little confidence that he would be prescribed something that would ease his pain: *"Well, I was hoping they'd, I don't know, give me something for the pain while I was there [at the ED], trying to get it to subside a little bit, and give me something that would actually work…"* —PA09. For some, helplessness was experienced because of being on the receiving end of swift changes in opioid prescribing habits. One patient described her experience*: "There's things going on where the kids are getting hold of them [opioid medications], people abuse them. Nobody likes to give them no more. I've got high blood pressure and they said like NSAIDS are no good for people with high blood pressure because you can have a heart attack. I tried to explain that to them but they think that I just want the Vicodin."* —PA23. Despite the frustration expressed by many, some patients appreciated the ED staff's efforts to educate patients about opioid risks. One patient said that the ED was the first place to tell her that opioids could cause harm: "*Or you end up in the emergency room and the emergency room is the one that told me, "You*

**Table 1.** Themes and representative quotations

| Theme | Representative quotes |
|---|---|
| Theme 1: Chronic pain patients perceive that they use the ED appropriately and avoid the ED unless they are having a true emergency. | "I would always bring my MRI report with me. My written MRI report. Things like that. They knew I wasn't in there just, "Hey, can I have some pain meds?" kinda deal. They knew there was an actual issue. " —PA10 |
| | "I'm not the type of person at all, "Well, I don't feel good today. Oh, I'm in a little bit of pain. I'm gonna go." No, if I go to the hospital, it's because I'm in severe pain…I don't play this, "I'll go if I'm not in pain." I go if I'm in severe pain, and that's it. That's the only time that I go to the hospital". —PA26 |
| | "Unfortunately sometimes it just gets too bad and I try to call my primary doctor or whatever doctor that's on-call. I'll explain to them the situation and they'll say, "Well, if you need to go to the emergency room, go." —PA01 |
| | "Then I had to go straight to the hospital. I had to see what they could do for me with the pain cuz my prescription ran out. The doctor said, "I don't wanna give you no more of this and that," and I said, "Dude, what do you want me to do?" I'm cryin' on the phone. She's like, "If you're hurt that bad, go right to the hospital."" —PA03 |
| Theme 2: Frustrations in communication with ED physicians | "Cuz I'm sitting here. I'm sweating. I'm dehydrated. They see all this stuff going on. They don't see no heroin marks or no nothing in my skin. I'm butt naked. They got me undressed. For real, why you asking me these stupid questions?" —PA15 |
| | "A lot of my initial pain, for some reason – I don't know why – is more like the evening time or nighttime. I don't know why. It just is, and trying to get an appointment to see a doctor when you're in pain – everybody wants you to take – they want you to keep takin' pills. Take pills, take pills, take pills, so you don't get to that point where it's so bad you hafta' go to the emergency room. If I don't hafta' take a pill, I don't wanna take a pill" —PA01 |
| | "[T]hey were just like a drug factory. Then they would up the medicine—amitriptyline—until my eyes dried out and I had to go to the ER. It was, like, "It's not working." "Oh, take more. Take more. Take more." I'm at a point in my life where I don't want to take medicine. I wanna find a way to make myself work." —PA19 |
| Theme 3: Helplessness | "I'm on Medicaid. I had been to the emergency room more than four times in one year. They sent me a letter. I was very upset cuz it said in the letter that you have to have new doctors and all this stuff. I had already spent the better part of six years gaining a rapport with my surgeons, with my doctors, with my nurse practitioner and everybody else. I panicked. I called the number. I said, "I can't get—you can't give me new doctors. This is ridiculous." I said, "It's taken a lot for me to trust these people."" —PA06 |
| | "This last time I went to Hospital 2, because they didn't wanna take me to Hospital 1…Yeah. Sometimes the emergency room doesn't—the emergency guys, they don't wanna take you down there". —PA12 |
| | "Yeah. They just started hand 'em [opioid medication] to me, but now my doctor said he don't even wanna give 'em to me no more". —PA03 |
| Theme 4: A change in beliefs and behaviors with care coordination. | "Well, they don't want me to go to the emergency room unless it's a true emergency. I called them [primary care providers (PCP)] when I hurt my ribs. They said that they couldn't see me. They couldn't see me for a couple of days. I said, "Listen, I might've broken my ribs….That's the only time I ever go to the emergency room, is when they can't see me. I understand that. I don't go to the emergency room unless I have to." —PA16 |
| | "Yeah, cuz I don't go as much no more cuz I'll sit there with the pain. I'll just call cuz they say, "Call your primary first before you come running over to the hospital." I'll be calling 'em. "I need to come in there today." He be like, "Okay. Come in at this time." —PA13 |

*need to try to cut down on 'em. You're takin' too many. They're gonna be bad for your liver and there's so many other side effects that could happen."* —PA01

A final theme from the interviews suggested that patient beliefs and behaviors associated with the ED changed because of being enrolled in the state Pain Management program which has the goal of connecting patients to services, including primary care. One patient described that she had learned to try other sources of care before visiting the ED: *"That's because she told me basic cold or basic little things. If you got a splinter just per se, if you've got something like that, go to the doctor instead of going to the emergency room. I tried it. I'd rather do that. I'll call her in the morning, and they'll give me an appointment either that same mornin' or that afternoon. Then I'll go."* —PA14. Other patients gave examples of how they now work with primary care to manage their health. As an example: *"They suggested I do the Communities of Care [Pain Management program] to help manage the pain. Since they put me in physical therapy, I don't get the episodes that used to put me in the hospital."* —PA07

## DISCUSSION

The aim of the current study was to understand the lived experiences of ED use by patients with chronic pain and a history of frequent ED use. The desperation, frustration and helplessness described by the patients with chronic pain in our study help to illuminate a population with complex needs. High-needs patients with chronic pain such as those enrolled in the Chronic Pain program are likely to need some form of behavioral intervention in addition to treatment of their pain syndrome.[18, 19]

Our study is one of many to describe communication difficulties between patients with chronic pain and physicians.[20] To our knowledge, however, it is the first to describe this tension in the ED setting. We detected one area of strain that centered on communication around pain medication. Patients felt defensive in the ED and believed they were suspected of diverting or misusing pain medication; yet patients – sometimes the same patients – also reported that medication was being pushed on them at the expense of finding an underlying problem.

The patients in our study were eligible to be enrolled in the state Pain Management program. One of the goals of the program is to better integrate patients into the healthcare system so that they rely less on the ED. Some patients reported that since being enrolled in the program, they had visited a PCP or urgent care center rather than the ED for a health concern. Initiatives like the Pain Management program may be useful for redirecting some to urgent care and connecting others to primary care; however, further quantitative evaluation of such programs is needed. An extensive evaluation of the Rhode Island Pain Management program is currently underway.

While the intention of our study is to report the experiences of a select population in great need, a limitation of our study is that the sample size, while appropriate for the goals of our study, was small, and knowledge gained might not generalize to other people, other settings, or other states.

In summary, patients with chronic pain who frequently use the ED believe they do so for true emergencies, but feel helpless and unable to communicate effectively with ED providers. Improved communication, particularly around opioids, may be helpful. Some patients report that the Pain Management program has led them to think differently about appropriate ED use but further evaluation of the program will be informative.

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# Using Plan-Do-Study-Act Cycle to Enhance Completeness of Suicide Firearm Reporting

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## ABSTRACT

The Rhode Island Violent Death Reporting System (RIVDRS) collects comprehensive surveillance data on violent deaths to support violence prevention programs in Rhode Island and nationwide. Successful collection of firearm information is critical to understanding gun violence in public health. A recent quality improvement (QI) project was performed to improve gun information collection in the RIVDRS program. Our aim was to increase the presence of firearm model information for 2014 suicides from 50% to 80% by December 31, 2015. We used the 2014 RIVDRS data and the Plan-Do-Study-Act cycle for this project. Our efforts achieved a 50% increase in the number of firearm model reporting. If we work more closely with police departments, they may understand the data importance, and be more likely to include the firearm information in their reports. We describe this process and provide lessons learned that can be generalizable to other states' violent death reporting system.

**KEYWORDS:** Rhode Island Violent Death Reporting System, Plan-Do-Study-Act cycle, quality improvement, suicide, firearm

## INTRODUCTION

Without cross-sector surveillance systems, effective strategies to prevent violent injuries and deaths will be limited.[1] According to the Centers for Disease Control and Prevention (CDC)'s standardized methodology, the Rhode Island Violent Death Reporting System (RIVDRS), based at the Rhode Island Department of Health (RIDOH), collects comprehensive surveillance data on violent deaths to support violence prevention programs in Rhode Island and nationwide. Successful collection of firearm information is critical to understanding gun violence in public health. Legislators can use firearm data to regulate guns to reduce fatal violent injuries and deaths.[2]

"Quality improvement (QI) is a process by which individuals work together to improve systems and processes with the intention to improve outcomes."[3] A recent QI project was performed to improve gun information collection in the RIVDRS program. A QI project is different from a research study.[4] A QI project encourages us to conduct a small test of change, whereas a research study requires us to interview more people before taking action.[4] A small-scale test of change enables us to observe the test while minimizing potential risks.[5] The smaller the scope, the faster the learning.[4] Our team decided to start with small tests of change.

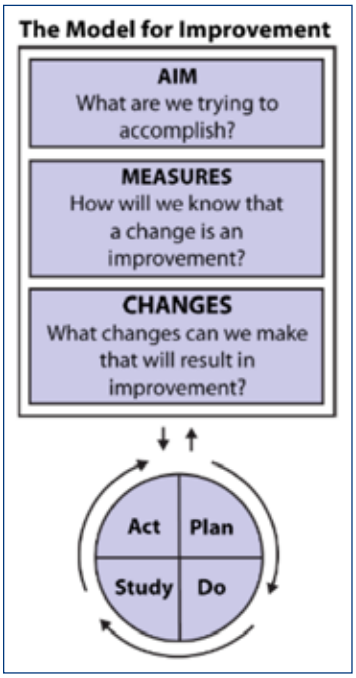
If the problem is identified, QI can help us find the solution. Plan-Do-Study-Act (PDSA) cycle is the most popular QI method used in healthcare.[3] Shewart and Deming initially introduced the PDSA cycle for QI in business, then the Institute for Healthcare Improvement (IHI) recommended it in healthcare use.[3] Our QI team attempted to use a PDSA cycle to identify the problem and root causes, develop, test, and begin implementing solutions. RIVDRS firearm information is mainly obtained from Medical Examiner (ME) records and law enforcement (LE) reports. Our aim was to increase the presence of firearm model information for 2014 suicides in the RIVDRS database from 50% to 80% by December 31, 2015.

## METHODS

Since 2004, RIVDRS has collected timely and high-quality characteristics of data in violence-related deaths, including homicides, suicides, legal intervention deaths, unintentional firearm deaths as well as deaths of undetermined intent at the state level.[2] It includes demographic characteristics, mechanisms of injury, location of death, toxicology tests, circumstances preceding the deaths, suspects, intimate partner violence, and gun information.[6] RIVDRS data are disseminated routinely and expeditiously to public health officials, LE officers, policy makers, and the public. Data are used to develop, implement, and evaluate programs and strategies designed to reduce and prevent violent injuries and deaths at the state level.[2] The 2014 RIVDRS data were used for this QI project.

The Model for Improvement (**Figure 1**) was used for the QI project. We received a binder with the Public Health QI Encyclopedia and the Rhode Island Department of Health's current QI plan.[7] The QI team received 13.5 hours of in class training and 13 hours of online training,[7] which included discussing the aim statement, developing measures, demonstrating and practicing QI tools and methods, and learning the PDSA cycle (**Figure 1**). There were ten Public Health Improvement Exchange (PHIX) meetings, which provided the opportunity for each QI initiative to present their project

**Figure 1.** The Model for Improvement




Source: Institute for Healthcare Improvement (IHI) Open School Online Course QI 201: Guide to the IHI Open School Quality Improvement Practicum (http://www.ihi.org/)

and receive feedback. The QI projects culminated in an oral presentation at the PHIX meeting and a poster presentation at the RIDOH Annual QI Fair.[7]

Force field analysis is used to analyze the weight of each contributing force.[8] It is an effective tool to identify restraining and driving forces of a problem, and it helps us visualize and prioritize the factors.[8] We brought the QI project to our team and conducted a brainstorming session. **Table 1** displays the negative and positive forces of our mini-QI project.

We used three measures: (1) balancing measure: the QI project affected other RIVDRS work. Although our QI project was a mini-project, it took more time and had more parties involved than we expected. For instance, it took about 24 hours to target-review 10 suicide files just focusing on firearm information. (2) Process measure: increase completeness of suicide firearm type and make. If we knew firearm type and make, it would be easier for us to find the firearm model. (3) Outcome measure: increase percentage of completeness of suicide firearm models.

We had three values: (1) Baseline value: we used 50% of the 2014 suicide firearm model data requiring improvement as the baseline value; (2) Target value: we documented the 2014 firearm data following successful completion of PDSA cycles. If the intervention was effective, we anticipated 80% of suicide firearm model information would be complete; (3) Actual value: we recorded status of the data following completion of PDSA cycles. This may be the same as, or different from, the target value during each PDSA cycle.[9]

## RESULTS

Multiple PDSA cycles were utilized to gain knowledge in the initial cycle, which raised some questions and showed some opportunities for improvement.[3] Usually, the easier change(s) is made in the first cycle and the more difficult changes are implemented in the next cycle.[3]

### PLAN – Find Opportunity for Improvement

By checking the 2014 raw data, we identified the problem: RIVDRS firearm information was incomplete due to the lack of data available. In order to keep our QI project manageable, we only focused on suicide deaths and four firearm fields including type, caliber or gauge, make, and model. Based on our force field analysis (**Table 1**), we identified the following probable root causes: (1) web-based system does not include all firearm makes or models. (2) Gun information mainly comes from police reports, which are not consistently included since there is no mandatory protocol for LE to provide firearm make and model. (3) Firearm make/model might not be in LE reports. If the gun is in their possession, LE can reexamine it and provide missing data. We proposed the following improvement theory or method: If we can reach out to each police department, then we may collect more of the missing information.

### DO – Test the Improvement Theory

We reviewed the 2014 raw RIVDRS data and found that Rhode Island had 20 firearm suicides in 2014. There were 10 firearm suicides without the firearm model information. The following strategies were used to improve firearm information collection. (1) We target-reviewed CME and LE reports, which included many narratives. It is possible to miss entering data into the system due to over 700 unique data elements.[6] When we narrowed our focus on firearm information, we were able to capture some firearm types and makes that were either not specified or unavailable at earlier abstraction. CDC also requests RIVDRS to randomly select 5% of the violent death incidents for re-abstraction to evaluate the high inter-rater reliability of abstraction and data entry. This annual effort is different from our target-reviewing files, where we only focused on the 10 firearm suicides

**Table 1.** Negative and Positive Forces in the Force Field Analysis

| | Negative Force | Positive Force |
|---|---|---|
| 1 | Short of budget | Familiar with current process |
| 2 | Low priority (firearm data) | CDC provided standard protocol |
| 3 | Process is labor-consuming | Supported by team members and CDC |
| 4 | Information may not always match the options (drop-down menu) in the RIVDRS database. | Developing strong interdepartmental working relationships encourages positive response when we request missing data |
| 5 | Police Department not mandatory to provide firearm make & model | Our team members spent hours compiling the data and constructing sound narratives to ensure RIVDRS accurate and complete and make RIVDRS one of the best. |

CDC, Centers for Disease Control and Prevention; RIVDRS, Rhode Island Violent Death Reporting System.

with the firearm model missing and only focused on firearm information. (2) We bought a Shooter's Bible 106th Edition with pictures of guns to use as a reference to identify guns from photos in LE reports. However, the handbook does not cover all makes and models, so this strategy ultimately was not helpful. (3) When we abstracted the data, some gun information did not match our options. If we did not find makes or models in the drop-down menu, we entered them in "Other Firearm Make Text" and/or "Other Firearm Model Text" fields. (4) We reached out to eight related police departments to improve firearm data.

### STUDY – Analyze Results

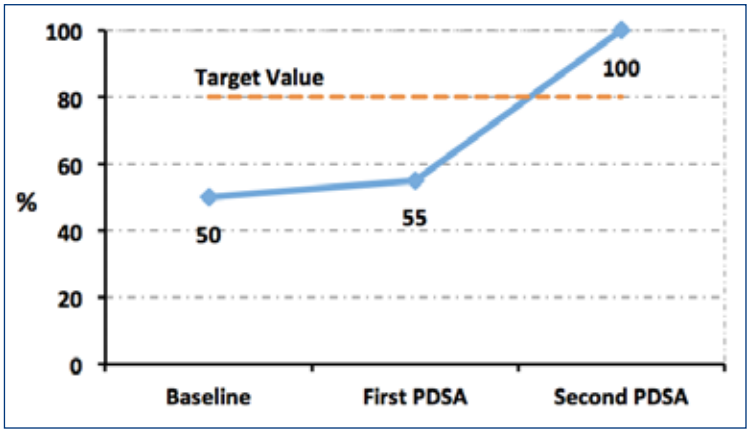
After target-reviewing the files, we captured one missing firearm type, three firearm makes, and one firearm model (**Table 2**). After reaching out to each related police department, we captured the model information for nine firearms. Our baseline value was 50%, target value was 80%, and actual value was 100% (**Figure 2**). These efforts achieved a 50% increase in the number of firearm model reporting.

**Table 2.** Firearm Information among 20 Suicide Deaths in 2014 RIVDRS

| Firearm | Pre-intervention | | Post-intervention (1st PDSA) | | Post-intervention (2rd PDSA) | |
|---|---|---|---|---|---|---|
| | n | % | n | % | n | % |
| Caliber or Gauge | 20 | 100.0 | | | | |
| Firearm type | 19 | 95.0 | 20 | 100.0 | | |
| Firearm make | 17 | 85.0 | 20 | 100.0 | | |
| Firearm model | 10 | 50.0 | 11 | 55.0 | 20 | 100.0 |

RIVDRS, Rhode Island Violent Death Reporting System;
PDSA, Plan-Do-Study-Action.

**Figure 2.** Change of Firearm Model Information in 2014 Suicide Deaths after Quality Improvement




PDSA: Plan-Do-Study-Action

### ACT – Adapt and Expand

The interventions were clearly effective, but labor intensive. Fewer firearm fields in our database ensured our project was small and manageable. In the "Act" phase of the cycle, we made a decision to adapt the changes. This decision was driven by the following suggestions: (1) because firearm information is not in one place in police reports, we should determine a better system to capture these firearm fields and reduce overlooking them; (2) we can list the most important fields in a spreadsheet and ask police departments to fill them; (3) most firearm suicides occur in non-core cities and police departments in those cities or towns may be understaffed and/or lack investigators. We should work closely with police departments and have a broad cooperation.

## DISCUSSION

Why did we choose improving firearm information collection as our mini-QI project? IHI recommends the scope of the project can be very small.[10] Compared to other modules in the RIVDRS database, there are fewer firearm fields in the weapon module. We needed to ensure our QI project was small and manageable.

In the CDC Secure Access Management Services (SAMS), there are eight fields including firearm type, caliber or gauge, make, model, gun stored loaded, stored locked, owner, and firearm stolen. It is hard to collect the last four fields, as police would need to consistently interview witnesses or family members. The Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) can provide more detailed firearm information. RIVDRS requested ATF reports from LE sources before, but as of 2014, LE no longer requests ATF reports. As a result, our mini-QI project focused on only the first four firearm fields.

Firearm information in homicides has proven more difficult to collect, since some homicides are unsolved and/or the firearm is not recovered. Even solved homicides present an additional challenge, as information is often held back until the case has been fully prosecuted. This can result in very long time lags, with data often not available until after the RIVDRS data for the year are closed out. In contrast, when a suicide occurs, police arrive on the scene, secure the gun, and then can collect the firearm type, make, model, caliber or gauge. Since firearm data for suicides is more accessible than firearm data for homicides, we focused on firearm suicide deaths.

## LESSONS LEARNED

First, if we can work more closely with police departments, they may understand the importance of the data, and be more likely to include the firearm information in their reports. Second, if we work with the CDC to revise the online data fields, then we will be able to put in makes and/or models that are not listed in the drop-down menu, therefore leading

to a more complete record. Third, how can we build what we learned into our routine work? How does this QI project affect our daily work? Since RIVDRS has hundreds of fields, it is not practical to reach out to each police department for each piece of missing information. Maybe we can prioritize our missing data by town/city.

Fourth, if we can make the firearm data more available to injury prevention programs or policy makers, they may be more likely to utilize the RIVDRS system and data to make decisions. However, how to get legislators to use RIVDRS firearm data effectively is a big concern. There were some patterns of firearm suicides: (1) most victims used a handgun; (2) .22/.32/.35 calibers were the most popular; and (3) Smith & Wesson was the most common make; however, there are thousands of models. How can model information best be used? Since examples of this application in the public health area could not be found; we could contact other states to determine how they disseminate and apply their firearm information.

Fifth, measurement is not the aim; improvement is the aim.[10] RIVDRS will continue to track progress on data collection. We hope that whatever positive change we make in our RIVDRS system stays long after our project is over. Our approach eliminated some unnecessary complexity to allow for easier adoption to other modules, such as circumstance, suspect, toxicology, or intimate partner violence modules. On September 1, 2016, CDC announced ten new awardees for the National Violent Death Reporting System (NVDRS), which expands NVDRS from 32 to 42 participating states and territories. We describe this process and provide lessons learned that can be generalized to other states to improve firearm data collection on violent deaths.

In summary, QI is an ongoing process and cannot be done without the following key component or features: (1) interdisciplinary support; (2) team work; (3) open communication; (4) continuous improvement, and making QI a culture.[10]

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# Adherence to Latent Tuberculosis Infection Treatment in a Population with a High Number of Refugee Children

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## ABSTRACT

**BACKGROUND:** Refugee populations in the US have a higher reported prevalence of latent tuberculosis infection (LTBI). The objective of this study was to assess adherence to LTBI treatment in refugee and non-refugee children living in Rhode Island.

**METHODS:** This was a retrospective review of LTBI patients seen in the Hasbro Pediatric Tuberculosis Clinic between August 2009 and September 2011.

**RESULTS:** Of 120 patients with LTBI, 93% were foreign-born and 30% were refugees. Overall, 94 children (78.3%) completed therapy. Higher rates of treatment completion were seen among patients who were female, referred within the same hospital system, used an interpreter, and did not report side effects. Refugees attended more scheduled visits compared to non-refugees (p=0.019).

**CONCLUSIONS:** Overall rates of completion of LTBI treatment were high in this population. Better adherence to clinic visits, likely due to the increased support and care coordination provided to the refugee children, improved treatment completion rates.

**KEYWORDS:** immigrant, refugee, TB prevention, adherence

## BACKGROUND

According to the World Health Organization, tuberculosis (TB) is the number one infectious killer worldwide.[1] An estimated 1 million children became ill with TB in 2014, and 140,000 died from the disease.[1]

Individuals who have positive TB screening tests with no symptoms suggestive of TB disease or radiographic findings associated with active tuberculosis have latent tuberculosis infection (LTBI). Adults with LTBI have about a 10% risk of developing clinical TB disease over their lifetimes. Compared to adults, children with LTBI have more years at risk to develop TB disease. It has also been suggested that their immature immune system places young children at increased risk of developing of active disease if infected with TB.[2,3] For this reason, younger children with TB disease are also more likely to develop severe life threatening forms of TB.[4] Therefore, identifying and treating children with LTBI is a vital part of TB control and prevention.

In the US, foreign-born persons accounted for 66% of cases with TB disease in 2014.[2] Being born in a TB endemic country is a risk factor for TB infection in children.[5] Refugee populations, in particular, have a higher prevalence of LTBI and therefore are at higher risk of developing active TB disease if not identified and treated.[3] Screening and treatment of populations at highest risk of developing active TB disease is critical to TB control in a low-incidence country such as the US.

A 9-month course of Isoniazid (INH) is the gold standard of treatment for LTBI in children in the US.[6] Historically, levels of adherence to LTBI treatment in industrialized countries are low.[7]

There is a paucity of data regarding LTBI treatment adherence in populations in the US with a high number of refugee children. Successful outcomes in this high-risk population require adherence to, and completion of treatment. One recently published report estimated LTBI treatment completion rates among refugee children in the US in 2010 to be only 30%.[8]

The purpose of this study was to assess rates of adherence to LTBI treatment in children seen in the Hasbro Pediatric Tuberculosis Clinic, in which a third of the patients are referred by the Pediatric Refugee Health Program (PRHP).

## METHODS

### Study Site

In Rhode Island, LTBI treatment can be provided by the child's primary care physician, or children can be referred to the Pediatric Tuberculosis Clinic at Hasbro Children's Hospital (HCH), the only pediatric hospital in the state of Rhode Island. This study included patients who attend the Hasbro Pediatric Tuberculosis Clinic. This clinic performs evaluations and treatment for all pediatric patients referred with a positive TB screening test (TBST) – either tuberculin skin test (TST) or interferon-gamma release assay (IGRA).

The Pediatric TB Clinic and the PRHP are part of the same Pediatric Primary Care Clinic at HCH. The PRHP was founded in 2007 to improve access and better address the needs of pediatric refugee patients by providing a medical home. Initial comprehensive screening evaluation is performed within 30 days of arrival to the United States and

follows CDC screening guidelines for refugees.[9] Robust collaboration exists with the Dorcas International Institute of Rhode Island, which is the Voluntary Resettlement Agency (VOLAG). They notify PRHP of incoming pediatric refugees to arrange timely initial evaluation. All newly arrived Rhode Island pediatric refugee patients are evaluated at the PRHP. The clinic evaluates between 42-90 refugee children annually. Also available at the initial screening are pediatric dental residents who insure follow up dental care. A trauma-informed child psychologist also screens and provides mental health care in the same location. The nurse for the Pediatric TB Clinic is also the nurse for the PRHP, which provides continuity for refugee patients. Most importantly, the PRHP works very closely with medical interpreters, most of whom are former refugees who provide services as Community Health Workers (CHW). The refugee CHW provides culturally appropriate care coordination. The children continue their pediatric primary care at HCH Pediatric Primary Care clinic by the same provider who performed initial comprehensive intake evaluation, thus creating a seamless transition from initial screening to a primary care medical home.

Patients with positive TBSTs are referred to the Pediatric TB Clinic for evaluation from the Providence Health Centers, Rhode Island public or private school systems, the Rhode Island Department of Health, community pediatricians or from primary or specialty clinics within HCH. The Pediatric TB Clinic treats between 50-90 children with LTBI each year.

### Clinic Procedures

Interpretation of a positive TBST is done based on epidemiological risk according to CDC guidelines.[6] During the period of study, children in Rhode Island were being screened almost exclusively with TSTs as IGRAs were not yet readily available. For patients who have a positive TBST, treatment is provided free to the patient by the Rhode Island Department of Health. After referral to the Pediatric TB Clinic, patients are initially evaluated by a pediatric infectious disease specialist. A follow-up visit is scheduled within a month, with a nurse who assesses the patient for any medication side effects, assesses medication adherence, and disburses refills of medication. Subsequent visits are scheduled every 2 months. Per protocol, patients are instructed to bring their pill bottles with them and pill counts are done at each follow-up visit as an assessment of adherence. During every patient visit, a member of the healthcare team spends 15-20 minutes assessing patient adherence and reinforcing good adherence. If a patient does not attend a scheduled visit, a phone call is made to the patient's residence. Therapy is certified as completed if the patient received 270 doses of INH within 12 months, as defined by the CDC treatment guidelines.[6] Therapy is restarted if ≥14 doses have been missed prior to the completion of at least 6 months of treatment

### Data Collection

The study was approved by the Lifespan Institutional Review Board. Medical records of all patients seen in the Hasbro TB clinic between August 2009 and September 2011 were obtained and reviewed. Data collected included country of origin, refugee status, TB exposure history, prior positive TST, comorbidities, LTBI treatment and adherence (including appointments, doses dispensed, pill counts, and reported side effects).

### Statistical analysis

Univariate and bivariate analyses using STATA 11 software (StataCorp, College Station, TX) were conducted to examine patient factors, as well as association of these factors among (1) patients who completed treatment and those who did not, and (2) refugee status. T-tests and $\chi 2$ – tests were used, where appropriate, to determine if differences were statistically significant.

## RESULTS

One hundred and twenty patients were diagnosed with LTBI from August 2009 to September 2011 (**Table 1**). Fifty-one percent were male, and the median age at first appointment was 12 years (range 1–18 years). Thirty percent (36/120) were refugees, 63% (76/120) had a history of BCG vaccination, and only 6.7% (8/120) were born in the US.

**Table 1.** Characteristics of children treated for LTBI from 2009 to 2011.

| | N=120 |
|---|---|
| **Male gender** | 61 (51%) |
| **Median age at first clinic visit** | 12 years (range 1–18 years) |
| **Birth region** | |
| **Africa** | 36 (30%) |
| **Caribbean** | 26 (22%) |
| **Asia** | 21 (18%) |
| **S. America** | 20(17%) |
| **US** | 8 (7%) |
| **Europe** | 4 (3%) |
| **Middle East** | 4 (3%) |
| **NR[a]** | 1 (0.8%) |
| **Refugee** | 36 (30%) |
| **BCG vaccine** | 76 (63%) |
| **HIV positive** | 1 (0.8%) |

Footnote. a: NR, not recorded.

The most common reason for performing a TST was immigration from a TB endemic country (62.5%, 75/120). Forty percent (30/75) of these immigrants entered Rhode Island with refugee status and were referred to the Pediatric TB Clinic from the PRHP. Among the other non-refugee patients (immigrant and non-immigrant), six were referred from their primary care provider, 32 from St. Joseph Health Center (which is a non-profit that provides primary care services), 15 from the Providence Community Health Centers, 4 from other hospitals or clinics, 2 from other HCH clinics, and for the remainder no referral source was recorded.

Thirty-eight children had no reason recorded for placement

of the TST; 15 (40%) of these were foreign-born with a US arrival date less than 12 months before the first TB clinic appointment, 8 (15%) had a household contact with a positive TST, 3 (8%) had history of foreign travel, and 3 (8%) had a household contact with active TB. One patient who had HIV infection was screened as part of standard care.

Ninety-four patients (78.3%) completed INH therapy. Eighteen patients did not complete the treatment, and there was no record of either completion or non-completion for the remaining 8 patients. Higher rates of treatment completion were seen among female patients (95% CI 0.805, 0.972), patients referred internally from other HCH clinics (95% CI 0.799, 0.845), patients who used an interpreter (95% CI 0.781, 0.946), and those who did not report side effects (95% CI 0.781, 0.941) (**Table 2**).

Thirty-one refugees (91.2%) completed treatment compared to 83.3% of non-refugee children (p=0.28). Refugees attended more of their scheduled appointments (95.4%), compared with only 82.3% of clinic visits attended by non-refugee children (p=0.019) (**Table 3**). Slightly more non-refugees reported missed doses (86.7%) but the difference compared to refugees (83.3%) was not statistically significant (p=0.3).

**Table 2.** Factors associated with completion of LTBI therapy in children between 2009–2011.

| | Completed Treatment[a] | 95% CI |
|---|---|---|
| **Gender** | | |
| male | 79% (46/58) | (0.689, 0.897) |
| female | 89% (48/54) | (0.805, 0.972) |
| **Refugee** | | |
| yes | 91.2% (31/36) | (0.816, 1.00) |
| no | 83.3% (60/76) | (0.747, 0.919) |
| **Referral source[b]** | | |
| outside Hasbro | 73% (28/31) | (0.609, 1.00) |
| within Hasbro | 90% (40/55) | (0.799, 0.845) |
| **Interpreter use** | | |
| yes | 86% (57/66) | (0.781, 0.946) |
| no | 80% (37/46) | (0.710, 0.933) |
| **BCG vaccination** | | |
| yes | 81% (58/72) | (0.712, 0.889) |
| no | 90% (36/40) | (0.849, 1.00) |
| **Reported Side Effects** | | |
| yes | 80% (32/40) | (0.676, 0.924) |
| no | 86% (62/72) | (0.781, 0.941) |

A total of 94 patients completed therapy, 18 did not complete, and there was no data available for 8 patients.
There was no recorded referral source for 26 patients.

**Table 3.** Comparison of adherence to LTBI therapy in refugee and non-refugee patients.

| | Refugee (n=36) | Non-Refugee (n=76) | p-value |
|---|---|---|---|
| Patients who missed any doses | 83.3% | 86.7% | 0.300 |
| Percent of scheduled appointments attended | 95.4% | 82.3% | **0.019** |

Boldface indicates statistical significance (p<0.05).

## DISCUSSION

Adherence to LTBI treatment among patients in North America, the majority of whom were born in TB endemic countries, is sub-optimal.[7,10–12] LTBI treatment adherence rates of children in North America vary, from 28% to 92%.[13–16] In our retrospective review of 120 patients, the majority of whom were born in TB endemic regions, 78% (94/120) overall completed the recommended nine months of INH treatment, and 91% (31/36) of refugees.

The overall rate of completion of LTBI therapy in our clinic population was high. This is consistent with findings reported in the literature from other immigrant populations.[11,14] A study in Los Angeles found that foreign-born adolescents had higher completion rates than their US-born counterparts (82% vs. 71.8%), despite language and cultural barriers.[17] The authors suggested that the higher completion rate among foreign-born adolescents was attributable to greater respect for physician's authority, and likelihood to have known somebody who suffered morbidity or mortality from tuberculosis, which increased the foreign-born adolescents' perceived susceptibility to tuberculosis disease.

Sixty-three percent of the patients had a history of BCG vaccination, but it did not impact treatment completion rates (p=0.84). A study in San Diego reported that 14% of parents in that population attributed their child's positive TST to prior BCG vaccination, which was a barrier to accepting LTBI treatment.[18] Our study did not assess parental perceptions of their child's positive TST.

The refugee children had a completion rate of 91% which is higher than previously reported in a 2010 national review of LTBI treatment among US refugee children.[8] We also observed higher rates of treatment completion among females, those who used an interpreter, those who reported no side effects, and those referred internally within the same hospital system. Factors previously identified as contributing to non-adherence to LTBI treatment in children include: perceived toxicity/somatic complaints, long duration of therapy, failure to understand the importance of treatment, lack of transportation, financial constraints, and parental work conflicts with clinic appointment.[18–20] The overall high rate of completion of LTBI treatment observed in our clinic is likely attributable to employing enablers and incentives as means to overcome barriers and facilitate better adherence. The Pediatric TB Clinic offers free interpreter services.

During every patient visit, a member of the healthcare team spends 15-20 minutes assessing patient adherence and reinforcing good adherence. The Clinic is located along a major highway and patients are provided with free parking vouchers at every visit. Additionally, the hospital is also easily accessible by bus, has a designated bus stop, and patients are given free bus passes. All medications are provided free of charge to patients. Upon completion of therapy, a gift card of $25-$50 is awarded to the child's family. If a patient does not attend a scheduled visit, a phone call is made to the patient's residence.

Comparison of refugee and non-refugee patient adherence revealed that refugee patients were more likely to attend their scheduled appointments than non-refugee children. The most likely explanation for this finding is that the Pediatric TB Clinic works closely with the PRHP. The nurse in charge of scheduling the visits often makes an effort to schedule follow-up visits at the TB clinic at the same day and time that the patients have their regular primary care visits at HCH Primary Care. Most importantly the refugees work closely with the refugee CHW who provides additional social support and works closely with the medical team to ensure that patients are always able to attend their visits.

There were some limitations to this study. First, the sample size was small but as this is the sole pediatric TB clinic for the state of Rhode Island, we feel that our cohort accurately reflects the state's population. Rhode Island is unique for it small geographical size and sole health department for the entire state. It may be more challenging to achieve similar treatment completion rates in larger states where follow-up may be more complex. Second, although the indirect measure of adherence (pill counts) that we used can serve as a proxy for estimating drug ingestion, it has an inherent limitation—the actual ingestion of the dose cannot be proven. Finally, as this was a retrospective study, missing data due to incomplete documentation in medical records could not be recovered.

## CONCLUSION

This study demonstrates that high LTBI treatment completion rates can be achieved in a population with a high number of refugees. Historically, inadequate attention and resources have been invested in diagnosis and treatment of LTBI in children despite being at high risk of developing active TB disease. The importance of supporting patients on LTBI treatment cannot be over-emphasized.

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# *Mark, Set, Go!* School-Based Nutrition and Physical Activity Program: A Five-Year Evaluation

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## ABSTRACT

*Mark, Set Go*! is a school-based intervention addressing pediatric obesity in an urban, underserved community. This study evaluates its impact on participants' knowledge, attitudes and behavior related to nutrition, physical activity and screen time.

**METHOD:** Participants, 954 fifth- and sixth-grade public school students, received a 9-week classroom-based intervention led by high school peer educators. A matched design analyzed paired data from pre/post intervention knowledge, attitude and behavior surveys, heights, weights and 24 hour pedometer recordings.

**RESULTS:** 787 students (82.4%) completed both a pre- and post-test. Participants demonstrated improvement in knowledge, self-reported screen time, daily exercise and sweetened beverage consumption. Changes were greater for girls. A statistically significant decrease in BMI was noted overall, for boys and for overweight students, among the 443 participants (46%) with paired BMI data.

**CONCLUSIONS:** This school-based peer educator led intervention was effective in improving participant knowledge and healthy behaviors.


**KEYWORDS:** Primary school, peer influence, health education, nutrition, physical activity

## INTRODUCTION

In 2014, 33.4% of United States children ages 2–19 were overweight or obese, double the prevalence in 1970, with even higher rates in ethnic minorities.[1] The prevalence among Rhode Island high school students rose from 23% in 2001 to 26.9% in 2013.[2] Contributing factors include an increase in sedentary forms of entertainment such as videogames or television.[3] Higher screen time is correlated with an increase in consumption of sweetened beverages and snack foods and a decrease in fruit and vegetable consumption[4] which adds to the risk of becoming overweight.[5,6]

A number of studies have demonstrated that school-based interventions can impact childhood overweight and obesity.[7-13] Eat Well and Keep Moving targeted fourth- and fifth- graders and resulted in improved dietary intake and decreased television screen time.[9] Planet Health deceased the rate of obesity among female participants.[11] Other school-based interventions increased participant knowledge and consumption of fruits and vegetables.[13]

Peer educators have been used to increase youth knowledge about HIV/AIDS and sexually transmitted infections[14,15] and to teach conflict resolution and peer mediation.[16] A peer health educator model is grounded in Bandura's social cognitive theory of health behavior[17] which posits that individuals are influenced, and more likely to change their behavior, in response to the opinions and actions of their peers. Review of the literature at the time of program implementation did not reveal any studies that use peer educators to deliver a school- based nutrition and physical education intervention.

From 2006 to 2010, the *Mark, Set, Go!* Program, a school-based intervention to teach 5th and 6th graders about physical activity and nutrition, was delivered by peer educators to nearly 1000 students in Providence, RI. Our study evaluates the program's impact on participants' nutrition and physical activity knowledge and behaviors.

## METHODS

### Participants and setting

Our study population was a convenience sample of all 5th or 6th grade students (954 students) attending one of ten public elementary schools in Providence, RI. Peer educators were recruited from the MET High School, a Providence school with an experiential learning curriculum that places students in internships at various community sites.

### Procedure

#### *Curriculum*

We developed the *Mark, Set Go!* curriculum, workbook and lesson plans in consultation with a pediatric nutritionist, based on previous interventions.[9,13] Topics included energy, physical fitness, the food pyramid, fats, drinks and a Jeopardy review game. The program coordinator and 3 to 4 trained peer educators used an interactive small group format to teach each class. For example, during the 'drinks' lesson each small group under the direction of a peer educator calculated the amount of sugar in a 2-liter bottle of a sweetened beverage and then filled that bottle with the correct number of teaspoons of sugar. Next the group calculated the number of minutes they would need to exercise to 'burn' those calories.

### *Peer educator training*

We held an orientation and weekly sessions to train peer educators. Topics covered included classroom management, effective small group teaching strategies and a review of material to be taught. Peer educators were trained by the Program Director (FE), program coordinators and consulting nutritionist.

### *School Enrollment*

We invited schools to participate through phone contact followed by an in-person presentation to the school nurse and principal that included topics to be covered in the program, the nature of the study, data to be collected and the passive consent process. All students in 5th grade (8 schools) and 6th grade (2 schools) received the nine-week Mark, Set, Go! Program. Passive consent was obtained from parents for student participation in the evaluation of the study. We sent home information about the program and the study evaluating its effectiveness to parents who could exclude their children from the study by returning an opt-out passive consent form. This study was IRB approved.[19] All students participated in the program; very few (six) opted out of the study.

### *Survey Tool*

The survey tool, written at a 5th grade math and language comprehension level, contained 15 knowledge questions and 11 previously validated questions from the Health Behaviors in School Age Children Survey[19] that assessed self-reported daily consumption of fruits, vegetables, fast food, TV screen time and physical activity. We administered the survey and measured pre/post height, weight and 24-hour pedometer readings during the first and last week of the program. Each student was assigned a unique identifier which allowed us to match pre/post results.

## Data analysis

We pooled data from ten consecutive semesters using a matched design to pair each student's pre- and post-test. Only data from students who completed both a pre- and post-test was included. We used the Wilcoxon-Rank Sum Test to analyze BMI, pedometer and self-reported physical activity and McNemar's test to analyze the knowledge and behavioral-based questions at the alpha= 0.05 level of significance, (SAS version 9.2). We conducted subgroup analysis by gender and BMI above and below the 85% for age, using pre-intervention BMI.

# RESULTS

## Demographic characteristics

The program was delivered to 960 students with 954 participating in the study. Matched pre/post survey and anthropometric data was available for 787 (82.4%) of the participants. Characteristics of study participants are shown in **Table 1**. Mean age of participants was 10.4; 46.3% were male and 53.8% female. 36.2% of the students had a BMI >85% for age with significantly more males (40.1%) than females (32.9%) falling into this overweight category. However, these data should be interpreted with caution as we did not have heights and weights for 25% of the participants. 66.3% identified as Hispanic, 15.8% as Black or African American, 9.3% as white, 7.5% as Asian and 1.1% as other.

## Knowledge

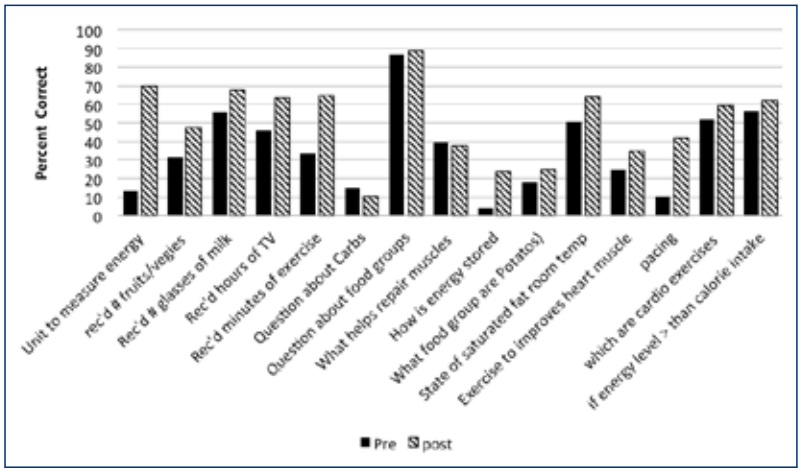
Fifteen questions tested participants' knowledge of nutrition, physical activity facts, and age appropriate recommendations (**Figure 1**). Questions generated from the curriculum tested students' knowledge of recommendations for exercise,

**Table 1.** Study Population Demographics N (%)

| | | N | % |
|---|---|---|---|
| | Total Participants | 956 | |
| | *Matched N | 787 | 82.4% |
| | Mean Age | 10.4 | |
| **Gender** | Male | 364 | 46.3% |
| | Female | 423 | 53.8% |
| **Race/Ethnicity** | Hispanic | 518 | 66.3% |
| | Black or African American | 124 | 15.8% |
| | White | 73 | 9.3% |
| | Asian | 59 | 7.5% |
| | †Other | 13 | 1.1% |
| **‡ BMI>=85%** | Overall | 285 | 36.2% |
| | Male | 146 | 40.1% |
| | Female | 139 | 32.9% |
| | Missing BMI | 203 | 25.8% |

*Study analysis based on participants with matched pre/post tests
†Other includes American Indian/Alaska Native, Native Hawaiian or Other Pacific Islander
‡BMI taken at baseline. BMI >85th % = overweight for age

**Figure 1.** Nutrition & Fitness Knowledge (% correct)



types of exercise, screen time, fruits and vegetable consumption and food groups. The number of students answering correctly improved in 13 of 15 questions, with statistically significant improvements in 11 questions.

## Behavior

We used questions from the previously validated 2005–06 Behavior in School Aged Children Survey[19] to assess behaviors. Questions asked about daily exercise, screen time, frequency of consumption of fruits and vegetables, sweetened beverages, breakfast and fast food meals. We also collected pre/post pedometer and BMI.

### *Physical activity*

Students were asked to report the number of days they worked out for at least 60 minutes in the last 7 days (**Table 2**). The mean number of days per week increased overall from 4.17 pre-intervention to 4.37 post-intervention (SD 2.52, p<0.03). The change was greater for girls, who reported an increased from 3.97 days per week to 4.32 (SD 2.62, p<0.008). Paired pre/post 24-hour pedometer data, collected for 232 (24%) of participants, demonstrated only modest improvement (**Table 2**). To assess for likelihood to exercise/play outside the home, participants were asked if they are allowed to play outside and if they feel safe playing outside. While 92.3% reported being allowed to play outside, only 85.2% reported feeling safe playing outside.

### *BMI*

We were able to collect both a pre- and post-intervention height and weight for 443 (46%) of participants. Mean BMI dropped for these participants (**Table 2**) from 21.13 to 20.82 (SD 2.42, p=0.01); and for male participants from 21.46 to 20.85 (SD 2.75, p=0.0088). Overweight participants dropped from a mean BMI of 25.09 to 24.33 (SD 2.4, p<0.0001).

### *Screen time/sedentary time*

We assessed interactive (computer/video game playing) and sedentary (television watching) screen time (**Table 3**). We analyzed the results in terms of percent of participants meeting the recommendation of less than or equal to 2 hours of screen time on weekdays. The percent of participants meeting this goal increased from 73.6% to 77.4% (p=0.039; CI 0.199-0.3491); with girls increasing from 79.0% to 84.2% (p=0.0263; CI 0.1233-0.3474). All categories saw an increase in the number of participants reporting a TV screen time of no more than two hours on weekdays. Noteworthy is the dramatic increase in girls meeting this recommendation, from 60.1% to 71.4% (p <0.0001; CI 0.1522-0.3373).

### *Eating habits*

We used questions from the HBSA survey[19] to assess self-reported dietary intake (**Table 4**). There was no significant change in the mean fruit and vegetable consumption pre/post intervention.

**Table 2.** Changes[1] in Physical Activity & BMI[2]

| | | N | Pre | Post | Absolute Difference | Std deviation | Std Error | p-value students t | signed rank |
|---|---|---|---|---|---|---|---|---|---|
| **Q6. In last 7 days, number of days physically active for a total of at least 60 minutes (mean)** | Overall | 780 | 4.17 | 4.37 | 0.20 | 2.52 | 0.09 | 0.0347 | 0.05 |
| | Male | 362 | 4.40 | 4.44 | 0.04 | 2.40 | 0.13 | 0.8609 | 0.935 |
| | Female | 417 | 3.97 | 4.32 | 0.35 | 2.62 | 0.13 | 0.0087 | 0.108 |
| | BMI >= 85% | 284 | 4.25 | 4.4 | 0.15 | 2.57 | 0.15 | 0.3215 | 0.4241 |
| | BMI < 85% | 294 | 3.91 | 4.35 | 0.44 | 2.56 | 0.15 | 0.0067 | 0.0079 |
| | | | | | | | | | |
| **Pre and Post Pedometer readings (mean steps)** | Overall | 231 | 8995 | 9873 | 878 | 7369 | 484 | 0.6488 | 0.8765 |
| | Male | 114 | 9534 | 10939 | 1405 | 8213 | 769 | 0.8713 | 0.7618 |
| | Female | 117 | 8468 | 8877 | 408 | 6406 | 592 | 0.4789 | 0.5052 |
| | BMI > = 85% | 109 | 8306 | 9447 | 1141 | 7747 | 742 | 0.5148 | 0.6087 |
| | BMI < 85% | 111 | 9743 | 10439 | 695 | 7053 | 669 | 0.9132 | 0.6481 |
| | | | | | | | | | |
| **Pre and Post BMI[3] (mean)** | Overall | 443 | 21.13 | 20.82 | 0.31 | 2.42 | 0.12 | 0.0183 | 0.0202 |
| | Male | 206 | 21.46 | 20.85 | 0.61 | 2.75 | 0.19 | 0.0088 | 0.0134 |
| | Female | 236 | 20.80 | 20.78 | 0.02 | 2.05 | 0.13 | 0.7436 | 0.4749 |
| | BMI > = 85% | 213 | 25.09 | 24.33 | 0.76 | 2.40 | 0.16 | <0.0001 | <0.0001 |
| | BMI < 85% | 227 | 17.26 | 17.46 | 0.20 | 2.34 | 0.16 | 0.2231 | 0.2655 |

1 Wilcoxon-Rank Sum Test

2 Pre-participation BMI was used to classify participants into BMI <85% and BMI >=85%

3 Only 443 participants had both a pre and post BMI

**Table 3.** Changes in Self-Reported Screen Time

| Questions | Less than or equal to 2 hours a day on weekdays | | | | | |
|---|---|---|---|---|---|---|
| | | | Pre | Post | | |
| | | N | % | % | p-value1 | 95% conf. inter |
| Q12. About how many hours a day do you usually play games on a computer or games console (Playstation, Xbox, GameCube) in your free time? | Overall | 788 | 73.6% | 77.4% | 0.0394 | 0.199-0.3491 |
| | Male | 364 | 67.3% | 69.5% | 0.4537 | 0.1716-0.3800 |
| | Female | 423 | 79.0% | 84.2% | 0.0263 | 0.1233-0.3432 |
| Q16. About how many hours a day do you usually watch television (including videos and DVDs) in your free time? | Overall | 788 | 55.8% | 66.8% | 0.0001 | 0.1884-0.3219 |
| | Male | 364 | 50.8% | 61.3% | 0.0011 | 0.1526-0.3474 |
| | Female | 423 | 60.1% | 71.4% | <0.001 | 0.1522-0.3373 |

1 McNemar's test

**Table 4.** Self-Reported Dietary Intake

| Questions | Every day once or more than once | | | | | |
|---|---|---|---|---|---|---|
| Q13. How many times a week do you usually eat or drink: | | | Pre | Post | | |
| | | N | % | % | p-value1 | 95% conf. inter. |
| A. Fruit | Overall | 788 | 61.0% | 62.0% | 0.6338 | 0.1750-0.3130 |
| | Male | 364 | 58.5% | 62.9% | 0.1824 | 0.074-0.2744 |
| | Female | 423 | 63.1% | 61.2% | 0.4959 | 0.2138-0.3995 |
| | BMI > = 85% | 285 | 62.1% | 61.2% | 0.5525 | 0.1334-0.3621 |
| | BMI < 85 | 299 | 58.5% | 62.2% | 0.2876 | 0.1422-0.3642 |
| B. Vegetables | Overall | 788 | 43.5% | 43.8% | 0.9035 | 0.1997-0.3351 |
| | Male | 364 | 45.3% | 42.9% | 0.4317 | 0.1712-0.3698 |
| | Female | 423 | 41.8% | 44.68% | 0.3304 | 0.1764-0.3609 |
| | BMI > = 85% | 285 | 42.1% | 44.7% | 0.4817 | 0.1815-0.4047 |
| | BMI < 85 | 299 | 43.1% | 43.8% | 0.8514 | 0.1132-0.3354 |
| D. Coke or other soft drinks that contain sugar | Overall | 788 | 37.9% | 31.0% | 0.0005 | 0.2415-0.3780 |
| | Male | 364 | 34.3% | 33.0% | 0.6381 | 0.2027-0.4073 |
| | Female | 423 | 41.1% | 29.3% | <0.0001 | 0.2259-0.4066 |
| | BMI > = 85% | 285 | 32.3% | 29.1% | 0.3232 | 0.1991-0.4337 |
| | BMI < 85 | 299 | 44.2% | 34.1% | 0.0024 | 0.2124-0.4259 |
| M. Juice (orange, apple or other fruit juices) | Overall | 788 | 73.0% | 60.7% | <0.0001 | 0.1697-0.3053 |
| | Male | 364 | 69.8% | 58.0% | 0.0506 | 0.1209-0.3193 |
| | Female | 423 | 75.9% | 62.9% | <0.0001 | 0.1595-0.3456 |
| | BMI > = 85% | 285 | 70.2% | 55.4% | <0.0001 | 0.1275-0.3458 |
| | BMI < 85 | 299 | 73.6% | 64.9% | 0.0100 | 0.0922-0.3205 |

1 McNemar's test

*Sweetened beverages*

The percent of students reporting drinking Coke or other soft drinks daily decreased from 37.9% to 31.0% (p=0.0005; CI 0.2415–0.3780). There was no significant change for boys but a substantial drop for girls from 41.1% to 29.3% (p <0.0001; CI 0.2259-0.4066). All groups had a significant drop in the daily consumption of juice. The largest change was for overweight students from 70.2% to 55.4% (p <0.0001; CI 0.1275–0.3458).

*Breakfast and fast-food consumption*

We did not find a change in breakfast consumption pre/post overall, by gender or by weight. Mean breakfast consumption was 3.9/5 weekdays. The percent reporting eating fast food one or more times a week decreased from 43.3% pre- to 37.3% post-intervention.

## DISCUSSION

This classroom-based intervention delivered by trained peer educators was effective in increasing participant knowledge and self-reported exercise behaviors while at the same time decreasing BMI, self-reported screen time and sweetened beverage consumption. Previous studies have demonstrated similar findings but did not use peer educators to deliver the curriculum.[7-13]

Our study population, a subset of children attending schools serving families with low socioeconomic backgrounds in Providence, had much higher rates of pediatric obesity than the US HBSA[20] sample from the 2005-06 survey. 40.5% of girls and 51.4% of boys in our sample had a BMI over the 85%tile for age as compared to 25% of girls and 33% of boys in the US sample. Our study population also had higher rates of baseline daily fruit consumption, 58.5% of boys and 63.1% of girls as compared to 49%

and 44% respectively for the US sample.[20] Daily soft-drink consumption was similar for boys, 34.3% as compared to 35% of boys in the US sample, but much higher for girls, 41.1%% as compared to 29% of girls in US sample.[20]

We delivered the *Mark, Set, Go!* Program in a real-world setting. Participating students attended schools in areas designated as food deserts, where affordable grocery stores are inaccessible by public transportation. Often the only source of groceries is a corner store, filled with processed foods and pre-packaged snacks. As a result, participants may have had limited access to fruit and vegetables.

Our study had several limitations. We collected pre/post surveys and anthropometric data on the first and last day of the program. If students were not present we did not capture their responses or measure them. Consequently, only 46% of participants had paired BMIs and only 24% had matched pedometer readings. The staffing of our program also changed over the course of the five years. While our curriculum remained constant, we had three program coordinators. Our peer educators, recruited from a local high school with an internship-based curriculum, also changed each year. There was also variation in the number of years each school participated in the intervention. Some participated for several years in a row and others only for one semester. In analyzing our data, we did not control for these differences. Instead we pooled data from all five years, matching pre/post data for each student, and looked for change at the individual level. Another limitation is that we did not have controls and consequently could not account for the impact of other nutrition and physical activity education.

## CONCLUSION

Despite the limitations, this study demonstrates the potential effectiveness of using peer educators to deliver nutrition and physical activity education. The program had a positive impact on BMI, overall health knowledge and self-reported behaviors, including a decrease in screen time and sweetened beverage intake. Future studies with more staffing consistency are needed in order to control for variability in instruction. Additional research that takes into consideration language barriers and cultural background would be helpful as would studies that help further analyze variation in how children of different genders interact with and respond to nutrition education.

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## Presentations

The results were presented as a poster at the Rhode Island Academy of Family Practice Annual Conference in March of 2014 and as a distinguished paper, Society of Teachers of Family Medicine, National Conference, May 5, 2014.

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# Influenza Vaccination Rates among Rhode Island Adults

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Influenza (flu) is a contagious respiratory illness caused by influenza viruses.[1] It is a serious disease that can lead to hospitalization and sometimes even death.[1,2] Each year in the United States, the estimated influenza-related hospitalizations ranged from 140,000 to 710,000, and influenza-related deaths ranged from 12,000 to 56,000 since 2010.[2] Although most persons who become infected with influenza viruses will recover without sequelae, some people such as older adults, very young children, pregnant women, and those with chronic medical conditions are at high risk for serious influenza complications.[3,4]

Annual influenza vaccination is the best way of preventing influenza and its complications.[1,2,3] To reduce the burden of influenza, the Advisory Committee on Immunization Practices (ACIP) recommends routine annual influenza vaccination for all persons aged ≥ 6 months who do not have contraindications to vaccination.[3] Optimally, vaccination should occur before onset of influenza activity in the community, that is by the end of October, if possible.[3] In addition, the national Healthy People 2020 influenza vaccination goal is to increase the percentage of adults aged 18 and older who are vaccinated annually against seasonal influenza to 70%.[5]

This report examines disparities in influenza vaccination coverage rates among Rhode Island adults by socio-demographic and health-related characteristics. Additionally, it describes the location and timing of influenza vaccination among adults.

## METHODS

We analyzed the data from the 2015 Rhode Island Behavioral Risk Factor Surveillance System (BRFSS). The BRFSS is an on-going, state-based telephone survey of civilian adults aged ≥ 18 years. The survey collects state and national data regarding health-related risk behaviors, chronic health conditions, and use of preventive services, including influenza vaccination.[6]

Influenza vaccination receipt was determined by asking whether the respondents received an influenza vaccination in the past 12 months prior to the survey. If the respondents said "yes", they were asked which places and what month/year they received their last influenza vaccination. Influenza vaccination rates were analyzed by socio-demographic factors (age; gender; race/ethnicity; education; employment status; disability status; having children under 5 years in the household) and other health-related factors (health insurance; having a personal doctor; having an annual check-up; having a chronic health condition such as asthma, diabetes or heart disease; current smoking status; obesity status).

The chi-square tests were performed to determine disparities in influenza vaccination coverage rates by select characteristics. All statistical analyses were conducted with weighted data, using SAS 9.4 software, to account for the complex survey design. A p-value of <.05 is considered statistically significant. Invalid responses in each variable, such as missing, don't know, or refused, were excluded from the analyses unless the item has imputed data.

## RESULTS

In 2015, there were 6,206 completed BRFSS surveys in Rhode Island. However, only 5,380 respondents provided a valid answer to the influenza vaccination question, which became the analytic data for this study (n=5,380; weighted invalid response rate for this item is 15.5%).

Overall, 47.8% (95% CI: 45.8-49.7) of Rhode Island adults reported having received an influenza vaccination during the past 12 months prior to the survey (**Table 1**).

### Disparities in Vaccination Coverage

The influenza vaccination rates shown in **Table 1** varied significantly by sub-population. Certain adult groups had lower vaccination rates than others including males (42.5%), adults with less than a high school education (41.1%), those who were aged 18-49 years (40.6%), Hispanics of any race (38.3%), current smokers (34.5%), those without health insurance (29.2%), those who were self-employed (29.0%), those who did not have a personal doctor (28.9%), and those who did not have an annual check-up within one year (27.6%).

Conversely, adults who were aged > 65 years (62.9%), were retired (62.5%), had a medical condition such as asthma, diabetes, or heart disease (57.1%), graduated from college (55.9%), were females (52.4%), had an annual check-up within one year (52.2%), had a personal doctor (50.2%), were non-Hispanic Whites (50.0%), were non-smokers (50.0%), and had health insurance (49.4%), were more likely to receive an influenza vaccination. Disability status, presence of children under 5 years in the household, and obesity status were not associated with the receipt of influenza vaccination (not shown in **Table 1**).

**Table 1.** Percentage of Rhode Island adults who received influenza vaccination by selected characteristics, RIBRFSS 2015

| | n[a] | Percent[b] | 95% CI[c] | P-value |
|---|---|---|---|---|
| Overall | 5,380 | 47.8 | 45.8-49.7 | |
| **Age** | | | | <.0001 |
| 18-49 | 1,527 | 40.6 | 37.3-43.9 | |
| 50-64 | 1,829 | 49.1 | 46.1-52.1 | |
| 65+ | 2,024 | 62.9 | 60.3-65.6 | |
| **Gender** | | | | <.0001 |
| Male | 2,184 | 42.5 | 39.5-45.5 | |
| Female | 3,196 | 52.4 | 49.9-55.0 | |
| **Race/Ethnicity** | | | | 0.0024 |
| White, Non-Hispanic | 4,604 | 50.0 | 47.9-52.1 | |
| Black, Non-Hispanic | 176 | 46.2 | 35.7-56.8 | |
| Other, Non-Hispanic[d] | 252 | 38.6 | 29.5-47.7 | |
| Hispanic, any race | 348 | 38.3 | 31.4-45.2 | |
| **Education** | | | | <.0001 |
| < High school | 422 | 41.1 | 34.5-47.7 | |
| H.S. grad/GED | 1,399 | 42.8 | 39.1-46.6 | |
| Some college | 1,329 | 47.4 | 43.6-51.2 | |
| College grad | 2,230 | 55.9 | 53.1-58.8 | |
| **Employment Status** | | | | <.0001 |
| Employed for wages | 2,202 | 46.8 | 43.8-49.7 | |
| Self employed | 349 | 29.0 | 22.0-35.9 | |
| Unemployed/Unable to work | 729 | 40.4 | 35.3-45.5 | |
| Homemaker | 234 | 50.8 | 41.7-59.8 | |
| Student | 114 | 49.4 | 37.9-61.0 | |
| Retired | 1,704 | 62.5 | 59.5-65.5 | |
| **Having health insurance** | | | | <.0001 |
| Yes | 5,127 | 49.4 | 47.4-51.4 | |
| No | 225 | 29.2 | 20.7-37.7 | |
| **Having personal doctor** | | | | <.0001 |
| Yes | 4,969 | 50.2 | 48.1-52.3 | |
| No | 393 | 28.9 | 22.6-35.1 | |
| **Annual check-up** | | | | <.0001 |
| Within 1 yr. | 4,598 | 52.5 | 50.3-54.6 | |
| Not within 1 yr. | 741 | 27.6 | 23.3-32.0 | |
| **Having medical conditions (asthma, diabetes, heart disease)** | | | | <.0001 |
| Yes | 1,358 | 57.1 | 53.1-61.1 | |
| No | 3,947 | 45.1 | 42.8-47.4 | |
| **Current smoking status** | | | | <.0001 |
| Non-Smoker | 4,652 | 50.0 | 47.9-52.2 | |
| Smoker | 676 | 34.5 | 29.3-39.7 | |

a: Unweighted number of respondents
b: Weighted percentage
c: 95% Confidence Interval
d: Other race includes American Indian, Alaskan Native, mixed race, and other non-white

## Location of Vaccination

Among those who reported having had an influenza vaccination in the past 12 months, the most frequently visited place to get vaccinated was a pharmacy in stores (e.g., supermarket or drug store) (34.2%; 95% CI=31.8%-36.0%), followed by a doctor's office or health maintenance organization (HMO) (28.1%; 95% CI=25.8%-30.5%) and workplace (14.8%; 95% CI=12.9%-16.8%). Nearly 6% (5.7%) reported they had received the vaccination from another type of clinic or health center (e.g., a community health center), 5.6% received the vaccination from a hospital (e.g., inpatient), 4.3% from a school, and 7.2% from some other kind of place (e.g., a senior, recreation, or community center, an emergency room, etc.) (**Figure 1**)

## Timing of Vaccination

**Figure 2** presents the timing of influenza vaccination by month. Nearly one half of Rhode Island adults reported that they received the influenza vaccination in October (44.5%; 95% CI: 41.7%- 47.2%), which was followed by November (22.6%; 95% CI=20.3%-24.8%), September (13.5%; 95% CI=11.6%-15.4%), December (6.6%; 95% CI=5.1%-8.1%) and January (5.1%; 95% CI=3.8%-6.3%).

**Figure 1.** Location of influenza vaccination among Rhode Island adults, Rhode Island BRFSS, 2015

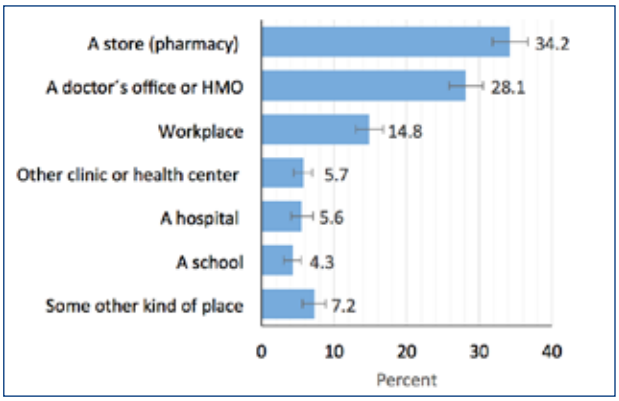
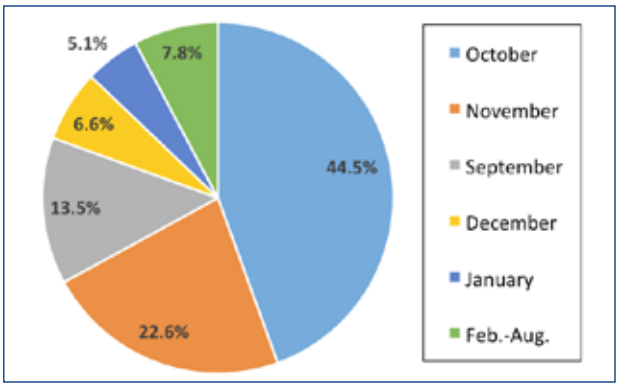



**Figure 2.** Timing of influenza vaccination among Rhode Island adults, Rhode Island BRFSS, 2015



## DISCUSSION

This report demonstrates that less than one half of Rhode Island adults (47.8%) received an influenza vaccination, well below the national Healthy People 2020 goal of 70%. None of the groups presented in **Table 1** met the Healthy People 2020 goal.

Certain groups had particularly low vaccination rates (lower than 30%), including those who are self-employed, uninsured, do not have a personal doctor, and had not had an annual check-up within the past 12 months. People in these groups probably share similar characteristics. For example, people without health insurance may be less likely to have a primary care provider and an annual check-up. Lack of health care access and utilization may also be closely related to other factors, such as age, education, racial/ethnic minority status, and employment status. It would be important to note that although the majority of the respondents had health insurance (93.0%), a personal doctor (88.9%) and an annual check-up in the past year (81.6%), the vaccination rates were still below 50%.

It was also found that Rhode Island adults were more likely to receive an influenza vaccination from non-traditional settings (e.g., supermarkets, drug stores, workplaces, schools, senior centers, and community centers) than traditional clinical settings, and many of them received the vaccination during October and November.

### Strategies to Improve Influenza Vaccination Coverage Rates

Recommended strategies for health care providers to improve influenza vaccination coverage rates include: educating patients and staff about the importance of influenza vaccination and providing a strong recommendation for vaccination; offering flu vaccine as soon as it is available and having it available in the office; assessing vaccination status at every encounter; and implementing standing orders and patient reminder/recall systems.[7,8]

Strategies for public health departments include: public and provider education and outreach; and working with multiple partners to ensure access to vaccination in non-traditional settings.[7,8]

Since 2007, Rhode Island has managed the purchase and distribution of influenza vaccine to all providers, at no cost, through the state-supplied vaccine program and universal vaccine purchase policy. Since 2009, Rhode Island has implemented school-located influenza vaccination clinics in all the districts across the state, many of which are open to the public, including adults.[9] The state immunization program works with the Ocean State Immunization Collaborative (http://osicri.com/) and other community partners to identify and develop new ideas and programs to address vaccination disparities and improve access to vaccine in a variety of non-traditional settings including pharmacies, senior centers, public events, and a variety of other community settings.

Despite these strategies, adult influenza vaccination coverage remains a challenge in Rhode Island and nationally. According to the 2015–16 flu season data, while Rhode Island ranked second highest in the nation for influenza vaccination coverage rates for adults 18 and older with 50.7% (41.7% for national average)[10], it is still far below the national Healthy People 2020 goal of 70%. Understanding that the number one predictor of vaccination is a strong recommendation from a health care provider, Rhode Island's efforts will be focused on working with providers on quality assurance/improvement initiatives, maintaining a universal vaccine policy, and developing an adult immunization registry.

The results in this report are subject to the following limitations. First, influenza vaccination status was based on self-report and not validated with medical records and thus, is subject to respondent's recall bias. Second, a low response rate for the 2015 Rhode Island BRFSS survey (38.1%) and a large invalid response to the influenza vaccination question (15.5%) might result in non-response bias even after weighting adjustments. Third, some of the groups presented in **Table 1** have small sample size which may limit the reliability of extrapolating this data to the general population. Finally, the 2015 BRFSS data used in this report were collected during the calendar year (January-December 2015), therefore, it may not be comparable with specific influenza season data.

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## Disclosures

The authors have no financial interests to disclose.

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# Rhode Island Monthly Vital Statistics Report
# Provisional Occurrence Data from the Division of Vital Records

| VITAL EVENTS | REPORTING PERIOD | | |
|---|---|---|---|
| | AUGUST 2016 | 12 MONTHS ENDING WITH AUGUST 2016 | |
| | Number | Number | Rates |
| Live Births | 1,094 | 11,708 | 11.1* |
| Deaths | 809 | 9,987 | 9.5* |
| Infant Deaths | 9 | 66 | 5.6# |
| Neonatal Deaths | 7 | 48 | 4.1# |
| Marriages | 822 | 6,848 | 6.5* |
| Divorces | 48 | 3,076 | 2.9* |
| Induced Terminations | 166 | 2,219 | 189.5# |
| Spontaneous Fetal Deaths | 48 | 573 | 48.9# |
| Under 20 weeks gestation | 43 | 499 | 42.6# |
| 20+ weeks gestation | 5` | 74 | 6.3# |

* Rates per 1,000 estimated population
# Rates per 1,000 live births

| Underlying Cause of Death Category | REPORTING PERIOD | | | |
|---|---|---|---|---|
| | FEBRUARY 2015 | 12 MONTHS ENDING WITH FEBRUARY 2015 | | |
| | Number (a) | Number (a) | Rates (b) | YPLL (c) |
| Diseases of the Heart | 234 | 2,389 | 226.2 | 3,730.5 |
| Malignant Neoplasms | 167 | 2,273 | 215.2 | 5,472.5 |
| Cerebrovascular Disease | 38 | 438 | 41.5 | 550.0 |
| Injuries (Accident/Suicide/Homicide) | 83 | 862 | 81.6 | 12,480.5 |
| COPD | 40 | 488 | 46.2 | 460.0. |

(a) Cause of death statistics were derived from the underlying cause of death reported by physicians on death certificates.
(b) Rates per 100,000 estimated population of 1,056,298 (www.census.gov)
(c) Years of Potential Life Lost (YPLL).

NOTE: Totals represent vital events, which occurred in Rhode Island for the reporting periods listed above.
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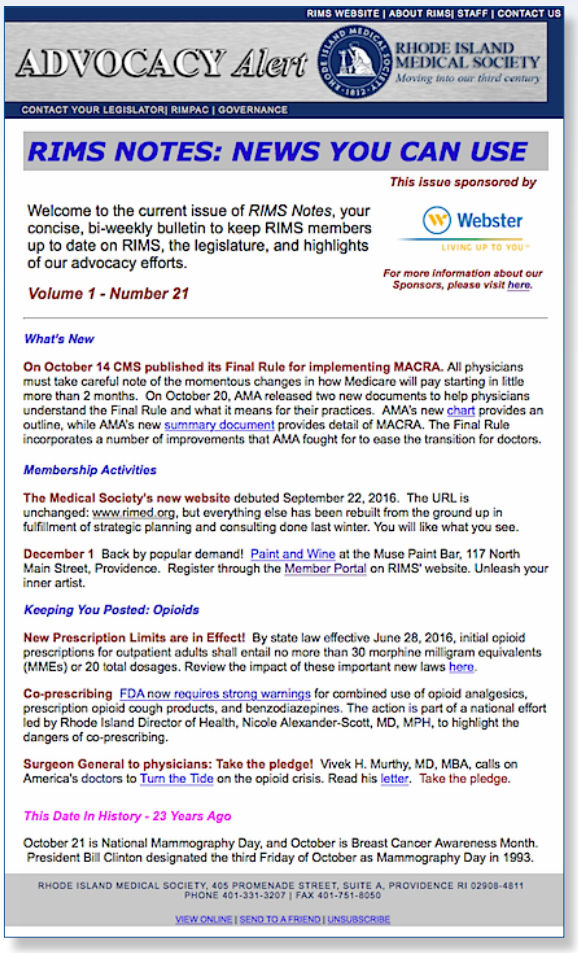

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*Volume 1 - Number 21*

***What's New***

**On October 14 CMS published its Final Rule for implementing MACRA.** All physicians must take careful note of the momentous changes in how Medicare will pay starting in little more than 2 months. On October 20, AMA released two new documents to help physicians understand the Final Rule and what it means for their practices. AMA's new chart provides an outline, while AMA's new summary document provides detail of MACRA. The Final Rule incorporates a number of improvements that AMA fought for to ease the transition for doctors.

***Membership Activities***

**The Medical Society's new website** debuted September 22, 2016. The URL is unchanged: www.rimed.org, but everything else has been rebuilt from the ground up in fulfillment of strategic planning and consulting done last winter. You will like what you see.

**December 1** Back by popular demand! Paint and Wine at the Muse Paint Bar, 117 North Main Street, Providence. Register through the Member Portal on RIMS' website. Unleash your inner artist.

***Keeping You Posted: Opioids***

**New Prescription Limits are in Effect!** By state law effective June 28, 2016, initial opioid prescriptions for outpatient adults shall entail no more than 30 morphine milligram equivalents (MMEs) or 20 total dosages. Review the impact of these important new laws here.

**Co-prescribing** FDA now requires strong warnings for combined use of opioid analgesics, prescription opioid cough products, and benzodiazepines. The action is part of a national effort led by Rhode Island Director of Health, Nicole Alexander-Scott, MD, MPH, to highlight the dangers of co-prescribing.

**Surgeon General to physicians: Take the pledge!** Vivek H. Murthy, MD, MBA, calls on America's doctors to Turn the Tide on the opioid crisis. Read his letter. Take the pledge.

***This Date In History - 23 Years Ago***

October 21 is National Mammography Day, and October is Breast Cancer Awareness Month. President Bill Clinton designated the third Friday of October as Mammography Day in 1993.

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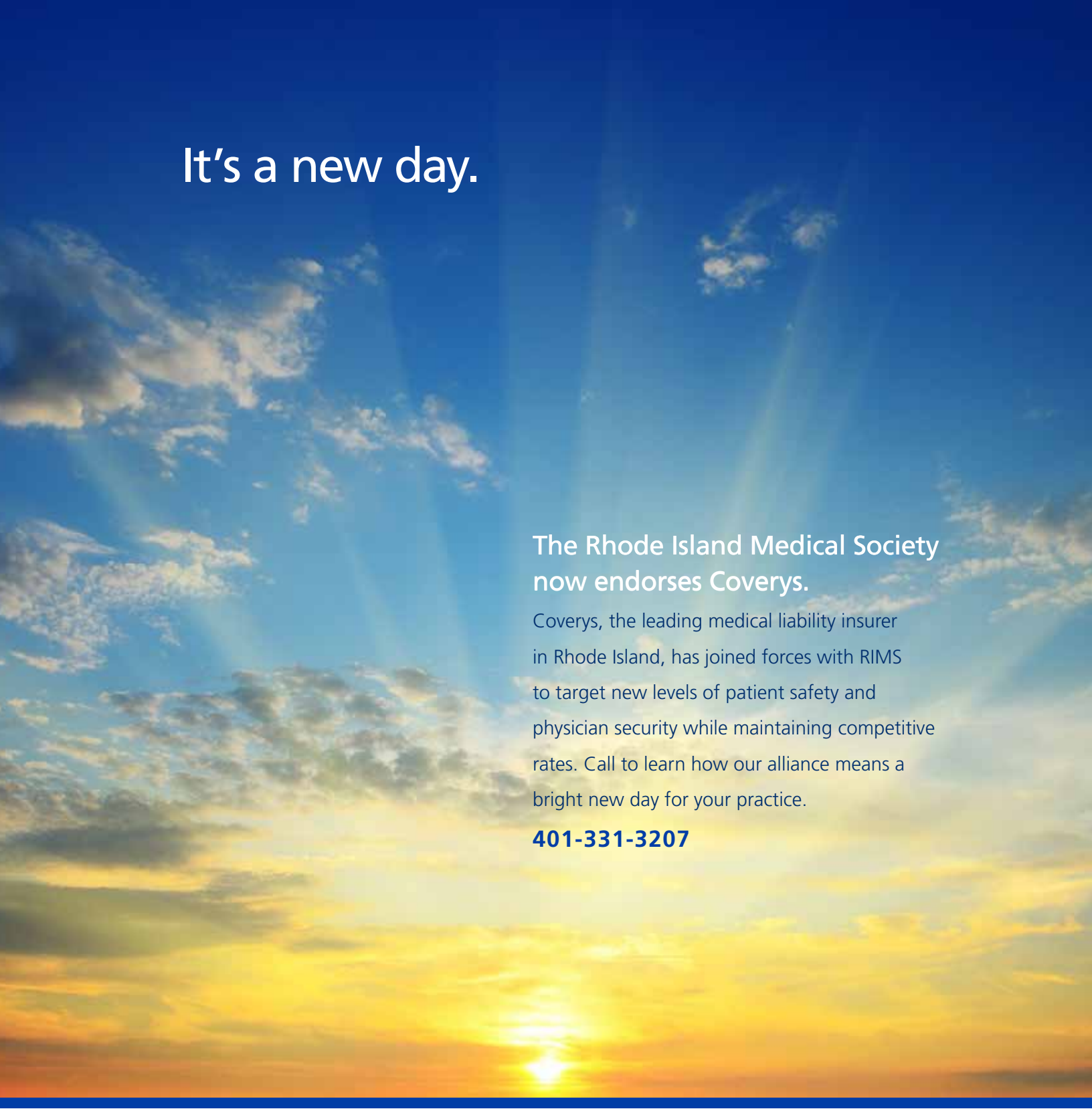


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# Working for You: RIMS advocacy activities

### January 3, Tuesday

RIMS Physician Health Committee: Herbert Rakatansky, MD, Chair

Site visit to Crowne Plaza, Warwick, for Weight+Wellness Summit

### January 4–7, Wednesday–Saturday

AMA State Legislation Strategy Conference; RIMS member Megan Ranney, MD MPH, presented on gun violence prevention for physicians

### January 9, Monday

Conference call with Blue Cross Blue Shield of RI regarding 2017 fee schedule; President Sarah Fessler, MD, President-elect Bradley Collins, MD, RIMS Staff

Meeting with United Health Plan of New England; President Sarah Fessler, MD, President-elect Bradley Collins, MD, RIMS Staff

Meeting with Hospital Association regarding legislation

Board of Directors Meeting, RIMS President, Sarah J. Fessler, MD

### January 10, Tuesday

Meeting with American Heart Association regarding sugar-sweetened beverage legislation

Weight+Wellness Summit Planning Committee

Special Legislative Committee on Health Literacy meeting

### January 11, Wednesday

Board of Medical Licensure and Discipline

Meeting with Senate Health and Human Services Chairman, Sen. Joshua Miller; Senate Policy staff; and David Kroessler, MD; regarding mental health parity, access, and legislation.

RI Association of Nurse Anesthetists Reception

### January 12, Thursday

SIM Grant Steering Committee: Peter A. Hollmann, MD

Memorial Service, former state representative Kenneth Carter

### January 13, Friday

Diabetes Prevention Program meeting

Meeting with Blue Cross Blue Shield of RI regarding RIMS' 2017 legislative agenda

**Megan Ranney, MD, MPH** recently addressed the AMA State Legislative Strategy Conference attended by over 220 physicians and staff from state and national medical societies.

### January 15, Sunday

Congressional Delegation Rally in support of the Affordable Care Act

### January 17, Tuesday

OHIC Health Insurance Advisory Committee

Meeting regarding out of network billing legislation, Sarah Fessler, MD; Michael Migliori, MD; Tony Cirillo, MD

### January 18, Wednesday

Primary Care Physician Advisory Committee, Department of Health

Legislative hearings

Speaker Mattiello fundraiser

### January 23, Monday

RIMS Finance Committee: Jose Polanco, MD, Treasurer

### January 24, Tuesday

Legislative hearings

### January 25, Wednesday

RI Society of Anesthesiologists meeting; OHIC Commissioner Kathleen Hittner, MD and RIMS staff

Legislative hearings

### January 26, Thursday

Alliance for Healthy Rhode Island legislative meeting

Legislative hearings

Senate President Paiva-Weed fundraiser

### January 30, Monday

Meeting with Blue Cross Blue Shield of RI; Sarah Fessler, MD, President-elect Bradley Collins, MD, RIMS Staff

### January 31, Tuesday

Department of Health public hearing on proposed opioid prescription regulations

Legislative hearings

New Legislators Reception; RIMS Board of Directors, Council, Public Laws, and RIMPAC

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*The Rhode Island Medical Society continues to drive forward into the future with the implementation of various new programs. As such, RIMS is expanded its **Affinity Program** to allow for more of our colleagues in healthcare and related business to work with our membership. RIMS thanks these participants for their support of our membership.*

*Contact Megan Turcotte for more information: 401-331-3207 or mturcotte@rimed.org*

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Alyn L. Adrain, MD, and Peter A. Hollmann, MD, Rhode Island Delegates to the AMA, participate in the formation of national AMA policy at annual House of Delegates meetings in Chicago.

RIMS Executive Director Newell E. Warde, PhD, hosting a free CME seminar for members of the Medical Society.

RIMS maintains close contact with federal and state lawmakers to represent physician and patient interests in emerging legislation. RIMS Public Laws Chair Michael E. Migliori, MD, at left, and RIMS Director of Government and Public Affairs Steven R. DeToy shown here following their meeting with RI Representative David R. Cicilline.

RIMS Leadership: Treasurer José Polanco, MD; Secretary Christine Brousseau, MD; President-Elect Bradley J. Collins, MD; President Sarah J. Fessler, MD; Vice President Peter A. Hollman, MD; and (seated) Immediate Past President Russell A. Settipane, MD.

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## Rhode Island Hospital submits obstetrics unit application

PROVIDENCE – Rhode Island Hospital has asked the state for approval to build a 31-bed obstetrics unit. The application filed with the Rhode Island Department of Health updates an earlier version, filed in January 2016. Rhode Island Hospital withdrew its submission in October 2016 in order to update the application, which had not yet been reviewed by the state. At the time, Rhode Island Hospital had notified the Department of Health that it would resubmit a new application.

In its application, Rhode Island Hospital is proposing completing the obstetrics unit in 2020 at a cost of $43 million to build. The new unit will include 25 post-partum beds, six antepartum beds, and eight labor and delivery rooms.

"While most women experience healthy pregnancies, chronic illnesses, delayed childbearing and other factors have led to an increased prevalence of obstetric complications such as hypertensive disorders, pulmonary embolism and many other problems," said **MARGARET MILLER, MD**, chief of women's services at Rhode Island Hospital and Director of Lifespan's Women's Medicine Collaborative.

The new obstetrics unit will offer a full range of services for pregnant women, including services for women who want a more holistic experience, but also for women who are considered high risk or experience an unexpected pregnancy complication. Women will have better access to experts and specialized care from cardiology to hematology, surgery and more, improving and ensuring coordination between OB/GYN doctors and these specialists.

"When women receive care in a fully-integrated model like this, outcomes improve, cost-effectiveness and value increase, and women have more choices," Miller added.

A world-class obstetrics program at Rhode Island Hospital will build upon Lifespan's OB/GYN services, which include Newport Hospital's longstanding, highly regarded obstetrics program. Lifespan also has approximately 40 OB/GYN providers through OB/GYN Associates and the Women's Medicine Collaborative. OB/GYN Associates is the largest practice in Rhode Island, with offices in Providence and throughout the state that integrates midwives and OB/GYN physicians. Rhode Island Hospital also has a dedicated women's medicine inpatient unit.

"The goal is very clear: Improve the health of women and their children across their lifetimes," said **MARGARET M. VAN BREE, MHA, DRPH**, president of Rhode Island Hospital. "We are moving to better serve women and their children in our community at a time when changes in the population of women needing care require a new and more comprehensive approach – one that is also cost effective." ❖

## New participants join several CMS alternative payment models

PROVIDENCE – Lifespan Health Alliance – a joint venture partnership between Lifespan and Community Physician Partners, Inc. (CCP) – was selected as one of 99 new Shared Savings Program ACOs, providing Medicare beneficiaries with access to high-quality, coordinated care across the United States, the Centers for Medicare & Medicaid Services (CMS) announced. Beginning January 1, 2017, a total of 480 Shared Savings Program ACOs are serving over 9 million assigned beneficiaries.

On January 18, CMS announced over 359,000 clinicians are confirmed to participate in four of CMS's Alternative Payment Models (APMs) in 2017. Clinicians who participate in APMs are paid for the quality of care they give to their patients. APMs are an important part of the Administration's effort to build a system that delivers better care and one in which clinicians work together to have a full understanding of patients' needs. APMs also strive to ensure that patients are in the center of their care, and that Medicare pays for what works and spends taxpayer money more wisely, resulting in a healthier country.

The Medicare Shared Savings Program (Shared Savings Program), Next Generation Accountable Care Organization (ACO) Model, Comprehensive End-Stage Renal Disease (ESRD) Care Model (CEC) and Comprehensive Primary Care Plus (CPC+) Model all apply the concept of paying for quality and effectiveness of care given to patients in different health care settings. CMS announced the participants in each of these models for the 2017 calendar year. ❖

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# Health care coalition calls for prior authorization reform

*Releases new principles to improve timely access to care and reduce administrative burdens*

CHICAGO – Responding to unreasonable hurdles for patients seeking care, a coalition including the American Medical Association (AMA) and 16 other health care organizations today urged health plans, benefit managers and others to reform prior authorization requirements imposed on medical tests, procedures, devices and drugs.

The coalition, which represents hospitals, medical groups, patients, pharmacists and physicians, says that requiring pre-approval by insurers before patients can get certain drugs or treatments can delay or interrupt medical services, divert significant resources from patient care and complicate medical decisions. Concerns that aggressive prior authorization programs place cost savings ahead of optimal care have led Delaware, Ohio and Virginia to recently join other states in passing strong patient protection legislation.

Given the potential barriers that prior authorization can pose to patient-centered care, the coalition is urging an industry-wide reassessment of these programs to align with a newly created set of 21 principles. Prior authorization programs could be improved by applying the principles' common-sense concepts grouped in five broad categories:

- Clinical validity,
- Continuity of care,
- Transparency and fairness,
- Timely access and administrative efficiency, and
- Alternatives and exemptions.

"Strict or bureaucratic oversight programs for drug or medical treatments have delayed access to necessary care, wasted limited health care resources and antagonized patients and physicians alike," said AMA President Andrew W. Gurman, MD. "The AMA joins the other coalition organizations in urging health insurers and others to apply the reform principles and streamline requirements, lengthy assessments and inconsistent rules in current prior authorization programs."

The data entry and administrative tasks associated with prior authorization reduce time available for patients. According to a new AMA survey, every week a medical practice completes an average of 37 prior authorization requirements per physician, which takes a physician and their staff an average of 16 hours, or the equivalent of two business days, to process.

The AMA survey illustrates that physician concerns with the undue burdens of preauthorizing medical care have reached a critical level. Highlights from the AMA survey include:

- Seventy-five percent of surveyed physicians described prior authorization burdens as high or extremely high.
- More than a third of surveyed physicians reported having staff who work exclusively on prior authorization.
- Nearly 60 percent of surveyed physicians reported that their practices wait, on average, at least 1 business day for prior authorization decisions – and more than 25 percent of physicians said they wait 3 business days or longer.
- Nearly 90 percent of surveyed physicians reported that prior authorization sometimes, often, or always delays access to care. ❖

Vivian Sung, MD, FACOG

## Research evaluating treatment options for pelvic organ prolapse published in *American Journal of Obstetrics & Gynecology*

PROVIDENCE – Pelvic organ prolapse occurs when the pelvic organs drop from their normal position in the pelvis. This can have a negative impact on a woman's overall functioning and quality of life. Two of the most common treatments are surgery or pessary, which is a removable device that helps provide support to the pelvic organs. While both surgery and pessary can improve prolapse symptoms, questions remain about patients' functional outcomes and goal attainment between the two forms of treatment.

Research on this topic has been published in the *American Journal of Obstetrics & Gynecology*. The research was conducted by **VIVIAN W. SUNG, MD, FACOG**; **KYLE J. WOHLRAB, MD, FACOG**; and **ANNETTA MADSEN, MD** (fellow) of the Division of Urogynecology and Reconstructive Pelvic Surgery at Women & Infants Hospital as well as **CHRISTINA RAKER, SCD**, of the Division of Research.

The researchers found that while women undergoing surgery or having a pessary achieve their goals and have improvements in physical, social and emotional functioning, those who underwent surgery experienced greater improvements.

"When choosing between surgery or pessary, many women have questions about long-term expectations," explained Dr. Sung. "While we already know that both surgery and pessary can improve symptoms of pelvic organ prolapse, we wanted to be able to provide women with more information comparing outcomes that matter to them, such as whether they are likely to achieve their prolapse, bladder and bowel symptom goals, as well as physical, social, emotional and sexual functioning goals."

A total of 160 women were enrolled in the study and followed for up to 12 months, including 72 surgical and 64 pessary patients.

Dr. Sung and her team concluded, "At follow-up, a higher proportion of women in the surgery group reported successfully achieving symptom goals and function goals compared with women who chose pessary." However, the team also acknowledged that not all women desire surgical treatment and women who continued with pessary also experienced improvements in symptoms. ❖

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# Recognition

## Dr. Eric Morrow receives Presidential Early Career Awards for Scientists and Engineers

**DR. ERIC MORROW**, associate professor of biology and of psychiatry and human behavior in the Warren Alpert Medical School specializing in neurodevelopmental biology and autism treatment, won the nation's top honor for a young scientist.

Dr. Morrow was one of 102 scientists and researchers as recipients of the Presidential Early Career Awards for Scientists and Engineers (PECASE), the highest honor bestowed by the United States Government on science and engineering professionals in the early stages of their independent research careers.

"I congratulate these outstanding scientists and engineers on their impactful work," President Obama said. "These innovators are working to help keep the United States on the cutting edge, showing that Federal investments in science lead to advancements that expand our knowledge of the world around us and contribute to our economy."

The awards, established by President Clinton in 1996, are coordinated by the Office of Science and Technology Policy within the Executive Office of the President. Awardees are selected for their pursuit of innovative research at the frontiers of science and technology and their commitment to community service as demonstrated through scientific leadership, public education, or community outreach. ❖

## Southcoast Health named among top 5 percent of hospitals in the nation for clinical outcomes

NEW BEDFORD, MASS. – Southcoast Health has received the *2017 Distinguished Hospital Award for Clinical Excellence* from Healthgrades, the leading online resource for comprehensive information about physicians and hospitals. The distinction places Southcoast Health in the top 5% for clinical excellence among more than 4,500 hospitals nationwide. This is the second consecutive year that Southcoast Health has received this recognition.

The 258 recipients of the Distinguished Hospital Award for Clinical Excellence stand out among the rest for overall clinical excellence across a broad spectrum of care. During the 2017 study period (2013-2015), these hospitals showed superior performance in clinical outcomes for patients in the Medicare population across at least 21 of 32 of the most common inpatient conditions and procedures – as measured by objective clinical outcomes performance data (risk-adjusted mortality and in-hospital complications). ❖

## Providence VA Medical Center earns 5-Star Quality Rating

PROVIDENCE – The Providence VA Medical Center received the highest quality rating, 5-stars, in the most recent Strategic Analytics for Improvement and Learning, or SAIL, model performance ratings by the Veterans Health Administration, on January 10.

"This achievement is the result of a sustained, systematic process improvement effort from staff throughout the medical center," said **DR. SUSAN MACKENZIE**, director of the Providence VAMC.

SAIL is a data-driven system for summarizing performance within the VHA. It assesses 27 quality measures in areas such as access to care, patient safety, clinical outcomes, readmission rates, hospital-acquired infections and overall efficiency. The most recent ratings rank the Providence VA Medical Center 16th out of 146 star-rated VA medical centers nationwide. The achievement follows other recent Providence VAMC accomplishments, including:

- The Providence VAMC was completing more than 98 percent of appointments within 30 days of the preferred date as of November 30, 2016, the most recent data available, and can now provide many Veterans with same-day access for both primary care and mental health care.
- As of December 2016, 92 percent of patients answered "satisfied" or "completely satisfied" on kiosk patient satisfaction surveys.
- The Providence VA Medical Center ranked fourth nationally in the VHA's 2016 all-employee survey results.
- In December 2015, the Providence VAMC jointly announced a neuroscience partnership with Lifespan, Brown University, the University of Rhode Island and Care New England focused on identifying the causes of and treatments for a wide-range of diseases and disorders, such as Alzheimer's disease, epilepsy, stroke, traumatic brain injury and autism. ❖

## Kent awarded advanced Certification for Primary Stroke Centers from The Joint Commission

WARWICK – Kent Hospital has earned The Joint Commission's Gold Seal of Approval® and the American Heart Association/American Stroke Association's Heart-Check mark for Advanced Certification for Primary Stroke Centers. The Gold Seal of Approval® and the Heart-Check mark represent symbols of quality from their respective organizations.

Kent Hospital underwent a rigorous onsite review in November 2016. Joint Commission experts evaluated compliance with stroke-related standards and requirements, including program management, the delivery of clinical care and performance improvement. This is the fifth consecutive time Kent Hospital has received such designation since the first certification in 2008.

Established in 2003, Advanced Certification for Primary Stroke Centers is awarded for a two-year period to Joint Commission-accredited acute care hospitals. The certification was derived from the Brain Attack Coalition's "Recommendations for the Establishment of Primary Stroke Centers" and the "Revised and Updated Recommendations for the Establishment of Primary Stroke Centers." ❖

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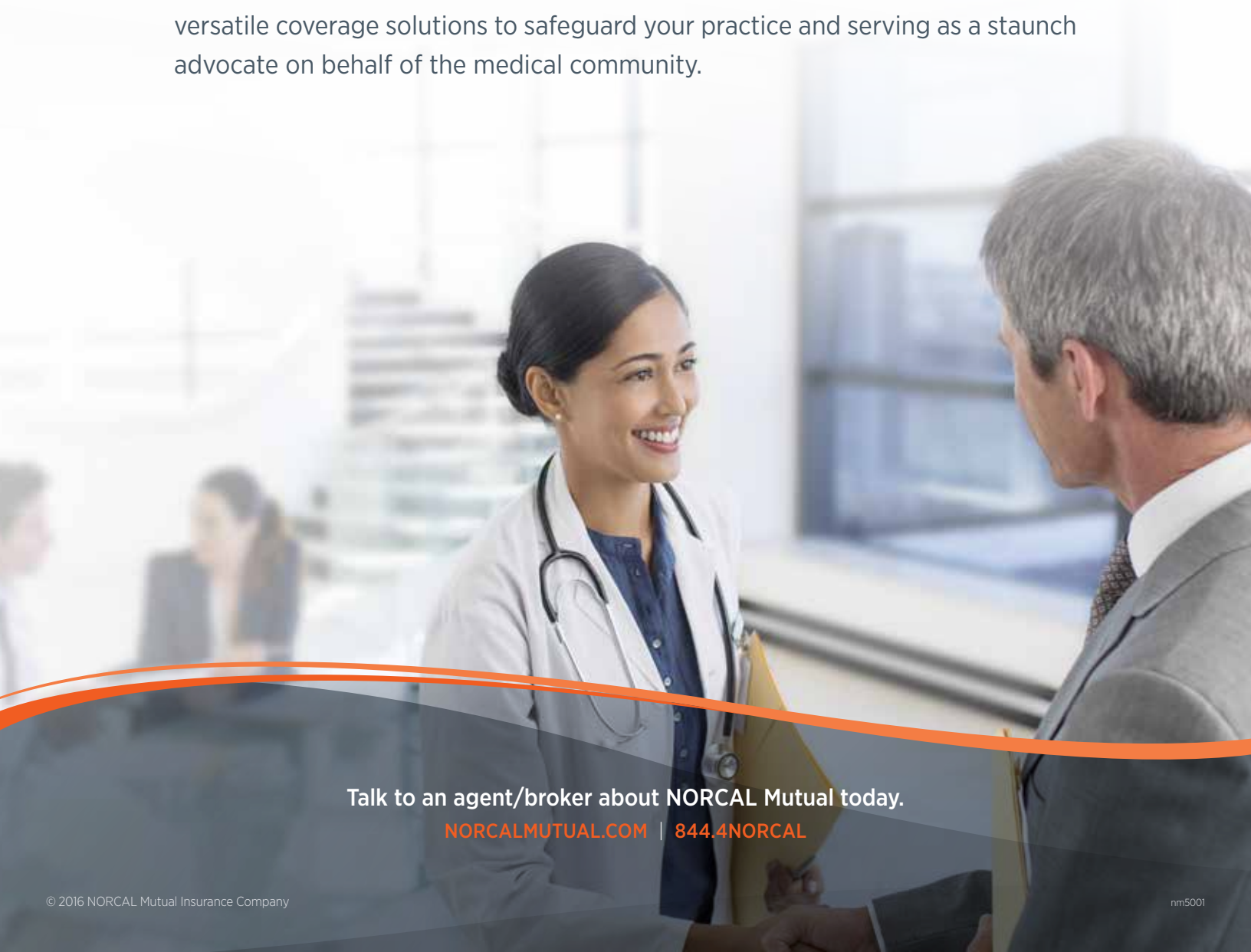

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On January 3, 2017 the Physician Assistant Program at Bryant University held its 3rd Annual White Coat Ceremony for the 43 members of the class of 2019. Standing in the center are, left to right, **Christopher Ferreira, PA-C**, Director of Clinical Education; **Christopher Furbee, PA-C**, Associate Program Director; **Robert Jay Amrien, PA-C**, Director of the Physician Assistant Program; **Susan Richmond, PA-C**, Director of Didactic Education.

# Appointments

## Debra Lasorsa, BSN, named Director of Nursing at Fatima

NORTH PROVIDENCE – **DEBRA LASORSA, BSN, RN, ONC**, has been named Director of Nursing at Our Lady of Fatima Hospital. A graduate of the University of Rhode Island, she is a member of Sigma Theta Tau, Delta Upsilon Chapter, and the National Association of Orthopedic Nursing. She is also certified in Surgical Orthopedics. Lasorsa has worked at Roger Williams Medical Center for the past 37 years. She has experience in a number of clinical settings including medical/surgical nursing, ICU, Home Care, Hospice, Intake, Bone Marrow Transplant, and Oncology. She has held leadership positions for the past 30-plus years. ❖

## Keren Braithwaite, DO, joins the Southcoast Health Breast Center

DARTMOUTH, MASS. – **KEREN BRAITHWAITE, DO**, breast surgeon, has joined the Southcoast Health Breast Center as a member of the Southcoast Physicians Group.

Dr. Braithwaite received her Doctor of Osteopathic Medical Degree from Nova Southeastern University in Davie, Fla. She completed a general surgery residency at Staten Island University Hospital on Staten Island, N.Y., followed by a fellowship in Breast Surgical Oncology at the University of Miami/Jackson Memorial Hospital in Miami, Fla.

Dr. Braithwaite is a member of the Society of Surgical Oncology, the American College of Surgeons and the American Society of Breast Surgeons. She is board certified in general surgery, and fluent in Spanish.

In her new role at the Southcoast Health Breast Center, Dr. Braithwaite will work alongside Maureen Chung, MD, PhD, medical director of the breast program. ❖

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# Appointments

## Dr. Paul DiSilvestro named director of gynecologic oncology at W&I

PROVIDENCE – After a rigorous national search, **PAUL A. DISILVESTRO, MD**, of Exeter, has been named the director of the Program in Women's Oncology for Women & Infants Hospital of Rhode Island and Care New England Health System, and the division director for Gynecologic Oncology in the Department of Obstetrics and Gynecology at The Warren Alpert Medical School of Brown University.

Dr. DiSilvestro is a professor of obstetrics and gynecology at Brown and has been the interim director of the Program in Women's Oncology and the Division of Gynecologic Oncology since April 2016.

Dr. DiSilvestro replaces Cornelius O. "Skip" Granai III, MD, FACOG, FACS, whose efforts brought the Program in Women's Oncology into the national spotlight as an innovative center of cancer care excellence and who remains in a supportive emeritus role while continuing to see patients, train the next generation of women's health providers, and provide outreach support.

Dr. DiSilvestro serves as the director of research in the Program in Women's Oncology and the chair of the Board of Managers of the recently formed Care New England Medical Group (CNEMG). He is principal investigator for the Women & Infants Hospital site of the National Cancer Institute's cooperative research group, NRG Oncology, the NIH-sponsored cancer collaborative that includes the Gynecologic Oncology Group. Dr. DiSilvestro is currently the co-chair of the Ovarian and Breast Cancer Committees at NRG Oncology and previously served on the Cancer Prevention and Control and the Phase I Committees. In addition, he has been study chair or co-chair of multiple National Cancer Institute-sponsored Gynecologic Oncology Group trials. Dr. DiSilvestro is well-respected nationally for his clinical, teaching and research expertise. He is a general board examiner as well as a subspecialty (gynecologic oncology) board examiner for the American Board of Obstetrics and Gynecology (ABOG).

A graduate of the University of Vermont College of Medicine, Dr. DiSilvestro completed a residency at Women & Infants Hospital and a fellowship in gynecologic oncology at the University of Oklahoma. ❖

## Dr. Peter Hollmann named new academic director of Brown's Healthcare Leadership program

COURTESY UNIVERSITY MEDICINE

PROVIDENCE – Brown University has named **PETER HOLLMANN, MD**, as the new academic director of its Executive Master of Healthcare Leadership (EMHL) program.

Hollmann is chief medical officer for University Medicine, a Rhode Island-based academic and patient care medical group practice with more than 200 physicians in a dozen medical specialties. He helps define the strategy and direction of the organization in the delivery of health care services; performance improvement activities; and the development of clinical programs.

Hollmann is assistant clinical professor in the Department of Family Medicine in the Warren Alpert Medical School and maintains a geriatric primary care practice in East Providence, R.I.

Hollmann earned his undergraduate and medical degrees at Brown University. Since then he has gained more than 25 years of experience in medical management. He served as associate chief medical officer at Blue Cross & Blue Shield of Rhode Island, where his major duties involved practice transformation, payment methods and system/coding implementation. He also served as medical director for a long-term care hospital, skilled nursing facility and hospital-based home care company.

"We are at a critical inflection point in health care and it is imperative that we address the big questions of access, quality and cost thoughtfully and creatively," Hollman said. "Now is the time to engage more intensely with colleagues from across health care who face these challenges every day. I am very excited about taking this leadership position in Brown's Executive Master in Healthcare Leadership program and being part of the solution."

Hollmann currently serves on the American Medical Association/Specialty Society Resource-Based Relative Value Scale Update Committee, is co-chair of the AMA Digital Medicine Payment Advisory Group and is past chair of Current Procedural Terminology Editorial Panel. He is also a member of the National Committee for Quality Assurance (NCQA) Geriatrics Measures Advisory Panel. He is secretary of the board of the American Geriatrics Society (AGS), an AGS fellow and American College of Physicians fellow. He chaired the AGS Public Policy Committee, founded the AGS Practice Management Advisory Group and was a founding member of the AGS Quality Committee. Hollmann has been active in creating geriatric measures for Medicare and NCQA.

On the Care Transformation Collaborative of Rhode Island, Hollmann co-chairs the Data and Evaluation Committee of the multi-payer Patient-Centered Medical Home demonstration project. He also serves on the board of the Rhode Island Medical Society and is the representative to the American Medical Association House of Delegates.

The Executive Master of Healthcare Leadership degree program builds on Brown University's multidisciplinary strength in public health and policy, health economics and evidence-based medicine. It prepares practitioners in clinical care, hospital and system administration, insurance, the biotech and pharmaceutical industry, and from legal, consulting and patient advocacy settings to address the rapidly evolving health care environment and to build innovative, sustainable solutions to pressing challenges in their organizations and across health care. ❖

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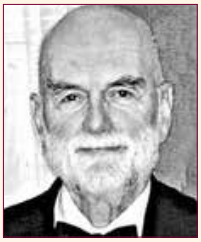
# Obituaries



**RICHARD G. BERTINI, MD**, July 27, 1932 –January 27, 2017, of Pawtucket and Monument Beach, MA, died of complications of vascular disease. An orthopedic surgeon who practiced medicine in Pawtucket for over forty years, he was a loving husband, dedicated family man and well known to many as kind, generous, humble and having a great sense of humor.

He is survived by his wife of 56 years, Lois D. Higgins Bertini, his children Lori D. Rolfe (Steven), Jena E. McNulty (Michael) and Richard G. Bertini Jr. (Kimberly), and many grandchildren, great-grandchildren and extended family members.

He was a member of the Rhode Island Society of Mayflower Descendants. Educated in the Pawtucket Public Schools, he went on to graduate with honors from Wesleyan University followed by Albany Medical College and had an internship and residency at Rhode Island Hospital, was a fellow of the American Academy of Orthopedic surgeons, practiced in Pawtucket at Memorial Hospital for over 40 years and was Chief of the Orthopedic Department for 19 years before retiring in 1999. Upon retirement he received the Emeriti Award from the Brown University School of Medicine. He made additional contributions to higher education as trustee of Talladega College in Alabama where he served for 14 years in multiple chairs. As past President of both the Rhode Island Medical Society and Pawtucket Medical Association, he was honored with the Dr. Charles L. Hill Award in 1996. He also served as ship's physician for the Landmark School's High school program aboard the tall ship "TeVega" for two Atlantic crossings.

He grew up in and became a leading member of the Pawtucket Congregational Church UCC. He was a choir member for more than 40 years and served as a delegate to the state conference and General Synod. Richard was a patron of the RI-UCC Haiti Task Force from its early years, with which he traveled accompanied by his wife Lois and their daughter Lori to aid in building a medical clinic and school in Port-au-Prince. He also, along with his wife, served as delegate to the US-USSR Bridges for Peace program through which he was able to deliver surplus medical supplies and equipment for victims of the Chernobyl disaster.

Richard was a tireless worker at all things he endeavored to take on. He loved his family and was consistently present to support and participate in their lives. His passion for music was a major component in his life. On his eightieth birthday his memoir "Memories, With a Sprinkling of Opinion" was published.

A memorial service followed by collation will be held at Swan Point Cemetery on Saturday February 11, 2017 at 11:00 a.m. In lieu of flowers, donations will be welcomed at Doctors Without Borders, 333 7th Avenue, 2nd Floor, New York, NY 10001 or Hope Hospice RI, 1085 N. Main Street Providence, RI 02904.

**DR. VICTOR PACHECO deMEDEIROS**, 91, of Gibson Road passed away on January 24th at Grace Barker Nursing Home. He was the husband of Angela (Lima) deMedeiros.

Born on March 29, 1925 in Candelaria, Madalena on Pico Island, Azores, he lived in Sao Miguel, Azores during his youth and continued his studies to obtain his medical degree as a surgeon at the University of Coimbra, Portugal. He moved to the United States in 1953.

He was the loving father of Lisa Marie Morris, Elena Marie de Medeiros and Victor A. deMedeiros and his wife Minda.

Next to his family, his greatest love was for his patients, many of whom became his life-long friends. His dedication and compassion was foremost, "medicine is my life, no phone call was too late, no visit too far." Beyond being a physician, he also found time to enjoy his family as well as the arts, music, and sports especially football, soccer and tennis.

Dr. deMedeiros did his residency at St. Luke's Hospital, New Bedford, MA; Truesdale Hospital in Fall River, MA and Memorial Hospital of Pawtucket. He was the physician for the International Ladies Garment Workers Union for 25 years as well as Grace Barker Nursing Home and the Bristol School Department. In 1963, he was one of the founding physicians of the Bristol County Medical Center where he practiced until his retirement. He served as Chief Medical Director for the Rhode Island Veterans Home and was both a medical doctor and medical educator for Brown University residents at Roger Williams Hospital. He was the physician for Luso American Soccer Association teams Bristol Sports Club, Fall River Sports, Academica, East Providence Sports.

Dr. deMedeiros was a communicant of St. Elizabeth's Church. He was a member of many organizations including the Rhode Island Medical Society and American Medical Association. He was the East Bay Chairman for the American Heart Association, American Cancer Society and Meeting Street School. He was an active member as well as past President and Treasurer of the Bristol County Lions Club. He was also the past President of Prince Henry Association of RI, RI Habitat for Humanity, and Bristol Sports Club. He was a member of Ateneu Micaelense of Fall River and a supporter of the East Bay Food Pantry.

Dr. deMedeiros was the 1969 Chief Marshall of Bristol Fourth of July Celebration and the 1980 Chief Marshall of the Bristol Tricentennial Celebration.

In lieu of flowers, donations in his memory may be made to: Friends of St. Elizabeth Food Pantry, 577 Wood Street, Bristol, RI 02809 or the Rogers Free Library, PO Box 538, Bristol, RI 02809.

# Obituaries

**ELIZABETH JUDD, MD**, of Warwick, passed away on January 4th, 2017. Originally from Amityville, NY, Dr. Judd attended Radcliffe University and the Albert Einstein School of Medicine. She practiced in the Newport Hospital Emergency Department until her retirement, after which she volunteered at the Providence Free Clinic. In her free time, Dr. Judd was an avid knitter.

She is survived by her husband Steven Kittell and their daughter Hannah Kittell, as well as her two sisters, Penelope Sandarg and Judy Judd, and her niece Mitchelle Holland.

In her memory donations may be made to Planned Parenthood.

**CATHERINE E. KERR, PhD**, a path-blazing brain scientist of mindfulness, tai chi, qigong, and healing, died surrounded by friends and family at home in Watertown, Massachusetts, on November 12, 2016. She was 52, and the cause was complications due to multiple myeloma, a cancer of the bone marrow whose odds she had defied for two decades.

Kerr was born in 1964 in Los Angeles, California. She graduated from Amherst College (BA 85), where she met her future husband, Jonathan Kranes, and a close circle of life-long friends. Awarded a Mellon Fellowship, she completed her American Studies dissertation on Southern liberal attitudes toward the New Deal at the Johns Hopkins University Center for the Humanities in Baltimore, Maryland (PhD 94).

It was in 1995, while teaching Social Studies at Harvard, that she was diagnosed with multiple myeloma, at the time a poorly understood disease known mostly to strike in older people. She was told she faced a median survival of five years, with limited, highly risky options for treatment. After years of humanities training, she started down a new path in science, aided by a coveted career development award from the National Institutes of Health to support retraining. Under the guidance of Ted Kaptchuk, she joined the research team at Harvard Medical School that was studying the placebo response. Under first author Sara Lazar, she contributed to important early findings in the cognitive neuroscience of meditation. In 2011, she joined the Department of Family Medicine at Brown University and was named the Director of Translational Neuroscience in the Contemplative Studies Initiative. At Brown, she created the Embodied Neuroscience lab, whose main focus was the Vitality Project, a clinical trial she designed to investigate the healing role of qigong in cancer survivors.

Recovering in recent years from a stem cell transplant, she drew on astonishing reserves of hope and focus to climb a mountain in New Hampshire and returned to work more productive. In 2015, after delivering a widely viewed TEDx talk, she traveled to India to present pioneering work on the neuroscience of mindfulness to His Holiness the Dalai Lama at the Sera Monastery, where she was also called upon to provide basic neuroscience teaching to young monks.

In Kerr's memory, the Mind and Life Institute has created a new honor, the Catherine Kerr Award for Courageous and Compassionate Science. Those interested in donating to this award may visit www.mindandlife.org/make-a-gift/catherine-kerr-award. Those who wish to support multiple myeloma research may visit the Multiple Myeloma Research Foundation at www. themmrf.org.

**MICHELE L. LOMBARDO, MD**, 42, died on January 15, 2017 in her Norfolk, VA home surrounded by family. She leaves behind her husband, Joseph M. Onofrio, and their 3-year-old son J. Murray Onofrio, parents Richard S. and Phyllis Lombardo, and a considerable number of extended family, friends, colleagues, and patients who will forever be inspired by her intellect, humor, compassion, selfless dedication and strength.

Michele grew up in Higganum, CT and graduated from Simmons College ('96) and Boston University School of Medicine ('04). She completed residencies in general surgery ('09) and pediatric surgery ('11) at Brown University. Dr. Lombardo practiced at Children's Hospital of The King's Daughters (CHKD) and Nuss Center for Chest Wall Reconstruction in Norfolk until January 9, 2017.

In lieu of flowers, please consider donating to Children's Hospital of The King's Daughters at https://www.chkd.org/Support-Us/Donate/

**DR. JOHN R. PAYNE,** 87, passed away January 7, 2017 with his family by his side. He was the beloved husband of Natalie H. (Charboneau) Payne.

Dr. Payne lived in Pascoag since 1970 and was a US Navy veteran assigned to the Marine Corp as a medical doctor. He worked at the Providence VA Medical Center for 35 years before retiring in 1992. He received his pre-med education from Hamilton College and received his Doctorate from the Albany Medical College.

He was a parishioner of St. Joseph Church in Pascoag and was a member of the church choir. In addition to his wife of 48 years, he was the father of Matthew J. Payne of Dobbs Ferry, NY, and Allison J. Payne of Pascoag. He was the grandfather of Jacob R. Payne and father in-law of Jessica Bryan. He was the brother of the late Dr. Guy Payne and Frederick Payne. He is also survived by many nieces and nephews.

# Modern X-ray Therapy

ISAAC GERBER, MD
PROVIDENCE, RHODE ISLAND

I have used the word "modern" in the title of this paper in order to emphasize the fact that x-ray therapy in practice today is radically different from that used as recently as four or five years ago. Immediately after the discovery of the Roentgen rays, over 20 years ago, many physicians began to apply them to the treatment of skin diseases. In this field the results were very frequently gratifying. In many instances, it is true, they were quite disappointing. In general, however, it can be said that the older methods, and purely superficial conditions, were fairly satisfactory.

…I shall now run over rather briefly some of the more important groups of conditions in which x-ray treatment has proved a value. It was in the treatment of skin diseases that the x-rays were first used.

Dr. Isaac Gerber (1885–1952) was the first physician in Rhode Island to limit his practice to roentgenology. He was a consultant on the staff of most hospitals in Rhode Island and had an active private practice.

…**The treatment of ringworm of the scalp** has been entirely revolutionized by the development of modern x-ray technique. This condition, which previously was considered incurable, is now treated by the exposure of the scalp to 5 massive doses, over separate areas. The hair falls out in about three weeks, and with them the organisms which had been deep down in the follicles. The hair begins to reappear in about three months. Often a single treatment of this sort is all that is necessary.

**Keloids,** more particularly those following on scars, react very favorably to the rays. Massive doses are given at fairly long intervals, and the necessity for excision is very rarely present. Keratosis, ordinary warts, especially the multiple variety, and moles, respond as a rule to one or two massive doses.

**The problem of tuberculosis** and its many forms has been one of the attractions to x-ray therapists for many years. The treatment of the ordinary tuberculosis glands of the neck has been gradually developed to such an extent that some authorities, such as Boggs, feel that surgery is only needed in about 5 to 10% of these cases; chiefly those in which suppuration has actually taken place. He feels that not only is the operation with its later scarring avoided, but there's less danger of recurrence with the x-ray treatment.

He also believes there is less danger of lighting up a pulmonary process. One of the reasons for the success is that the x-ray treatment in this condition has not alone a local action in causing the disappearance of the glands, but likewise the constitutional effect. The destruction and absorption of large amounts of tuberculous tissue, carried on slowly, results in the production of numerous antibodies in the body. The patient thus obtains active immunization, equivalent to the passive immunization from the use of tuberculin. The early application of the rays will prevent the production of large suppurating masses.

**The present European war** has disclosed a number of novel and important applications of the x-ray treatment. It has been found in many of the base hospitals that obstinate, suppurating wounds, especially those following upon the treatment of osteomyelitis, may be made to heal very rapidly under the application of stimulating deep treatments of x-rays. Many cases of nonunion in bad fractures have been stimulated to the production of healthy callous. Sluggish granulating surfaces have been stimulated to proper healing. Skin grafts were made to take hold where otherwise they would have died. The application of massive filtered doses has been found very beneficial as an analgesic in cases of obstinate neuritis.

# An Indispensable Diagnostic Aid

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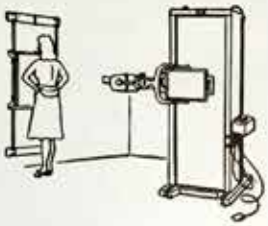

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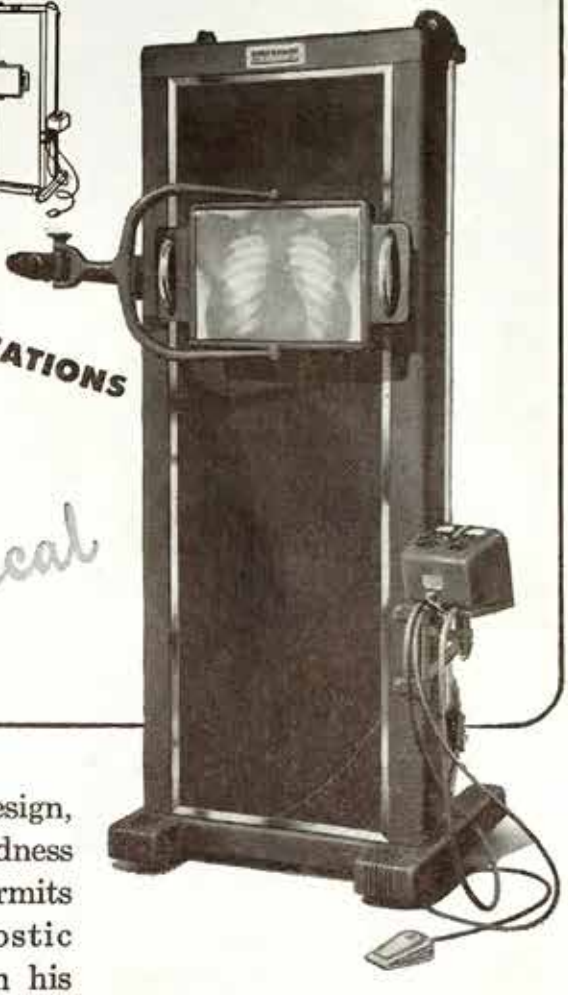

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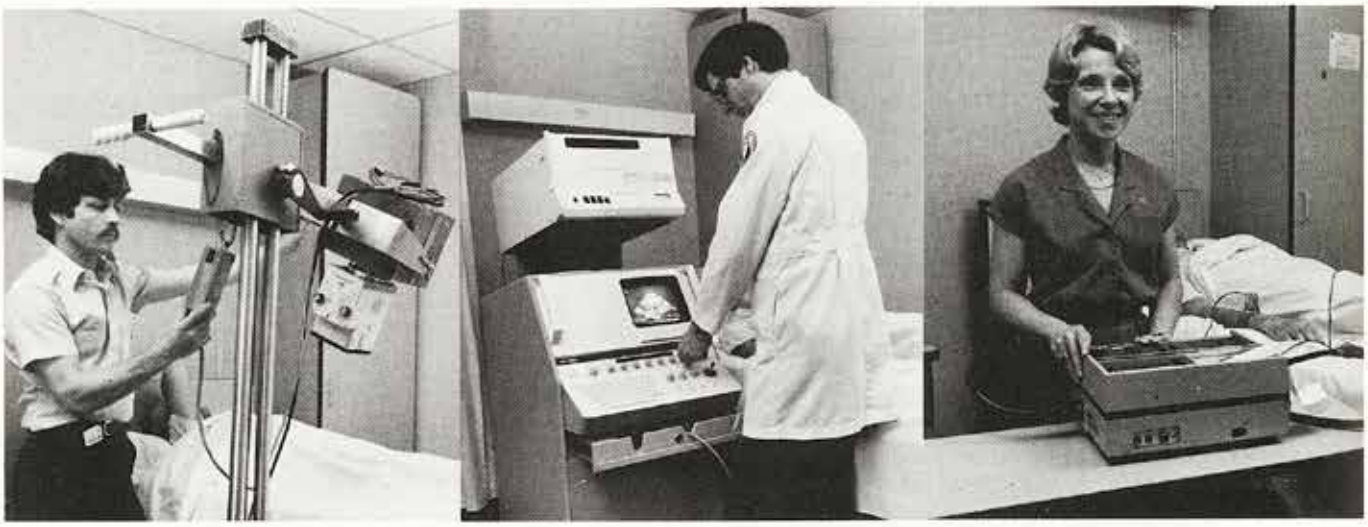

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# Editorials

## The Society for Ultra Scientific Research

John Smith thought he was getting too fat. A prosperous busy manufacturer, devoting all of his time to business and none to recreation, taking little exercise, for he found walking an exertion, he assumed that his increasing weight accounted for his shortness of breath. So John Smith consulted his physician, although he had not been ill for 40 years and his last dose of medicine had been castor oil administered by his mother after a too hearty indulgence in pie.

His story was soon told, a hearty breakfast, a ride to his office and close application to business for ten hours, broken only by a few minutes for pie and milk, serving as a lunch, a hurry home for a big dinner with an antiprandial cocktail and then evening spent at the office, in committee or church work, or some of the inevitable banquets. Why was he getting fat? Why was he short of breath?

It would seem that his physician, with years of experience, after satisfying himself that there was no organic lesion to account for his condition, would at once accept his fee and give the patient a bit of good advice, tempered perhaps with a dose of physic, but this physician had recently joined The Ultra Scientific Society, and so before venturing advice he must know more about his patient. The urine must be sent to the campus, in the early days of his practice he examined it himself, and his blood pressure taken; it was 165, this must be reduced, and John Smith was placed on K. I. and told to return in a month. K. I. in daily doses in two weeks knocked out his stomach and he returns now with real symptoms, but Oh Joy! His blood pressure was lowered. It was now 164. But now symptoms of appendiceal trouble with gastric ptosis were present. Straightaway he was sent for a bismuth meal and a picture, which cost him $40 dollars and his heart action was consequently disturbed.

Next, he was sent for a tracing of the pulse, which was worth $15 to the consultant, but not quite so much to the patient. By this time he was really ill and the physician learned by close questioning that 34 years previous he had a touch of syphilis, but for a score of years had neither aches nor pain. A Wassermann test was done for $10, but was negative saving for the depletion of his purse, and in despair he saw again his physician, determined now to know the truth about his condition, ready to face the inevitable, yet fearful of the verdict.

"Why," the doctor said, "you seem to be all right, there is no organic disease. Suppose you eat a little less, take more time for your meals and fewer hours for business, cut out your banquets and walk a few miles each day."

"And this," said John Smith, "is what I get for my $60? Why in hell didn't you say so at first?" But he took the advice and in a fortnight was as right as ever.

This is not a story or fable. It occurred in Providence in the year 1916. The Society for Ultra Scientific Research and the Obliteration of Common Sense and Things Taught by Experience is still in existence.

## Fees

Within the past two years the cost of living has risen beyond all precedent in this country except that period immediately following the Civil War. Accompanying this increase in the cost of living there has come a wage increase for most laborers, and of late the salaries of many fixed wage earners has been raised. In this prosperity the physician, in common with most professional men, has not shared. Our cost-of-living has greatly increased and we have felt the burden also in the higher price of nearly all medical and surgical supplies. Professional fees are practically the same as they were a generation ago, the only difference being in the case of special work and the fees charged for laboratory examinations. The time is not too far distant when, in simple justice to ourselves, there must be a general increase in professional fees.

# Brown donates ambulances to France; Floating Hospital seeks funds; Bill on TB isolation

PROVIDENCE – The following news items were reported in the February 1917 edition of the *Rhode Island Medical Journal.*

NATIONAL LIBRARY OF MEDICINE

An American Field Service ambulance in France during World War I.

NATIONAL LIBRARY OF MEDICINE

Logo of the field service.

**BROWN UNIVERSITY** has contributed three ambulances to the American Ambulance Field Service in France. In addition, **Miss Ellen D. Sharpe** and **Mrs. Jesse Metcalf** have each given one ambulance.

At the January meeting of the **Rhode Island Medical Society**, a communication was read from the **PROVIDENCE FLOATING HOSPITAL ASSOCIATION, INC**, asking for endorsement of its work and its campaign to raise $10,000. It was referred to the Standing Committee.

A communication was also read from the **RHODE ISLAND ANTI-TUBERCULOSIS ASSOCIATION** requesting action on a bill to be presented to the State Legislature providing for the isolation of certain persons suffering from tuberculosis; House Bill No. 650, was read at the last meeting of the Rhode Island Medical Society and the following resolution was passed: "*Resolved,* that the Rhode Island Medical Society endorses Act H-650 which provides for the isolation of certain persons suffering from tuberculosis, and requests the General Assembly to pass said bill in the interest of public health."

PROVIDENCE JOURNAL ARCHIVES

Providence Floating Hospital circa 1917.

## People

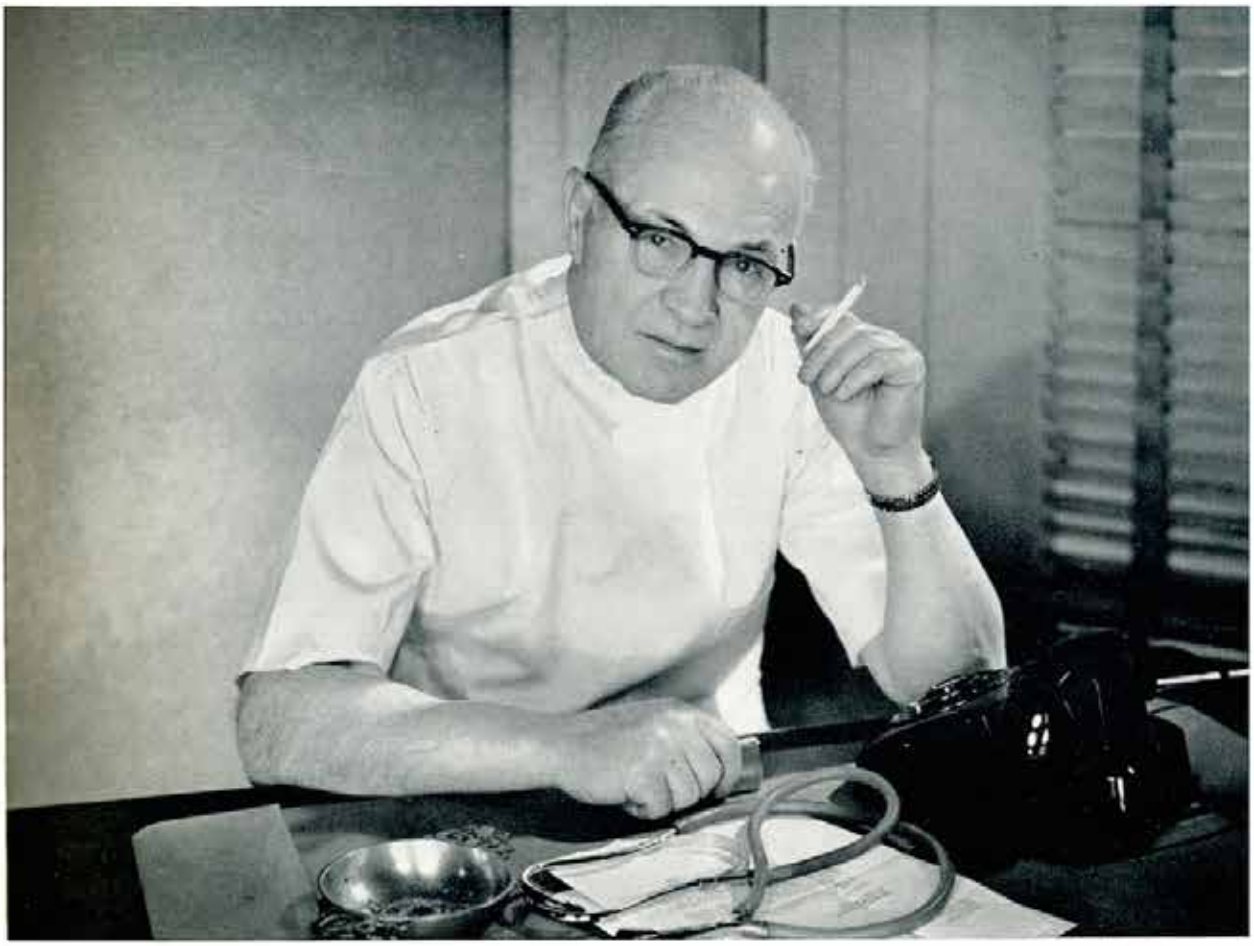
**DR. F.T. ROGERS** is entertaining **DRS. JOHN CHAMPLIN, E.D. CHESEBRO** and **W.A. RISK** on a yachting trip in Florida.

**CHARLES E. CONNOR, MD**, on the staff of Rhode Island Hospital, who graduated Jan. 1, 1917, has left for a short vacation at his home in Terre Haute, MD, after which he will take up special work in the diseases of the eye and ear.

## Necrology

**DR. EDWARD F. WALKER**, Superintendent of the Providence Lying-In Hospital for three years, died of heart trouble at the hospital Dec. 12, 1916. He was born Feb. 4, 1846, in New York City; graduated from the College of Physicians and Surgeons, Columbia, in 1876, and commenced to practice in this city three years later, continuing until his death, having been connected with the Lying-In Hospital for thirty years.

Dr. Walker was a member of the Rhode Island Medical Society, the Central Congregational Church and also a Mason.



# Who watched his securities today?

The doctor above has spent his day *working*. No one would expect him to take even an hour out of his schedule to devote to his securities. Because today's investment picture is many times more complex than it was even five years ago, he'd need much more time than that in order to do a thorough job.

That's why our Supervisory Investment Service is enjoying a growing popularity with busy doctors. By utilizing our services, a doctor frees himself from *all* investment duties and responsibilities. By having the bank act as agent, he enlists the services of a professional staff of investment men. They follow the market fluctuations for him — read financial reports and analyze business cycles. They collect dividends and interest, watch for called securities, collect and remit income to his account. In short, the bank's staff acts as a full-time *financial secretary* for him.

If you feel your securities may be suffering, or if you simply want to be relieved of growing financial work, why not talk to one of our trust officers or the manager of your nearest branch office. He'll be glad to explain our services in detail. The fee is moderate, and is deductible from your taxable income.

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# Unique hospitals dotted RI medical land and seascapes in 1917

MARY KORR
RIMJ MANAGING EDITOR

In addition to the larger hospitals in Rhode Island, there were a number of smaller private hospitals and dispensaries in operation during the first year of the *Rhode Island Medical Journal's* publication in 1917. Among them were:

**THE JOHN W. KEEFE SURGERY** at 262 Blackstone Boulevard on Providence's East Side contained an operating room, sterilizing area, and dressing room, with 30 beds.

Dr. Keefe (1863–1935), a consulting surgeon at several hospitals, founded the hospital in 1913. The staff included consulting surgeons and physicians associated with the larger hospitals, as well as an oral surgeon, Albert L. Midgely, MD.

It was in existence until 1937, when it became a monastery.

PROVIDENCE MAGAZINE 1916

Dr. John W. Keefe, who founded a small private surgery on Blackstone Boulevard, was a member of the U.S. Army's Medical Reserve Corps and was a physician on the staff of Gov. R. Livingston Beeckman. In 1917 he was appointed chairman of the Red Cross Committee to organize medical resources for the state in the event of war.

RHODE ISLAND PHOTOGRAPH COLLECTION, PROVIDENCE PUBLIC LIBRARY, PROVIDENCE, RI.

The John W. Keefe Surgery at 262 Blackstone Boulevard, Providence.

**THE PARADE STREET HOSPITAL** at 37 Parade Street in Providence's West End first opened on Broadway. In 1917, it had a capacity of 16 beds and was under the direction of Jennie C. Ross and Sophie A. Grant. Later, it became The Miriam Hospital.

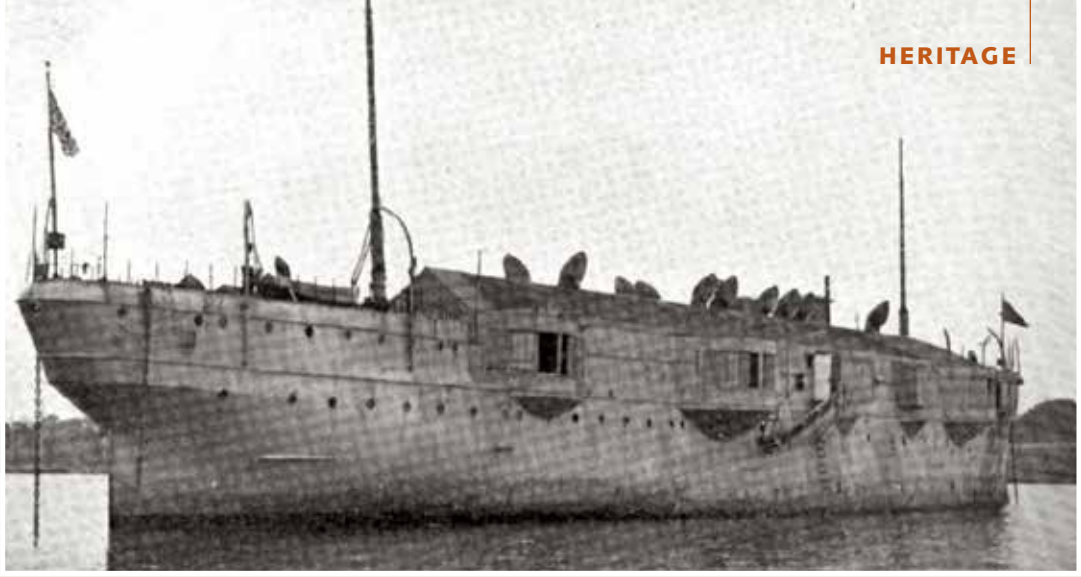
JOHN HUTCHINS CADY RESEARCH SCRAPBOOKS COLLECTION, PROVIDENCE PUBLIC LIBRARY, PROVIDENCE, RI.

The Parade Street Hospital at 37 Parade Street, Providence.

PROVIDENCE MAGAZINE 1916

The Hope Private Hospital at 1 Young Orchard Avenue.

**THE HOPE PRIVATE HOSPITAL**, a former mansion at 1 Young Orchard Avenue on the East Side of Providence, opened in 1913 for medical/surgical patients, with 34 beds under the supervision of Maude Culton, RN.



PROVIDENCE MAGAZINE 1916

The former USS *Newark* became a floating hospital and quarantine station in Providence from 1912–1926, except for a brief stint during World War I when it served as a unit for the Newport Naval Hospital.

### RHODE ISLAND QUARANTINE STATION

The United States Naval vessel USS *Newark* became a floating hospital and quarantine station in the Port of Providence in 1914 when it was transferred to the Public Health Service. In 1918, it served as an annex to the Naval Hospital in Newport until 1919, when the ship returned to Providence, where it remained until 1926.

Medical registries of the era also list the following hospitals:

**PAWTUCKET PARK PLACE HOSPITAL**, Park Place, 30 beds, founded in 1905 by WH Helmer, MD

**PAWTUCKET-BLACKSTONE HOSPITAL**, Miller and Broad Sts., founded 1912, 60 beds

**PROVIDENCE NORMANDY HOME AND HOSPITAL FOR INFANTS**, 171 Indiana Ave., 20 beds, Herbert Partridge, MD, chief physician

**PROVIDENCE PARK HILL HOSPITAL**, 107 Park St.

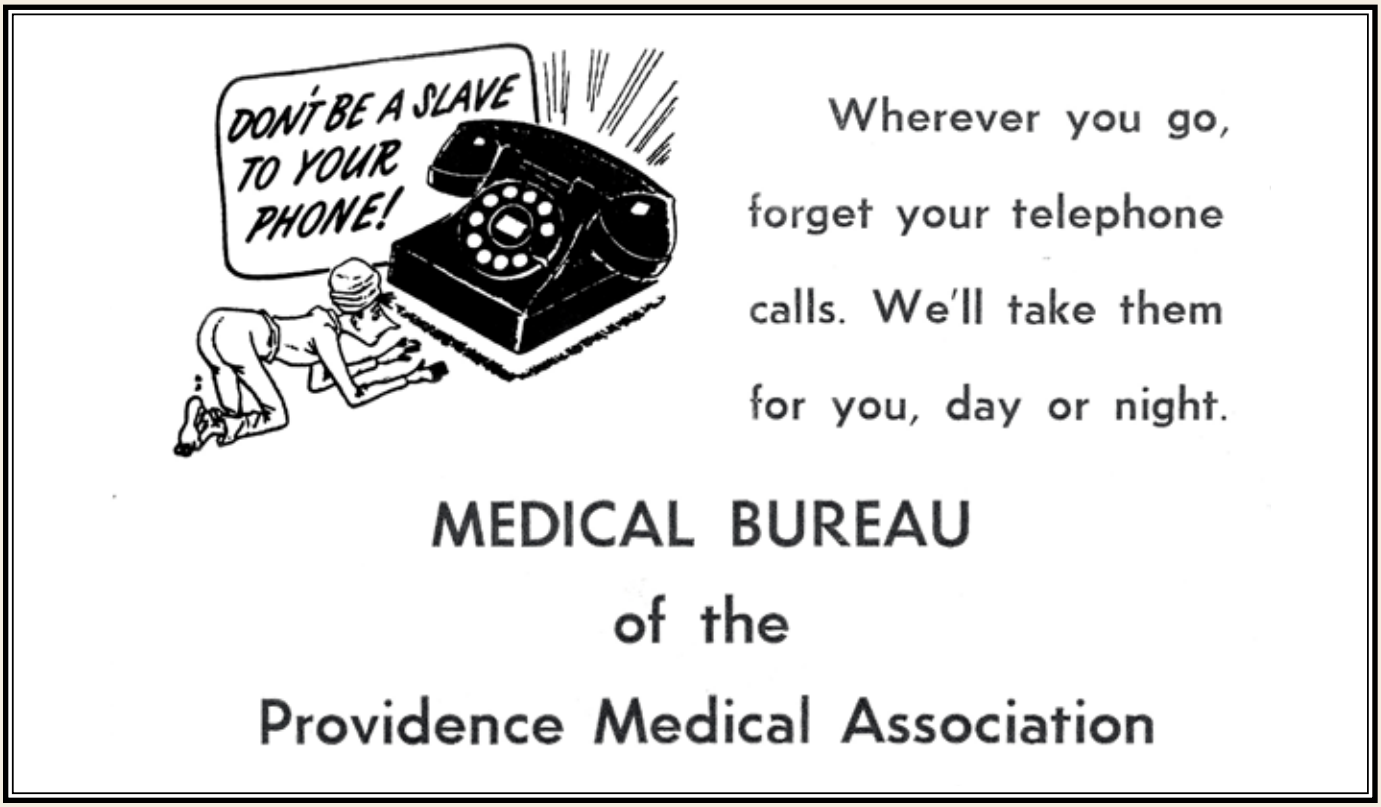
**PROVIDENCE SURGICAL HOSPITAL**, 16 Bridgham St., Henry A. Lange, MD, chief physician

**DR. WALL'S PRIVATE HOSPITAL**, 11 Wood St., Warren, 1905, NR Wall, MD, 7 beds

**BROWN HOSPITAL**, Providence, 1907, for surgical cases, 9 beds, Jane L. Brown, Supt.

**CHANNING HOSPITAL**, 73 Common St., Providence, 1898, 20 beds, Channing Hospital Company, Louis Allen Crocker, MD, supt., 1902

## 40 YEARS AGO – FEBRUARY 1977



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