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Impostor Syndrome and Medicine: Talented people believing ‘I am a fraud’

CARI HAMPTON, BA, MD’20; EDWARD FELLER, MD, FACP, FACG

Skilled, accomplished individuals too commonly lack confidence in their own abilities and discount legitimate respect and praise. The impostor syndrome is an inaccurate self-perception afflicting those who have difficulty experiencing success despite high achievement and recognition from others. Common associations are perfectionism, excessive anxiety, guilt and self-doubt.

Do you think you are an impostor? Those beset by feelings that they are faking it will answer that they frequently agree with the following statements modified from the Clance Impostor Phenomenon Scale. Higher scores on the 20-statement scale indicate more severe or frequent feelings of impostorism.

- I’m less competent than people think I am.
- I don’t do things as well as I should.
- It’s tough for me to believe praise.
- When I succeed, I worry I won’t be able to repeat it.
- I’m disheartened if I’m not the best at a specific skill.

There exists an under-appreciation of the pervasive influence and damaging consequences of the Impostor Syndrome. Impostors believe that they have fooled others to conclude that they are more skilled than they really are. They seem unable to internalize success. New situations can appear to be merely set-ups to be unmasked as inadequate. Because fear of being outed is a cardinal aspect of impostors, those afflicted are less likely to reveal their insecurities or seek help. Instead, they suffer in silence.

Impostorism increases pressure to avoid failure or be detected as an incapable phony. Situations where others will be aware of your success or perceived defeat tend to be most anxiety provoking for those with poorly calibrated high standards. People who over-work and over-prepare may believe that only luck prevented their exposure as fakes. This repetitive, maladaptive behavior drains cognitive energy, engenders psychologic distress and wastes precious time.

How common is impostorism in Medicine? Physicians are vulnerable from early training to late career. Intense, pressurized, competitive selection processes begin much earlier than medical school for the high achievers who succeed amongst other high achievers. Overcommitment may be the norm. Fear of discovery as an impostor may replace the natural inclination to learn and experience. Medical culture and environments may include continual evaluation at each career stage with new obligations, challenges, pressures and opportunities to stumble.

In a study of 477 medical, dental, nursing, and pharmacy students, Henning and colleagues reported the prevalence of impostor syndrome to be 30%. In medical students, one report found that 1 in 2 women and 1 in 4 men demonstrated impostor syndrome. Unfortunately, increased experience and skill marked by objective successes doesn’t reliably abolish feelings of inadequacy. Many mid- and late-career physicians continue to believe they are faking it.

The insecure also discount their future competence. The result may be avoidance of appropriate aspirations, leadership roles and opportunities. Success is feared because it may be viewed only as another risk to be detected as a fraud.

Hillock et al. studied connections between impostorism and burnout in medical students. The perception of inadequacy correlated with elements of burnout – emotional depletion, depersonlization, and impaired perception of personal accomplishment. Burnout can also mimic depression. Both commonly include poor attention, sleep...
difficulties, irritability, disengagement from work and an inadequate sense of self-worth. These traits also characterize the impostor phenomenon in which success and positive feedback feel unmerited.6 Too many talented people in Medicine miscalibrate their self-perceived impostorism despite objective evidence of achievement. Even some of our star later-career physicians struggle because accolades are neither believed nor internalized.

Core facilitators of impostor syndrome include [1] perception of being continually judged which can activate negative self-assessment; [2] pressure to perform well in a specific setting; [3] challenging tasks which increase the likelihood of impaired performance. Easy problems tend to be less threatening.7 Other correlates are absence of a support network, including self-affirming peer relationships and mentoring; lack of same sex, same gender, same race or ethnic role models; inadequate feedback on performance or confirmation of aspirations, and a culture of competition and rivalry.

<table>
<thead>
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<th>Table 1. Imposterism – Consequences</th>
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<td>Psychologic dysfunction – anxiety, depression, lack of well-being</td>
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<tr>
<td>Fear of failure, burnout</td>
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<tr>
<td>Impaired self-esteem, motivation, self-identity</td>
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<td>Avoidance of settings perceived as threatening</td>
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<tr>
<td>Reduced professional aspirations, limited goals</td>
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<tr>
<td>Self-consciousness, reduced participation</td>
</tr>
<tr>
<td>Rejection of validity of positive feedback or test results</td>
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<tr>
<td>Failure to seek help – disclosure is feared, avoided</td>
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<tr>
<td>Communication difficulties, self-consciousness interfering with participation</td>
</tr>
<tr>
<td>Impairment of social belonging</td>
</tr>
</tbody>
</table>

Potential failure. The consequences may interfere with a sense of well-being. (Table 1)

There are two distinct forms of impostorism.8 The first, the subject of this commentary, is an inappropriate, negative self-image held by accomplished people. The second group is, in fact, less skilled, but typically unaware of frequent misalignment between their actual competency and their inflated, self-perceived skill. The latter don’t know what they don’t know, impairing their capacity to self-monitor or identify personal weaknesses, rendering them prone to error. These same deficits also compromise their ability to identify when they are overconfident. Commonly cited examples are findings that as many as 90% of drivers, college professors and diagnosticians rate their personal skill as above average.

The sad reality is that competent people may become deskilled and underperform. The afflicted are often beset by a conviction that they have fooled others. Intense feelings of inadequacy can interfere with well-being and stunt the personal, academic and career development of high-performing people.9 Even the most impressive achievement may not inoculate us from impostorism.

References

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Are Women More Likely to Exhibit Psychogenesis...Or Just More Likely to Be Diagnosed That Way?

ALYSON J. MCGREGOR, MD, MA, FACEP

After reading Dr. Friedman’s commentary, “What To Do When Bad News Isn’t Understood?” which appeared in the November 2018 issue of this journal, I was inspired to add to the conversation a point which was not addressed directly in the article.

Dr. Friedman’s observations had the effect of highlighting a subject which is central to my research, and which is being recognized as an area of profound imbalance in all branches of medicine. This subject, of course, is sex – in particular, the role sex differences play in patients’ diagnoses, treatments, and outcomes.

The patient he described in his article did not present with “typical” symptoms of Parkinson’s disease; in particular, he noted the absence of tremor as a cause to examine other potential diagnoses. He ordered the appropriate dopamine transporter (DaT) scan and was able to give her a conclusive diagnosis – to which she reacted in an unexpected way.

My question for Dr. Friedman – and to all of us who interact with patients on a daily basis – is: If your patient had been a man, with the same symptom profile and exam findings, would a psychogenic diagnosis have been considered? This is a question we all need to be asking ourselves in our respective practices every day – particularly with regard to one of the most prevalent psychogenic diagnosis, anxiety.

In nearly every area of medicine, research is revealing that women do, in fact, experience disease differently than men on a physiological level. However, there currently exist few protocols which take these differences into account. From cardiovascular disease and stroke to chronic pain conditions and physical trauma, women’s outcomes are poorer than men’s. They are more likely to be misdiagnosed, more likely to receive inadequate or inappropriate treatment, and more likely to suffer mortality than their male counterparts.

For example, chest pain is the most common presentation of acute coronary syndromes; however, women are more likely to experience nonspecific symptoms, including no chest pain at all, than men. The American Heart Association reports women who experience heart attacks have worse outcomes – more likely to die within one year of a heart attack, more likely to have another heart attack within six years, and more likely to be disabled because of heart failure than men. It’s not difficult to assume that differences in clinical presentation in women can lead to under-recognition, less aggressive treatments and lower representation in clinical trials.

In one study of patients with similar symptoms of irritable bowel syndrome (IBS), researchers found that men were more likely to be referred for X-rays, while women were offered anti-anxiety medication and lifestyle advice.

These examples are just the tip of the iceberg, so to speak. Our current medical model does not account for any of the above disparities. There are few to no guidelines in place for assessing and treating female-pattern disease. And in many cases where such guidelines are lacking, data show that our solution is to resort to the diagnosis of exclusion – which, for women, is often psychogenic. While psychological symptoms may, in fact, be present, there’s a vast difference between anxiety as a symptom of an underlying physical disease and anxiety.
as causation for those disease symptoms. We need to be aware of when and how we are treading that line.

As physicians, we must routinely and thoroughly examine and reconsider our implicit biases, assumptions, and “textbook” knowledge. More specifically, we must discover where and how we may have allowed our ideas and biases about women – who women are, what they do, and what they need – to influence our professional judgment. Only then can we apply appropriate and objective criteria to every patient, every diagnosis, and every prescription.

Finally, as we evolve in our understanding of how sex and gender influence both disease patterning and treatment pathways, we should also consider our tendency to dismiss patients’ research and self-knowledge. When a patient references Dr. Google, or FDA drug trial snapshots, the possibility exists that he or she may have actually discovered something relevant about their drug or disease – something we may have not yet encountered in our own research. In this information age, we are no longer the sole disseminators of medical knowledge. Moreover, on a human level, it does more good than harm to treat our patients’ research, responses, and knowledge of their own bodies – regardless of their sex, gender, age, or ethnicity – as relevant until proven otherwise.

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References
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Response to Point of View on the Question of Bias

JOSEPH H. FRIEDMAN, MD

I appreciate the response of Dr. McGregor to my commentary in the November 2018 issue of RIMJ, “What to do when bad news isn’t understood?”

Her observations of the different ways in which men and women are viewed and treated by physicians and other health professionals are well known. There are racial, cultural and age biases as well. In the area of psychogenic disorders, which is an area of great interest to all neurologists, particularly epilepsy and movement disorders specialists, we are keenly aware of the potential for bias. After all, the disorders we currently label as “conversion” disorders were once considered “hysterical,” etymologically based on ancient theories of causality being related to the wandering uterus.

About 2–5% of new cases seen at movement disorder centers are thought to be of psychogenic origin. These are not rare. As with any diagnosis, the consideration of a psychogenic etiology is based on the history and examination. When signs and symptoms appear to be non-physiological, we generally go out of our way to look for organic causes. We don’t want to punish our patients by “blaming” them for their disorder. In the movement disorders field, we generally order very few tests. The appropriate work-up for someone with Parkinson’s disease, for example, is a clinical examination and nothing more. I order tests only when I’m unsure, as in the case described. In my practice, it is only after I find signs that I believe are non-physiological, that I delve into more details of the psychiatric history. As Dr. McGregor knows, there is a strong correlation between childhood sexual abuse and conversion disorders, and that childhood sexual abuse is more common among girls than boys, probably explaining some of the gender disparity in psychogenic diagnoses. Some diagnoses, undoubtedly, are due to physician bias, although long-term, follow-up studies have shown a remarkably low rate of error. I suspect that I diagnose about the same ratio of males to females with conversion disorders as my female and male colleagues in my field.

What Dr. McGregor may fail to appreciate is that under-diagnosis of psychogenic disorders can lead to extreme doctor shopping, multiple unwarranted tests and useless treatments while not addressing the real problems affecting the patient.

The point of my article was the lack of a response that I thought was appropriate to bad news. One might, perhaps, think that I was biased in my response to her lack of a response, and that if the patient was male I would have applauded his sangfroid. I don’t think my consideration of a psychogenic etiology was gender-based, but as Scottish poet Robert Burns noted,

O wad some power the giftie gie us
To see oursels as ither sees us!

Author
Joseph H. Friedman, MD, Editor-in-chief Emeritus, Rhode Island Medical Journal; Stanley Aronson Chair in Neurodegenerative Disorders, Director, Movement Disorders Program, Butler Hospital Professor, Department of Neurology, Alpert Medical School of Brown University
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SAN DIEGO, CALIFORNIA
Margaret Cody Baudo, RN, checks the latest issue of RIMJ during a sunset walk on the Mission Beach boardwalk in San Diego, CA, while visiting family. Marge’s brother, Bill, at left, is the owner of Relevé, a Guide Dog for the Blind, who accompanies him everywhere, but seems tuckered out after walking the two-mile boardwalk along the beach, which features restaurants, arcades, stores, and the historic Giant Dipper Roller Coaster in the Belmont Amusement Park.

The Giant Dipper aka the ‘Earthquake’ Roller Coaster on opening day in 1925. It was built during the Golden Age of wooden roller coasters by the Prior & Church Company and is one of a handful of large wooden scaffolded roller coasters in the country; it closed for a time in the 1970s and was later restored and reopened. It was designated a National Historic Landmark in 1987.

[PHOTO: SAN DIEGO HISTORY CENTER]

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SMITHFIELD, RHODE ISLAND
Robin Warde, Director of Alumni Engagement at Bryant University, at right, and RIMS Staffer Sarah Stevens, left, access the Journal while attending the 22nd Annual Bryant Women’s Summit on March 15, 2019.

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An Interprofessional Model for Teaching Medical Students to Provide Screening, Brief Intervention, and Referral for Treatment for Substance Misuse

PRANAV AURORA, MD-ScM’20; LUBA DUMENCO, MD; MICHAEL J. MELLO, MD, MPH; PAUL GEORGE, MD, MHPE

ABSTRACT

BACKGROUND: Screening, Brief Intervention, and Referral to Treatment (SBIRT) is an evidence-based method to identify, reduce, and prevent the harmful use of alcohol and illicit substances. However, SBIRT remains underused by physicians and other healthcare providers. Integrating interprofessional SBIRT training in medical curricula may better prepare future providers to care for patients with substance use disorders.

METHODS: The authors report the development and outcomes of a longitudinal, interprofessional SBIRT curriculum organized in partnership with health professions’ schools in nursing, pharmacy, and social work.

PRIMARY RESULTS: From October 2015 to April 2017, 1,327 students were trained in SBIRT, resulting in the screening of 4,520 individuals and interventions in 897 individuals. 553 (42%) trainees were medical students, providing 3,330 (74%) screenings and 412 (46%) interventions.

PRINCIPAL CONCLUSIONS: These initial data demonstrate the feasibility of including SBIRT in undergraduate medical curricula. Broadly implemented, SBIRT training offers potential to normalize its practice as part of standard, evidenced-based patient care.

KEYWORDS: medical education, interprofessional education, substance use disorders

INTRODUCTION

The epidemic of opioid overdose deaths is unprecedented, and is now the leading cause of mortality for people under 50 years of age in the United States. In 2015, Rhode Island (RI) had the highest rate of illicit drug use, third highest rate of alcohol poisoning deaths, and fifth highest rate of opioid overdose deaths among all states.1 In RI, excessive drinking results in 294 deaths and 7,618 years of potential life lost each year.1 In RI, 336 people in 2016 and 323 people in 2017 lost their lives to accidental drug-related overdose.2 These data indicate a large unmet need for individuals with substance use disorders in RI.

Screening, Brief Intervention, and Referral to Treatment (SBIRT) is recommended by the United States Preventive Services Task Force (USPSTF) and the Substance Abuse and Mental Health Administration (SAMHSA) to identify, reduce, and prevent the harmful use and dependence of alcohol and illicit substances.3 SBIRT involves assessing substance misuse with validated, standardized screening tools, providing brief interventions using motivational interviewing, and referring to behavioral and/or medical treatment if necessary. Yet, despite the evidence, healthcare providers do not routinely ask patients about alcohol or drug use.4

Engaging all trained healthcare providers is critical for realizing universal screening. Studies demonstrate that physician and non-physician providers with proper training are well-positioned to conduct SBIRT with patients.3 However, key differences in attitudes, perceptions, and SBIRT practice between physician and non-physician providers have been identified, such as role responsibility, time constraints, and adherence to validated screening tools.4 There appears to be a critical need for improved SBIRT training, particularly in interprofessional contexts.

At the level of undergraduate medical education, nearly all medical schools include some instruction on “substance abuse,” but the depth of instruction on SBIRT in these programs is not known.5 There is a notable paucity of literature on approaches to teaching SBIRT to medical students. A review of the literature on studies of undergraduate medical curricula reveals one stand-alone second-year course,6 incorporation of a video supplement within a longitudinal standardized patient curriculum,7 and interactive online modules.8

In this report, we describe the development of a longitudinal, interprofessional model for teaching medical students SBIRT. We share our process and early lessons learned to fill this gap in the literature.

METHODS

The Warren Alpert Medical School of Brown University (AMS) partnered with Rhode Island College Schools of Nursing and Social Work, and the University of Rhode Island College of Pharmacy to develop an interprofessional SBIRT curriculum. In 2015, with AMS as the lead, these institutions were awarded a Medical Professional Training grant from the Substance Abuse and Mental Health Services Administration (SAMHSA) to develop and implement SBIRT training in each individual program and allowed healthcare
students from various disciplines to learn in partnership.

SBIRT training is incorporated into each individual schools’ curriculum, with subsequent practice and reinforcement in interprofessional workshops. The curriculum model for delivering SBIRT training is a longitudinal integrated program. Early professional students receive training in each component of SBIRT including motivational interviewing, while more advanced professional students then use these skills in their clinical settings. All students must demonstrate competence in delivering SBIRT as measured by faculty/supervisors/preceptors with simulation using standardized patients and in clinical settings. All medical, nursing, pharmacy, and social work students participate in their first five screenings per year for substance misuse and provide a simple, brief intervention and referral to treatment for all individuals that screen positive.

At AMS, SBIRT is integrated into specific aspects of the pre-clerkship and clinical curriculum for medical students. SBIRT education begins in the 1st and 2nd year required Doctoring (clinical skills) course. Students first learn SBIRT and motivational interviewing techniques in small group sessions from an interprofessional faculty team comprised of both a physician and a behavioral health specialist. Students also practice SBIRT with simulated patients and later perform screenings and brief interventions at their mentor sites as part of the Doctoring course. In the 3rd year, SBIRT is integrated into the 6-week rotation in Family Medicine and 12-week rotation in Internal Medicine. During these two rotations, students provide screenings and brief interventions as appropriate in routine patient encounters under the supervision of preceptors. The curriculum culminates in an SBIRT case as part of the 4th year Objective Structured Clinical Examination (OSCE) requirement. In addition, knowledge around substance use (particularly opioid misuse) is integrated into the basic science and clinical curriculum, in a series of lectures, small groups and workshop sessions.

The training that students receive in their individual schools is reinforced in an interprofessional education workshop that focuses on SBIRT, detailed elsewhere.9 In this four-hour annual workshop, small inter-professional teams of four to five students are formed with students from medicine, nursing, pharmacy, and social work. As a team, students participate in a series of activities intended to provide training and to simulate realistic multidisciplinary treatment environments. The workshops consist of four distinct curricular elements: patient panel session, patient case study in small group, naloxone administration training, and standardized patient simulation as a multidisciplinary team. All students are assessed by both faculty and standardized patients on their ability to deliver SBIRT. These elements are intended to highlight specific aspects of substance misuse along with what each profession contributes to the care of patients with substance use disorder.

At AMS, the longitudinal SBIRT curriculum is a core component of a novel curriculum on substance use disorders that qualifies medical graduates for the Drug Abuse Treatment Act of 2000 (DATA 2000) waiver to prescribe medication-assisted treatment (MAT) for opioid dependency after licensing.10 There is a large gap between the number of individuals in need of treatment and the availability of community outpatient behavioral therapy and MAT. Less than half of all providers who have obtained the DATA 2000 waiver offer MAT to patients.10 Recognizing the challenge of MAT accessibility as part of our curricular initiative, we formed a partnership with the RI Department of Health and RI Board of Medical Licensure and Discipline to enable medical students after successful completion of curriculum to qualify for the DATA 2000 waiver after licensing. Medical students complete 24 hours of training over four years specific to the assessment and treatment of substance misuse, which is greater than the 8 hours required by the DATA 2000. The longitudinal SBIRT training described above comprises 12.5 hours of the 24-hour curriculum. Medical student graduates must still complete residency to obtain a full medical license and receive DEA registration for prescribing controlled substances before independently providing MAT. Presently, this program only applies to physicians practicing in Rhode Island.

In addition to the curricular programs described, students and faculty from all schools are invited to attend an annual opioid symposium hosted at AMS. The symposium aims to educate a broad range of healthcare providers, many of whom are clinical preceptors for these students, around opioid use disorder locally and nationally.11

RESULTS
Evaluation has been built into all aspects of this initiative. Qualitative data show that there has been a high level of satisfaction with all aspects, including the curriculum, workshops, and symposium, detailed in prior publications.9,11 The strongest evidence of impact, however, is the number of screenings and interventions that have occurred through this program (Table 1).

From October 2015 to April 2017, 1,327 students across medicine, nursing, pharmacy, and social work were trained

| Table 1. Student Screenings and Interventions from October 2015 through April 2017 |
|---------------------------------|-------|-------|-------|
| Health Professions | Trained Students | Screenings | Interventions |
| Medical students | 553 | 3330 | 412 |
| Nursing students | 443 | 4 | 3 |
| Pharmacy students | 118 | 538 | 161 |
| Social Work students | 213 | 648 | 321 |
| Total | 1327 | 4520 | 897 |
in SBIRT, resulting in the screening of 4,520 individuals and interventions in 897 individuals. 553 (42%) trainees were medical students, providing 3,330 (74%) screenings and 412 (46%) interventions. These data are self-reported by students in real-world patient encounters under the supervision of preceptors.

**DISCUSSION**

We believe this SBIRT curriculum adds to the existing body of scholarship in several important ways. First, the integration across four health professional schools, including medical students, is noteworthy as it promotes a team-based approach to the care of individuals with substance use disorders. Our curriculum brings together students from medical, nursing, pharmacy, and social work schools that are located on separate campuses and across public and private institutions to train in a simulated setting. While the students are not in “real-life” clinical situations, it is our hope these sessions provide a foundation for future collaborative work.

Second, while medical students only comprised 42% of trainees, they provided 74% of all screenings. Of interest though, social work and pharmacy students provided one intervention for every two (648/321 = 2.0) and three (538/161 = 3.3) screenings, respectively, whereas as medical students provided one intervention for every eight (3330/412 = 8.1) screenings. Based on these data, medical students are screening patients at a much greater rate compared to their colleagues in the other health professions. In contrast, social work and pharmacy students are much more likely than medical students to see patients that screen positive and to then provide brief interventions. It may be possible that medical students see a higher volume of patients that are less likely to present with substance misuse or that when identified they expect other healthcare professionals to provide the appropriate interventions. Another alternate hypothesis is that patients may feel more comfortable talking about their substance use with the other health professions’ students than with medical students. The differences noted may also reflect differences in curricula in clinical time and placements across the health professions’ schools. While these findings are only preliminary, they suggest that an interdisciplinary approach may be key to identifying and treating substance misuse.

In addition, one very novel aspect of this initiative is the assessment of the implementation of student-initiated SBIRT in the community. Despite historic evidence of the effectiveness of SBIRT, the implementation of SBIRT in undergraduate medical curricula has largely been absent given the dearth of studies in the literature. In the first iteration of this program, students across the health professions had an appreciable number of patient interactions that screened positive for substance use leading to brief interventions. This finding alone highlights the importance of evidence-based training in caring for patients with substance use disorders. Mobilizing the thousands of health professions’ students nationally to learn and provide SBIRT may better prepare healthcare providers of the future to reduce the public health harms of substance use by incorporating SBIRT as part of standard, evidence-based practice.

There are notable limitations to the study of this initiative to date. Each school used their own data collection system. This provides challenges for comparing data across institutions and implementing new data collection efforts. For example, the number of screenings and interventions reported by nursing students was low despite accounting for 33% of trainees. This finding is maybe more reflective of known local challenges with data collection than of nursing students’ ability to provide SBIRT. An additional limitation is the lack of more granular data on SBIRT patient encounters. At this time, it is not possible to provide greater context to the screenings and brief interventions that students conducted with patients. Finally, while it is our hope these screenings and brief interventions impacted patient substance use, it is beyond the scope of this medical education evaluation to examine this.

Moving forward, we aim for all medical students to provide a minimum of five screenings per academic year for at least the next three years, totaling approximately 8,640 additional screenings. We plan to explore options to better assess the fidelity of student-initiated SBIRT and to gather additional granular data, such as patient demographics, healthcare setting, substance(s) counseled on, and referral provider. Additionally, we hope to collaborate with health professions’ schools in other states to share curricular innovations and develop best practices to grow students’ involvement in identifying and treating substance misuse.

**CONCLUSION**

To date, we have established a longitudinal, interprofessional SBIRT program within the undergraduate medical curriculum. Incorporating SBIRT training in undergraduate medical education offers potential to normalize its practice as part of standard, evidenced-based patient care. It is feasible to integrate SBIRT training into medical student curricula, have an interprofessional component with other healthcare trainees, and also implement student-initiated SBIRT in the community. Our SBIRT curriculum may provide a model for interprofessional collaboration, particularly in the setting of coordinating across multiple campuses and public and private institutions.
References

Acknowledgments
This work was supported by a grant from the Substance Abuse and Mental Health Services Administration, Rockville, MD, to the Warren Alpert Medical School of Brown University, Providence, RI. Grant Number: H79TI025938-01. PI: Paul George MD, MHPE. The funding organization had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; and decision to submit the manuscript for publication.

The authors are thankful to colleagues at the Rhode Island College Schools of Social Work and Nursing and the University of Rhode Island College of Pharmacy for their commitment in this joint effort.

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The BIT:S (Bronchopulmonary Dysplasia Interdisciplinary Team: Severe) Initiative at Women and Infants Hospital of Rhode Island

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ABSTRACT
Bronchopulmonary dysplasia (BPD) is a major cause of morbidity and mortality in surviving extremely preterm infants, with long-term morbidity disproportionately affecting children with severe BPD (sBPD). Infants with sBPD experience multiple organ system dysfunction. To best treat these complicated patients, we created a multidisciplinary team in 2011 consisting of multiple pediatric subspecialists with a specific interest in sBPD. In the past six years, 150 patients have been referred to our multidisciplinary team, with 131 of the 150 patients discharged home, 65% on home oxygen. Twelve were transferred to the Pediatric Intensive Care Unit (PICU), 3 to a level 2 nursery and 4 died. The multidisciplinary BPD team has standardized the care of children with sBPD and complex medical problems and improved outpatient referral to subspecialists.

KEYWORDS: bronchopulmonary dysplasia, preterm, neonate, chronic lung disease

INTRODUCTION
Bronchopulmonary dysplasia (BPD) is a major cause of morbidity and mortality in surviving extremely preterm infants. The incidence of BPD is anywhere from 25-35% in infants with birthweight < 1500 g.1 In a large National Institute of Child Health and Human Development (NICHD) Neonatal Research Network study, 68% of infants born at 22-28 weeks gestation who survived developed BPD.2 Analysis of a United States (US) nationwide database from 1993-2006 revealed an annual decrease of 4.3% in incidence of BPD with increased length and cost of hospitalization of this population3, but no further improvement has been observed since that time.

The 2001 NICHD definition of severe BPD (sBPD) is the need for ≥30% oxygen and/or positive pressure at 36 weeks post-menstrual age (PMA) or discharge, whichever comes first, for infants born before 32 weeks.4 The point prevalence of children with sBPD has been estimated to be between 11-58% across different centers around the country. An incidence of 16% for sBPD of all children born <32 weeks estimated nationally amounts to approximately 13,000 new patients across the US every year.5-9 Within this group of sBPD patients, 4-11% require tracheostomy and mechanical ventilation and 66% are discharged home on supplemental oxygen.7 Approximately 2,000 children in the US require home ventilation as a result of sBPD and 8-25% of them have pulmonary hypertension.10-12 In Rhode Island, the rate of sBPD is about 6% of all children born at <33 weeks.

In 2001, the NICHD defined BPD simply as a chronic pulmonary disease, but there is typically multi-system involvement with many co-morbidities, including neurologic sequelae, pulmonary hypertension, gastrointestinal issues and growth failure. BPD has a multi-factorial etiology and individual susceptibility plays an important role. In the pre-surfactant era, BPD was characterized by airway injury, inflammation and parenchymal fibrosis referred to as old BPD. “New” BPD in the post-surfactant era shows a simplified lung with fewer and larger alveoli due to an arrest of normal alveolarization, with minimal fibrosis, epithelial metaplasia and smooth muscle hypertrophy in the small and large airways accompanied by decreased pulmonary microvascular development.13

CREATION OF BIT:S
Due to the multiple systems involved, management of sBPD is best achieved through a multidisciplinary approach. In July 2011, opportunities for improving the care provided to infants with severe BPD at Women and Infants Hospital were identified and the Bronchopulmonary Dysplasia Interdisciplinary Team: Severe (BIT:S) was born. The goals of forming such a team were to: 1) improve overall management of infants with sBPD by taking a collaborative approach, 2) standardize ventilation/oxygenation strategies for infants with sBPD, whose needs are very different from the typical preterm infant, 3) screen for and manage infants with pulmonary arterial hypertension according to published best practice, 4) create a smooth transition from inpatient to outpatient care and 5) establish rapport between subspecialists and the family prior to discharge.

Based on the consensus definition of BPD, criteria for BIT:S referral were defined as any infant who, at 36 weeks post-menstrual age (PMA) or discharge, whichever comes first, for infants born before 32 weeks. The point prevalence of children with sBPD has been estimated to be between 11-58% across different centers around the country. An incidence of 16% for sBPD of all children born <32 weeks estimated nationally amounts to approximately 13,000 new
support in the form of continuous positive airway pressure, nasal intermittent positive pressure ventilation or invasive mechanical ventilation or; 4) requiring high flow nasal cannula flow > 2 liters.

The team consists of a dedicated pediatric pulmonologist, a pediatric cardiologist, a pediatric intensivist, all from Hasbro Children’s Hospital, a neonatologist with an interest in BPD, and a pediatric pharmacist from Women and Infants Hospital. Pediatric gastroenterologists are available for consultation in infants with concerns for gastroesophageal reflux, feeding difficulties, poor weight gain, the need for a gastrostomy tube and aero-digestive disorders. Infants who need positive pressure ventilator support at the time of the initial consult, have an absent voice or weak/ hoarse cry, or have stridor/noisy breathing also receive a pediatric ENT evaluation. The BPD team rounds twice a month with the infants’ medical team consisting of the on-service neonatologist and neonatology fellow, along with a resident or nurse practitioner, respiratory therapist, nutritionist and bedside nurse. Parents are encouraged to meet the team and be present during rounds. The first patients were seen by the BIT:S team in November 2011.

WHY DO INFANTS WITH SEVERE BPD WARRANT A MULTI-DISCIPLINARY APPROACH?

Infants with sBPD are typically born extremely preterm and suffer from a variety of sequelae of extreme prematurity, of which their chronic lung disease is only one component. Growth restriction and nutritional status affect lung and somatic growth, dysplasia within the lungs leads to impaired vascular growth and pulmonary hypertension, gastroesophageal reflux with recurrent aspiration can worsen pulmonary disease and exacerbate pulmonary hypertension. Prolonged respiratory support often leads to oral aversion and feeding difficulties. The multiple medications these patients receive may interact with and impair many different systems. Neurodevelopmental sequelae are common, in part because developmentally appropriate activities are often precluded by prolonged intubation.

Patients with established sBPD make up a relatively small percentage of any given NICU population, and the strategies employed to manage these problems diverge significantly from the typical NICU patient. Once sBPD and its associated co-morbidities have developed, the management needs to switch from an acute care model aimed at rapid improvement, to a chronic care model with a focus on stability and growth promotion with acceptance of the co-morbidities as the new “normal.” This shift is illustrated in the recommendations for ventilator and supplemental oxygen management. No longer is the goal to quickly wean the patient to extubate, or get the patient off oxygen. Instead, the strategy is to ensure adequate respiratory support and allow for growth, improved interaction with caregivers and development of normal oral motor skills.

Ventilator strategies used in acute respiratory distress syndrome to prevent BPD are very different from the ventilator strategies used in established BPD. The complex, multi-compartmental lung pathophysiology of BPD is different from newborn respiratory distress syndrome and requires much slower ventilator rate, larger tidal volume and much higher end-expiratory pressure. Weaning of support is very slow and deliberate; chronic lung disease does not improve in a matter of days, but rather weeks or months. Children with sBPD need adequate respiratory support in order to grow and to engage in developmentally appropriate activities. Adequate gas exchange is not the sole criterion for adequacy of respiratory support. The infant should be comfortable, without agitation or excessive work of breathing. Too much energy can be expended on respiratory effort, leading to increased energy expenditure, inadequate growth and weight gain which, in turn, impairs pulmonary recovery as well as neurodevelopment.

Meeting the complex needs of this small but challenging population is important as ultimately these children will outgrow most of their problems and eventually leave the hospital, though they often still require some respiratory support at the time of discharge. The transition to outpatient care is an important step, which is facilitated by the fact that the family has an opportunity to establish a relationship with the outpatient providers, such as the BIT:S pulmonologist and cardiologist. In turn, the providers are familiar with the patient, the family and the medical course and thus can provide continuity of care upon discharge.

Because sBPD patients have a high incidence of pulmonary hypertension, a pediatric cardiologist is a key member of the team. They perform screening echocardiograms on every patient at the time of referral and repeat as indicated through discharge and beyond. The presence of pulmonary hypertension is associated with much higher risk of poor outcome and changes how the ventilator and oxygen saturation goals are managed, with higher targeted saturations and more ventilator support recommended. Gastroesophageal reflux and chronic aspiration may worsen lung damage and contribute to pulmonary hypertension. Therefore, a work-up for gastroesophageal reflux is indicated in any infant whose lung disease worsens over time or who is diagnosed with pulmonary hypertension. A pediatric critical care physician is also an integral member of the team, because of expertise in the continued management of infants with sBPD and the fact that some infants become too old to be managed in a newborn ICU and need to transition to the PICU. In addition, because of the high rate of re-hospitalization, there is great benefit in establishing a relationship with the family and aligning management strategies between the NICU and the PICU.
RESULTS

From its inception in November 2011 through December of 2017, 150 infants have been evaluated by BIT:S. Initially the number of referrals increased every year. The last two years have seen the numbers plateau with 27 and 28 patients respectively (Figure 1). The majority of those patients was less than 27 weeks gestation age at birth (Table 1 and Figure 2) and weighed less than 1,000 grams (Figure 3). The patients referred to the team born after 30 weeks gestational age had congenital malformations in the form of genetic syndromes or complex congenital heart disease.

As of July 2017, 131 of the 150 patients were discharged home from the NICU; 12 were transferred to the pediatric intensive care unit at Hasbro Children’s Hospital; 3 were transferred to a level 2 nursery pending their discharge, and 4 patients died prior to discharge from the NICU. One patient died from complications of prematurity after discharge. Sixteen patients required tracheostomies and were discharged home on ventilators and 65% of patients were discharged home on supplemental oxygen (Table 1). Thirty percent (30%) of patients had failure to thrive (FTT) and 60% had clinically significant feeding problems.

Table 1. Population characteristics of patients with severe BPD born from November 2011-December 2017

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>N = 150</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gestational age (weeks), SD</td>
<td>26.1 ± 2.4</td>
</tr>
<tr>
<td>Birth weight (grams), SD</td>
<td>833 ± 428</td>
</tr>
<tr>
<td>Female sex</td>
<td>58 (38.6%)</td>
</tr>
<tr>
<td>Race:</td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>81 (54%)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>28 (18.6%)</td>
</tr>
<tr>
<td>African American</td>
<td>30 (20%)</td>
</tr>
<tr>
<td>Asian</td>
<td>3 (2%)</td>
</tr>
<tr>
<td>Not stated</td>
<td>8 (5.3%)</td>
</tr>
<tr>
<td>Maternal age (years), SD</td>
<td>28.8 ± 6.4</td>
</tr>
<tr>
<td>Tracheostomy at discharge</td>
<td>16 (10.6%)</td>
</tr>
<tr>
<td>On oxygen at discharge</td>
<td>96 (65.7%)</td>
</tr>
</tbody>
</table>

DISCUSSION

Over the last two decades there have been great advances in the care of very preterm infants and the rates of survival continue to improve. Despite these advances the incidence of BPD has not changed. The focus of neonatology has been on the prevention of BPD, but the literature on how to manage BPD once it has been established is sparse. Creating a multi-disciplinary team focused on the care of infants with fully developed BPD is the first step in studying this disease. We now have six full years of patients enrolled in our program and the beginning of a clinical database that allows us to better understand the problems we are facing.

We have successfully implemented a multidisciplinary team and now collaborate on the care of every child with sBPD. The number of referrals was initially small, but grew annually between 2011 and 2014 and has now plateaued around 26 patients/yr. As the service has become established, the primary care providers have come to value and appreciate the input of the team as we seek to standardize care and improve best practices. The term “WWBD” (what would BIT:S do?) has even been coined.

One of the goals of the team was to improve the transition from inpatient to outpatient and because all of our patients...
are seen by both a pulmonologist and cardiologist while inpatient, there has been an improvement in the transition to outpatient and an increase in the number of follow-up well visits. Nationally there has been a push to create medical homes for complex patient populations and we have been at the forefront of this with our sBPD population. There is a large variability between centers on how sBPD is treated, and because even at large centers the number of patients is relatively small, we were one of the seven founding members of the BPD Collaborative, currently made up of 17 hospitals dedicated to improving the life-long outcomes of babies who develop severe BPD by fostering interdisciplinary collaboration.

With the creation of our own database and of the BPD Collaborative we have put the tools in place to study this complex disease, foster a multi-disciplinary approach and identify areas that have benefited patients and those that need to be improved upon. As an example, when the BIT:S team was founded, gastroenterology (GI) was not a part of it. After our data showed that there were clinically important GI co-morbidities, we have added GI to the team in an effort to improve growth and to facilitate early referral to the Hasbro Children’s Hospital’s feeding team. Because of the small size of the state of RI and the regionalization of perinatal and pediatric care at Women & Infants Hospital and Hasbro Children’s Hospital, we have an opportunity to undertake longitudinal, population-based studies and provide an integrated medical home to this unique and vulnerable population, in an effort to understand the long-term impacts of this disease.

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Disclaimer

The views expressed herein are those of the authors and do not necessarily reflect the views of the Rhode Island Hospital or Women and Infants Hospital.

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We explored pre-clinical medical students’ awareness, attitudes, and understanding of Physical Medicine and Rehabilitation (PM&R). We conducted a survey of Brown University medical students within the first 18 months of training to determine their level of familiarity with the field of PM&R. Of the respondents, 53% understood the acronym “PM&R.” Sixty-one percent either disagreed or strongly disagreed that they understood the patient population that PM&R serves. Thirty-four percent strongly disagreed and 44% disagreed that they would know a PM&R physician to contact either at or external to their medical school. Pre-clinical medical students may have limited exposure to PM&R compared to most other specialties, resulting in a lack of understanding and/or potential misconceptions of the field, which may influence future career choice and referral patterns. Our data suggests that medical students may have limited exposure to PM&R in the preclinical years.

**KEYWORDS:** pre-clinical, medical education; physiatry, physical medicine and rehabilitation

**METHODS**

Pre-clinical medical students at Brown University were surveyed. Pre-clinical students were defined as students in their first or second academic year, when the majority of their education is in classrooms. Investigator-created survey data was collected and managed using SurveyMonkey, a secure, web-based application designed to support data collection for research studies. The electronic survey included 6 investigator-generated multiple choice questions, one Likert-type scale question, and one qualitative open response question. Each question probed the student’s familiarity and attitudes concerning the field of PM&R. (Table 1)

All students in the first and second years of medical school were contacted (144 first-year students and 144 second-year students) via email. Surveys were distributed in January 2018; a follow-up email to non-responders was sent two weeks later. No personal identifying information was collected. The study was IRB-exempt because our primary study aim was educational to gain knowledge to aid the PM&R Department’s educational and outreach efforts in exposing medical students to important clinical material.

**RESULTS**

A total of 77 of 288 [27%] students responded to the survey. Answering all questions was not mandatory; one study subject opted out of question 3; three opted out of question 4; eight opted out of question 5; seven opted out of question 7; thirty opted out of question 8. Of the respondents, 41 of 77 said that they knew what the acronym “PM&R” stands for, while the remaining 36 of 77 did not. Only 1 student surveyed had worked with a physiatrist as a medical student. Six of 77 students had worked with a physiatrist outside of the medical curriculum, but not as a medical student. A majority, 46 of 76, of the students either disagreed or strongly disagreed with the statement that they understand the patient population that PM&R serves. Approximately half (39 of 74) of respondents knew that the post-medical school career path for PM&R was a preliminary year plus a 3-year PM&R residency. More than one third (28 of 74) thought the career path was through a fellowship following an internal medicine residency. About one in ten (7 of 74) thought PM&R training required a fellowship after a neurology residency.
Responses regarding students’ understanding of patient populations that physiatrists treat are summarized in Table 2. Regarding access to educational resources at this medical school, 60 of 77 disagreed or strongly disagreed that they would know whom to contact for educational purposes such as shadowing or research efforts. Approximately one in ten (9 of 77) respondents were neutral, while 7 of 77 agreed and only one respondent strongly agreed. On a scale of 0–10 of interest in learning more about PM&R, with 1 representing little to no interest, and 10 representing the highest level of interest, the average was 5.4 (SD 2.1) and the median was 6. Given the opportunity to ask a PM&R physician a question, respondents expressed a few common themes (Table 3).

**DISCUSSION**

Our results indicate that pre-clinical medical students at Brown, which does not have an academic PM&R department, had a limited knowledge of the specialty. The responses support the premise that PM&R lacks visibility to many pre-clinical students. We speculate that students at medical schools without a PM&R department or division may face greater difficulty learning about the specialty.

A national survey of the 141 American medical schools found that 39 of 75 medical schools that responded reported...
having a disability awareness program. The most common reasons cited for the absence of such a program were a lack of advocacy and curricular time constraints. The Office of the Surgeon General reported that “People with disabilities experience significant health disparities, cited the lack of provider training as a major barrier to high-quality health care for this population, and identified the training of healthcare providers as a central solution.” Many medical schools are transitioning to system-based education where physiology, pathology, and pharmacology are combined into relevant organ systems such as cardiology, neurology, and gastroenterology. This updated model adopted by medical schools has the potential unintended consequence of overlooking interdisciplinary specialties such as PM&R.

In the United States, some schools have made major changes in their medical education curricula to implement mandatory rotations in PM&R. Efforts have been made to create standardized rehabilitation education guidelines in medical schools, but success is often limited to the hospitals that have strong PM&R representation and resources. Advocacy for PM&R will also address the perceived lack of musculoskeletal education. A University of Rochester study of medical education found that required musculoskeletal instruction, at a mean of 2 ± 1 weeks, was only present in 15% (20 of 136) of medical schools. Other programs have sought community-based physiatrists to teach the musculoskeletal physical exam to pre-clinical medical students. Additionally, one school applied a problem-based learning session integrating anatomy and musculoskeletal ultrasound skills.

The field of PM&R has undergone considerable growth during the past 75 years. We believe educational opportunities for pre-clinical medical students prior to the selection of a career path would support this growth and should be encouraged by medical school administrations, hospitals, curricular committees, and national PM&R organizations.

Our study design has limitations and should be interpreted with caution before generalizing to all academic medical centers and students. The survey did not include individual demographic identifiers; therefore, we cannot delineate responses between first-year and second-year medical students as well as male versus female students. Responses were limited to one school. The sample size was small and the survey response rate of 27% was low. It is possible that non-responders may be systematically different from those who respond. It is possible that survey results at medical schools that have a designated academic department and/or a PM&R residency training program would have different results. Future studies could assess how changes in the curriculum have affected students’ opinions and knowledge of the specialty in the clinical years of medical school and/or the efficacy of interventions to increase medical students’ awareness of our field. Surveys distributed more widely with a larger sample size and response rate may provide insight into what additional factors improve PM&R awareness and experiences for preclinical students.

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Mindfulness in Residency: A Survey of Residents’ Perceptions on the Utility and Efficacy of Mindfulness Meditation as a Stress-Reduction Tool

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ABSTRACT
PURPOSE: Mindfulness meditation can help reduce burnout in medical students and attendings, yet has not demonstrated efficacy in residents. The authors surveyed internal medicine residents to determine their prior experience with and interest in mindfulness meditation.

METHODS: An anonymous survey was given to 130 internal medicine residents at the Alpert Medical School at Brown University during the 2016–2017 academic year. The survey assessed prior experience, perceived efficacy, and interest in learning about mindfulness meditation.

RESULTS: Of 104 completed surveys, 61% reported prior use of mindfulness and 25% reported current weekly or greater use. Eighty-seven percent of residents believed mindfulness meditation would help with stress reduction, and 87% were interested in receiving mindfulness training.

CONCLUSIONS: Though a minority of residents currently practice mindfulness meditation, most believe it is an effective stress reduction tool and are interested in receiving further training. These results support the inclusion of mindfulness training within residency wellness initiatives.

KEYWORDS: mindfulness; burnout; wellness; graduate medical education

INTRODUCTION
Mindfulness, the practice of attending to the present moment without judgment,1 is a well-studied stress reduction tool2 which has received increasing attention as a wellness resource for physicians.1,3,4 The recent surge in research on mindfulness for healthcare providers comes at a time when there is increasing focus on the impact of burnout on the physician workforce.5 Resident physicians are a subgroup that are highly susceptible to burnout, with a higher burnout prevalence than either medical students or early career physicians.6 Up to 70% of residents meet criteria for burnout during training.7 Detrimental effects range from medication errors,8 early discharges and treatment errors,9 to decreased empathy and increased guilt10; in light of this, the importance of combating burnout is undeniable.

Unfortunately, data on how to reduce burnout in residents is not yet definitive. In residents, duty-hour restrictions resulted in a slight decrease in burnout, but other interventions including scheduled sleep time and training in stress reduction and communication did not show a significant reduction when reviewed via a meta-analysis.10 Data in attending physicians is both more robust and more promising, though still with mixed results. A meta-analysis revealed moderate improvements in burnout with organizational-based changes, including decreased call, shorter shift length, and targeted quality-improvement and workflow projects. Physician-directed interventions including discussion groups and skill training resulted in small but significant improvements in burnout, though when examined individually some studies were less successful.11

Mindfulness training has been shown to lead to improvements in burnout for attending physicians and medical students, in addition to other benefits, including improved well-being,11 improved empathy,12 and decreased distress and rumination.13 The benefits of mindfulness have also been shown to have a direct impact on improving patient satisfaction and quality of care.13

Despite these recognized benefits, there remains a paucity of studies investigating the benefits of mindfulness for residents. Goldhagen et al demonstrated a modest, though not statistically significant, improvement in stress, burnout, depression and anxiety ratings within subgroups of residents following mindfulness training.14 A 2014 feasibility study also showed a trend towards increased mindfulness and empathy following a multifactorial wellness intervention, which included mindfulness activities, but again without significance when compared with pre-intervention assessments.15 Two other studies, one using mindfulness and art,16 and the other using smartphone mindfulness apps,17 showed improvement in mindfulness scales, trends toward improved positive affect. However, none of these studies have definitively demonstrated decreased burnout or stress following a mindfulness intervention in residents.

Across the academic community there have been multiple calls to action recommending more programs and research on wellness in residency,18 and more specifically on mindfulness.19 The question remains as to whether residents would benefit from mindfulness at all, and indeed whether they would be open to learning more about this stress-reduction tool.
tool. No published studies to date have assessed resident baseline interest in mindfulness meditation; this question is important, as a perceived inefficacy or a lack of interest may limit the utility of mindfulness meditation for residents. To this end, we designed a survey to assess residents’ prior experience with and openness to using mindfulness as a wellness tool.

**METHODS**

**Study design and participant selection**

We designed an anonymous, web-based survey using REDCap™ electronic data capturing software.²⁰ Author TT primarily developed the survey based on prior mindfulness training, and we revised it via a focus group among all three authors. We piloted our survey with Internal Medicine attending physicians at Brown University.

We distributed the survey electronically via email; reminder emails were sent every two to four weeks. The study population included the 130 enrolled Internal Medicine Residents at the Warren Alpert Medical School at Brown University during the 2016–2017 academic year.

Our study was reviewed by the Rhode Island Hospital Institutional Review Board and approved with exempt status on September 22nd, 2016. In accordance with IRB request, a cover letter was included with the survey, and participants who completed the survey were given a mindfulness meditation resource list. Participants did not receive compensation.

**Survey content**

The survey consisted of 27 questions assessing demographics, current well-being, and mindfulness. Questions were multiple choice, Likert scale and free text. The mindfulness questions specifically assessed prior experience including setting and type of practice; current mindfulness practice; beliefs about efficacy of mindfulness as a stress reduction tool; interest in learning more about mindfulness during residency including preferences in setting and content; and confidence in use of mindfulness in the future. The full survey is available on request.

**Analysis**

We used SAS® software (SAS Institute Inc., Cary, North Carolina) for data analysis and tabulating. Chi-square and Fisher analyses were performed for descriptive and bivariate analysis to report demographics and specifically to evaluate participant perception on efficacy of mindfulness.

**RESULTS**

Of 130 residents, 111 responded to the survey. We excluded seven incomplete surveys and considered 104 surveys for the analytical sample (80% response rate). The mean age of participants was 30 years old. Half of respondents were female, and the majority identified as Caucasian race and had a partner. Survey responses came from all three years of training, though first years had the highest response rate. Participants also ranged across planned specialization, with the largest proportion planning on general medicine (n=31, 30%), with multiple other subspecialties represented. [*Table 1*]

A majority of residents had previously used mindfulness meditation (61%, n=63). About half were currently using mindfulness (54%, n=56) and one-quarter (n=26) were using it frequently (defined as weekly or more often). [*Table 2*]

Prior mindfulness experience included a variety of practices, with mindful breathing as the most common (52 of 63, 82% of meditators) followed by sitting meditation (44 of 63, 70%). [*Figure 1a*] Residents had also practiced mindfulness in a variety of settings including alone (41 of 63, 65% of meditators) and in a yoga/exercise class (30 of 63, 47%) as well as other locations. [*Figure 1b*] Of residents who had previously practiced mindfulness, 86% (n=54) had practiced more than one type and 68% (n=43) had practiced in more than one setting. When comparing mindfulness use to baseline demographics, women were significantly more likely to practice

<table>
<thead>
<tr>
<th>Table 1. Demographic characteristics of Internal Medicine residents at Brown University during the 2016-2017 academic year.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Full sample size (n=104)</strong></td>
</tr>
<tr>
<td><strong>number (%)</strong></td>
</tr>
<tr>
<td><strong>Age, mean (SD)</strong></td>
</tr>
<tr>
<td>30.0 (2.6)</td>
</tr>
<tr>
<td><strong>Male gender</strong></td>
</tr>
<tr>
<td>52 (50.0)</td>
</tr>
<tr>
<td><strong>Year of training</strong></td>
</tr>
<tr>
<td>PGY-1</td>
</tr>
<tr>
<td>43 (41.4)</td>
</tr>
<tr>
<td>PGY-2</td>
</tr>
<tr>
<td>35 (33.7)</td>
</tr>
<tr>
<td>PGY-3</td>
</tr>
<tr>
<td>26 (25.0)</td>
</tr>
<tr>
<td><strong>Relationship</strong></td>
</tr>
<tr>
<td>General medicine*</td>
</tr>
<tr>
<td>31 (29.8)</td>
</tr>
<tr>
<td>Cardiology</td>
</tr>
<tr>
<td>13 (12.5)</td>
</tr>
<tr>
<td>Gastroenterology</td>
</tr>
<tr>
<td>12 (11.5)</td>
</tr>
<tr>
<td>Pulmonary/Critical care</td>
</tr>
<tr>
<td>6 (5.8)</td>
</tr>
<tr>
<td>Heme/Oncology</td>
</tr>
<tr>
<td>11 (10.6)</td>
</tr>
<tr>
<td>Other*</td>
</tr>
<tr>
<td>31 (29.8)</td>
</tr>
<tr>
<td><strong>Race</strong></td>
</tr>
<tr>
<td>Black/Hispanic/Other</td>
</tr>
<tr>
<td>8 (7.7)</td>
</tr>
<tr>
<td>Asian</td>
</tr>
<tr>
<td>28 (26.9)</td>
</tr>
<tr>
<td>Caucasian</td>
</tr>
<tr>
<td>60 (57.7)</td>
</tr>
<tr>
<td>Prefer not to answer</td>
</tr>
<tr>
<td>8 (7.7)</td>
</tr>
<tr>
<td>Partnered relationship</td>
</tr>
<tr>
<td>58 (56.9)</td>
</tr>
<tr>
<td><strong>Current rotation</strong></td>
</tr>
<tr>
<td>Inpatient/Wards</td>
</tr>
<tr>
<td>54 (52.4)</td>
</tr>
<tr>
<td>ICU</td>
</tr>
<tr>
<td>12 (11.7)</td>
</tr>
<tr>
<td>Outpatient/Elective</td>
</tr>
<tr>
<td>37 (35.9)</td>
</tr>
</tbody>
</table>

Notes: a – General medicine includes primary care, general hospitalist and academic general internal medicine; b – All others not listed above; c – Married, living with partner, or divorced. Abbreviations: PGY – postgraduate year; ICU – intensive care unit; SD= standard deviation.
Table 2. Experience with and interest in mindfulness meditation among Internal Medicine Residents at Brown University.

<table>
<thead>
<tr>
<th>Experience with mindfulness meditation</th>
<th>Full sample size (n=104)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any prior experience with mindfulness meditation</td>
<td>number (%)</td>
</tr>
<tr>
<td>Yes</td>
<td>63 (60.6)</td>
</tr>
<tr>
<td>No</td>
<td>37 (35.6)</td>
</tr>
<tr>
<td>Don’t know</td>
<td>4 (3.9)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Current use of mindfulness meditation</th>
<th>number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all</td>
<td>48 (46.2)</td>
</tr>
<tr>
<td>Sometimesa</td>
<td>30 (28.9)</td>
</tr>
<tr>
<td>Frequentlyb</td>
<td>26 (25.0)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interest in receiving training in mindfulness meditation</th>
<th>number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all interested</td>
<td>14 (13.5)</td>
</tr>
<tr>
<td>Slightly/Somewhat interested</td>
<td>58 (55.8)</td>
</tr>
<tr>
<td>Moderately/Extremely interested</td>
<td>32 (30.7)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Likelihood of starting or continuing mindfulness meditation use</th>
<th>number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extremely unlikely/Unlikely</td>
<td>27 (26.0)</td>
</tr>
<tr>
<td>Neutral</td>
<td>36 (34.6)</td>
</tr>
<tr>
<td>Likely/Extremely likely</td>
<td>41 (39.4)</td>
</tr>
</tbody>
</table>

Notes: a – rarely to monthly; b – weekly to daily

Figure 1. Internal Medicine residents’ prior experience with mindfulness meditation. Percentage of residents who had previously participated in (A) each of the listed meditation types and (B) each of the listed meditation practice settings. (n=104)

A. What types of meditation have you previously practiced?

B. In what setting have you previously practiced meditation?

Figure 2. How effective is mindfulness meditation as a stress-reduction tool? Residents’ perception of efficacy of mindfulness as a stress-reduction tool for the general population and for the participant personally. There was an overall significant difference between residents who thought mindfulness would be effective in general versus those who thought it would be personally effective (96% versus 87%, p-value < 0.01; n=103).

Figure 3. Internal medicine resident interest in learning about mindfulness meditation: (a) preferred type of mindfulness training and (b) preferred setting of future training sessions. (n=104)

A. Which type of mindfulness technique would you most like to learn about?

B. In what setting would you find learning about meditation most beneficial?
mindfulness than men (71% versus 50%, p-value = 0.03).

Nearly all participants believed that mindfulness was an effective stress reduction tool in general (96%, n=99), and 52% believed it would lead to significant or extreme improvements in stress (n=54). [Figure 2] However, significantly fewer residents believed that mindfulness would benefit them personally (87%, n=90; p-value < 0.01). Two respondents (2%) thought that mindfulness would be detrimental to their stress level. (Of note, a single respondent did not answer this question; percentages are out of 103 responses.)

Most residents were interested in receiving further training in mindfulness meditation (87%, n=90), with 31% expressing a moderate or high level of interest. [Table 2] Participants wanted to learn about a variety of mindfulness types, with sitting meditation (47%, n=49) and breath awareness (44%, n=46) as the most popular, followed by walking meditation, yoga and body-scan. [Figure 3a] A majority of residents were interested in learning about two or more types of meditation (68%, n=71). Noon conference was the most commonly selected potential learning environment (49%, n=51) with other venues following in popularity. [Figure 3b]

Regarding anticipated future use of mindfulness meditation, 39% of residents felt that they were likely or extremely likely to use mindfulness meditation in the future. Thirty-five percent felt neutral about future use, and 26% (n=27) thought it was unlikely they would use mindfulness meditation. When comparing gender and anticipated ongoing use of mindfulness, significantly more women anticipated using mindfulness in the future when compared to men (50%, n = 26 vs 29%, n=15; p-value = 0.02).

DISCUSSION

This survey-based study of internal medicine residents shows that, among this population, most residents are both interested in receiving training in mindfulness meditation and believe that it is an effective stress-reduction tool. This is the first study to date examining baseline resident interest in and experience with mindfulness meditation and suggests that current efforts to introduce mindfulness into residency programs is likely in-line with resident interests. These results also suggest that the current lack of demonstrated efficacy of mindfulness programs for residents is unlikely to be related to a lack of interest. Furthermore, the demonstrated discrepancy between residents who believe mindfulness would personally benefit their stress level (87%) and the much smaller number who regularly use mindfulness (25%) and who plan on using it in the future (39%) highlights the sizable target population of a residency-based mindfulness initiative. We believe this is an exciting first step to inform the larger graduate medical education audience on the potential usefulness of mindfulness in residency training.

The results of this study also inform potential design of such a mindfulness intervention. Most studies showing the benefit of mindfulness for attending physicians and trainees have been based on a time-intensive Mindfulness Based Stress Reduction format, which involves weekly 2.5-hour meetings and an additional 7 hours of homework per week.3,12,13 Such a format requires all participants to be available at the same time of day, as well as have predictable time available for independent practice. In contrast, our results show that residents prefer mindfulness training to be available across a variety of venues and times and are also interested in a variety of mindfulness types. This suggests that in order to capture the greatest number of residents, both in interest and availability, a residency-based training program should include a variety of mindfulness practices and venues. Studies outside the medical community have shown that brief mindfulness interventions, including a single 10-minute training session10 and four 20-minute sessions11 can have beneficial effects on brain function, mood and attention, even for novice meditators. Such brief training sessions, offered at different times of day and with different content, could be an achievable method for maximizing resident participation and efficacy.

Our data also highlight two additional areas of potential future research. First, significantly more woman than men both had prior experience with mindfulness and expressed confidence in using mindfulness in the future. These results align with Goldhagen et al, who found a trend toward reduced stress among women who participated in their mindfulness intervention when compared to men.14 Second, there was a significant difference between the number of residents who thought mindfulness would be beneficial in general versus for themselves personally [96% versus 87%, p-value < 0.01]. Investigating the etiology of these discrepancies may lead to wider resident buy-in to using mindfulness and improved outcomes of an intervention.

Our study has several limitations. First, it is based in a single residency at a single institution, which limits the generalizability of our results. Second, the prevalence of mindfulness use in the study population was significantly higher than that of the general U.S. population.35 We expect that this may be related to features that run across residencies, including a high level of education and higher income, which have previously been shown to correlate with mindfulness use.35 However, it is also likely that the study population was biased towards meditation use in other ways that we cannot yet account for, which may limit generalizability to other programs.

Given our results as well as the limitations of our study, we hope other residencies will be inspired to do a needs-assessment and to design a mindfulness initiative that caters to the specific needs of their residents. Though we find these results encouraging, more study is most certainly needed to determine whether mindful practice over time will result in less resident burnout and more resilience.
CONCLUSION
We found that the majority of surveyed residents both had prior experience with mindfulness and expressed interest in learning more about mindfulness meditation in the future. In addition, nearly all residents thought mindfulness was an effective stress reduction tool. Despite this interest and belief in efficacy, only a quarter of residents currently use this wellness tool on a regular basis. We believe these results support current efforts to include mindfulness training as one part of the armamentarium against burnout within residency programs. In addition, residents’ interest in multiple types of mindfulness as well as a variety of training settings provides guidance to the content and structure of future residency-based mindfulness programs.

References
Attitudes Toward Advocacy Do Not Match Actions: A Cross-sectional Survey of Residents and Fellows

MEGHA GARG, MD, MPH; ZOE TSENG, MD; GRAYSON L. BAIRD, PhD; PAMELA EGAN, MD; KELLY MCGARRY, MD

ABSTRACT

BACKGROUND/OBJECTIVE: We sought to determine baseline physician advocacy knowledge and attitudes of resident and fellow trainees at our institution to inform future graduate medical education (GME) activities.

METHODS: A cross-sectional survey was developed and administered to all house staff in 2014 at Lifespan Hospitals, affiliated with The Warren Alpert Medical School of Brown University.

RESULTS: The response rate was 24% (134/558). Eighty-eight percent reported voting in the 2012 presidential election, with lower participation in regional elections. Less than 25% felt comfortable explaining the Affordable Care Act, communicating with media, or influencing legislation on a health care issue. The majority (94%) agreed that “as a physician I have a duty to advocate.” Few reported receiving adequate advocacy training in medical school (18%) or residency (12%).

CONCLUSIONS: House staff agreed that physicians have a duty to advocate, but this did not translate into knowledge or action. GME should increase curricular efforts for trainees in the health care advocacy domain.

KEYWORDS: physician advocacy, graduate medical education, advocacy training

INTRODUCTION

The physician’s role in advocacy and civic engagement is increasingly recognized as an important component of a career in medicine. Medical professional organizations have declared that a physician’s responsibilities include “advocacy for social, economic, educational, and political changes”\(^1\)\(^2\) and “promot[ing] justice in the health care system.”\(^3\)

Despite the societal importance of health care, doctors have been less engaged in advocacy and civic activities than others. One study found that doctors voted in national elections between 1996 and 2002 at lower rates than the general population (42% vs 50%) and lawyers (64%).\(^4\) Physicians were half as likely to have volunteered in the past month than the general public or lawyers.\(^5\)

While there have been previous studies on attitudes toward advocacy of practicing physicians who have completed training, and pre-post surveys after advocacy teaching or experiences, little is known about the baseline attitudes and advocacy experiences of resident and fellow (house staff) physicians.

A study of house staff showed that 89% agreed that health policy is important, but only 21% felt confident in their knowledge of health policy.\(^6\) Another study of Canadian medicine residents, administered after a required academic retreat focused on advocacy, showed that while a majority agreed that advocacy was part of a physician role, most were not participating in advocacy activities as residents.\(^14\) A qualitative study of residents identified advocacy as essential, but challenges included professional boundaries and personal discomfort.\(^15\)

We sought to determine baseline knowledge and attitudes of physicians-in-training at our institution to inform future graduate medical education (GME) activities regarding physician advocacy.

MATERIALS AND METHODS

We developed a survey based on themes derived from a literature review on physician advocacy topics. We found no previously validated survey instrument published on this topic. A pilot study of graduating residents and fellows at Lifespan Hospitals, a major teaching affiliate of The Warren Alpert Medical School of Brown University, was administered in April 2014 to improve internal validity of the survey instrument (N = 171). Using these data, questions were clarified. Subsequently, a cross-sectional study was performed of all residents and fellows at Lifespan Hospitals (n = 558). The study was deemed exempt by the Lifespan Institutional Review Board (IRB).

The survey was distributed electronically through the GME listserv over an 8-week period, from September – October 2014. Participants received no compensation for participation. Study data were collected and managed using REDCap electronic data capture tools hosted at Lifespan.

Analyses were conducted with SAS Software 9.4 (SAS Inc., Cary, NC). Responses were examined as both discrete variables with the Chi Square test using the FREQ procedure and as ordinal variables with generalized linear modeling assuming a binomial distribution using the GLIMMIX procedure. All interval estimates were calculated for 95% confidence and alpha was set, a priori, at the 0.05 level.
RESULTS
There were 134 responses, for a response rate of 24% (134/558). The majority were residents (77%), while the remainder were fellows (23%). Eighty-five percent were in a medical subspecialty, while 15% were in a surgical subspecialty. Of the respondents, 56% were female, while 63% reported being Non-Hispanic white. Postgraduate year (PGY) breakdown was approximately 20% each for years one, two and three, with the remaining PGY-4 or higher (Table 1).

Trainees reported generally high levels of social engagement. Approximately 80% keep up with current events and are registered to vote. Of those registered to vote, 88% reported voting in the 2012 presidential election. Fewer reported voting in state and local elections; 37% reported voting “always” or “often” with 55% voting “sometimes” or “rarely.”

House staff were less comfortable with their knowledge of health care issues and related advocacy activities. Less than a quarter (24%) felt comfortable explaining the Affordable Care Act (ACA) to patients and colleagues. Only 22% reported that they would feel comfortable communicating with media about an advocacy issue, while 13% felt comfortable advocating for legislation about a health care issue.

Table 1. Characteristics of Survey Respondents (N = 134)

<table>
<thead>
<tr>
<th>Training Level</th>
<th>Residents</th>
<th>77%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fellows</td>
<td>23%</td>
</tr>
<tr>
<td>PGY1</td>
<td>1</td>
<td>21%</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>22%</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>22%</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>14%</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>11%</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>8%</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>2%</td>
</tr>
<tr>
<td>Specialty</td>
<td>Medical</td>
<td>85%</td>
</tr>
<tr>
<td></td>
<td>Surgical</td>
<td>15%</td>
</tr>
<tr>
<td>Sex</td>
<td>Female</td>
<td>53%</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>47%</td>
</tr>
<tr>
<td>Race</td>
<td>Non-Hispanic White</td>
<td>63%</td>
</tr>
<tr>
<td></td>
<td>Asian/Asian American</td>
<td>23%</td>
</tr>
<tr>
<td></td>
<td>Black/African American</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td>Hispanic/Latino</td>
<td>4%</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>5%</td>
</tr>
<tr>
<td>Citizenship</td>
<td>U.S.</td>
<td>95%</td>
</tr>
</tbody>
</table>

1PGY = post graduate year

Table 2. Survey Likert Scale Questions with Response Mean and Confidence Interval (CI)

<table>
<thead>
<tr>
<th>Question</th>
<th>Mean (1-5)</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel comfortable using the internet to contact my elected official.</td>
<td>1.7</td>
<td>[1.5 1.9]</td>
</tr>
<tr>
<td>Using the internet to contact my elected official. (This includes using social media, online form, and email.)</td>
<td>3.5</td>
<td>[3.3 3.7]</td>
</tr>
<tr>
<td>Calling my elected official</td>
<td>2.7</td>
<td>[2.5 2.9]</td>
</tr>
<tr>
<td>Visiting my elected official</td>
<td>2.3</td>
<td>[2.1 2.5]</td>
</tr>
<tr>
<td>Writing an op-ed or letter-to-the-editor</td>
<td>2.5</td>
<td>[2.3 2.7]</td>
</tr>
<tr>
<td>How often have you used the internet to contact your elected official.</td>
<td>1.2</td>
<td>[1.0 1.4]</td>
</tr>
<tr>
<td>Called your elected official</td>
<td>1.2</td>
<td>[1.0 1.4]</td>
</tr>
<tr>
<td>Written a letter-to-the-editor</td>
<td>1.2</td>
<td>[1.0 1.4]</td>
</tr>
</tbody>
</table>

How likely in the future will you... (1) Very Unlikely to (5) Very Likely

| Communicate with elected officials                                      | 2.9        | [2.7 3.1] |
| Write an op-ed or letter-to-the-editor                                   | 2.5        | [2.3 2.7] |
| Teach students, residents or colleagues about health policy             | 3.4        | [3.2 3.6] |
While trainees lacked comfort with knowledge of health care issues and related advocacy activities, the vast majority (94%) agreed that “as a physician I have a duty to advocate.” Few reported feeling that they received adequate advocacy training in medical school (12%) or residency (18%), yet 69% agreed it should be a part of medical school training and 73% residency training. Half (50%) were undecided about future advocacy involvement. When asked about barriers to advocacy involvement, 60% reported time to be the biggest barrier, while 17% selected knowledge (Figure 1). Table 2 summarizes responses in their original Likert form.

Significant differences were found between PGY1 interns and PGY2 and higher trainees such that 72% of PGY1’s reported they were not comfortable explaining the Affordable Care Act to patients or colleagues while 53% of PGY2 and higher trainees expressed the same discomfort, p=.0292. Nevertheless, 50% of PGY1’s reported plans to be involved with advocacy in their careers while only 31% of PGY2’s and higher reported having the same plans, p=.0178.

**DISCUSSION**

House staff overwhelmingly agreed that a physician has a duty to advocate (94%), similar to a previous study; however, this did not necessarily translate into knowledge or action. Less than one quarter of respondents indicated comfort with discussing the ACA with patients or colleagues, communicating with media or influencing legislation. More than 60% did not feel they had adequate training in advocacy activities in either medical school or residency, yet the majority agreed that it should be included in their training (70%). A gap exists between what house staff recognize as important to learn versus what is being taught in residency programs.

Since time and knowledge, rather than motivation, were noted as the biggest barriers to participation in advocacy activities, one possible solution is to engage physicians by incorporating advocacy curricula and activities into GME. This would address the time and knowledge barriers noted by respondents. Furthermore, house staff earlier in training (PGY1) expressed less comfort with explaining health care policy but more intent to be involved with advocacy, indicating a possible window of opportunity to build advocacy skills and interest early in their careers during residency training.

The strengths of this study include its breadth of resident and fellow specialties surveyed, as well as the cross-sectional design. The assessment of trainee advocacy perceptions and experiences not connected to an advocacy experience is a unique, unexplored area of study.

This study has several limitations. We surveyed house staff at only one academic institution, which limits generalizability of results. The response rate of 24% would ideally be higher, and is subject to participation bias, thus making conclusions more difficult to draw. This response rate, however, is in line with response rate of physician surveys without an incentive.

This study demonstrates possible areas of further study. There is burgeoning literature on the attitudes, knowledge, and experiences of medical students toward policy and advocacy; there is yet to be a similar large-scale study of house staff. Future studies should include a larger sample size, multi-site and regional surveys to better characterize attitudes and differences among groups.

**CONCLUSIONS**

This study evaluates resident and fellow trainees across specialties about attitudes and experiences toward advocacy not related to a training or intervention. House staff acknowledge that they have a duty to advocate, and may participate in more advocacy activities if training were provided. Given the increasing complexity of health care and the mandate by many professional organizations that a physician’s responsibility is to advocate, leaders in GME should bolster educational requirements and curricular efforts for resident physicians in health care advocacy.

**References**

Contribution


Authors

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ABSTRACT
A 59-year-old man presented with sharp chest pain, hypoxia, and tachycardia. His past medical history included intravenous drug use (IVDU). Pseudomonas aeruginosa was isolated from his blood. Pseudomonas aeruginosa is a rare cause of endocarditis. Patient revealed that he injected drugs intravenously with tap water. Transesophageal echocardiogram revealed vegetation on the anterior mitral leaflet with associated mitral regurgitation. Patient was successfully treated with meropenem and tobramycin and underwent mitral valve replacement without complications. Majority of IVDU-related endocarditis caused by Pseudomonas involve right-sided valves, but our case is unique as it demonstrates left-sided endocarditis in a patient with IVDU. A combination of aggressive medical and early surgical treatment with valve replacement has enabled this patient to successfully recuperate.

KEYWORDS: endocarditis, pseudomonas, intravenous drug abuse

INTRODUCTION
Infective endocarditis (IE) is a life-threatening infection of the endocardial surfaces of the cardiac valves. Gram-positive cocci, as Staphylococci and Streptococci, are the leading causes of IE. Gram-negative rods and fungi are uncommon causative pathogens. In this case, we diagnosed IE secondary to Pseudomonas aeruginosa, a very unusual cause of endocarditis. Involvement of the mitral valve is a unique presentation of our case.

CASE
A 59-year-old man with a past medical history of alcohol abuse and ongoing IVDU, presented to the emergency department with intermittent chest pain. The pain started 4 days prior to the encounter, was substernal, pleuritic, sharp, and non-radiating. He also reported diaphoresis and decreased appetite. He denied associated dyspnea, fever, or chills. He has a history of smoking and denied prior history of cardiac disease. Family history was unremarkable.

The patient’s initial oxygen saturation was 91%, improving to 98% with two liters of oxygen via nasal cannula. His respiratory rate was 22 and heart rate was 120 beats per minute, and he was afebrile with a blood pressure (Bp) of 115/65. On exam, funduscoppy revealed normal appearing retinas, lungs were clear to auscultation, heart exam significant for regular tachycardia with no added sounds or murmurs, and extremities with no edema, rash, or nail changes. The rest of the physical exam was otherwise unremarkable. Work-up in the emergency department included a normal complete blood count with a white cell count of 4,100/µL, hemoglobin of 13.6 gm/dl, mean corpuscular volume of 92 fl, and platelets of 269,000/µL. Patient’s blood chemistry was significant for a sodium of 139 mmol/L, potassium of 4.2 mmol/L, bicarbonate of 24 mmol/L, urea of 9 mmol/L and creatinine of 0.7 mmol/L. His international normalized ratio was 1.3. Initial troponin level was 5.78 (Normal <0.03), with no dynamic ST/T wave changes or right ventricular strain pattern on electrocardiogram. Computed tomography angiogram was ordered and revealed emboli in the sub-segmental right lower lobe pulmonary arterial branches. The patient was started on heparin infusion for his pulmonary embolism. His troponin elevation was attributed to demand ischemia, but a trans-thoracic echocardiogram (TTE) was ordered for follow-up. It showed an ejection fraction of 40 to 45% with apical hypokinesia. Overnight, the patient’s chest pain improved, but he had a febrile episode with dysuria. He was started empirically on ceftriaxone for a urinary tract infection, and blood and urine cultures were collected. Two sets of blood cultures grew gram-negative bacilli and the urine culture was negative. Over the next 24 hours, he became hypotensive but was fluid responsive. Given his active septic picture, antibiotics were escalated to piperacillin/tazobactam (Zosyn).

On hospital day 3, the patient developed severe persistent abdominal pain and a CT scan of the abdomen revealed a small splenic infarct. By that time the blood cultures grew pan-sensitive Pseudomonas aeruginosa. This raised suspicion for a possible source showering emboli, specifically infective endocarditis, given his IVDU history. A transesophageal echocardiogram (TEE) was ordered, and revealed a large highly mobile 2.2 x 1.1 cm vegetation of the anterior leaflet of the mitral valve with accompanying mild to moderate mitral regurgitation (Figures 1, 2). No valve abscess was appreciated and no other vegetations were seen over the rest of the cardiac valves.
On further history review, the patient confirmed injecting methamphetamine using tap water and occasionally his own saliva a few weeks prior to his admission. Thorough examination did not reveal any new skin lesions or visual defects. There were no signs of heart failure or new neurological deficits. Based on TEE results, antibiotics were changed to intravenous meropenem and tobramycin. By the fourth day of hospitalization, the patient had a new onset progressive headache with dizziness, but a non-focal neurological exam.

Computed tomography of the brain revealed high-density foci overlying the left frontal and parietal cortex, which were reported as possible meningeal abnormalities versus hemorrhagic emboli. Anticoagulation was stopped and he was found to have magnetic resonance imaging (MRI) findings consistent with multifocal acute emboli, possibly septic, with accompanying hemorrhage.

Follow-up blood cultures were negative, fever subsided, and repeat neurological exam was normal. Given the size of the vegetation and the multiple septic emboli, he was transferred to a facility with cardiothoracic services for valve replacement. Patient underwent left-heart catheterization revealing normal coronaries. Right-heart catheterization revealed low filling pressures and cardiac output at 6.5 L/min. After careful review of his reports and completion of an antibiotic course, the patient underwent a mitral valve replacement, with no immediate complications. Follow-up TTE revealed a well-functioning bioprosthetic valve.

DISCUSSION

Pseudomonas aeruginosa endocarditis is an uncommon condition, although its incidence increases with higher frequency of drug abuse, heart surgery, and P. aeruginosa bacteremia. Current evidence indicates that gram-negative bacilli are responsible for 5.3–12% of endocarditis cases, and P. aeruginosa is present in 30 to 50% of these cases. Estimates of the incidence of infective endocarditis in IVDU have been hampered by the lack of reliable data; approximately 2 to 4 cases per 1000 years of IVDU have been reported.

Our patient was found to have pseudomonas bacteremia, with no obvious risk factor other than IVDU. Despite having urinary symptoms, his urine cultures were negative. Therefore, we hypothesized that his febrile illness may have been triggered by IE.

In the case of IVDU-related endocarditis, bacteria have a predilection for the right side of the heart, affecting the tricuspid valve in up...
to 75% of cases as compared to 9% in cases of IE in non-IVDU patients. Tricuspid valve involvement presents with cough, hemoptysis, and discrete lung lesions. In our patient, the source of the pulmonary emboli was never identified, although a right-sided lesion would be most likely. And although the echocardiograms never confirmed concomitant right-sided vegetations, the pulmonary valves were reported as poorly visualized, and may have been the source of small vegetations causing sub-segmental pulmonary arterial occlusion. In contrast, the mitral valve involvement in IVDU patients is far less common, representing only 30% of cases.\textsuperscript{5,7} Compared to right-sided disease, left-sided P. aeruginosa endocarditis presents with fulminant, rapidly progressive symptoms with associated embolic events. According to a recent literature review summarizing 40 cases of the left-sided P. aeruginosa endocarditis in non-intravenous drug users, the overall mortality was about 64%.\textsuperscript{8-10} Tricuspid involvement is associated with better prognosis compared to left-sided valve involvement.

Our case is unique due to IE caused by pseudomonas with involvement of a left-sided valve. With disseminated septic foci, medical management becomes a challenge. The possibility of septic embolization in the setting of IE must always be considered with vigilance.\textsuperscript{11,12} In one large series, systemic arterial embolization or septic pulmonary infarction occurred in approximately 33% and 11% of cases, respectively.\textsuperscript{11} Although mortality attributable to IE can exceed 30%,\textsuperscript{11,13} it is even higher among patients who experienced septic embolism events.\textsuperscript{14} Medical treatment alone is rarely successful in left-sided infective endocarditis caused by Pseudomonas aeruginosa, but we were able to clear his blood cultures with a combination therapy of meropenem and tobramycin due to early diagnosis.\textsuperscript{15-18}

Early surgical consult is preferred in left-sided valve involvement and early valve replacement has been shown to improve prognosis. Most authorities now recommend treatment of left-sided endocarditis caused by Pseudomonas aeruginosa with early valve replacement accompanied by a 6-week course of high-dose combined extended spectrum β-lactam plus aminoglycoside antimicrobials.\textsuperscript{16-20} Such a combined surgical and medical approach is associated with improved survival.\textsuperscript{17,19} Prognosis for medical therapy alone is worse compared to medical plus surgical therapy. Our patient’s complicated hospital course led to a delay in surgical intervention, as the recent hemorrhagic cerebral emboli posed a challenge prior to taking the patient to surgery, especially with the expected need for anticoagulation afterwards. He eventually underwent a successful bioprosthetic mitral valve replacement, with complete resolution of his infection on both clinical and radiological grounds. The choice of the bioprosthetic valve was mainly due to the patient’s active drug use and anticipated challenge with maintaining long-term anticoagulation.

CONCLUSION

In summary, we describe a male patient with history of IVDU presenting with left-sided endocarditis with Pseudomonas. This presentation is unique with respect to the bacterial pathogen involved and left-sided involvement. Early identification and aggressive treatment is key to successful recovery. Early surgical consultation is imperative as evidence demonstrates improved outcomes compared to medical treatment.

References

5. Spijkerman IJ, van Ameijden EJ, Mientjes GH, Coutinho RA. Early identification and aggressive treatment is key to successful recovery. Early surgical consultation is imperative as evidence demonstrates improved outcomes compared to medical treatment.

References

5. Spijkerman IJ, van Ameijden EJ, Mientjes GH, Coutinho RA. Early surgical consult is preferred in left-sided valve involvement accompanied by a 6-week course of high-dose combined extended spectrum β-lactam plus aminoglycoside antimicrobials. 16-20 Such a combined surgical and medical approach is associated with improved survival.17,19 Prognosis for medical therapy alone is worse compared to medical plus surgical therapy. Our patient’s complicated hospital course led to a delay in surgical intervention, as the recent hemorrhagic cerebral emboli posed a challenge prior to taking the patient to surgery, especially with the expected need for anticoagulation afterwards. He eventually underwent a successful bioprosthetic mitral valve replacement, with complete resolution of his infection on both clinical and radiological grounds. The choice of the bioprosthetic valve was mainly due to the patient’s active drug use and anticipated challenge with maintaining long-term anticoagulation.


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Initial Findings: Rhode Island’s Community Health Teams Address Complex Physical, Behavioral, and Social Needs of Patient Populations

JAMES C. RAJOTTE, MS; COLLEEN A. REDDING, PhD; CATHERINE E. HUNTER, LCDP; SHAYNA S. BASSETT, PhD

Rhode Island (RI) has continued facilitating health system transformation and promoting physical and behavioral healthcare integration. In June 2017, the RI State Innovation Model (SIM) and the RI Department of Behavioral Health, Developmental Disabilities, and Hospitals (BHDDH) awarded funds to the Care Transformation Collaborative of RI (CTC-RI) to implement Community Health Teams (CHTs) and Screening, Brief Intervention, Referral and Treatment (SBIRT) locally. The CHT/SBIRT model works with primary care providers (PCPs) – and insurers – to best support patients by facilitating access to community-based services to address complex social, environmental, medical, and behavioral health needs. With the goal of creating a comprehensive health system for patients, CHTs assist PCPs to:

- Identify and triage rising risk, high-risk, and high-cost patients;
- Normalize assessing patients’ physical, behavioral, and social needs using standardized screens;
- Develop and coordinate patient-centered care plans;
- Provide outpatient behavioral health services and/or coordinate substance use treatment referrals;
- Facilitate community supports to address socioeconomic and environmental barriers to care; and
- Re-establish patient engagement with PCP and other services upon stabilization.

CTC-RI oversees a network of eight, payer-agnostic CHTs. In the last quarter of 2018, CHTs were referred patients with following insurance carrier breakdown from PCPs: commercial (29.3%), Medicare (14.7%), Medicaid (52.5%), Uninsured (3.5%). CHTs are comprised of at least one behavioral health clinician and two community health workers trained in SBIRT. Pharmacist, nutritionist, and legal consultations are available as needed. Formally integrating SBIRT into CHTs increases whole-person care – particularly for vulnerable populations often lost to follow-up. CHTs normalize screening for and treating patients’ behavioral health and social needs, ultimately delivering more integrated care responsive to emerging needs (e.g., opioid epidemic, costly healthcare overutilization).

The eight CHTs are operated by five community-based implementation partners in Aquidneck Island, Blackstone Valley, Providence, South County, West Warwick, and Woonsocket. This place-based (i.e., where patients live) approach to CHTs was intentionally aligned with Health Equity Zones. By using new patient ZIP codes reported by CHTs, Figure 1 represents recent geographical distribution of CHT intakes by partner site over a four-month period. Note that this figure shows only new intakes over four months, not all CHT patients served to date.

Physical and behavioral health comorbidities are well-documented in RI’s State Health Improvement Plan, including an extensive focus on depression, chronic disease, severe mental illness, tobacco use, and opioid use disorder. With growing focus on practice transformation and value-based care, addressing the complex care needs of patient populations is increasingly urgent. RI has invested in the CHT/
SBIRT model to assist PCPs with improving patients’ physical, behavioral, and social health. CHTs include both teams co-located with PCPs – operating in community and clinic settings – as well as teams established as community extensions of participating PCPs. Model evaluation is underway with the University of RI [URI] and early CHT/SBIRT evaluation data are presented here.

**METHODS**

CHT-affiliated PCPs referred patients using broad eligibility criteria, inclusive of adults (age 18 and older) who:

- Have multiple chronic conditions and/or special healthcare needs;
- Have a behavioral health comorbidity – including substance use;
- Are not regularly accessing primary care and/or essential healthcare due to cost; and/or
- Had many inpatient/emergency visits.

Full data collection began in October 2018 and will continue through June 2019. CHT eligibility was affirmed at intake by certified community health and/or behavioral health providers using health risk assessments. CHTs were assessing health risk previously, with most teams using the Cambridge Health Alliance-adapted Referral Triage Tool (RTT) and one partner using an impactability algorithm with comparable items. Health risk scores, many times in combination with a new patient meet-and-greet meeting, are used to further triage PCP referrals beyond the broad eligibility criteria noted previously.

CHTs used different social determinants of health (SDOH) measures, all of which mapped to common domains. All CHTs screen for depression using PHQ-2/9, with many CHTs also using GAD-2/7 for anxiety. All CHTs screen for substance use using DAST, AUDIT, and/or CAGEAID. For all measures, higher scores reflect higher severity of conditions/risks and cutoff scores have been used to differentiate between patients falling within ranges that represent acceptable versus more severe levels of conditions/risks. All CHTs met at least monthly lead project staff to discuss and standardize social and behavioral health (including SBIRT) screening, conduct de-identified case reviews, and share best practices. Basecamp – a shared project management platform – was maintained by CTC-RI to house tools, share information, and disseminate resources across the CHT network.

Multiple data sources are presented, including four samples/measures. In the suite of measures in a standardized way. Given that patients seen by CHTs are predominantly high-risk and likely have been disengaged in primary care, screening for influenza vaccination and tobacco use were prioritized. A total of 723 patients seen by CHTs were screened and informed about influenza vaccine and 689 patients seen by

**RESULTS**

In Table 1, results reported from two quarters demonstrate various CHT value-add activities. Eight CHTs served 2,202 unique patients, providing 5,658 face-to-face visits between July 1–December 31, 2018. A total of 461 patients were new patients from PCPs who were not previously established with CHT care in quarters prior. Data from previous quarters were not presented because all eight CHTs were not reporting the entire suite of measures in a standardized way. Given that patients seen by CHTs are predominately high-risk and likely have been disengaged in primary care, screening for influenza vaccination and tobacco use were prioritized. A total of 723 patients seen by CHTs were screened and informed about influenza vaccine and 689 patients seen by

<table>
<thead>
<tr>
<th>Measure</th>
<th>Reporting Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients served*</td>
<td>2,202</td>
</tr>
<tr>
<td>Number of patients seen in the community (i.e., unique face-to-face visits)</td>
<td>5,658</td>
</tr>
<tr>
<td>Number of new referrals from primary care practices</td>
<td>461</td>
</tr>
<tr>
<td>Number of patients asked if influenza vaccine received within the past year</td>
<td>723</td>
</tr>
<tr>
<td>Number of patient referrals to pharmacy and/or nutrition and/or medical-legal consultation services</td>
<td>12</td>
</tr>
<tr>
<td>Number of patients who screened positive for tobacco use</td>
<td>689</td>
</tr>
<tr>
<td>Number of provider trainings delivered to PCPs about practice transformation, value-based care, and CHT benefits</td>
<td>14</td>
</tr>
</tbody>
</table>

*Number from two quarters of data does not reflect unique patients as patients are deduplicated for annual reporting only
CHTs were screened and yielded a positive result for tobacco use. Pharmacy, nutrition, and/or medical-legal consultation services were newly added as features of the CHT network and data reflect limited utilization due to delayed referral as new workflows were established, limited capacity and funding for medical-legal case reviews, and other-related reasons. CHTs also delivered 14 PCP-focused trainings over a longer timeframe to develop referral relationships and foster engagement.

Between October 1 to January 31, 2019, seven CHTs representing four partners reported descriptive data for all new patients. Table 2 shows CHT patients were: 60.1% female, 34.7% non-English speaking, and 38.4% racially/ethnically diverse. Ninety percent of patients identified at least one SDOH need, with a median number of two SDOH needs, and 12.9–38.4% identifying specific SDOH concerns. For health risk assessments, an average of 55.6% scored above the highest-risk cutoff. For depression (43.9%) and for anxiety (45.6%) scored above clinical cutoff, indicating a strong likelihood of these conditions that requires clinical follow-up. For substance use, 9.2% scored above clinical criteria, again indicating a strong likelihood of this condition that requires clinical follow-up. The number of poor functioning days out of the past 30 due to physical/mental health problems averaged 17.4. Using the Life Evaluation Index,12 patients were categorized into three groups – with 95.5% either struggling/suffering.

A convenience sample of patients with both pre-/post-RTT data and averaging seven months of CHT care was collected by three CHTs. This sample was 66.0% female and averaged 61 years old. Figure 2 shows scores declined significantly upon pre/post analysis (paired sample t-test, t(65)=11.84, p<.0001), reflecting a 43.0% decline in health risk in CHT patients over time (i.e., from CHT intake to discharge).

Another CHT-patient convenience sample was collected by one CHT with pre-/post- data for PHQ-97 and/or GAD-78 and averaging 10-months of CHT care. Figure 3 shows significant GAD-7 (28.0%) and PHQ-9 (31.0%) score reductions using paired sample t-tests (GAD-7 t(73)=5.79, p<.0001; PHQ-9 t(70)=6.53, p<.0001), reflecting significant declines depression and anxiety levels within CHT patients over time (i.e., from CHT intake to discharge).

A total of 2,222 SBIRT screenings for substance use were conducted by CHTs over 16 months. Table 3 shows 17.4% of patients required brief intervention, 1.5% required brief treatment, and 3.6% required referral-to-treatment.

Table 2. CHT Intake Data (N=271 Patients*)

<table>
<thead>
<tr>
<th>Demographics</th>
<th>SDOH Needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Characteristic</td>
<td>Issue</td>
</tr>
<tr>
<td>Age in Years Range: (18-96)</td>
<td>54.1 (SD=16.9)</td>
</tr>
<tr>
<td>Gender</td>
<td>Housing Issue 37.6%</td>
</tr>
<tr>
<td>Male</td>
<td>Transportation 33.6%</td>
</tr>
<tr>
<td>Female</td>
<td>Food Insecurity 27.7%</td>
</tr>
<tr>
<td>Other</td>
<td>Financial 38.4%</td>
</tr>
<tr>
<td>English Not First Language</td>
<td>Caregiver Support 12.9%</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td>Interpersonal Violence 13.7%</td>
</tr>
<tr>
<td>Black</td>
<td>Wellbeing</td>
</tr>
<tr>
<td>Hispanic</td>
<td>Suffering 21.3%</td>
</tr>
<tr>
<td>White</td>
<td>Struggling 74.2%</td>
</tr>
<tr>
<td>Multi-Racial/Other**</td>
<td>Thriving 4.6%</td>
</tr>
</tbody>
</table>

Psychosocial and Health Risk Cutoffs***

<table>
<thead>
<tr>
<th>Health Risk</th>
<th>Quality of Life in Number of Poor Functioning Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression 43.9%</td>
<td>17.4 (SD=11.2)</td>
</tr>
<tr>
<td>Anxiety 45.6%</td>
<td>Substance Use 9.2%</td>
</tr>
</tbody>
</table>

* Sample size varies for each measure due to missing data
** Multi-racial/other combines 2+ race and “other race”
***Health Risk reflects Referral Triage Tool Scores ≥15 or Impactability Algorithm Scores ≥2
Depression reflects PHQ-9 Scores ≥10
Anxiety reflects GAD-7 Scores ≥10
Substance Use reflects DAST-10 Scores ≥3 or AUDIT Scores ≥16
percent of patients who screened positive for risky substance use were randomly selected for six-month re-assessment. Among those re-screened (N=51), paired sample t-tests examined substance use changes over time. Significant reductions in past 30-day alcohol use ($t(50)=3.25$, $p<.01$) and illicit drug use ($t(50)=2.60$, $p<.01$) were found, reflecting declining substance use by CHT patients over time (i.e., from initial screen to six-month rescreen).

Table 4 compares quality measure rates over 12 months (January 1–December 31, 2018) from one partner with CHTs in two geographic regions, revealing differences between CHT-attributed and entire clinic populations on several measures. CHT patients were more likely to meet BMI, tobacco use (and when positive, offered cessation services), and breast/cervical/colorectal cancer measures when compared to the clinic population. No difference in blood pressure control was observed. Diabetes control was the only indicator where the CHT-attributed population performed significantly worse, potentially reflecting challenges of high-risk patient comorbidities and SDOH needs (e.g., food insecurity). The Chi-squared tests show cross-sectional differences between these two independent groups but cannot show causation.

**DISCUSSION**

A coordinated statewide approach to CHT/SBIRT delivery has shown some valuable signals across behavioral and clinical health measures. Activity data indicated that CHTs serve a large volume of RI tobacco users, potentially due to the comorbidities with behavioral health conditions, further supporting the integration of substance use screening, brief intervention, and treatment. After averaging 6–10 months in CHT care, different patient samples showed 28–43% reductions in health risk, depression, anxiety, and substance use. These changes were both clinically and statistically meaningful.

CHTs successfully collaborated with clinical partners to identify and support high-risk patients with 55.6% meeting the highest health risk cutoff scores. Some patients who may not score within the highest health risk cutoff are still included within CHT care, representing various vulnerable populations including: rising-risk patients, cancer patients, homeless and undocumented communities, dementia clients, and the elderly. These data support CHTs’ ability to identify and engage patient populations needing complex medical, behavioral health, and social supports.

For example, one CHT served a 50-year-old African male who immigrated to RI. The patient continually experienced chronic headaches and vertigo for three years, causing him to lose his job – exhausting unemployment and temporary disability insurance, stop driving, and search far and wide for healthcare that relieved his symptoms. During 2016–2017, the patient had 14 emergency department visits and over seven unique specialty providers with multiple visits each (e.g., ear, nose, and throat clinicians, radiologist, audiologist). The patient was very frustrated with the unaddressed headaches, having seen...
multiple providers across three states (including an attempt to see the Mayo Clinic but his insurance was not accepted), and he refused to see a psychiatrist for his depression and post-traumatic stress disorder. The patient had limited proficiency with English and had no formal education beyond fourth grade. The patient walked to destinations, surfed couches due to homelessness, remained spiritual, and continued to stress over being unable to send monetary resources to family back in Africa (causing interpersonal conflicts). The patient had an initial RTT health risk score of 22.

The CHT engaged with the patient by coordinating his care, providing health coaching – including how to focus on the items within the patient’s control, teaching the patient how to use Logiscare transportation, guiding the patient through the social security and disability income (SSDI) process – including legal referral, and assisting the patient with completing subsidized housing applications. The CHT eventually coached the patient to partial behavioral health hospitalization, overcoming the psychiatric barrier. The CHT’s community health worker continually assisted in reviewing mail and documents, reminding the patient of PCP appointments, helping patient maintain adherence to PCP recommendations, and encouraged the patient to consider GED classes.

In late 2018, the patient’s RTT health risk score decreased from 22 to 11. During 2018, only two emergency department visits occurred – none of which were for prior chief complaint of headache/dizziness. The patient recently began to drive again, enrolled in GED courses, received SSDI, obtained priority standing for public housing, and recently paid for daughter’s school tuition back home to ease strain with family members. CHT confirmed the patient has been following PCP recommendation – including acupuncture treatment – and noted the patient reported improvement in previous symptoms. The patient now regularly attends scheduled PCP visits, checks in with the CHT’s community health worker, and participates in the local immigrant community. Lastly, the patient has had significant improvement in mood and outlook from a behavioral health perspective.

In addition to physical and behavioral health challenges, most CHT patients [95.0%] were suffering,struggling, as the case presented above demonstrates, and were experiencing at least one SDOH need [90.0%]. Housing, transportation, and food insecurity were the top three reported social determinants of health in CHT patients. CHT benefits include improving health equity by: addressing social needs, delivering integrated physical/behavioral healthcare, and managing complex care in community settings. CHTs can improve high-risk patient population outcomes by offering services that bridge system gaps and sustain patients’ engagement with healthcare. Specific opportunities for CHTs to improve patient care have been seen through extensive care coordination with PCPs, by treating unmet, unaddressed behavioral healthcare needs, and by understanding and referring to local resources that address social needs within a given patient’s community. Given a focus on vulnerable populations, CHTs may also be valuable assets for PCPs as patients transition from various ‘high-risk’ settings, such as emergency departments or the Department of Corrections, into the community.

CHTs offer PCPs opportunity to provide integrated care, successfully increasing outpatient behavioral health services – assisting those ineligible for models such as Integrated Health Homes. Providing mechanisms for clinicians to address SDOH and behavioral health needs exacerbating complex medical problems make CHTs a likely essential component of comprehensive, accountable care. Opportunities for improvement given the data presented include continuing to expand the utilization of pharmacy and nutrition support services to address quality measure challenges (e.g., diabetes control) of high-risk populations. Sustaining CHTs as safety-net resources for small PCPs and systems of care remains a priority.15

MOVING FORWARD
Long-term sustainability planning for a CHT network in RI includes: continued evaluation of the model itself – leveraging insights presented in this data brief; determination of remaining unmet patient need and underserved geographical catchment areas; development of value-based payment models to support the network and critical resources (i.e., community health workers); and further alignment with other initiatives such as Accountable Entities and Health Equity Zones to build stronger community-clinical linkages that help to achieve the Institute for Healthcare Improvement’s triple aim. PCPs interested in the CHT/SBIRT model may request more information below.

CHT/SBIRT model sustainability remains a public-private entity discussion topic with SIM ending in June 2019. Continued data collection/analysis will continue through SIM completion. CHT follow-up data include measures previously reported and other indicators (e.g., patient experience, health literacy, health confidence, treatment regimen). The systematic collection of a full range of outcome data in addition to social determinant screening is needed to assess changes over time in response to CHT care. One report limitation is very small-sized convenience samples. Without a control/comparison group, regression to the mean remains a potential alternative explanation for health risk, behavioral health, and substance use declines observed. More systematic controlled data collection with a control/comparison group (including on discharge, quality, and cost) would allow evaluators to draw clearer causal conclusions about CHT-value and patient-level outcomes that will be necessary to inform policies and interventions.
References


Acknowledgments

Special thanks to CTC-RI for continuing to lead RI’s CHT/SBIRT initiative. Our deepest gratitude to the Blackstone Valley Community Health Center, East Bay Community Action Program, Family Service of RI, South County Health, and Thundermist Health Center CHTs whose data are presented, reflecting extraordinary collaboration. Thanks to URI Evaluation Teams for data analysis and RI College SBIRT Training and Resource Center for SBIRT training. Lastly, thanks to Jay Metzger at RIDOH for his assistance with GIS. This article and the findings/ conclusions, supported by Centers for Medicare and Medicaid Services and Substance Abuse and Mental Health Services Administration, do not necessarily represent views of Federal partners.

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Working for You: RIMS advocacy activities

March 1, Friday
Meeting with BCBSRI regarding legislation

March 4, Monday
RIMS Board of Directors Meeting: Peter A. Hollmann, MD, President

March 5, Tuesday
RIMS Physician Health Committee: Herbert Rakatansky, MD, Chair
RI Public Radio interview regarding
RIMS Harm Reduction Center (safe injection facilities) legislation
AMA Advocacy Resource Center conference call regarding opioid legislation
Legislative hearings

March 6, Wednesday
Meeting with RI Health Care Association
Michael E. Migliori, MD, Public Laws Chair, testified before House Health, Education and Welfare Committee regarding hospital medical staff legislation
Legislative hearings

March 7, Thursday
Legislative hearings

March 8, Friday
Meeting in Senate Policy Office regarding reimbursement for opioid use disorder treatment

March 11, Monday
Thundermist Health Center Annual Meeting and Awards Ceremony
Meeting with American Cancer Center-RI regarding legislation

March 12, Tuesday
RI Department of Health conference call regarding Health Professionals Loan Repayment Program; Steve DeToy, Board Member
Meeting with House Policy Office regarding legislation
Meeting with Senate leadership regarding Nurses Compact legislation
Interview with Brown Daily Herald regarding Memorial Hospital closure
Legislative hearings

March 13, Wednesday
Board of Medical Licensure and Discipline Governor’s Overdose Prevention and Intervention Task Force: Sarah Fessler, MD, Past President
Meeting with BCBSRI regarding Diabetes Prevention Program grant
RI ACEP Advocacy Day at the State House: Catherine A. Cummings, MD and Scott Pasichow, MD
Legislative hearings

March 14, Thursday
Meeting with Massage Therapy Association regarding pain management legislation
Legislative hearings
Representative McKiernan fundraiser

March 15, Friday
Health Professionals Loan Repayment Program
Neurology Advocacy Forum, RI Hospital: Kara Stavros, MD
MMJUA Finance Committee: Newell Warde

March 19, Tuesday
Meeting with RI Community Acupuncture Association regarding pain management legislation
AMA Advocacy Resource Center conference call regarding LGBTQ+ issues
Legislative hearings
Meeting with RI Pharmacists Association regarding legislation: Peter Karczmar, MD, RIMS Past President; Sarah Fessler, MD, RIMS Past President; Thomas Bledsoe, MD, RIMS Secretary; and Lynn Taylor, MD

March 20, Wednesday
Primary Care Physician Advisory Committee
American Heart Association Tobacco Free Generation meeting
Legislative Hearings
RI Neurological Society membership meeting: Steve DeToy, Director of Government and Public Affairs
RI Foundation Long-Term Health Planning Committee: William Corwin, MD

March 21, Thursday
CMS Region 1 medical societies conference call
MMJUA Board of Directors: Newell Warde, Director
Legislative hearings
Rep. Charlene Lima fundraiser

March 25, Monday
OHIC public hearing on Utilization Review regulations

March 26, Tuesday
AMA Advocacy Resource Center conference call on gun safety
Legislative hearings
Rep. Mia Ackerman fundraiser

March 27, Wednesday
Meeting with United HealthCare medical director
Workers Comp Advisory Council
Legislative hearings

March 28, Thursday
Advocacy presentation
Warren Alpert Medical School
Legislative hearings
Meeting with RI Orthopedic Society and physical therapists regarding legislation

OFFICE SPACE AVAILABLE
RIMS has 442 square feet of newly renovated office space (3 contiguous offices of 200 sf, 121 sf and 121 sf), complete with convenient sheltered parking and the opportunity for tenants to share three well-equipped meeting spaces, break room, office machinery, etc. on the western edge of downtown Providence. Suitable for a small non-profit organization, boutique law firm, CPA firm or other office-based small business.

Inquiries to Newell Warde, nwarde@rimed.org
The Rhode Island Medical Society now endorses Coverys.

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401-331-3207
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 Marc Bialek for more information: 401-331-3207 or mbialek@rimed.org

Neighborhood Health Plan of Rhode Island is a non-profit HMO founded in 1993 in partnership with Rhode Island’s Community Health Centers. Serving over 185,000 members, Neighborhood has doubled in membership, revenue and staff since November 2013. In January 2014, Neighborhood extended its service, benefits and value through the HealthSource RI health insurance exchange, serving 49% the RI exchange market. Neighborhood has been rated by National Committee for Quality Assurance (NCQA) as one of the Top 10 Medicaid health plans in America, every year since ratings began twelve years ago.

RIPCPC is an independent practice association (IPA) of primary care physicians located throughout the state of Rhode Island. The IPA, originally formed in 1994, represent 150 physicians from Family Practice, Internal Medicine and Pediatrics. RIPCPC also has an affiliation with over 200 specialty-care member physicians. Our PCP’s act as primary care providers for over 340,000 patients throughout the state of Rhode Island. The IPA was formed to provide a venue for the smaller independent practices to work together with the ultimate goal of improving quality of care for our patients.
RIMS gratefully acknowledges the practices who participate in our discounted Group Membership Program.
Alpert Medical School students celebrate Match Day 2019

MARY KORR
RIMJ MANAGING EDITOR

Match Day 2019 nationwide was celebrated on March 15th and according to the National Resident Matching Program® (NRMP®), this year’s main Match was the largest in its history with a record of 38,376 applicants submitting program choices for 35,185 positions, the most ever offered in the Match.

The Rhode Island Medical Journal (RIMJ) reached out to a cadre of fourth-year students at the Alpert Medical School who had contributed to recent issues of RIMJ and asked them to share their Match experiences.

Alexa Kanbergs: [Matched at Brigham & Women’s]
The hardest piece of the Match process was the couples match. I couples matched with my partner Cullen Roberts who will be going into general surgery. So a big piece of matching was finding a program and location that was a good choice for both of us (which is easier said than done).

There is a lot of work that goes into making sure you have interviews at the same programs – we had to put a lot of time into emailing programs when one of us had an interview and the other didn’t. It was also hard to put together a list as a couple because I may have loved a program but his experience at that same program was completely different.

Matthew Perry: [Matched at Brown Family Medicine]
Realizing that there is no such thing as a perfect fit. Every program I looked at had wonderful aspects and drawbacks, between city, culture, specific learning opportunities, patient population, faculty mentors, etc.

RIMJ: What was the most difficult part of the Match process?
Processing the constant feeling of uncertainty. The Match is such a unique system compared to the traditional college and medical school applications in years’ past. In those applications, I had the luxury of choosing amongst a list of programs that had extended their acceptance letter to me. However, in the match, an applicant’s leverage in selection is less clear. I had to rank the programs I liked in order of preference, and the programs did the same for me. There were many unfamiliar and unknown factors that made the application process exciting, yet unnerving at times.

**RIMJ: How did you choose the type of residency program you applied for?**

**Jonathan Staloff:**

[Couples Matched at the University of Washington Affiliated Hospitals]

Maddy [Madeline Wozniak] matched in Pediatrics and I matched in Family Medicine. In looking at residency programs, we were both looking for programs that had a strong sense of collegiality among residents and faculty, a commitment to advocacy and community engagement, and a dedication to teaching.

For myself, I was specifically interested in Family Medicine departments where I can find faculty mentorship in my interests in US healthcare policy and primary care delivery system innovation. I was fortunate to find that at the University of Washington as a whole, which has excellent public health and public policy schools, and within the Department of Family Medicine as well.

Before interviewing, I reached out to a faculty member in the Family Medicine Department who is engaged in health policy work, and I let him know I’d be interviewing and would love to learn more about how I might find the University of Washington to be the right fit and opportunity for me. This generosity with his time made such a lasting impression on me, and made me appreciate that this was likely the program for me.

On Maddy’s interview day, a week before Christmas, she attended resident morning report, where a case was presented and residents had to systematically determine the mystery diagnosis and treatment. On this morning report, as the details of the patient case were unfolding, it started to become clear that the mystery patient was Tiny Tim from Charles Dickens’s *A Christmas Carol*. That spirit of intellectual curiosity, creative teaching, and fun was so striking for Maddy. She is really excited about Seattle Children’s Hospital being a freestanding hospital with opportunities to explore all the subspecialties that might interest her for future training.

**Matthew Perry:** I selected Family Medicine because I felt that the values of the field most closely aligned with my own values. I wanted a specialty that saw patients in the context of their lives and communities, and where there weren’t rigid boundaries around what type of care we would provide for people.

**Bryan Le:** Physical Medicine and Rehabilitation focuses on the functional quality of life of patients. These include patients with strokes, spinal cord injuries, and traumatic brain injuries. The field is incredibly broad and includes careers in sports medicine, cancer rehabilitation, and pain medicine. Our management focuses on how to use medicine to maximize the level of independence in patients living with chronic disabilities. It is a field that is crucial and serves a unique and often underserved population. I personally loved the longitudinal and humanistic patient care that the specialty caters towards. I also liked the team-based approach to patient care. I have a personal interest in the field of neurorehabilitation, and PM&R ended up being the perfect fit for me.
RIMJ: How did you feel when the balloons dropped and you opened your red envelopes?

Alexa Kanbergs: It was an overwhelming and happy experience. My four best friends from home (Oregon) flew out to be with me. Brigham was my number one choice, so to be surrounded by my best friends, my peers in medical school and my partner and to celebrate this achievement was an unforgettable moment for me.

Bryan Le: Pure elation. Once I opened the letter, it was an outburst of joy. My years of hard work came to fruition in that moment. Moreover, I was so happy for my classmates for their success. My phone was inundated with texts and phone calls from friends and family sending their congratulations. I was so glad to share that moment with my parents who have supported me throughout the whole process. It was a great feeling.

Matthew Perry: The atmosphere at school on Match Day was electric. I was happy to have family with me because they were a grounding presence amidst such chaos. I feel so lucky that I get to do my residency close to my family. Also, since I am staying at Brown, it was really wonderful to be able to connect with faculty and residents that I already know, to celebrate that I will get to continue learning from and working with such great people.

Jonathan Staloff: We were thrilled when we opened our envelopes and saw we matched at the University of Washington. Soon after opening our envelopes, we learned that two of our good friends also matched in Seattle, and we were over the moon to be joining them in the same city.

RIMJ: What would be your best advice to the Class of 2020?

Matthew Perry: A hundred people will all give you different answers as far as the most important things to consider when applying and ranking programs. Ultimately, trust yourself and your own priorities. You know better than anyone else what you are looking for.

Bryan Le: Embrace the process. All of your hard work is being rewarded by invitations to the many programs that want your skills and talents. This is ultimately a job application, and you will finally be a physician at the end of this. Remind yourself how incredibly fortunate you are to be in this position – helping patients and their families for a living. That fact remains true no matter where you match.

Editor’s Note: The following is a link to Match results on the Brown University website: www.brown.edu/academics/medical/about-us/facts-and-figures/md-2019-match-list

Match 2019 by the numbers

According to The National Resident Matching Program® (NRMP®):

The number of available first-year (PGY-1) positions rose to 32,194, an increase of 1,962 (6.5%) over 2018. Of these, 946 were in the primary care specialties of Family Medicine, Internal Medicine, Internal Medicine

- Internal Medicine programs offered 8,116 categorical positions, 574 more than in 2018. The percentage of Internal Medicine categorical positions filled by U.S. allopathic seniors has declined every year since 2015.

- Family Medicine programs offered 4,107 positions, 478 more than in 2018. This year was the first year since 2009 that the number of U.S. allopathic seniors matching to Family Medicine has decreased; however, a record number 986 osteopathic students and graduates matched in Family Medicine, accounting for 25.8 percent of all applicants who matched to the specialty.

- Pediatrics programs offered 2,847 categorical positions, 79 more than in 2018.

- Emergency Medicine programs offered 2,488 first-year positions, 210 more than in 2018, and filled all but 30. Since 2015, the number of Emergency Medicine positions has increased by 667, or 36.6 percent.

- Psychiatry programs offered 1,740 positions, 184 more than in 2018, and filled all but 20. The overall fill rate was 98.9 percent, and 60.6 percent were filled by U.S. allopathic seniors. Since 2015, the number of Psychiatry positions has increased by 387, or 28.6 percent.

- Radiation-Oncology advanced programs offered 192 positions, 15 more than in 2018, but filled only 163 (84.9%), a sharp drop from prior years when only a handful of positions were unfilled.

- The number of U.S. osteopathic medical school students and graduates who submitted program choices also was a record high at 6,001, an increase of 1,384 over 2018. Since 2015, the number of U.S. osteopathic medical school students and graduates seeking positions has risen by 3,052, a 103 percent increase. That growth has been driven in part by the transition to a single accreditation system. As part of that transition, the American Osteopathic Association (AOA) Match has ended.

Unmatched Applicants

Applicants who did not match to a residency position participated in the NRMP Match Week Supplemental Offer and Acceptance Program® (SOAP®) to attempt to obtain an unfilled position. This year, 1,652 of the 1,768 unfilled positions were offered during SOAP. SOAP results will be available in the full Match report published in early May.
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‘Magic Minute’:
International Space Station
sends ‘Good Night Lights’ greeting
to Hasbro Children’s Hospital

MARY KORR
RIMJ MANAGING EDITOR

“Right now we are flying 250 miles above Earth aboard the International Space Station,” NASA Flight Engineer Anne McClain told the children gathered in the fifth-floor playroom of Hasbro Children’s Hospital last Wednesday night, in a special extra-terrestrial surprise greeting.

McClain has been on the International Space Station (ISS) since December and will remain until June, with five fellow astronauts. They have six sleeping quarters, two bathrooms, a gym, and a 360-degree view bay window.

“My crewmates and I are on a six-month expedition. While we are here we will conduct hundreds of scientific experiments to explore and challenge the boundaries of what we know,” McClain told those gathered at Hasbro in a pre-recorded video.

Good Night Lights is a hospital and uniquely Rhode Island tradition created several years ago by hospital volunteer and artist/cartoonist Steve Brosnihan. At 8:30 p.m. every night, Rhode Island organizations, businesses and universities send
Flight engineer Anne McClain collects samples for Marrow, a long-term investigation into the negative effects of microgravity on the bone marrow and blood cells it produces. The investigation may lead to development of strategies to help prevent these effects in future space explorers, as well as people on Earth who experience prolonged bed rest. [PHOTO: NASA]

A week of scientific study aboard the space station

The NASA.gov website regularly updates and summarizes the scientific aspects of the current International Space Station Expedition 59 in its space station science highlights.

In addition to two spacewalks last week, the Expedition 59 crew was busy studying the human brain and an astronaut’s wake-sleep cycle in space.

Flight Engineers Nick Hague and Christina Koch spent time last week to research how blood flows to the brain in microgravity. Koch took Doppler waveform measurements of her arterial blood pressure for the cerebral autoregulation study. Hague then closed out the brain blood-flow experiment and stowed its gear in the Kibo lab module.

Astronaut David Saint-Jacques of the Canadian Space Agency, worked on a wearable device, the Actiwatch Spectrum (a Ws), which measures an astronaut’s daily wake-sleep cycle, or circadian rhythm. The AWS provides doctors insights into sleep quality, sleep onset and ambient light quality aboard the orbital lab.

Flights engineers Anne McClain, in addition to a spacewalk to swap out batteries on ISS, also worked on a science freezer and trashed obsolete ultrasonic hardware designed to detect pressure leaks.

And with that farewell, she spun in circles to the delight of her Hasbro audience and waved them all a good night.

Rhode Island Hospital President Margaret M. Van Bree, MHA, DrPH, listens to the greeting from the International Space Station. [PHOTO: BILL MURPHY/LIFESPAN]

The Good Night Lights program takes place every night at Hasbro. [PHOTO: BILL MURPHY/LIFESPAN]

flashing light signals toward Hasbro to show patients they care. Patients gather in rooms at the hospital for this “Magic Minute” and flash lights back out to the community in response.

The space station greeting was arranged by Brosnihan through the efforts of a fellow Rhode Islander, Brian Ramos, who works at NASA.

In the spirit of Good Night Lights, McClain illuminated one of the many areas of scientific study Expedition 58/59 is conducting to the children: replacing fluorescent lights with LEDs with adjustable intensity and color, to see if the latter can improve the crew’s sleep cycles, adaptation and performance.

“So to all of you on Earth shining a light on this Magic Minute, keep up your efforts. Everyone on the International Space Station wishes you a wonderful evening on our beautiful planet Earth. Good Night Lights from the International Space Station.”

And with that farewell, she spun in circles to the delight of her Hasbro audience and waved them all a good night.
RIH awarded $1.6M from NIH to study effectiveness of providing MAT, care at pharmacies to people with opioid use disorder

Will partner with pharmacy chain Genoa, treatment provider CODAC, URI, state health agencies

PROVIDENCE – Rhode Island Hospital has been awarded $1.6 million from the National Institutes of Health (NIH) to study the effectiveness of providing medication and care at pharmacies to people with opioid use disorder, compared to usual care pathways at specialty clinics and doctors’ offices. The unusual approach could mean a major expansion of treatment at a time when the crisis is claiming the lives of 120 Americans every day and six Rhode Islanders every week, according to TRACI GREEN, PhD, MSc, co-director of Rhode Island Hospital’s new NIH-funded Center of Biomedical Research Excellence (COBRE) on Opioids and Overdose and a senior research scientist.

“Treatment with medications is a critical tool in the opioid crisis, but can only work if it is available and accessible in the community,” said Green, the study’s principal investigator. “Other countries have long provided addiction care in the pharmacy, and now is the time to learn if it can work here in the United States.”

Currently, patients with an opioid use disorder who are prescribed buprenorphine or naltrexone – two types of Medication Assisted Treatment (MAT) – must see an approved physician or go to a DEA-approved opioid treatment facility for their care. Patients typically then have the medications dispensed at the clinic or go to the pharmacy to pick them up. The trial will allow pharmacists trained in the foundations of addiction treatment to instead be the one, convenient and community-located place patients go for their care and to get their medication. At the “one-stop” community pharmacy visit patients will fill their prescriptions, obtain medication management and receive follow-up care. The goal is to increase patient engagement and make maintenance therapy more convenient and accessible.

The three-year study is being undertaken in collaboration with the University of Rhode Island College of Pharmacy, the Rhode Island Department of Health, CODAC Behavioral Healthcare and the Rhode Island Department of Behavioral Healthcare, Developmental Disabilities and Hospitals. The state had previously received State Targeted Response funding from the federal Substance Abuse and Mental Health Services Administration to pair novel academic research studies about medication treatment improvements alongside “real-world” investments.

Last August, NICOLE ALEXANDER-SCOTT, MD, MPH, director of the Rhode Island Department of Health, signed the first Rhode Island collaborative pharmacy practice agreement for medications for opioid use disorder. It authorizes Genoa Healthcare pharmacies to provide medication treatment in collaboration with medical providers at CODAC, Inc, the largest not-for-profit provider of medications for opioid use disorder in the state and the operator of a similar program at the Rhode Island Department of Corrections. Under this agreement, pharmacists must complete a thorough, 13-hour training in provision of addiction care including the same one buprenorphine prescribers complete; follow the protocols and guidance of the prescriber; and provide timely updates to CODAC on patient experiences.

“Easily accessible treatment for addiction is vital,” said Dr. Alexander-Scott. “This novel approach reflects our philosophy of removing barriers to treatment and recovery for people with opioid use disorder so that we can prevent overdoses and save lives. We know early treatment is effective and starts people on the road to recovery sooner; this helps the patient, their family and their community.”

Green and her team of researchers had previously secured NIH funds to assess what other countries and other U.S. settings were doing with regards

CODAC Behavioral Healthcare expands into Pawtucket

PAWTUCKET – Due to the growing number of people seeking treatment services for substance use disorder, CODAC Behavioral Healthcare has expanded its operations by opening a new location at 600 Pawtucket Avenue, Pawtucket. More than 220 patients will begin receiving care at the new location on March 11, but that number is expected to increase, according to senior leaders at CODAC.

The 3,000-square foot building will allow CODAC staff to offer medication-assisted treatment, tobacco cessation services, counseling, alternative treatments for pain management, ambulatory care, and other holistic approaches to treat addiction, which are not typically available at other outpatient treatment centers.

“This location not only provides more space, it allows us to offer more services that were not previously available at our North Main Street facility,” said LINDA HURLEY, President/CEO of CODAC Behavioral Healthcare. “More importantly, our newest location could attract a new group of underserved individuals in Pawtucket as more people become dependent on opiates at alarmingly high rates.”

Conveniently located on the Providence and Pawtucket border, the Pawtucket Avenue facility will become CODAC’s 9th location in Rhode Island. Hurley says it has enough room to serve 500 to 600 patients in total. The new space features seven counseling offices, two medical offices, and additional rooms for administrative purposes.

Patients will no longer be able to receive medication at the North Main Street location, but it will remain open for other general outpatient services such as counseling.
to pharmacy addiction care and to conduct a pilot of pharmacy-provided medication. That took place during fall 2018, with 11 patients testing out the care model for over a month, paying over 70 visits to Genoa pharmacies. Genoa has six sites in Rhode Island.

“With this model, our pharmacists are able to provide specialized care within the neighborhoods our patients live and work, at times that are convenient to them. Our expectation is that this model will improve patient access to care and lessen the stigma that clients experience in treating substance use disorder, which in turn will help them stay in therapy longer and relapse less often,” said Genoa Healthcare CEO MARK PETERSON.

“What is so promising about this new project is that it will make options for treating opioid use disorder more accessible in a number of settings,” said LINDA HURLEY, president and CEO of CODAC. “For example, people who live in rural areas, far from the nearest opioid treatment provider, will be able to receive medication at their community pharmacy. Access to care at pharmacies also offers a viable alternative for those who may not need the comprehensive and evidence based services provided by opioid treatment programs. In the midst of the current opioid overdose crisis, pharmacy-based care has the potential to provide critical – and potentially lifesaving – services to individuals who might not otherwise have received treatment.”

“Pharmacists are the most accessible, yet underutilized healthcare providers that specialize in medication safety and disease state optimization. With fewer than 1 in 5 patients receiving any treatment for opioid use disorder, pharmacists are essential to compassionately manage medication-based therapy in partnership with addiction specialists,” said JEFFREY BRATBERG, clinical professor of pharmacy practice at the University of Rhode Island, academic collaborations officer for the state Department of Health, and a member of the Governor's Overdose Prevention and Intervention Task Force.

Green, who is leading the study, is an epidemiologist in the Department of Medicine and co-director of the COBRE on Opioids and Oversed, which was established in 2018 to research innovations to address the opioid epidemic. She also serves as an expert advisor to the Governor’s Overdose Prevention and Intervention Task Force and is an associate professor of emergency medicine and epidemiology at Brown University’s Warren Alpert Medical School.

In addition to establishing the COBRE, Lifespan last year opened the Lifespan Recovery Center, a multidisciplinary, evidence-based, recovery-oriented program that meets the full spectrum of medical and social needs of individuals who have opioid use disorders.

Miriam study supports value of active video games in promoting physical activity

PROVIDENCE – Research led by a behavioral scientist at The Miriam Hospital is providing further evidence that active video games, such as the Wii and Xbox Kinect gaming systems, can help sedentary individuals achieve more physical activity than traditional exercise.

BEETH BOCK, PHD, a research scientist with The Miriam’s Center for Behavioral and Preventive Medicine, presented findings from her research during a presentation in March at the annual meeting of The Society of Behavioral Medicine (SBM).

Bock’s research team, in a randomized controlled study, assigned healthy, yet sedentary people to one of two groups—one that engaged in traditional exercise on treadmills and stationary bikes and another that played video games that required moderate to vigorous aerobic intensity. Their effort was tracked with heart rate monitors. Researchers followed up with the participants at the end of the 12-week program and again six months later to assess their physical activity.

Bock’s research found that those in the video game group engaged in more minutes of moderate to vigorous physical activity than those that took part in the standard exercise intervention. A recently completed analysis of the follow-up data examined whether the differences between the two groups could be related to psychosocial constructs from Self-Determination theory and Social Cognitive theory.

“These people who played the physically active video games continued to do more exercise than the standard group because they got more enjoyment, better management of stress and depressive symptoms, felt more engaged in physical activity and were more confident about their ability to exercise than people doing Standard exercise,” Bock said.

The goal for both exercise interventions was move participants toward meeting national guidelines for aerobic physical activity. Despite the many health benefits associated with physical activity and health risks associated with inactivity, only about half of American adults report being sufficiently active to meet national guidelines, according to the U.S. Centers for Disease Control.

“Even among those who initiate a physical activity program, long-term adherence is a challenge. Approximately half of those who take up a new exercise program stop within the first six months,” said Bock. “There is a continuing need to discover effective approaches that not only encourage physical activity uptake, but also promote the continued maintenance of regular physical activity.”

The paper Bock will present at the SBM annual meeting is titled “Psychosocial Mediators of Physical Activity Using Exercise Video Games: Wii Heart Fitness.” The trial was supported by a grant from the National Heart, Lung and Blood Institute of the National Institutes of Health under award R01 HL109116 to Dr. Beth C. Bock.
The PA Class of 2019: [Back, left to right] Ida Apel, Danielle Frask, Kayla Johnson, Stephen Wright, Stephen Sherman, Dylan Irish, Ian Knapton, Robert Amrien (faculty), Christopher Furbee (faculty), Eric Preuss (faculty), Randy Wnuk, Daniel Lenoci, Rebecca Darby, Mallory Des Champs, Lauren Kess, Kasey Cameron, Christine Paleczney, [Center, left to right] Vincent Alexandre, Allison Malo, Khushbu Desai, Kaitlyn Weygand, Cassie Woods, Kenneth Baris, Wendy Buja (faculty), Christopher Ferreira (faculty), Daniel Leary, Peter Basilios, Alison Migliori, Libbi Wissekerke, Katherine Ashe, Allegra Bernardo, Remy Lamphere, Emily Abbood, [Front, left to right] Danielle Tetreault, Kelly Duran, Danielle English, Hannah Murdock, Emma Pennock, Andrea Ferraro, Leigh Iber, Jerri Miller, Delaney Horsley, Elizabeth Manocchio, Haylee Kurkoski, Taryn Sousa [PHOTOS: PAM MURRAY]

SMITHFIELD – On March 23, 2019, Bryant University’s School of Health Sciences held the commencement ceremony for the Physician Assistant (PA) Program, its third graduating class since the master’s program was established in 2015.

PA Program Director Robert Jay Amrien, MPAS, PA-C, (wearing his academic robe) offers a toast to the 40 newly-graduated PAs wearing their white coats. Students who completed 10 weeks of clinical rotations at LBJ Tropical Medical Center in American Samoa wore ula pu’a. Traditionally a chief’s ornament, the kukui nut necklaces are now given to honor achievement in Samoan celebrations.
New EMS data indicate continued need for community naloxone use

Report released as Rhode Island remains on downward overdose trend

New Rhode Island Department of Health (RIDOH) data indicate that more than a third of the opioid overdose calls to which Emergency Medical Services (EMS) responded in Rhode Island in 2018 occurred in public places. Public health leaders are again urging all Rhode Islanders who are comfortable doing so to carry naloxone, the overdose reversal medication.

The data, published on March 1, 2019 in the Rhode Island Medical Journal, indicate that 34.2% of the opioid overdoses that EMS responded to in 2018 occurred in public places. That figure was 29.6% in 2016. Examples of public places include streets, parking lots, restaurants, stores, and beaches.

“Naloxone can be purchased over the counter at pharmacies throughout Rhode Island, and it is as easy to use as nasal spray,” said Director of Health NICOLE ALEXANDER-SCOTT, MD, MPH. “We are starting to make some progress in addressing the drug overdose crisis. However, as this report demonstrates, this is a changing epidemic. With so many overdoses happening in everyday places, and sometimes in plain sight, everyone can play a role in preventing overdoses and saving lives.”

For the first 10 months of 2018, Rhode Island saw a 6.1% decrease in opioid-related overdose deaths, compared to the first 10 months of 2017. A total of 324 Rhode Islanders died due to drug overdose in all of 2017. Rhode Island’s 2018 overdose data should be finalized in the coming weeks, as toxicology results are still pending for many of the deaths that occurred in November and December.

“When someone overdoses on an opioid, they need help immediately. If naloxone is administered quickly, it can reverse the overdose effects, usually within minutes,” said JASON RHODES, MPA, AEMT-C, Chief of the Center for Emergency Medical Services at RIDOH. “By carrying naloxone and using it when it is needed, everyone has the ability to be a first responder and save a life.”

A Good Samaritan law in Rhode Island protects people from legal liability if they are making a good faith effort to assist a person in a medical emergency, including a suspected overdose.

The lead authors of the study published in the Rhode Island Medical Journal were LEANNE LASHER, MPH, the Program Manager of Opioid Overdose Surveillance at RIDOH; JASON RHODES, MPA, AEMT-C, Chief of the Center for Emergency Medical Services at RIDOH; and SAMARA VINER-BROWN, MS, Chief of the Center for Health Data Health Data and Analysis and Public Health Informatics at RIDOH.

Governor Gina Raimondo’s Overdose Prevention and Intervention Task Force distributed more than 16,000 naloxone kits in 2018, more than double the number in 2017. The steps taken to expand naloxone availability throughout Rhode Island include:

• Partnering with outreach organizations and peer recovery specialists to get naloxone to people at highest risk. Examples of outreach organizations include The Providence Center’s Anchor Recovery Mobile Outreach Recovery Efforts (MORE), Project Weber/RENEW, AIDS Care Ocean State’s ENCORE Needle Exchange Program, and Rhode Island Communities for Addiction Recovery Efforts (RICARES).

• Implementing a new regulation that requires prescribers of controlled substances to co-prescribe naloxone to patients who are at a higher risk of overdose.

• Working with city and town law enforcement to make naloxone available to all officers.

• Funding (through an RIDOH mini-grant) the development of NaloxBoxes, a mountable container that includes naloxone and all the necessary life-saving supplies to reverse a suspected overdose. Rhode Islanders can go online to locate public NaloxBoxes.

Governor Raimondo’s Overdose Prevention and Intervention Task Force is co-chaired by DR. ALEXANDER-SCOTT, Director REBECCA BOSS of the Rhode Island Department of Behavioral Healthcare, Developmental Disabilities, and Hospitals (BHDDH), and TOM CODERRE, Senior Advisor to Governor Raimondo.

The data in the article were compiled as a result of updated regulations for EMS agencies that were enacted in January 2019. EMS professionals now must upload patient care reports from EMS incidents within two hours of completing a call. RIDOH is working to create a real-time automated overdose outbreak detection system with web-based dashboards and alerts.

The complete article, titled Identification and Description of Non-Fatal Opioid Overdose Using Rhode Island EMS Data, 2016-2018, is available online.

AVAILABLE RENTAL

Rental space available, 725 Reservoir Avenue, Suite 100, one to two days a week in Physician’s Office, Cranston, RI 02910. Open to non-physicians as well. Terms negotiable.

If interested, please call 401-272-2562, Monday through Friday, between the hours of 9:00am and 4:30pm.

Thank you.
Butler awarded $12M COBRE grant
Focus will be on clinical-translational brain research

Butler Hospital has been awarded a $12 million, five-year Center of Biomedical Research Excellence (COBRE) grant from the National Institute of General Medical Sciences, part of the National Institutes of Health (NIH).

The overall goal of The COBRE Center for Neuromodulation (CCN) at Butler Hospital will be to address the pressing need for novel treatments for people struggling with neuropsychiatric disease, by understanding and testing methods to change the functioning of brain circuits underlying such illnesses.

“This grant establishes Butler Hospital and The COBRE Center for Neuromodulation as a national leader in this field of translational medicine, expanding both research and clinical application of non-invasive brain stimulation across disorders of brain and behavior,” said Benjamin Greenberg, MD, PhD, principal investigator on the grant, and director of the OCD Research Program at Butler Hospital. “It will unify an interdisciplinary community in clinical-translational research on neuropsychiatric illnesses such as impulsivity, post-traumatic stress disorder (PTSD), and obsessive-compulsive disorder (OCD), all focused on ultimately helping patients by developing new treatments.”

The COBRE Center for Neuromodulation will nurture the careers of exceptional young researchers in Rhode Island by providing them the infrastructure and expertise to administer brain stimulation and assess its effects on both the brain and behavior. The CCN, co-directed by Linda Carpenter, MD, a nationally recognized leader in brain stimulation therapies and research based at Butler Hospital, will provide the platform these exceptional Project Leaders and other early-career researchers need to make important discoveries and transform them into better treatments for patients with neuropsychiatric illnesses. The stimulation methods to be tested are noninvasive, meaning they affect the brain when applied on the scalp (transcranial magnetic and transcranial electrical stimulation); stimulation effects will be assessed with neuroimaging (MRI) and other methods.
**Bill requiring telecommunicator CPR certification for 911 system introduced**

**State House** – Rep. Mia Ackerman (D-Dist. 45, Cumberland, Lincoln) has introduced legislation that would improve over-the-phone CPR instructions by requiring the 911 system to certify and staff individuals trained in telecommunicator CPR.

The legislation (2019-H 5568) http://web-server.rilin.state.ri.us/BillText/BillText19/HouseText19/H5568.pdf would establish an emergency telephone system call review and quality improvement, and would require at least one 911 system operator trained in telecommunicator cardiopulmonary resuscitation be on duty at all time.

“911 operators are the real first responders and can make the difference between life and death,” said Representative Ackerman. “When CPR starts before the arrival of an emergency medical technician, the person in cardiac arrest is two-to-three times more likely to survive. T-CPR can help untrained callers provide cardiopulmonary resuscitation. It can also remind those who are trained how to provide high-quality CPR.”

Each year an estimated 350,000 sudden cardiac arrest events occur in the United States in an out-of-hospital environment, according to the American Heart Association, which strongly endorses T-CPR-trained 911 operators. Almost all of these events result in a call for help to 911. Without quick intervention in the form of CPR and defibrillation, death becomes more likely.

“Implementing a policy where operators trained in T-CPR are always on duty could save countless lives,” said Representative Ackerman. “Emergency telecommunicators are a vital link in the lifesaving chain, and this legislation will help to ensure that CPR is being performed before emergency medical personnel arrive.”

The bill, which is cosponsored by Majority Leader K. Joseph Shekarchi (D-Dist. 23, Warwick), Julie Casimiro (D-Dist. 31, North Kingstown, Exeter), William W. O’Brien (D-Dist. 54, North Providence) and Camille F.J. Vella-Wilkinson (D-Dist. 21, Warwick), has been referred to the House Committee on Health, Education and Welfare.

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**Toxicologist Jason Hack, MD, to speak at Audubon Center on exhibit of his photography**

Bristol—**JASON HACK, MD,** will speak on Sunday, April 14, from 1–3 pm at the Audubon Nature Center, 1401 Hope Street, Bristol on the hidden properties of plants he captures in his floral photographs now on exhibit through April at the center.

“The show is a collection of beautiful poisonous/medicinal/benign flower photographs that I have taken over the last few years,” he said. “Each one is accompanied by interesting information and facts.”

Dr. Hack is Director, Division of Medical Toxicology, at Brown University, where he is a Professor in the Department of Emergency Medicine.

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For more information on Dr. Hack’s photography, visit toxinri.com
Women & Infants introduces MAT for pregnant women with opioid use disorder

Women & Infants Hospital has created Moms MATTER (Medication Assisted Treatment to Enhance Recovery). Medication Assisted Treatment (MAT) in pregnancy has been shown to improve birth outcomes among women who have substance use disorders and are pregnant. MAT has proved to be clinically effective and to significantly reduce the need for inpatient detoxification services for these individuals. MAT provides a more comprehensive, individually tailored program of medication and behavioral therapy. MAT also includes support services that address the needs of most patients.

“The ultimate goal of medication assisted treatment is full recovery, including the ability to live a self-directed life,” said Anupriya Gogne, MD, director of Moms MATTER, psychiatrist in Women & Infants Center for Women’s Behavioral Health. “This unique model of care provides a safe place for pregnant and breastfeeding women with an opioid use disorder to seek compassionate and non-judgmental care in an office-based setting.”

Moms MATTER services include treatment of acute withdrawal for inpatients at Women & Infants Hospital, medication assisted treatment with buprenorphine for opioid use disorder, assistance in caring for babies with neonatal abstinence syndrome (NAS) in collaboration with pediatricians at Women & Infants Hospital, and pain management for opioid-dependent women as an inpatient at Women & Infants Hospital.

In addition to Dr. Gogne, members of the Moms MATTER team include Erica Hardy, MD, Women’s Infectious Disease Consult Service and Center for Obstetric and Consultative Medicine; Neha Hudepohl, MD, Center for Women’s Behavioral Health; Jessica Pineda, MD, Center for Primary Care and Center for Women’s Behavioral Health; Adam Czynski, MD, Department of Pediatrics; Matthew Esposito, MD, Division of Maternal-Fetal Medicine; and case manager Alpha LaFrancois, LCDP, Center for Women’s Behavioral Health.
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**Appointments**

**Lifespan elects Ziya L. Gokaslan, MD; Sarah T. Dowling, JD, to Board**

PROVIDENCE – The Lifespan Board of Directors recently elected two new members – **Ziya L. Gokaslan, MD, FACS**, and **Sarah T. “Sally” Dowling, JD, LLM**. The volunteer board, which includes clinical, business and community leaders, oversees the leading health care system and largest employer in the state, guided by its mission: Delivering health with care.

Dr. Gokaslan is the neurosurgeon-in-chief at Rhode Island and The Miriam hospitals, co-director of the Norman Prince Neurosciences Institute and director of the Comprehensive Spine Center. He is also director of the Complex Spinal Surgery Fellowship at The Warren Alpert Medical School of Brown University, where he is professor and chair of the Department of Neurosurgery. He earned his medical degree from the University of Istanbul in Turkey, then completed an internship in general surgery, a fellowship in neurotraumatology, and a residency in neurosurgery at Baylor College of Medicine in Houston, TX, followed by a fellowship in clinical spinal surgery at New York University Medical Center.

Dr. Gokaslan served as a member of the faculty and clinical leadership at UT M.D. Anderson Cancer Center in Houston, and Johns Hopkins School of Medicine, Baltimore, MD, before joining Brown and Lifespan in 2015. He is a recipient of numerous prestigious awards and an active member of many professional societies. His has authored more than 450 peer-reviewed publications, four books and numerous book chapters. His practice focuses on complex spinal reconstruction and radical surgical treatment of both primary and metastatic spinal tumors, sacral neoplasms, and spinal cord tumors, and he is regarded as one of world’s foremost experts in this area. He and his wife, Ayse Gokaslan, MD, reside in Barrington and have two young adult children – Aaron, a graduate student at Brown University, and Hannah, an undergraduate at Middlebury College.

Ms. Dowling spent much of her four-decade legal career, including 21 years as partner, at Adler Pollock & Sheehan, overseeing ethics and compliance and specializing in business transactions, healthcare, government entities, banking and commercial law. She left corporate practice briefly, serving as director of policy and legal counsel to Governor Edward Di-Prete from 1989 through 1990. She is presently the chair of the Rhode Island Judicial Nominating Commission, appointed by Governor Gina Raimondo, and a member of the Brown University Civic Leadership Council. She maintains membership in the Rhode Island, Massachusetts and American Bar Associations.

Dowling’s past board roles include chairmanships of the Rhode Island Board of Governors for Higher Education, the Rhode Island Criminal Justice Oversight Committee, the Rhode Island Supreme Court Ethics Advisory Panel and other distinguished legal and governmental bodies. Further, her community involvement has included chair of the board for Trinity Repertory Company and board membership for such entities as Waterfire Providence and the Providence Foundation. She and her husband, Joseph Dowling, MD, have four grown children and reside in Providence and Narragansett.

“Lifespan is fortunate to have on its Board some of the most distinguished individuals in their respective fields, and Dr. Gokaslan and Ms. Dowling are no exception,” said Lawrence Aubin, Sr., chairman of the Lifespan Board of Directors “Their commitment to governance that embodies our values is clear, and their knowledge and perspective will be invaluable to the organization.”

“We welcome Dr. Gokaslan and Ms. Dowling to the Board. They both bring complementary experience and knowledge that will help to advance the important work of the Board,” said Lifespan President & CEO Timothy J. Babineau, MD. “We are eager to have them share in the important work of guiding the Lifespan health system in its mission to serve the hundreds of thousands in Rhode Island and beyond who turn to us in need of care.”
Recognition

South County Hospital earns 5-star rating from CMS

The Centers for Medicare and Medicaid (CMS) again ranked South County Hospital with an overall rating of 5 Stars, the highest rating possible. South County Hospital was one of only two hospitals in Rhode Island to receive a 5 Star rating. Included among the ratings are results of the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey, a national survey that asks patients about their experiences during a recent hospital stay.

Hospitals are ranked on such categories as survey of patients’ experiences, timely and effective care, complications and death, unplanned hospital visits, use of medical imaging, payment and value of care.

The results of the quality of care ratings at over 4,000 Medicare-certified hospitals, including over 130 Veterans Administration (VA) medical centers, across the country can be found on the Hospital Compare website.

Newport Hospital earns top score for overall quality in national CMS ratings

NEWPORT – Newport Hospital received a five-star rating from the federal Centers for Medicare and Medicaid Services (CMS) in its latest hospital quality ranking, released in late February. Scores from one to five stars are assigned to hospitals across the country, based on their performance on patient experience, safety and quality of care measures.

The hospital is among 283 out of 3,725 hospitals nationwide to earn the top rating, and one of only two in the state.

CMS posts hospital star ratings twice annually on its Hospital Compare website. Due to a change in methodology, the last ratings were released in December of 2017. Ratings are based on more than 100 rigorously tested measures, including patient experience, the timeliness and effectiveness of care, complication rates, and other factors. The Hospital Compare website provides public access to quality measures on more than 4,000 Medicare-certified hospitals, as well as Veterans Health Administration and Military Health System hospitals.

Southcoast Hospitals Group is named to Newsweek’s World’s Best Hospitals 2019

FALL RIVER – On March 29th, Southcoast Hospitals Group, which includes Charlton Memorial Hospital, St. Luke’s Hospital, and Tobey Hospital, has been named to Newsweek’s inaugural list of the World’s Best Hospitals 2019.

Out of the 2,743 considered hospitals in the US, only 250 earned this recognition. Southcoast Hospitals Group ranked 162.

Southcoast Hospitals Group, which includes three hospitals in Fall River, was named to Newsweek’s inaugural list of the World’s Best Hospitals 2019, calculated in partnership with Statista Inc., recognizes the best 1000 hospitals across 11 countries: USA, Canada, Germany, France, United Kingdom, Switzerland, South Korea, Japan, Singapore, Australia, and Israel.

“Our care is world class and this national and international recognition is a testament to the incredible work our physicians, providers, nurses and staff do every day,” said Keith Hovan, chief executive officer of Southcoast Health. “I am tremendously proud. This is a recognition they have earned many times over.”

Newsweek’s methodology was calculated in three areas:

- Recommendations from peers via survey (55%)
- Patient Experience scores (15%)
- Medical KPIs (quality scores) from a variety of public sources (30%)

The Miriam Hospital named among IBM Watson Health Top 100 Hospitals

PROVIDENCE – The Miriam Hospital has been named among the Top 100 hospitals in the nation by IBM Watson Health.

The annual report “spotlights the best-performing hospitals in the U.S. based on a balanced scorecard using publicly available data for clinical, operational, and patient satisfaction metrics.”

Divided into four categories, the list grouped The Miriam, a major affiliate of The Warren Alpert Medical School of Brown University, as among the top 25 “major teaching hospitals” in the nation.

“While our top priority is to always deliver the best care possible to our patients – not to seek honors – I am very proud that The Miriam Hospital has been included on this prestigious list of top hospitals in the country. It attests to the hard work of our medical leaders and staff in the face of very challenging times in our industry,” said Arthur J. Sampson, president of The Miriam Hospital. “We are constantly looking for opportunities to better meet the needs of our patients, and our staff knows that’s important to us and to our board. They want to do a good job and we listen to what they say about how we can improve. The culture of care here is very robust.”

Hospitals were evaluated based on a variety of performance metrics, including the following:

- [Lower rates better] Complications and infections, lengths of stay, emergency department wait times, and inpatient expenses
- [Higher rates better] Survival, patient satisfaction and profit margin

The winners outperformed peer group hospitals within all 10 clinical and operational performance benchmarks evaluated in the study: risk-adjusted inpatient mortality, risk-adjusted complications, mean healthcare-associated infection, mean 30-day risk-adjusted mortality, mean 30-day risk-adjusted readmission, severity-adjusted length of stay, mean emergency department throughput, case mix- and wage-adjusted inpatient expense per discharge, adjusted operating profit margin, and Hospital Consumer Assessments of Healthcare Provider (HCAHPS) scores.

For more information about the study, visit www.100tophospitals.com. (The list was formerly known as the Truven Health Analytics Top 100.)
Obituaries

KENNETH GARDNER KNOWLES, MD, 87, of Warwick Neck, died March 9, 2019. He was the husband of Sally [Loxley] Knowles. Dr. Knowles was a graduate of Moses Brown School, Brown University, and Tufts University School of Medicine.

He served on active duty in the US Navy on a destroyer and retired from the US Naval Reserve as a Lt. Commander. He then completed his residency in orthopedic surgery at RI Hospital before opening a private practice in Cranston and Pawtucket. He was affiliated with R.I. Hospital, St. Joseph Hospital, and Pawtucket Memorial Hospital and retired in 1995.

Besides his wife, he is survived by daughter Cynthia K. McLaughlin of Warwick, son Robert L. Knowles and his wife Jane of North Kingstown, and four grandchildren: Elizabeth McLaughlin, William McLaughlin, Sarah Knowles, and Hannah Knowles, and his sister Joyce Williams of Virginia.

Memorial donations may be made to the Class of 1953 Endowed Scholarship Fund, Brown University, Box 1877, Providence, RI 02912.

KENNETH B. NANIAN, MD, 90, died on March 7, 2019 at Philip Hulitar Hospice Center in Providence. For 58 years he was the beloved husband of Patricia [Zartarian] Nanian.

Ken was a graduate of Cranston High School, Brown University and Tufts Medical School. After his internship in Internal Medicine and residency, he practiced Cardiology at Rhode Island Hospital for 40 years. His welcoming smile and obvious pleasure in his encounters with patients and colleagues, not to mention his skill, improved the lives of all he touched, including those he taught and mentored.

While he was dedicated to his work, he loved the time he spent with family and friends. Whether listening to music, sailing, skiing, or just sharing a joke, his enthusiasm was contagious, and he took obvious delight in the enjoyment of others.

Besides his wife Pat, he is survived by their three sons: David Nanian and his partner Elizabeth Billingham of Weston, MA; John Nanian and his wife Beatrice of Warwick, RI; and Paul Nanian of Rumney, NH. He also leaves three loving grandchildren, Chloe, Willem and Camilia, and one sister, Hope Meguire of Lemont, IL. He was predeceased by his younger sister Cynthia Pierce.

Memorials may be made to First Baptist Church, or Armenia Tree Project, 400 West Cummings Park, Suite 3900, Woburn, MA 01801 or online at www.armeniatree.org.

CATHERINE M. SHANNON, MD, 72, of Providence and formerly of Barrington, died March 22, 2019 at Mass. General Hospital, after a courageous battle with cancer.

She leaves a son Michael A. Sligar, his wife Jane R. Duket, and their daughter Annabelle D. Sligar of Providence, R.I.; two brothers, Paul V. Shannon of Worcester and Dr. Michael T. Shannon and his wife Carolyn of Andover, Mass.; and four nephews.

Dr. Shannon was the daughter of Dr. Paul V. and Margaret V. [Sullivan] Shannon, and grew up in Worcester. She graduated from the College of New Rochelle in N.Y., earned a Ph.D. in Anatomy from Tufts University, and completed a postdoctoral fellowship at Case Western Reserve University in Cleveland.

In her accomplished academic career, Dr. Shannon taught at Case Western, Temple University, the University of Louisville, and Brown University. Dr. Shannon received her Medical Degree from the University of Louisville in 1984, followed by an internship and a residency in Radiology at St. Vincent Hospital, and a fellowship at the University of Massachusetts, all in Worcester.

Dr. Shannon was a radiologist in medical practice for more than 15 years in Rhode Island. She was affiliated with the Rhode Island Hospital in Providence, Memorial Hospital in Pawtucket, South County Hospital in Wakefield, and Kent County Hospital in South Kingstown. In 2007, she moved to Albuquerque, N.M., where she worked six years with Radiology Associates of Albuquerque until her retirement in 2013.
Remembering Isaac Ray, MD, as Butler launches its 175th anniversary celebration

Past president of RIMS was pioneer in medical jurisprudence

MARY KORR
RIMJ MANAGING EDITOR

Butler Hospital launched the celebration of its 175th anniversary in February at the hospital’s Art and History Committee annual event. A centerpiece of the year-long celebration will be the creation and installation of a historical timeline in the Riverview building. ISAAC RAY, MD, the hospital’s first superintendent, played a prominent role in the hospital’s launch in 1844, and its medical legacy.

**Birth of Butler**

A report published by Butler trustees in 1926 on the early history of the hospital states that Providence businessman and philanthropist NICHOLAS BROWN (1769–1841) wished to construct an asylum for the mentally disturbed. His will provided $30,000 for a hospital “where that unhappy portion of our fellow beings who are by the visitation of Providence deprived of their reason, may find a safe retreat, and be provided with whatever may be conducive to their comfort and to their restoration to a sound state of mind.”

A committee of incorporators applied for a charter from the State for the Rhode Island Asylum for the Insane, which was approved by the General Assembly in 1844. A Board of Trustees was formed, which subsequently sent a request to businessman CYRUS BUTLER, who agreed to donate $40,000, to be matched by the community and other sources. Records showed wide community support, with donations large and as small as $1. To honor benefactor Butler, the Board in 1844 voted to change the name of the institution to the Butler Hospital for the Insane. Changing the designation from asylum to hospital was also made, noting the latter is “a place where an enlightened and persistent effort is made to cure the patients of their illness.”

**DR. LUTHER BELL** of the McLean Asylum for the Insane in Somerville, Mass., was consulted in the planning and construction of the facility and traveled to Europe to visit similar institutions. Subsequently, he submitted plans which were executed with some modifications and with the input of Dr. Ray, who had also visited European institutions, particularly in the British Isles.

**Isaac Ray, MD**

The trustees of the institution chose Dr. Ray, a native of Beverly, Mass., as the first superintendent of the hospital. He attended Harvard Medical School for a time and graduated from Maine Medical School at Bowdoin College in 1827 at the age of 20. He was one of the original founders of what is now the American Psychiatric Association and a pioneer in the fields of medical jurisprudence and forensic psychology. In 1838, he published his first work, *The Medical Jurisprudence of Insanity*, which was republished half a dozen times in his distinguished career and cited frequently in court cases of the era.

A brochure for Center House, the main building at Butler Hospital in 1846, advertised the new facility. Providence architects William Tallman and James Bucklin designed the Tudor-Gothic style structure. The facility was built in 1846-1847, and the first patient was admitted on December 1, 1847.

Frederick Law Olmsted and his brother, who also designed New York’s Central Park, enhanced the original landscaping design in 1906.

Butler is now on The National Register of Historic Places.

[IMAGE: NATIONAL REGISTER OF HISTORIC PLACES]
The late DR. STANLEY M. ARONSON, Brown’s founding medical school dean and a decade-long editor of the Rhode Island Medical Journal, wrote this about Dr. Ray in a commentary:

“Ray wrote extensively on the many forensic and environmental factors that encouraged derangement, including social stress, excessive alcohol use and exhaustion. Much of his research pertained to the causes of mental disease. He urged suspension of judgment rather than facile explanation: ‘The less that is really known, the more obscure and mysterious this seems…the more disposed we are to accept the suggestion of the imagination, rather than a candid confession of ignorance.’

In his decades of labor in Rhode Island, he had fashioned a great institution that acknowledged the innate humanity of all patients and operated on the simple premise that compassion rather than punishment is a more effective therapy for the mentally ill.”

**Patient population**

In its early years, the hospital was open to all classifications of patients, from the poor to private-paying, housed in separate and spacious buildings for men and women. In the superintendent’s report of 1849, Dr. Ray reported that in the first 13 months of the hospital’s opening, the facility had admitted 156 patients, and by the end of December 1848, there were 100. Of the 56 no longer there, 17 had recovered to their “normal mental condition,” 13 had died, and the rest were removed by their families. The deaths were attributed to cancer, old age, consumption, chronic disease, delirium tremens, apoplexy, acute mania, and general paralysis. [Figure 1]

Dr. Ray related his general philosophy of treating patients this way in the annual report: “The law of kindness is imperative and inflexible; that the preservation of self-control and self-respect is encouraged by precept and example, by courteous and gentle treatment, and by rewarding every effort with some indulgence or privilege; that the violence of excitement is controlled by seasonal seclusion and perhaps medicine and with as little as possible mechanical restraints…that various forms of exercise and amusement, such as riding, walking, indoor and outdoor games, serve to improve bodily health, and divert the mind from morbid contemplations into healthier channels.”

**Costs**

Even in its early history, the hospital struggled with deficits, as it sought to gain acceptance and subsidies from local cities and towns for the indigent, which often found it cheaper to house the “incurable insane” in local almshouses. Annual reports of the hospital enumerate the rising costs, for example, the Board in 1854 raised rates for public patients from $2.50 per week, to $3.50. When a state institution opened in Cranston in 1870, many of the “paupers” were sent there, which alleviated some of the budgetary deficits Butler faced in its first decades. More than 100 years after its opening in 1847, the hospital closed in 1956 due to deficits, and was reopened the following year after philanthropic efforts spearheaded by the Providence community.

**Family**

Dr. Ray was joined by his son, BENJAMIN LINCOLN RAY, MD, at Butler. The younger Ray was a graduate of Brown University, Class of 1856, and Harvard Medical School, Class of 1859, and followed in his father’s footsteps, serving as assistant physician at Butler from 1859–1867.

In 1856–1857 Dr. Ray served as president of the Rhode Island Medical Society. The Transactions of the Rhode Island Medical Society of 1862 contain an address on “Hereditary Transmission,” by B. Lincoln Ray, MD, in which he is observed by those present to be a “chip off the old block and a proof of the doctrine of hereditary transmission.”

After retiring from Butler in 1867, Dr. Ray removed to Philadelphia, where his son had opened a practice. He died in 1881. It is fitting that he is interred adjacent to the Butler campus, in Swan Point Cemetery, one of the first garden cemeteries, which was chartered in 1846, the year that Dr. Ray assumed his duties at Butler. Also interred are his wife, Abigail May Frothingham, a daughter, Abby, who died at the age of 14, and his son, Benjamin Lincoln Ray, MD, who predeceased him by two years, leaving his parents grief-stricken, and which hastened Dr. Ray’s demise, according to a eulogy published in 1881 in The Alienist and Neurologist, a journal of scientific, clinical and forensic psychiatry and neurology. It stated:

“A great and good man has departed, but he has left behind a good work, fairly finished for his time, and a fragrant memory embalmed in the hearts of many warm friends and confreres.”

Dr. Ray’s work continues to this day, in Butler’s 175th year.
‘Magic Minute’: International Space Station sends ‘Good Night Lights’ greeting to Hasbro Children’s Hospital

MARY KORR
RIMJ MANAGING EDITOR

“Right now we are flying 250 miles above Earth aboard the International Space Station,” NASA Flight Engineer Anne McClain told the children gathered in the fifth-floor playroom of Hasbro Children’s Hospital last Wednesday night, in a special extra-terrestrial surprise greeting.

McClain has been on the International Space Station (ISS) since December and will remain until June, with five fellow astronauts. They have six sleeping quarters, two bathrooms, a gym, and a 360-degree view bay window.

“My crewmates and I are on a six-month expedition. While we are here we will conduct hundreds of scientific experiments to explore and challenge the boundaries of what we know,” McClain told those gathered at Hasbro in a pre-recorded video.

Good Night Lights is a hospital and uniquely Rhode Island tradition created several years ago by hospital volunteer and artist/cartoonist Steve Brosnihan. At 8:30 p.m. every night, Rhode Island organizations, businesses and universities send...
Flight Engineer Anne McClain collects samples for Marrow, a long-term investigation into the negative effects of microgravity on the bone marrow and blood cells it produces. The investigation may lead to development of strategies to help prevent these effects in future space explorers, as well as people on Earth who experience prolonged bed rest. [PHOTO: NASA]

A week of scientific study aboard the space station

The NASA.gov website regularly updates and summarizes the scientific aspects of the current International Space Station Expedition 59 in its space station science highlights.

In addition to two spacewalks last week, the Expedition 59 crew was busy studying the human brain and an astronaut’s wake-sleep cycle in space.

Flight Engineers Nick Hague and Christina Koch spent time last week to research how blood flows to the brain in microgravity. Koch took Doppler waveform measurements of her arterial blood pressure for the Cerebral Autoregulation study. Hague then closed out the brain blood-flow experiment and stowed its gear in the Kibo lab module.

Astronaut David Saint-Jacques of the Canadian Space Agency, worked on a wearable device, the Actiwatch Spectrum (AWS), which measures an astronaut’s daily wake-sleep cycle, or circadian rhythm. The AWS provides doctors insights into sleep quality, sleep onset and ambient light quality aboard the orbital lab.

Flight engineer Anne McClain, in addition to a spacewalk to swap out batteries on ISS, also worked on a science freezer and trashed obsolete ultrasonic hardware designed to detect pressure leaks. Hague spent a couple of hours one morning in the Kibo lab module measuring his arterial blood pressure using waveform data. The results will inform the Cerebral Autoregulation experiment that observes the brain’s blood vessels in microgravity.

Hague then joined Koch and collected leg, shoulder and back measurements for the Myotones muscle study in the Columbus lab module. Results could improve muscle rehabilitation techniques on Earth and in space.