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Q&A: RI Physicians Sound Clarion Call on Climate Change

See Page 59

NSF awards RI $6M to address Climate Change

See News, Page 61

SEPTEMBER 2023 VOLUME 106 • NUMBER 8 ISSN 2327-2228

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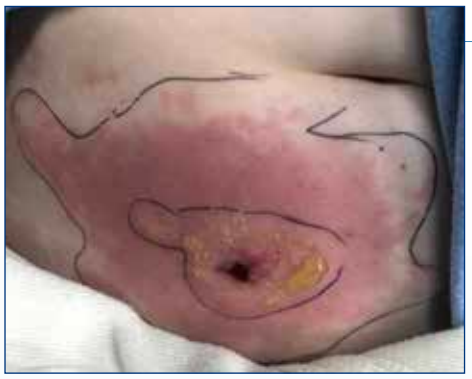
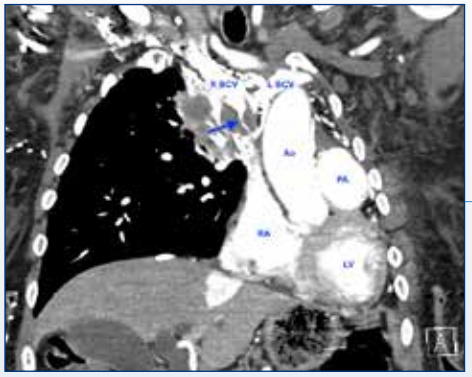
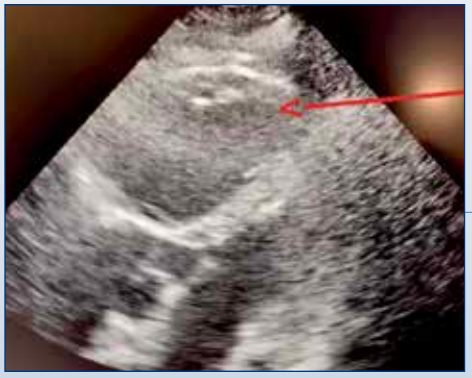


CASE REPORTS





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VOLUME 106 • NUMBER 8

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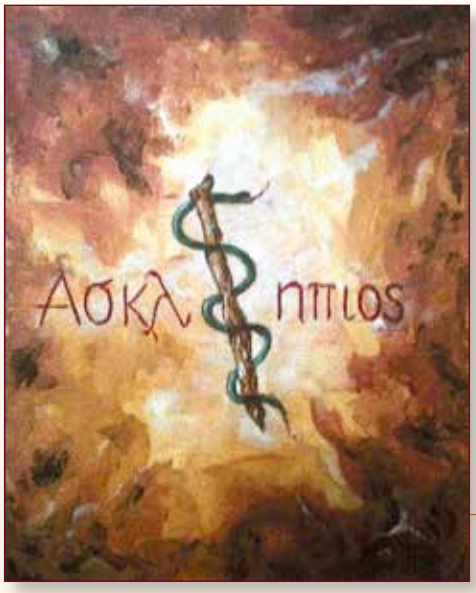

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A Novel Approach to the Treatment of a Stingray Injury to the Abdomen

SAMANTHA NI, MD; BRIAN HAWKINS, MD; MARK F. BRADY, MD, MPH

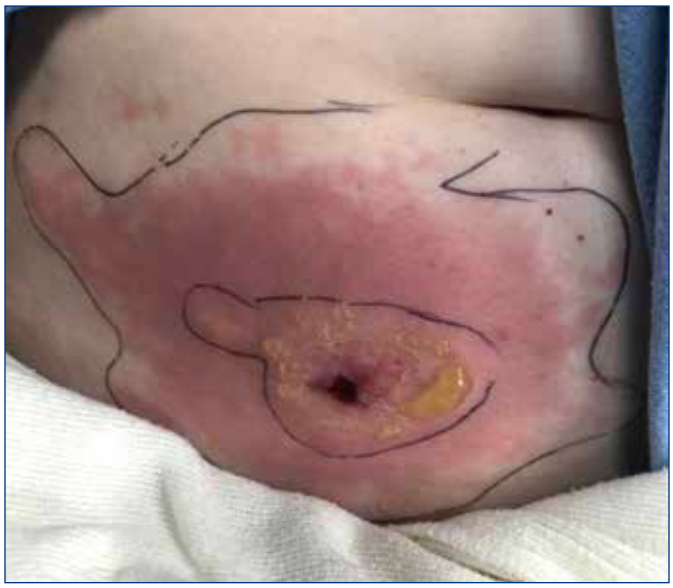
CASE PRESENTATION

A 24-year-old female presented to the Emergency Department with a puncture wound to her abdomen from a cownose stingray (Rhinopterus bonasus). She sustained the injury as part of her job trimming stingray barbs at the zoo.

On presentation, the patient was alert and appeared uncomfortable. Her heart rate was 72 beats per minute, her blood pressure was 86/58 mmHg, her respiratory rate was 24 breaths per minute, and her oxygen saturation was 100% on room air. In the right lower quadrant of the abdomen there was a 2 cm puncture wound surrounded by a well-demarcated, blanching erythematous rash with centrally located bullae, extending from just anterior to the right flank to the umbilicus (**Figure 1**).

Laboratory values for Complete Blood Count (CBC), Comprehensive Metabolic Panel (CMP), Fibrinogen, D-Dimer, Prothrombin Time (PT), International Normalized Ratio (INR), and Activated Partial Thromboplastin Clotting Time (aPTT) were all within normal limits.

Figure 1. Patient's right lower abdomen with stingray puncture wound centrally and surrounding bullae and well-demarcated erythema.



DISCUSSION

Stingrays are generally bottom-dwelling flatfish related to sharks that live in both salt and freshwater. Injuries are caused by their purely defensive venomous dorsal tail barbs. Only one or two stingray fatalities are reported annually, with the most publicized being Steve Erwin in 2006 from a barb to the chest from the short-tail stingray (Dasyatis brevicaudata), which can grow to be 14 feet long. In the Greek play Odysseus Acanthoplex by Sophocles, Odysseus was killed by his son with a spear dipped in stingray venom.

Trauma from the puncture and envenomation are the clinically relevant components when treating a stingray barb injury.[1,2] The barb must be removed and the wound treated as if it were caused by a serrated knife. Not all trauma from a barb is equivalent – though injuries are typically seen around the lower extremities when a person accidentally steps on the stingray – stingray barbs can also penetrate more dangerous areas such as the abdomen or the mediastinum. Further imaging may be indicated depending on the location of the trauma, as was the case with this patient. The patient had a CT abdomen and pelvis done, which did not show intraperitoneal involvement. Point-of-Care Ultrasound (POCUS) is another imaging modality that can offer information quickly at the bedside.[3,4,5]

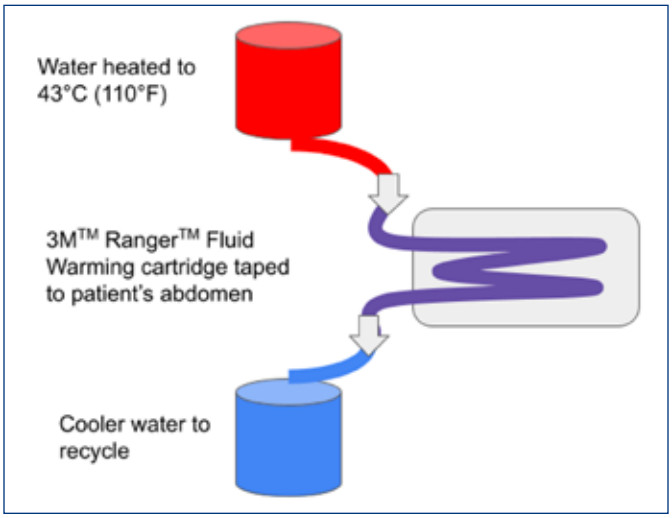
Stingray envenomation causes local pain, soft tissue necrosis, and can also cause systemic effects such as hypotension and cardiovascular collapse. Three active components in stingray venom have been identified: Serotonin, 5-nucleotidase, and phosphodiesterase.[6] Because these mediators are heat labile, treatment for stingray envenomation involves supportive care and local heat application. There are different opinions on the optimal temperature needed to deactivate them. The toxin has been reported to be deactivated at 50°C (122°F).[1] However, there have been multiple reports of patients having relief at lower temperatures.[6-10] The general consensus is to immerse the patient's affected area in water at a temperature as hot as the patient can tolerate for 30–90 minutes.

The location of this patient's wound required additional consideration because immersion in hot water was not possible. A 3M™ Ranger™ Fluid Warming cartridge was taped to the patient's abdomen over the puncture wound (**Figure 2**). Tap water was externally heated in a microwave

to 43°C (110°F). This heated water was placed in a bucket above the patient's bed. It flowed by gravity down into the cartridge through IV tubing and out of the cartridge via IV tubing into a second bucket on the floor. Heated water was added as needed to maintain the required temperature, allowing for a continuous hour-long treatment and significant pain relief for the patient (**Figure 3**).

Figure 2. 3M™ Ranger™ cartridge on patient's abdomen.

Figure 3. Schematic of fluid warming system with 3M™ Ranger™ cartridge.



The patient immediately reported pain relief when hot water was applied in this manner. In the Emergency Department the patient was treated for the possibility of anaphylaxis to the venom because she was hypotensive, receiving 0.3 mg Epinephrine, 10 mg dexamethasone, 50 mg Benadryl, 40 mg Pepcid, 650 mg Tylenol, and 2 liters of IV fluid.[11] She was given Levofloxacin and Doxycycline in order to cover for marine organisms, considering the open wound and exposure to saltwater. The patient's blood pressure normalized and she was admitted to the Intensive Care Unit for close monitoring. She was discharged two days later.

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Danial Jambard, EDT who configured the 3M™ Ranger™ set-up and the application on the patient's wound. Without his ingenuity, we would not have been able to treat the patient as efficiently.

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Improvement in Parkinson Disease Symptoms After Treatment for COVID-19 with Monoclonal Antibodies

DANIEL H. STRAUSS, BS, MD; KAREN HERLOFSON, MD; UMER AKBAR, MD

ABSTRACT

BACKGROUND: Parkinson disease (PD) is a neurodegenerative disease characterized by motor symptoms, such as bradykinesia, and non-motor symptoms, such as fatigue, which can be a particularly disabling feature of the disease.

METHODS: We conducted a retrospective chart review on a patient who reported improvement in baseline PD symptoms after COVID-19 treatment.

RESULTS: The patient is a 76-year-old male with a six-year history of PD who developed a COVID-19 infection, underwent treatment with COVID-19 monoclonal antibodies, and experienced a remarkable improvement in his pre-COVID PD symptoms, most notably his gait and fatigue. Prior to COVID, he rated his fatigue as '9 out of 10,' which worsened to 10 out of 10 during his COVID infection, and post-COVID treatment, his fatigue improved to '3 out of 10'.

PRINCIPAL CONCLUSIONS: We described an unexpected improvement in baseline PD symptoms for a patient treated with COVID-19 monoclonal antibodies. Further investigation will be essential to understand the mechanisms underlying this phenomenon.

KEYWORDS: Parkinson disease; COVID-19; monoclonal antibodies; fatigue

ABBREVIATIONS:
PD: Parkinson disease
COVID-19: Coronavirus disease 2019
IL-6: Interleukin-6
TNF-α: Tumor necrosis factor-α
UPDRS: Unified Parkinson Disease Rating Scale

INTRODUCTION

Parkinson disease (PD) is a neurodegenerative disease characterized by motor symptoms, such as bradykinesia, and non-motor symptoms, such as fatigue, which can be a particularly disabling feature of the disease affecting approximately half of those with PD.[1] We report a case of a man with PD who experienced robust improvement in pre-existing fatigue for approximately one month following an infusion of monoclonal antibodies for treatment of COVID-19 (coronavirus disease 2019) infection.

MATERIALS AND METHODS

We conducted a retrospective chart review of a patient who reported improvement in baseline PD symptoms after COVID-19 treatment.

RESULTS

The patient is a 76-year-old male with a six-year history of PD, presenting as stiffness, slowness, stooped posture, decreased arm swing, dream enactment, and fatigue. His exam revealed bradykinesia, rigidity, and a Unified Parkinson Disease Rating Scale (UPDRS) motor score of 18, consistent with PD. His pharmacologic regimen included carbidopa/levodopa 25/100mg 1 1/2 tabs thrice daily. His baseline fatigue was severe and disabling, and described as an "overwhelming exhaustion" that caused him to feel like he was "hit by a train." His fatigue was treated – albeit sub-optimally – with methylphenidate 10mg twice daily. He developed a COVID-19 infection which was heralded by a mild cough, fever and body aches, and overall worsening of his PD symptoms. He underwent treatment with a single infusion of casirimivab/imdevimab 600mg/600mg (without steroids) in the outpatient setting. Over the course of a week, his COVID-19 symptoms resolved. He and his wife noticed a remarkable improvement in his PD symptoms, most notably his gait and fatigue. To the amazement of the patient and his wife, his improvement was above and beyond his pre-COVID baseline. He rated his pre-COVID fatigue as '9 out of 10,' which worsened with COVID to 10 out of 10, and improved to '3 out of 10' after the treatment, with the improvement lasting nearly 4 weeks, after which his fatigue returned to pre-COVID levels. His wife commented that after treatment, he appeared like "he didn't have Parkinson's." The improvement was so drastic that the couple went on a 2-week trip to Italy, a previously unthinkable task. This episode occurred between his routine neurology clinic visits, so a clinical exam during the improvement phase was not available.

DISCUSSION

Fatigue is a disabling non-motor symptom which affects approximately half of those with PD.[2] Patients affected by PD fatigue feel drained and exhausted, even without physical exertion. No approved therapy for fatigue in PD has shown to be effective, but in extreme cases, off-label use of stimulants, such as methylphenidate, can be tried.

In this report, we present a case of a patient treated for COVID-19 with an infusion of casirimivab/imdevimab, a monoclonal antibody targeting the spike protein of SARS-CoV-2, with a subsequent improvement in his baseline PD fatigue. To our knowledge, only one other similar case has been reported, in which the patient experienced a marked improvement in gait and speech post-COVID treatment and lasted for about 40 days. This supporting case gives credence to the effect we observed; however, we report a substantial and novel observation of PD-related fatigue improvement.[3] Further evidence to implicate casirimivab/imdevimab in PD improvement in this patient are the half-lives of these two medications, 30.2 and 26.5 days respectively,[4] mirroring the month-long reprieve of symptoms in our patient. Placebo effect is possible but unlikely given that the patient had no expectations from receiving the infusion except for treatment for his COVID-19 infection. Returning to his pre-COVID baseline was expected but improvement above and beyond his baseline made this incident noteworthy.

The lack of a clinical exam weakens the association between symptom improvement and the COVID treatment. However, certain aspects of improvement are undeniable: the patient's own perception of feeling less tired and walking with more ease; his wife's observation of the same; their spontaneous plan to take an international trip which was previously unfathomable; and return of PD symptoms back to pre-COVID baseline after approximately 4 weeks of benefit. Mechanisms of PD-related fatigue are unclear, but there has been growing evidence of neuroinflammation as a key mediator. In broader literature, fatigue has been associated with a heightened inflammatory response and an activated cytokine network. Notably, pro-inflammatory cytokines have been implicated in PD, mediating dopaminergic cell death.[5,6] Additionally, levels of inflammatory markers, such as C-reactive protein, are significantly higher in PD patients compared to healthy controls.[7] It is possible that these neutralizing antibodies may reduce an inflammatory cytokine cascade, a shared feature of both COVID-19 infection and PD.[8] Studies have shown that the SARS-CoV-2 spike protein directly induces production of inflammatory cytokines, such as IL-6 and TNF-α,[9] and it is plausible that spike protein-directed monoclonal antibodies attenuate this process. Other evidence includes a significant reduction in C-reactive protein following treatment of COVID-19 patients with convalescent plasma, a cocktail of donor neutralizing antibodies with similar action.[10] Further investigation will be required to understand the mechanism for this improvement of PD symptoms following COVID-19 monoclonal antibody treatment.

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Disclosures

The authors report no conflicts of interest.

Consent

Written informed consent was obtained from the patient to publish this case report.

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Campylobacter Infection-Associated Acute Pancreatitis in a Renal Transplant Recipient

ALLISON NAVARRETE-WELTON, AB; ELIZABETH R. FRANCIS, MD, MPH; REGINALD GOHH, MD; DIMITRIOS FARMAKIOTIS, MD, FACP, FIDSA

ABSTRACT

Immunocompromised individuals (patients with cancer, diabetes, HIV/AIDS, transplant recipients) and pregnant women are at greater risk of complicated foodborne illness than the general population. Though rare, *Campylobacter* enteritis-associated acute pancreatitis has not been reported in an immunocompromised host to our knowledge. Herein, we describe a case of *Campylobacter* infection-associated pancreatitis in a renal transplant recipient. This case highlights the need for food safety education for the immunocompromised, emphasizes the role of health care providers in encouraging adherence to food safety guidelines, and stresses the need to maintain broad infectious differentials for immunocompromised patient populations, even for conditions which are not commonly associated with an infectious etiology.

KEYWORDS: pancreatitis, *Campylobacter*, renal transplant, immunosuppression, food-borne illness, food safety

CASE REPORT

A 63-year-old man with history of renal transplant presented to the emergency department with eight days of non-bloody diarrhea, emesis, and subjective fever. His past medical history was notable for two deceased donor kidney transplants 29 and 15 years prior for end-stage renal disease of unknown etiology, for which he took sirolimus, prednisone, and mycophenolate mofetil. He also had a history of post-transplant diabetes mellitus, gout, hypertension, and diverticulitis, for which he had undergone hemicolectomy seven years before. He did not drink alcohol, smoke, or use any recreational substances.

Ten days prior to presentation, the patient attended a funeral where he ate papaya salad with raw shrimp. Two days later, he began experiencing copious watery diarrhea. The diarrhea occurred approximately eight times per day and was usually yellow but sometimes black. He also reported emesis that occurred twice per day without blood or coffee-ground appearance. The following day, he began to feel feverish. Other people who had attended the same funeral also reported gastrointestinal symptoms.

In the emergency department, the patient's vital signs were notable for blood pressure of 96/65 mmHg, heart rate of 101 beats per minute and temperature of 36°C. Physical exam revealed epigastric tenderness. Pertinent labs, including elevated amylase and lipase, are shown in **Table 1**. Given that the triglycerides were only moderately elevated, we eliminated pancreatitis caused by hypertriglyceridemia due to sirolimus. Multiplex stool polymerase chain reaction (PCR) was positive for *Campylobacter, Vibrio*, and *enteropathogenic E. Coli (EPEC)*. *Clostridium difficile* PCR was negative. An abdominal and pelvic CT with contrast revealed an unremarkable gallbladder with no biliary dilatation. The pancreas appeared normal without peripancreatic inflammatory changes. Abdominal ultrasound revealed no gallbladder stones and a normal-caliber (4 mm) common bile duct without evidence of cholelithiasis or choledocholithiasis. The patient was started on intravenous fluids and subsequently admitted to the renal transplant service.

Table 1. Pertinent Laboratory Values

Laboratory Test	Patient Value	Normal Range
Creatinine (mg/dL)	3.46	0.64–1.27*
Lipase (IU/L)	791	10–60
Triglycerides (mg/dL)	392	40–149
Calcium (mg/dL)	8.4	8.5–10.5

*Patient baseline creatinine: 1.8–2.2

Via diagnosis of exclusion given the patient's negative alcohol history, no cholelithiasis, triglyceride level less than 1,000 IU/L, and case reports linking *Campylobacter* spp. (but none of the other pathogens) to acute pancreatitis, *Campylobacter* enteritis was deemed to be the cause of pancreatitis.[1–9] As such, azithromycin 500mg daily was started, providing coverage for *Campylobacter, EPEC* and *Vibrio.* Mycophenolate mofetil was held given the active infection and the risk of exacerbating the diarrhea.

The patient's diarrhea improved rapidly and resolved on day 3 of hospitalization. Blood and conventional stool cultures showed no growth, serum creatinine returned to baseline, and the patient was discharged home on hospital day 4 to complete a 5-day course of azithromycin. His mycophenolate mofetil was restarted five days after discharge without sequelae and he was doing well six months after. The patient was counseled to avoid raw meat or seafood and communal food in the future.

DISCUSSION

Campylobacter enteritis is rarely associated with acute pancreatitis. To our knowledge, only 19 cases have been reported to date.[2–9] Postulated mechanisms include bacterial invasion through the pancreatic duct, blood, or lymphatic system or obstruction of the ampulla of Vater by local inflammation. Similar mechanisms have been hypothesized for another invasive enteric pathogen, salmonella.[10] Alternatively, pancreatitis may also be a reactive immune phenomenon, similar to reactive arthritis associated with *Campylobacter*.[5]

In resource-rich countries, *Campylobacter* is typically transmitted through consumption of or cross-contamination with raw or undercooked meat, most commonly poultry and dairy products. In approximately one-quarter of cases, the source cannot be identified.[11]

Immunosuppressive medications place patients at increased risk for severe foodborne infections. One prospective study of 4405 solid organ transplant recipients in Switzerland found that 3% of *Campylobacter* foodborne illnesses in transplant recipients resulted in hospitalization, compared to 1% in the general population. Of note, 2.2% of the *Campylobacter* infections in this study resulted in graft failure, acute rejection, or death.[12] To avoid such complications, the 2019 American Society of Transplantation Infectious Disease Community of Practice guidelines recommend transplant patients avoid eating raw or undercooked meat, poultry, fish, and seafood, raw or undercooked eggs, and unpasteurized dairy products and fruit juice. It is also recommended that transplant recipients avoid consuming communal food and food at risk of improper handling and storing, including public salad bars, buffets, picnics and potluck meals.[13] Guideline adherence has not been thoroughly studied to date, but one single-center survey of 197 Swiss organ transplant recipients found that adherence to food safety recommendations decreased after the first year post-transplantation. Of the microbiologically confirmed foodborne infections in that cohort, none occurred in the 17.7% of patients who reported adherence to all food safety guidelines.[14] As such, immunocompromised patients may benefit from regular counseling about the importance of food safety guidelines. Providers can utilize existing patient education materials on food safety for the immunocompromised produced by the United States Department of Agriculture and the Food and Drug Administration.[15,16]

Campylobacter-associated pancreatitis also presents additional management challenges in immunocompromised patients. In prior case reports, *Campylobacter*-associated pancreatitis in immunocompetent patients was successfully managed with supportive care although details are too sparse to precisely ascertain outcomes. As this was the first reported case involving an immunocompromised patient, we decided to act more cautiously by initiating antibiotics as well as temporarily holding mycophenolate. These measures may have accelerated the resolution of symptoms.

There are significant diagnostic challenges associated with *Campylobacter* acute pancreatitis. In this case, we arrived at *Campylobacter* as a culprit of exclusion based on PCR results, prior case studies and no alternative explanation. Conventional stool cultures were negative, but this did not refute our diagnosis as PCR is known to be a better diagnostic tool than culture for *Campylobacter*, a fastidious organims.[17] It is, therefore, possible that the incidence of Campylobacter infection-associated complications is underestimated.

CONCLUSION

Campylobacter enteritis-associated acute pancreatitis is rare. Transplant recipients are at a higher risk than the general population for contracting foodborne illnesses such as *Campylobacter* enteritis and they are also at higher risk for developing invasive *Campylobacter* infection due to immunosuppressive medications. While *Campylobacter* enteritis-associated acute pancreatitis can be managed with supportive care in a non-immunocompromised host, antibiotics may be preferred in renal transplant recipients to shorten symptom duration and potentially protect the graft. Food safety guidelines, including those by the United States Department of Agriculture and the American Society of Transplantation Infectious Disease Community of Practice provide immunocompromised patients recommendations on best food consumption practices. Immunocompromised patients should be educated on and regularly reminded of the importance of following food safety guidelines.

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Disclosures

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A Dorsolateral Medullary Infarct Presenting with Isolated Dysphagia

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ABSTRACT

Posterior circulation cerebrovascular events comprise approximately 20% of ischemic events in the brain. Symptoms range from dizziness to profound ataxia altering gait. The majority of cases have some spectrum of dizziness. In this case report, we discuss a dorsolateral medullary stroke which atypically presented with dysphagia and without dizziness or ataxia. Although initial computed topography scans did not show large vessel occlusion or acute infarct, magnetic resonance imaging showed a right dorsolateral medullary infarct. Treatment is similar to other ischemic cerebrovascular accidents, including aspirin and high-intensity statin therapy, as well as thrombolysis if indicated. Pharyngeal dysfunction places a patient at higher risk for aspiration and pneumonia.

KEYWORDS: Posterior stroke, dysphagia, posterior circulation, cerebrovascular event

CASE REPORT

Our patient is a 57-year-old male, with a past medical history of Meniere disease and hypertension. He presented to the emergency department at approximately 8 pm with reported "throat tightness and inability to swallow." His symptoms had begun suddenly earlier in the afternoon, approximately 1 pm. He stated that since that time, he was unable to swallow solids, or liquids of any kind (including his saliva). He stated that he felt like his "throat was tight, but not swollen." His review of symptoms was positive for reported tingling in his hand earlier, as well as reported slurring of his words by his family (both of these had resolved some time prior to presentation in the emergency department). His family also reported that he did slur his words occasionally, which they attributed to Meniere disease. His family and social history were non-contributory. He specifically denied any history of stroke in the past, or any specific allergies including anaphylactic reactions.

His vital signs on arrival were: heart rate of 50 beats per minute, blood pressure of 152/82 mmHg, respiratory rate of 19 breaths per minute, temperature of 37 degrees Celsius, oxygen saturation of 97% on room air. His physical exam was notable for the inability to swallow when asked, and he was spitting up his secretions. There was no uvular deviation noted on physical exam. There was no ataxia, dysarthria, sensory or motor deficits on examination. He had no gait disturbances and was able to ambulate steadily. His National Institutes of Health Stroke Scale (NIHSS) was zero. There was suspicion for possible medullary stroke, given his profound dysphagia and sudden onset of symptoms, as well as the reported transient slurred speech and tingling in his hands. For this reason, a Computed Tomography (CT) without contrast of his brain, as well as a CT Angiogram of his head and neck (Emergent Large Vessel Occlusion [ELVO] protocol) was performed. His laboratory studies were notable for hyperlipidemia, but were otherwise within normal limits.

His CT Angiogram of the head showed markedly diminished opacification of the right vertebral artery to the level of the exit from the vertebral foramina at the skull base. There

Figure 1. Acute Infarct in the dorsolateral medulla on the right (Arrow).

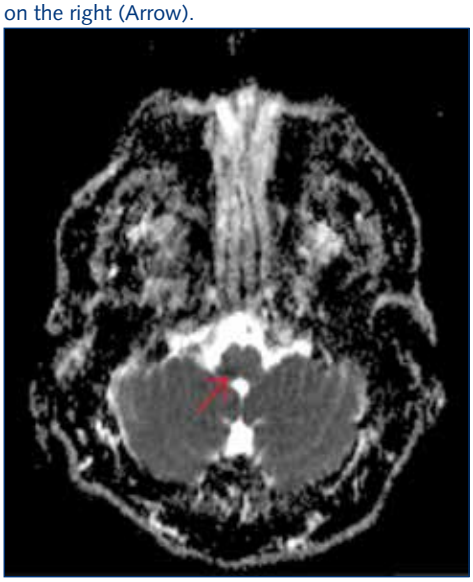
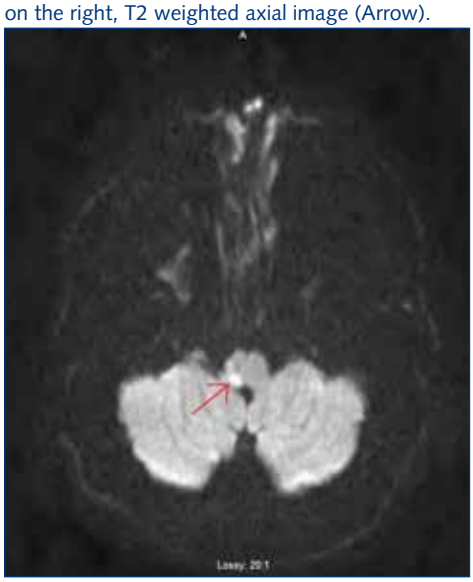


Figure 2. Acute Infarct in the dorsolateral medulla on the right, T2 weighted axial image (Arrow).



was no discrete thrombus identified. The age of this abnormality was indeterminate. He had a tele-neurology consult from the emergency department, and as his symptoms had been present for approximately eight hours, tissue plasminogen activator was not indicated. He did not have a discrete thrombus for mechanical thrombectomy. The neurologist recommended a magnetic resonance imaging (MRI) of his brain, a speech therapy evaluation, with a modified barium swallow, and to consider a fiber optic evaluation of swallowing with sensory testing. He was administered rectal aspirin, and admitted for further evaluation of his dysphagia.

An MRI of the brain was performed, which revealed an acute infarct in the right dorsolateral medulla (**Figures 1,2**). It also revealed an age-indeterminate occlusion of the right V3 and V4 segments of the vertebral artery. An echocardiogram did not reveal any acute abnormalities. The modified barium swallow was unable to be completed, as liquid was unable to progress past the piriform sinuses. The patient did not have further progression of his symptoms, but was unable to tolerate by mouth nutrition, and thus a percutaneous endoscopic gastrostomy (PEG) tube was placed by the gastroenterology team. The patient was discharged to home on hospital day seven.

DISCUSSION

Our patient suffered a lateral medullary infarction, also known as Wallenberg syndrome. This is the most common syndrome related to intracranial vertebral artery occlusion. His presentation, however, was atypical, with dysphagia and without dizziness, nystagmus, limb weakness, or ataxia. His dysphagia was severe, with an inability to swallow solids, or liquids, and to control his own salivary secretions.

Infarct locations can be subdivided into proximal, middle, and distal intracranial territories. The proximal territory includes regions supplied by the intracranial vertebral arteries (the medulla oblongata and the posterior inferior cerebellar artery supplied cerebellum). The blood supply to the lateral medulla is the posterior inferior cerebellar artery.[2,3] Dysphagia in this type of stroke is caused by involvement of the nucleus ambiguus.[4]

Vestibulocerebellar symptoms and signs are very common in patients with lateral medullary infarcts.[2,4] A case series performed at a tertiary center in Boston, Massachusetts reported the most frequent symptoms as dizziness (47%), unilateral limb weakness (41%), and dysarthria (31%). Dysphagia was also reported, at a rate of less than 10%.[2] It is important to identify and correlate these symptoms, as this syndrome is commonly missed upon initial presentation.

Prognosis with lateral medullary infarction is generally favorable. However, a multicenter follow-up study demonstrated poor long-term prognosis in up to 21.2% of patients, with all-cause mortality rate of 10.6%. The risk factors for poor prognosis and death were age greater than or equal to 65 years old, dysphagia, recurrent stroke, and medial medullary infarction plus cerebellar infarction.[4] Pharyngeal dysfunction unfortunately places patients at higher risks for aspiration and pneumonia.

CONCLUSION

Posterior circulation cerebrovascular syndromes may present atypically, with dizziness reported as the most common symptom. There may also be limb ataxia or dysarthria reported as well. The patient in our case presented with isolated dysphagia, and no ataxia or dizziness or gait disturbance. He was found to have a lateral medullary infarct on MRI. This subtle presentation is important to identify, as it can be a major cause of morbidity and mortality among patients.

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A Breathtaking Scenario: Superior Vena Cava Syndrome

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KEYWORDS: superior vena cava syndrome, complications of squamous cell carcinoma of lung, SVC stent, post-stenting anticoagulation

CASE REPORT

A 68-year-old woman with hypertension and asthma presented to the emergency department with three days of progressively worsening dyspnea and two weeks of left upper extremity swelling. She had a remote history of squamous cell carcinoma (SCC) of the left lung treated with total left pneumonectomy. One year before this admission, she developed cough and dyspnea, and computed tomography (CT) of the chest demonstrated a new mass encasing the right upper lobe bronchus with lymphangitic carcinomatosis. CT-guided tissue biopsy confirmed recurrence of SCC. Given her heavy disease burden and the compromised state of her airway and thoracic inlet, she was not a surgical candidate. She was treated with five cycles of systemic combined chemotherapy of carboplatin, abraxane, and pembrolizumab followed by maintenance pembrolizumab alone.

On this admission, review of systems revealed progressively worsening left upper extremity swelling, facial flushing, cyanosis of the lips, and orthopnea. She denied fever, chills, increased sputum production, and visual changes. Vital signs were significant for tachycardia to 119 beats per minute, blood pressure 162/81 mmHg, respiratory rate of 21 breaths per minute, temperature of 98.7°F, and oxygen saturation of 99% on ambient air. Physical examination revealed bilateral upper extremity edema (left greater than right), left breast edema, left periorbital edema, and extensive venous collateralization on the anterior chest wall (**Figure 1**). Bilateral arm elevation did not cause facial plethora (Pemberton's sign). Laboratory workup was unremarkable. CT of the chest with and without contrast showed marked interval disease progression from two weeks prior with increased size of numerous pulmonary nodules, a right apical mass that increased in size from 2.8 x 1.8 to 3.2 x 2.8 cm, and a mediastinal mass that increased in size from 4.8 x 4.4 to 5.4 x 5.4 cm. The mediastinal mass encased the right upper lobe bronchus, right upper lobe pulmonary artery, and superior vena cava (SVC). Numerous venous collaterals within the right anterior and posterior chest wall were demonstrated, and the SVC was nearly completely occluded with only minute, threadlike flow (**Figure 2**).

Figure 1. Physical examination included extensive venous collateralization on the anterior chest wall (blue arrows).

These clinical and diagnostic findings were consistent with SVC syndrome. She underwent endovascular stent placement in the SVC, and her symptoms improved (**Figure 3**). Palliative radiation was then administered to reduce stress on the SVC, other vasculature, and airways. Repeat CT venacavogram demonstrated patency of the SVC stent, and she was discharged with home oxygen, a prednisone taper, and plans to continue palliative radiation.

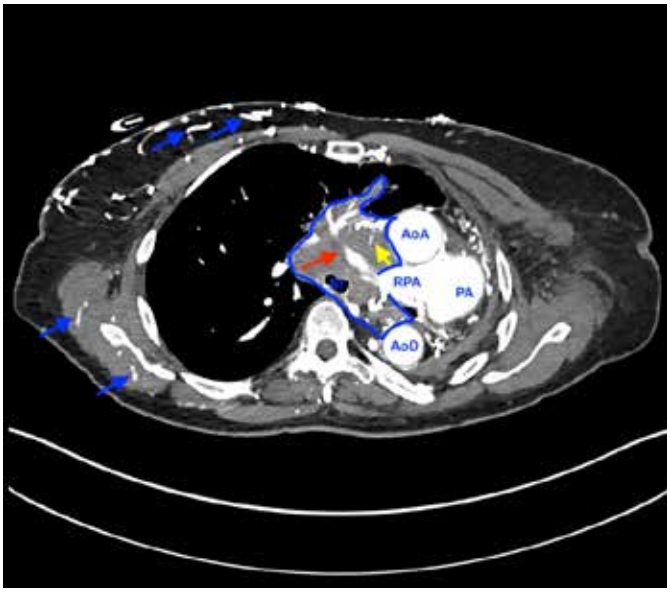
DISCUSSION

SVC syndrome was first described in 1757 by William Hunter in a patient with a large syphilitic aortic aneurysm compressing the SVC.[1,2] The syndrome results from either partial or complete obstruction of the SVC, impeding venous return to the right atrium via external compression, vessel stenosis, or intraluminal occlusion. Malignancy is the cause

Figures 2A, 2B. Computed tomography of the chest upon presentation, prior to SVC stent placement.

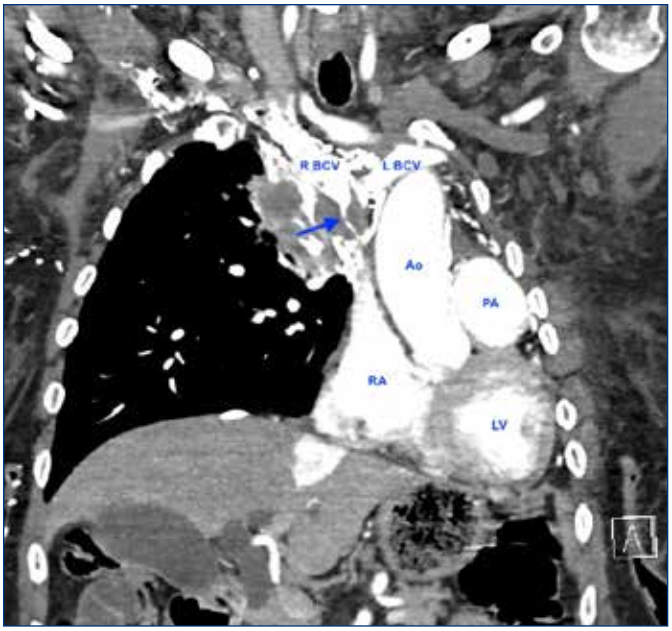
[**2A**] Axial image with contrast showing mediastinal mass (outlined in blue) that encases the right upper lobe pulmonary artery (red arrow) and its branches, which are diminutive (yellow arrow). No corresponding right upper lobe bronchus (implying its near-total occlusion). Numerous venous collaterals within the right anterior and posterior chest wall (blue arrows).

Abbreviations: AoA = ascending aorta, BI = bronchus intermedius, RPA = right pulmonary artery, PA = main pulmonary artery, AoD = descending aorta.



[**2B**] Coronal image with contrast showing minute, threadlike flow of SVC (blue arrow).

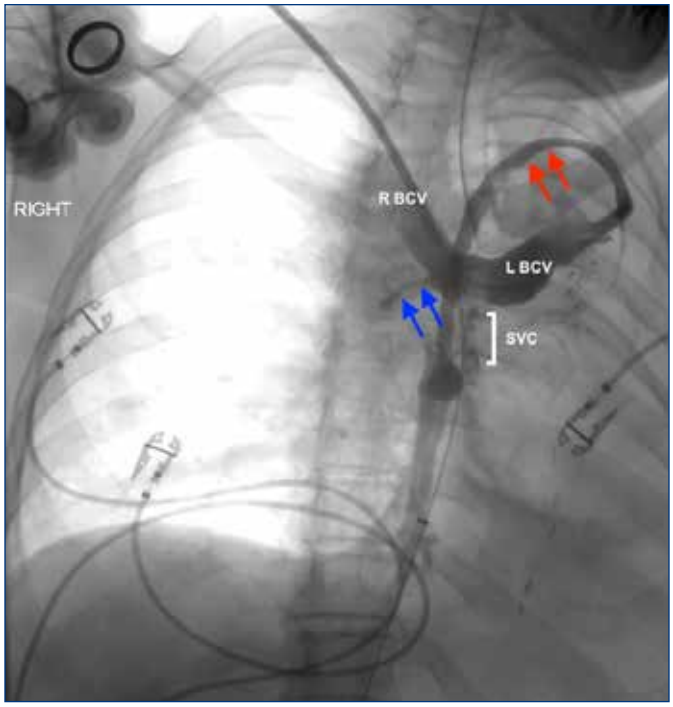
Abbreviations: R BCV = right brachiocephalic vein, L BCV = left brachiocephalic vein, Ao = aorta, PA = main pulmonary artery, RA = right atrium, LV = left ventricle.



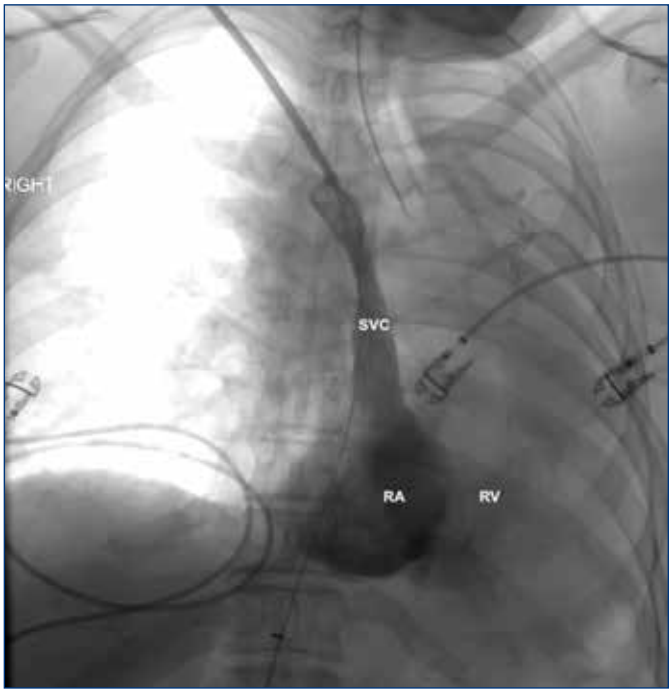
Figures 3A, 3B, 3C. Selected fluoroscopic images from endovascular stent placement in the SVC.

[**3A**] pre-stenting venography showing impeded flow of contrast through the SVC and resultant backflow.

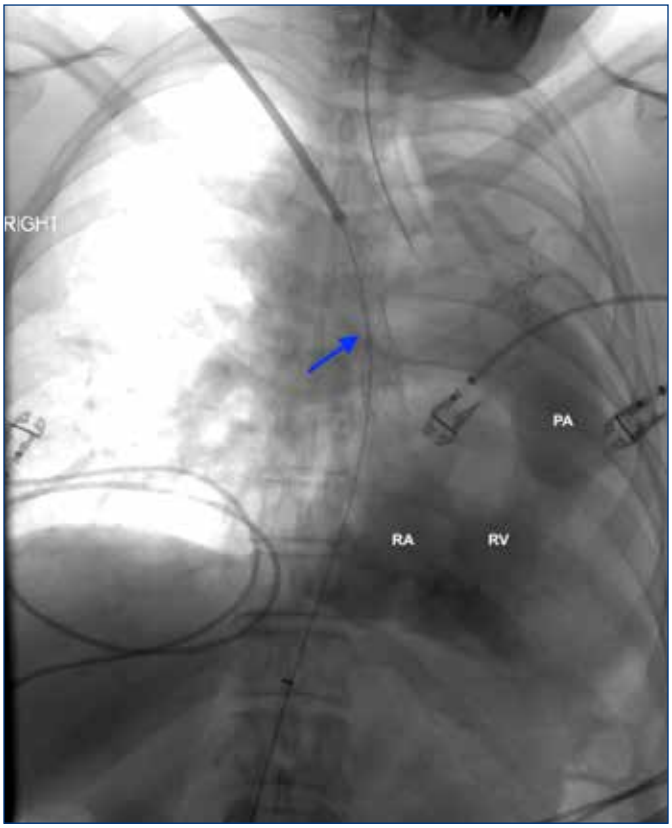
Abbreviations: R BCV = right brachiocephalic vein, L BCV = left brachiocephalic vein, red arrows = accessory hemiazygos vein, blue arrows = dilated intercostal vein draining into azygos vein.



[**3B**] Post-stenting venography showing flow of contrast through SVC stent into right atrium (RA) and right ventricle (RV).



[3C] Post-stenting venography showing flow of contrast past SVC stent (blue arrow) and into right atrium (RA), right ventricle (RV), main pulmonary artery (PA), and downstream pulmonary vasculature.



in up to 90% of cases, due to tumor invasion or external compression of the SVC (most commonly a bronchogenic squamous cell carcinoma). Other common etiologies of SVC obstruction include thrombus formation, infection, intravascular device malfunction, and fibrosing mediastinitis.[3]

Anatomically, the right and left brachiocephalic veins join to drain into the SVC. A major tributary to the SVC is the azygos vein, which can potentially connect the body's venous supply in the event of SVC obstruction.[4] The resultant backflow and increased pressure to upstream vessels can lead to edema of the head, neck, brain, chest wall, and upper extremities. Symptoms include cough, dyspnea, stridor, hoarseness, and dysphagia, while cerebral edema can cause headaches, confusion, and visual disturbances.[5] Plethora and cyanosis might be observed, but the diagnosis should not be precluded in darker skinned individuals. Symptom severity is correlated with the tempo of disease progression and the degree of SVC narrowing. Rarely, the condition can be fatal via one or multiple mechanisms: brainstem herniation leading to obtundation and coma, laryngeal edema leading to respiratory failure, or interruption of cardiac preload leading to hemodynamic collapse[6] (though the latter is more likely to result from compression of the right atrium itself).

Regardless of symptom severity, any patient with a known malignancy that has the possibility of causing SVC syndrome deserves cross-sectional imaging; venous phase CT with contrast is often the study of choice, but magnetic resonance venography can be used as well. Point-of-care ultrasound (POCUS) is also helpful when making the diagnosis more urgently or in outpatient settings.[7-9] Once SVC obstruction is confirmed, symptom severity scoring systems can be used to guide management.[10] The Kishi score can aid in assessing the need for stent placement.[11] The median life expectancy among patients with SVC obstruction is approximately six months, but this duration can vary depending on the underlying malignancy. However, survival among patients presenting with malignant SVC syndrome does not significantly differ from survival among patients with the same tumor type and disease stage who present without SVC obstruction.[5]

For patients with malignant SVC syndrome, treatment should focus on reducing tumor burden and promptly relieving symptoms. Supportive care for patients often includes head elevation to relieve the effects of cerebral edema, though data supporting this practice is lacking.[5] An SVC stent should be considered in these patients if they cannot tolerate optimal treatment of their malignancies or if symptoms have persisted or recurred after treatment.[10] This patient presented with moderate symptoms secondary to a known radiosensitive malignancy, which would at first indicate radiation therapy as appropriate treatment. Her tumor progression on imaging paired with her acute decline in respiratory status, however, prompted the care team to pursue stenting. Post-stenting radiation was protective against recurrent SVC obstruction as well as progression of right bronchus obstruction.

The role and duration of anticoagulation and antiplatelet therapy after intravascular stenting remains an area of uncertainty in the management of SVC syndrome. Some studies suggest the use of aspirin and a P2Y12 inhibitor, while others advocate for therapeutic anticoagulation for a period of one to nine months.[3] A 2013 retrospective review of patients with malignant SVC syndrome treated by endovascular stenting showed that long-term anticoagulant therapy did not influence the risk of recurrence or complications,[12] while a 2018 retrospective review of benign SVC syndrome showed the same results.[13] However, further studies are required to develop a consensus on management.

The management of superior vena cava syndrome is focused mostly on alleviation of symptoms and treatment of underlying causes. There are no universally accepted guidelines on staging or management, but the proposed approaches might be helpful to clinicians. This patient's case highlighted pertinent physical exam and imaging findings, with notable improvement in her symptoms after endovascular stent placement, which is now the preferred treatment.

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Disclaimer

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Ultrasound Findings in Two Patients with Hemodynamically Unstable Pulmonary Embolism

LUKE SULLIVAN, BA, MD; SHANNA STRAUSS, MD, MS; WILLIAM BINDER, MD

CASE PRESENTATIONS

Patient #1 is a 76-year-old woman with a past medical history of chronic obstructive pulmonary disease (COPD) on 2 liters of oxygen at home, who presented to the emergency department (ED) in respiratory distress. She reported one week of increased dyspnea on exertion, orthopnea, abdominal distention, leg swelling and increased home oxygen requirement. Her past medical history also included atrial fibrillation (AFib), congestive heart failure (CHF), remote breast cancer, and a previous pulmonary embolism (PE), for which she was on warfarin. Physical exam revealed a systolic blood pressure ranging from 70–90 mm Hg, and an irregular pulse in the 130–150 range. Her lungs were clear. An EKG demonstrated AFib with rapid ventricular rate (RVR). Point-of-Care ultrasound (POCUS) revealed right ventricular (RV) enlargement (**Figure 1**). Additionally, no B-lines were identified. During placement of a central line, a very plump, right, internal jugular vein containing swirling clot was visualized on POCUS (**Figure 2**). A CT pulmonary angiogram (CT PE) demonstrated a saddle PE extending into all lobar and multiple segmental branches bilaterally (**Figure 3 and Video 1**). The patient was given tissue plasminogen activator (TPA) and transferred to the intensive care unit, where she required thrombectomy for removal of her PE.

Patient #2 is a 96-year-old woman with a history of hypertension and dementia who presented to the ED via EMS after having an unwitnessed fall at her nursing home. EMS found the patient to be unresponsive and apneic, but with a pulse. Upon arrival to the ED, however, she was noted to have pulseless electrical activity (PEA) and cardiopulmonary resuscitation (CPR) was initiated. The patient received epinephrine, calcium gluconate, and bicarbonate per ACLS guidelines, but she never had a shockable rhythm. During the resuscitation, POCUS revealed a blood clot in the right atrium and a dilated RV suggestive of pulmonary embolism (**Figures 4A,B**).

CPR and epinephrine were continued, and the patient was given 50 mg of TPA. Return of spontaneous circulation (ROSC) was achieved and the patient was started on an epinephrine infusion and received an additional 50 mg of TPA. After stabilization, a CT PE was obtained and revealed extensive bilateral PE. The patient was admitted to the intensive care unit for continuation of care. Because of her age, comorbidities, and unknown down time, by family decision, the patient was transitioned to comfort measures only and terminally extubated.

Figure 1. Example of enlargement of the right ventricle.

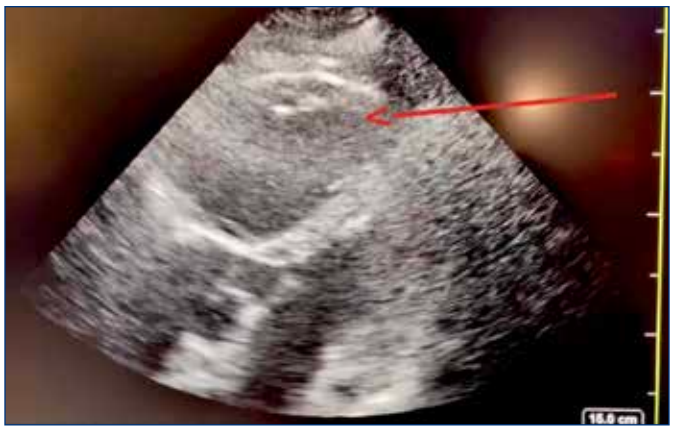


Figure 2. Internal jugular vein containing swirling clot.

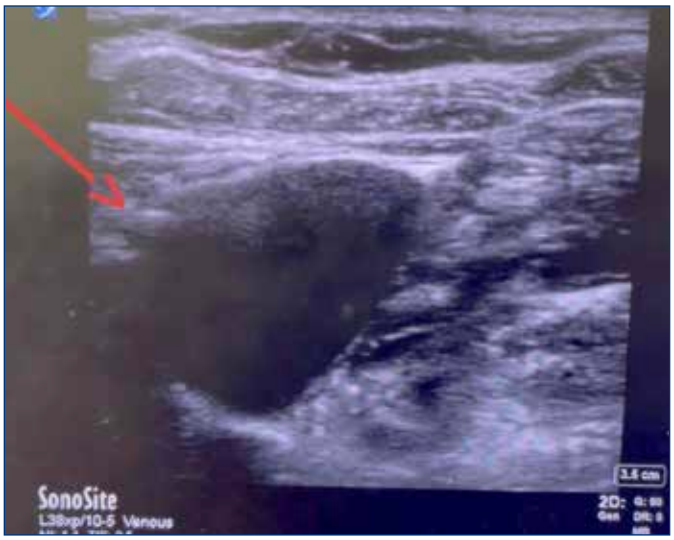
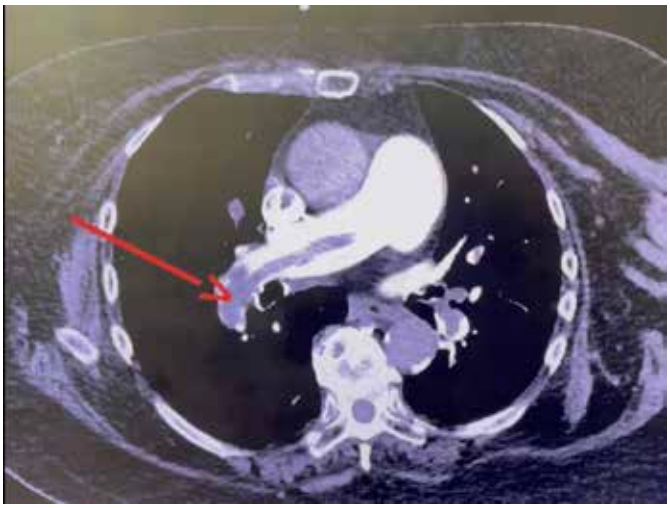


Figure 3 and Video 1. CT PE showing large saddle pulmonary embolus extending into all lobar and multiple segmental branches bilaterally. Additionally, there is associated reflux of contrast into the IVC and hepatic veins, enlargement of the right atrium and right ventricle with RV/LV ratio measuring greater than 1 and bowing of the interventricular septum.



Click to play video. [https://vimeo.com/841898475]

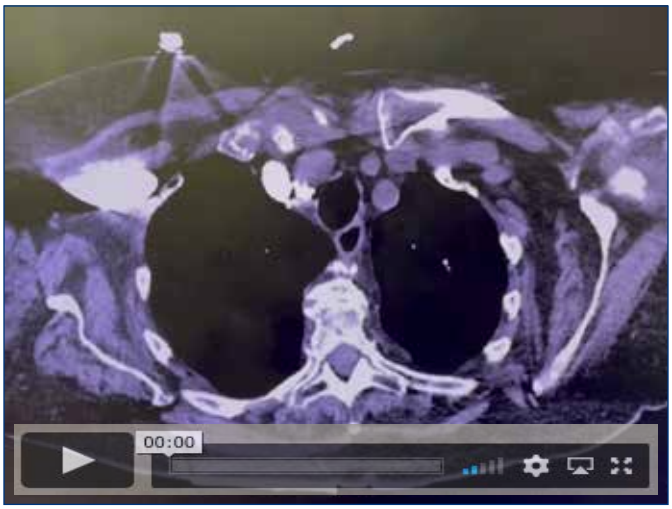
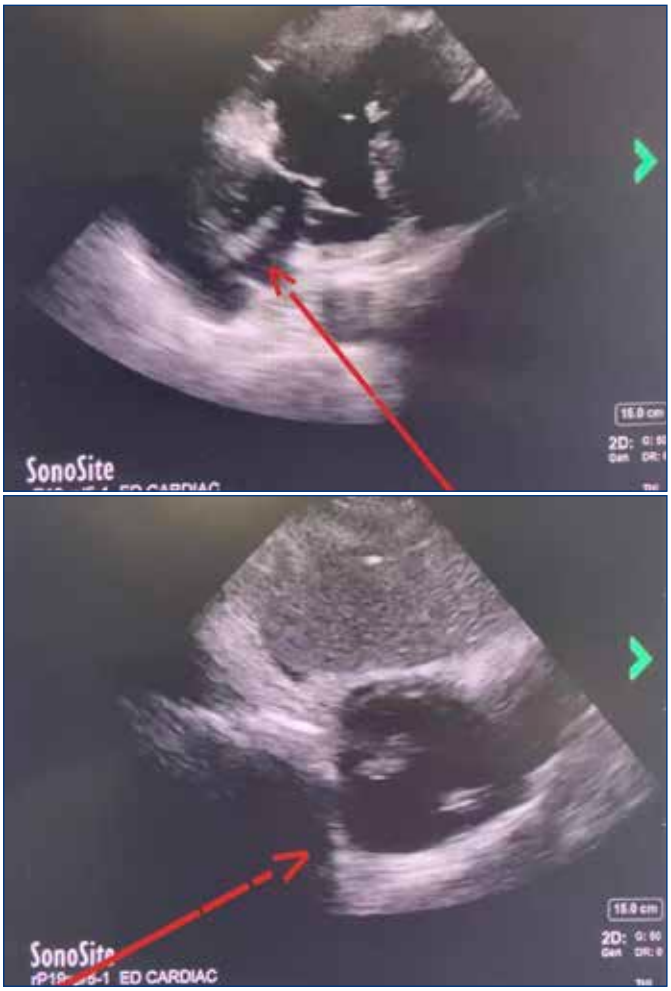


Figure 4. Evidence of clot in the right atrium [**A**] and dilation of the right ventricle [**B**].



DISCUSSION

The two patients described above illustrate opportunities for POCUS imaging to be used in the time-sensitive diagnosis and treatment of PE. In many patients with PE and normal vital signs, a focused cardiac ultrasound will be normal. However, our two patients were unstable and had visualized clot. In the unstable patient with a PE, echocardiogram findings are rarely unremarkable.[1] It is more common to see POCUS findings suggestive of right heart strain. These findings include RV enlargement (RV:LV ratio >0.6 in the apical 4 chamber view (A4C)), septal flattening in the parasternal short view (PSS), poor tricuspid annular plane systolic excursion (TAPSE) or McConnell's sign.

Providers may also recognize a plump, fixed, inferior vena cava and expanded right or left internal jugular vein. While RV strain is not specific to PE and may be noted in other causes of obstructive or cardiogenic shock, it was highly suggestive in both of our patients. Performing POCUS in the unstable patient with undifferentiated dyspnea allowed us to evaluate our patient's ejection fraction, as well as to look for B lines, which are used to diagnose congestive heart failure (CHF). Additionally, the absence of lung sliding ruled out a pneumothorax and allowed us to hone our differential diagnosis.[2,3,4] While both of our patients were able to obtain CT scans, in patients who are too unstable for CT or who are deteriorating, POCUS may expedite initiation of appropriate treatment.[5,6,7]

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Immediate Postpartum Long-acting Reversible Contraceptives (LARC) Among Low- versus High-Risk Obstetric Populations

ANNA R. WHELAN, MD; ZANDRA HO, BS; STEPHEN S. RASIAH, MD; BENJAMIN P. BROWN, MD, MS

KEYWORDS: contraception, postpartum, long-active reversible contraception, health equity, pregnancy

BACKGROUND

While long-acting reversible contraceptives (LARC) – intrauterine devices (IUD) and contraceptive implants – offer exceptional pregnancy prevention, the United States (US) has a long history of contraceptive coercion. Contraceptive coercion is behavior from medical providers/institutions/individuals that interferes with one's ability to make choices regarding their reproductive health. Coercive practices regarding the prescription of contraceptives has been shown to systematically affect patients of color and those with lower socioeconomic status.[1-3] Prior studies have shown that these patients are more likely to receive LARC devices than White affluent patients, and that this may be due to coercion.[3,4] Multiple methods of contraception counseling have been studied in order to improve equitable care. Until recently, tiered-effectiveness-based counseling was the standard training.[1] However, effectiveness may not be a patient's sole goal and open-ended counseling is now recommended.[1] Moreover, disparities in contraceptive counseling may also be affected by differences in rates of medical comorbidities in pregnancy, driven in large part by inherent systemic racism in the US.[5]

Patients who undergo high-risk deliveries may be more likely to use a LARC method, when compared to patients with low-risk pregnancies, which may be due to the intersecting effects of racism, classism, and providers' pre-conceived recommendations based on the patient's medical comorbidities. Prior to being able to investigate the presence or rates of contraceptive coercion in low- versus high-risk patients, usage of immediate postpartum LARC in these two groups must be assessed. Our objective was to determine if rates of immediate postpartum LARC use differed between high- and low-risk obstetric populations.

STUDY DESIGN

We performed a retrospective cohort study of patients who delivered at a single academic center in 2019 with the high- and low-risk hospital obstetric services. Detailed chart abstraction of prenatal visits and delivery information was performed by trained research staff. The primary outcome was immediate postpartum LARC placement (post-placental IUD or contraceptive implant). Multivariable logistic regression was calculated, adjusting for confounders which differed between groups on bivariate analysis.

RESULTS

From the patients included in this analysis, 236/355 (66%) delivered with the low-risk service. Patients who delivered with the low-risk service were less likely to be White (28.3% vs 54.6%), more likely to be of Latinx ethnicity (62.5% vs 32.2%), and more likely to have public insurance (85.8% and 65.3%) than those who delivered with the high-risk service (p<0.001 for all).

No significant difference was seen between high- and low-risk patients in regards to receiving immediate postpartum

Table 1. Patient Demographics

	Low-Risk Service (N=236)	High-Risk Service (N=119)	p-value
Maternal age, median (IQR)	26 (22–31)	30 (26–37)	**<0.001**
Maternal BMI, median (IQR)	31.2 (27.3–36.3)	33.1 (28.9–39.2)	**0.04**
Maternal Race			**<0.001**
Black	37 (16.1)	18 (15.1)	
White	65 (28.3)	65 (54.6)	
Asian/Pacific Islander	6 (2.6)	3 (2.5)	
Indigenous	15 (6.5)	2 (1.7)	
Other	107 (46.5)	31 (26.1)	
Maternal Ethnicity			**<0.001**
Latinx	140 (62.5)	37 (32.2)	
Non-Latinx	84 (37.5)	78 (67.8)	
Insurance provider			**<0.001**
Medicaid/Publicly funded	200 (85.8)	80 (68.3)	
Private/Commercial	31 (13.3)	34 (29.1)	
Self-pay/No insurance	2 (0.9)	3 (2.6)	
No. prenatal visits, median (IQR)	10 (7–-12)	8 (5–11)	**0.01**
Nullipara	75 (31.8)	27 (22.7)	0.08

Fisher's exact test was used for analysis of categorical variables and Wilcoxon rank sum test was used for analysis of continuous variables. Significance at p<0.05.
Data presented as N(%) unless otherwise specified
IQR = interquartile range

IUDs. However, patients who delivered with the low-risk service received contraceptive implants in the immediate postpartum period more frequently than those who delivered with the high-risk service (19.2% vs 7.7%, p<0.005). This difference was no longer seen after adjustment for age, body mass index (BMI), gestational age, non-White race, Medicaid insurance status, cesarean delivery and nulliparity (adjusted odds ratio for high-risk patients to receive implant 0.51 95% CI 0.21–1.27). Contraceptive counseling was documented in the medical chart more frequently among high-risk patients (59.7% vs 46.2%, p<0.001). (See **Tables 1,2,3**)

Table 2. Maternal medical and delivery characteristics

	Low–Risk Service (N=236)	High–Risk Service (N=119)	p–value
Prior cesarean	35 (15.0)	29 (24.6)	**0.04**
Maternal medical comorbidities	0	7 (5.9)	–
Pregestational diabetes	4 (1.7)	4 (3.4)	0.45
Chronic Hypertension	0	4 (3.4)	–
VTE	2 (0.9)	1 (0.8)	1.00
CHD	0	1 (0.8)	–
Coronary artery disease	2 (2.7)	2 (2.9)	1.00
Migraine with aura	13 (5.5)	7 (5.9)	0.24
Migraine without aura			
Maternal medical comorbidity (combined)*	30 (12.71)	27 (22.7)	**0.02**
Gestational age at delivery, median (IQR)	39.3 (38.3–40.1)	37.3 (34.9–39)	**<0.001**
Preterm birth (<37 weeks')	20 (8.6)	47 (40.2)	**<0.001**
Mode of delivery			**<0.001**
Spontaneous vaginal delivery	168 (71.2)	57 (47.9)	
Operative vaginal delivery	17 (7.2)	8 (6.7)	
Cesarean delivery	51 (21.6)	54 (45.4)	
Mode of Anesthesia			0.06
None	23 (9.8)	10 (8.5)	
Local/pudendal	8 (3.4)	0	
Nitrous oxide	3 (1.3)	0	
Neuraxial	199 (85.1)	105 (89.0)	
General anesthesia	1 (0.4)	3 (2.5)	
Estimated blood loss mL (median, IQR)	350 (300–500)	500 (350–700)	**<0.001**
Delivery Complications			
Unplanned Cesarean	20 (8.5)	27 (22.7)	**0.03**
Postpartum hemorrhage	7 (3.0)	3 (2.5)	0.29
Intra–amniotic infection	14 (5.9)	2 (1.7)	**0.03**
Preeclampsia/Eclampsia	17 (7.2)	9 (9.0)	0.47
ICU admission	0	2 (1.7)	–
OASIS	1 (0.4)	1 (0.8)	–
Delivery Complication	59 (25.0)	40 (33.6)	0.10

Fisher's exact test was used for analysis of categorical variables and Wilcoxon rank sum test was used for analysis of continuous variables. Significance at p<0.05.

Data presented as N(%) unless otherwise specified

IQR = interquartile range, VTE = venous thromboembolism, CHD = congenital heart disease, ICU = intensive care unit, OASIS = obstetric anal sphincter injury

*Maternal medical comorbidity is comprised of: pregestational diabetes, chronic hypertension, VTE, CHD, coronary artery disease, migraines with and without aura.

Table 3. Contraceptive Counseling and Device Placement

	Low-Risk Service (n=236)	High-Risk Service (n=119)	p-value
Desired contraceptive method antepartum [n (%)]			
None	17 (7.2)	12 (10.8)	0.41
Barrier contraception	8 (3.4)	0	—
Combination oral contraception	5 (2.1)	1 (0.8)	0.67
Progestin only pills	3 (1.3)	6 (5.0)	0.07
Patch/Ring	7 (3.0)	5 (4.2)	0.55
Depot medroxy-progesterone	11 (4.7)	3 (2.5)	0.40
Levonorgestrel IUD	24 (10.2)	18 (15.1)	0.22
Copper IUD	16 (6.8)	2 (1.7)	**0.04**
Implant	46 (19.5)	7 (5.9)	**<0.001**
Tubal sterilization	20 (8.5)	24 (20.2)	**0.003**
Vasectomy	0	0	—
Not documented	79 (33.5)	41 (34.5)	0.91
Counseling documented? [n (%)]	109 (46.2)	71 (59.7)	**<0.001**
Counseling method: [n (%)]			0.15
Open-ended	18 (12.2)	5 (5.3)	
Tiered	18 (12.2)	8 (8.4)	
Other	1 (0.7)	1 (1.0)	
Not documented	110 (74.9)	81 (85.3)	
Immediate postpartum LARC [n (%)]			
None	174 (74.4)	94 (80.3)	0.30
Levonorgestrel IUD	11 (4.7)	12 (10.3)	0.07
Copper IUD	4 (1.7)	2 (1.7)	1.00
Implant	45 (19.2)	9 (7.7)	**0.005**

Odds Ratio for Immediate Postpartum LARC among High-risk Patients*

LARC	OR High-Risk [OR (95% CI)]	aOR† High-Risk [OR (95% CI)]	aOR‡ High-Risk [OR (95% CI)]
Levonorgestrel IUD	2.29 (0.98–5.37)	1.94 (0.60–6.33)	**2.55 (1.01–6.39)**
Copper	0.99 (0.18–5.49)	0.78 (0.09–6.67)	0.63 (0.09–4.26)
Implant	**0.35 (0.16–0.74)**	0.51 (0.21–1.27)	0.45 (0.20–1.00)

Fisher's exact test and multivariable logistic regression used for analysis. Significance at p<0.05.

IUD = intrauterine device, LARC = long-acting reversible contraception, OR = Odds Ratio

*As compared to low-risk patients (reference group)

†Adjusted for age, nulliparity, cesarean, maternal BMI, GA at delivery, Medicaid, non-White race.

‡Adjusted for maternal medical comorbidities, delivery complications and preterm birth

CONCLUSION

We did not identify a statistically significant difference in rates of immediate postpartum LARC uptake in the study population after demographic adjustment between high- and low-risk obstetrics populations. Therefore, we suspect that other factors may outweigh the impact of high- versus low-risk status on contraceptive counseling. Further prospective study of provider behaviors and patients' perceptions about the use of postpartum contraception is needed, particularly among people from historically-excluded populations, as are broader studies of metrics of contraceptive coercion for the clinical setting.

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Disclosures

None

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Dopamine Transporter Scan (DAT) in Parkinsonism – a Short Review for Non-Neurologists

BIJU GOPALAKRISHNAN, MD; JOSEPH H. FRIEDMAN, MD

ABSTRACT

The Dopamine Transporter Scan (DaT) is a radionuclear imaging technique which was approved by the FDA to differentiate essential tremor (ET) from Parkinson's disease (PD). The scan is a crude indicator of the number of dopamine-secreting cells and is abnormal in presynaptic parkinsonian syndromes. In this article we review this and other possible clinical situations in which a DaT scan may be useful.

KEYWORDS: DaT Scan, essential tremor, Parkinson's disease, dementia with Lewy bodies

INTRODUCTION

The Dopamine Transporter Scan (DaT) is a single photon emitting computed tomographic (SPECT) nuclear imaging study that provides a crude estimate (reduced or normal) for the number of dopamine secreting cells in the midbrain. The dopamine transporter is a receptor on the dopamine secreting neurons. Its function is to resorb the secreted dopamine so that it can be recycled.[1] To accomplish the scan, a radioactively tagged chemical, Ioflupane,[1,2,3] is injected intravenously, which binds to the dopamine transporter, thereby labeling the synapse where dopamine is secreted.

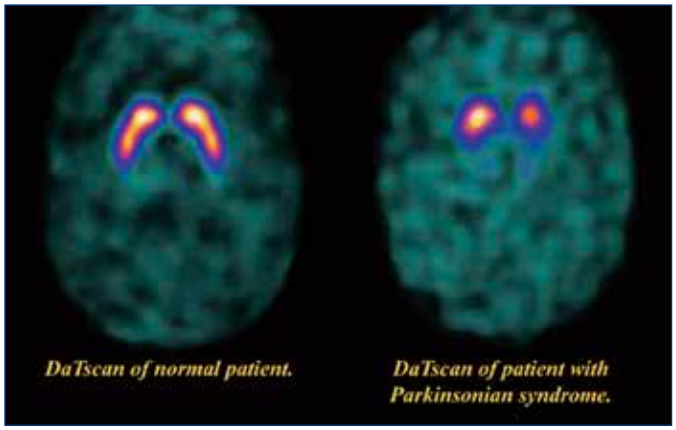
Although the cell body is in the midbrain, the synapse where dopamine is secreted is in the putamen (**Figure 1**). In Parkinson's disease (PD) and several related disorders, the first clinical signs of disease become evident when dopaminergic cells are decreased by over 50%. The study is considered abnormal if the uptake is significantly reduced. The FDA approved use of the DaT scan (Ioflupane I 123 Injection) in 2011 to assist in the differentiation of essential tremor (ET) from tremor due to PD and recently approved DaT scan in diagnosing dementia with Lewy bodies (DLB).

FDA-APPROVED INDICATIONS

1. ET versus PD or when both are coexisting

Distinguishing ET from PD is usually straightforward. The tremor in ET is not present at rest, whereas it is in PD, and ET patients generally exhibit action tremors, which are not usually seen with PD. Furthermore, ET patients generally do not have the other features seen in PD such as slowness, stooped posture, stiffness and imbalance. Older patients, however, commonly exhibit many of these signs, and some PD patients also have ET, thereby confounding evaluation. Dopamine is not affected in essential tremor, so an abnormality supports the diagnosis of a parkinsonian disorder. The DaT scan has approximately 90-95% sensitivity and specificity in diagnosing dopamine deficiency and increases diagnostic certainty. It cannot determine whether ET is present or absent. The pathology for ET is generally thought to be predominantly in the cerebellum, involving the inferior olive, dentate nucleus, and cerebellar outflow tracts.

Figure 1. On the left side of the image is the DaT scan of a normal patient; right side of image shows asymmetric decrease in the uptake in basal ganglia region consistent with presynaptic parkinsonian syndromes.



2. Alzheimer's dementia (AD) versus dementia with Lewy bodies (DLB)

It is often difficult to distinguish DLB from AD. In academic memory disorders clinics, the accuracy of distinguishing DLB from AD is about 50%. Some AD patients have mild parkinsonian signs and some DLB patients do not meet criteria to make the diagnosis. An abnormal DaT scan is considered an "indicative biomarker" for the diagnosis of DLB. Distinguishing AD and DLB is becoming increasingly important as disease-specific treatments are being developed.[2]

OTHER CLINICAL SITUATIONS WHERE DaT SCAN CAN HELP

1. Early PD and DaT scan

It is believed that DaT scans are abnormal years before the clinical signs appear, based on animal models of PD and studies of people with REM sleep behavior disorder, a herald syndrome of PD. It should only be ordered when the diagnosis is questionable, which is common in early cases. Even though there is no disease modifying treatment for PD, making a firm early diagnosis is sometimes important for both patients and clinicians. A study from a movement disorder center concluded that DaT scan results have an impact on physicians' confidence in their diagnosis and may also have a positive impact on patients.[3] In regions of the U.S. where there are no neurologists, a DaT scan can be a crucial diagnostic tool for a physician with little experience in PD.

2. PD versus drug-induced parkinsonism

Dopamine receptor blocking (DRB) medications block the effect of dopamine but do not alter the dopamine transporter levels. These drugs therefore may cause clinical syndromes that mimic PD exactly, and patient sensitivity to this side effect is notoriously variable. A person with mild PD pathology may be highly sensitive to DRB medications so that even small doses of the drugs can unmask subclinical PD. DaT scan is normal in drug-induced parkinsonism, since the dopamine cells are normal. This often cannot be assessed clinically since stopping a DRB will usually worsen the psychiatric disorder before the parkinsonism wears off, which usually takes weeks to months.

3. PD versus secondary parkinsonism

In conditions which can mimic PD, including vascular parkinsonism, the clinical findings alone may not distinguish PD from secondary parkinsonism. When the clinical distinction is unclear, DaT scan may help, as the DaT scan will be normal in some secondary parkinsonism, such as vascular parkinsonism.

4. Rapid eye movement sleep behavior disorder (RBD) and synucleinopathies

RBD is a syndrome in which the normal muscle paralysis in dream (REM) sleep is lost. The patient typically acts out dreams of violence, punching or kicking, or sports activities like throwing or catching a ball, while asleep. When it occurs in middle-aged people, usually men, it is usually a premonitory symptom of one of the three "alpha synucleinopathies" (PD, DLB, Multiple system atrophy (MSA)). In a landmark study,[4] the majority of patients (73.5 %) developed one of the synucleinopathies within 12 years of the start of RBD. Although DaT scan will be abnormal prior to the development of parkinsonian features, the severity of the abnormality has not been shown to have prognostic value. A positive scan cannot be used to predict when PD motor signs will emerge. Therefore, until an intervention to slow PD progression is developed, we believe, there is no role for DaT scan in assessing RBD and should be discouraged.

CONCLUSIONS AND RECOMMENDATIONS

DaT scans may be a useful adjunct to clinical findings in differentiating neurodegenerative causes of parkinsonism (PD, Progressive supranuclear palsy (PSP), MSA, DLB) from other etiologies, especially in their early stages. It is not diagnostic. It is a supportive laboratory test. DaT scan will distinguish PD from ET, vascular parkinsonism, drug-induced parkinsonism, and normal aging and DLB from AD. It is an expensive test that simply detects a dopamine deficit. It is best ordered on a case-by-case basis and should not be used as a routine test to validate a diagnosis. It is too crude to be used to follow disease progression or to be used for prognostic purposes, so it rarely needs to be repeated.

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Review of Complaints to the Rhode Island Board of Medical Licensure and Discipline 2018–2020

LUKE BARRÉ, MD, MPH; ANGELA PHENGSAVATDY, BS, MPH; JAMES V. McDONALD, MD, MPH

ABSTRACT

OBJECTIVE: This study aimed to examine the patterns of complaints filed against physicians in Rhode Island, investigate the factors associated with complaint rates and outcomes, and assess the impact of the implementation of a new Framework for Just Culture.

METHODS: Complaint data from the Rhode Island Department of Health's complaint tracker and physician licensing database were analyzed for the period of 2018 to 2020. Descriptive and statistical process control analyses were conducted to assess complaint rates, investigation rates, and adverse outcomes.

RESULTS: Over the three-year period, 1672 complaints were filed against Rhode Island physicians, with approximately 40% of complaints being opened for investigation. The implementation of the Framework for Just Culture coincided with a sustained decrease in the rate of complaints opened. Failure to meet the minimum standard of care was the most common allegation, and male physicians and those aged 40-50 were more likely to have complaints filed against them.

CONCLUSIONS: The study highlights the importance of complaint investigations in upholding standards for medical licensure and clinical competence. The Framework for Just Culture may have influenced the investigation process, resulting in fewer investigations opened without compromising the identification of cases requiring disciplinary action. These findings provide insights into physician accountability and the need for ongoing monitoring and improvement in complaint handling systems.

KEYWORDS: complaint investigations, physician accountability, medical licensure, adverse outcomes, Framework for Just Culture

INTRODUCTION

State Health Departments and Licensing Boards have a shared responsibility to safeguard and promote the health and safety of their communities. In Rhode Island, the Board of Medical Licensure and Discipline (BMLD) is entrusted with the mission of protecting the public by upholding standards for medical licensure and ensuring ongoing clinical competence.[1] Comprising eight physicians and four public representatives, as mandated by General Laws § 5-37-1.1,[2] the BMLD benefits from the inclusion of individuals outside the medical field, offering diverse perspectives and insights into the investigation and decision-making process concerning physician misconduct.

Instances of concern, encompassing issues such as quality of care, communication, and other unprofessional behaviors, can give rise to complaints. All complaints filed against physicians in Rhode Island fall under the jurisdiction of the BMLD. These complaints may originate from various sources, including patients, patient relatives, and other healthcare professionals. Once a complaint is received, it is considered confidential and cannot be retracted. While the complaint review process may be time-consuming, it is of utmost significance to the Department of Health. Initially, the Board Administrators conduct a preliminary review of all complaints. If deemed necessary, the complaint is then assigned to an Investigating Committee for further examination. The physician in question is notified of the complaint and provided with a designated period to respond to the allegations. Following the collection of all pertinent information, board members meticulously evaluate the findings, make recommendations, and vote on whether the physician has violated General Law 5-37-5.1, which outlines measures for unprofessional conduct.[2]

Previous studies have analyzed BMLD administered disciplinary actions in Rhode Island,[3,4] shedding light on physician characteristics associated with an increased risk of license revocation. Other jurisdictions have published reviews examining behaviors that trigger the generation and investigation of complaints; however, to date, Rhode Island has previously only anecdotal data available.[5] The present study aims to surpass anecdotal evidence by examining behaviors that prompt the generation of complaints and investigating which behaviors ultimately lead to disciplinary actions resulting from a complaint.

METHODS

Complaint information was obtained from the BMLD complaint tracker, a repository of all complaints submitted to the Rhode Island Department of Health (RIDOH). To gather licensing information regarding physician age, gender, and

Table 1. Complaints categorized by alleged offending behavior

Allegations (percent of total)
Abuse (Physical, Mental, Emotional, Verbal) 1%
Billings/Claims or Fee Related <1%
Boundary violations 1.5%
Breach of Confidentiality <1%
Death Certificate <1%
Disciplinary action in another jurisdiction 9.1%
Drug Diversion <1%
Failure to Complete CME's 1.6%
Failure to meet minimum standard of care 60.3%
Filing a false report 1.6%
Fraud <1%
Impairment <1%
Inappropriate Prescribing 4%
Lack of Informed Consent <1%
Malpractice 7.4%
Medical Records 7%
Non-compliance of Disciplinary Action <1%
Office Related (Sanitation) <1%
Patient Abandonment 2.1%
Practicing outside of scope <1%
Practicing without a license <1%
Violation of Civil or Criminal Law <1%

specialty, we utilized RIDOH's publicly available physician licensing database for the period between January 1, 2018, and December 31, 2020.

The complaint allegations were classified into 22 distinct types, as presented in **Table 1**.

Duplicate complaints or those filed against unidentified individuals were excluded from the analysis.

Descriptive analysis was conducted on physician characteristics such as age, specialty, and gender. We performed this analysis on physicians with a complaint, physicians with three or more complaints, and physicians whose complaints were opened for investigation.

Furthermore, using descriptive methods, we examined the underlying allegations and the outcomes of investigations for complaints that were opened for investigation.

To assess whether rates of complaints changed over the period of study, we used statistical process control (SPC) charts. Rates of complaints filed, complaints opened, and adverse actions taken by the board were evaluated using this method. SPC charts are valuable tools for detecting nonrandom variation in measured rates over time. In our analysis, we utilized XmR charts, which make no assumptions about data distribution. The XmR charts incorporated standard rules to identify any points outside the control limit, defined as three standard deviations from the mean. Additionally, we applied the Western Electric (WE) statistical process control chart rules, which detect two out of three successive points beyond a 2-sigma limit, four out of five successive points beyond a 1-sigma limit, or eight or more successive points on one side of the center line. Research has shown that using an XmR chart with this set of rules effectively identifies statistically significant outliers and trends.[6]

RESULTS

A total of 1,672 complaints filed against Rhode Island physicians between 2018 and 2020 were included in the analysis after excluding complaints against unknown individuals. Among licensed physicians, 992 received at least one complaint. The majority of licensed physicians with complaints were male, accounting for 73% (726) of the cases, while female physicians represented 27% (266).

Age was categorized into deciles, and the average age of physicians with a complaint was in the fourth decade of life across all specialties. **Figure 1** illustrates the distribution of complaints by age decile and gender.

Among physicians receiving three or more complaints, a similar pattern emerged. Out of 113 physicians in this category, 85% (97) were male (**Figure 2**). The average age for

Figure 1. Number of complaints received by age and gender

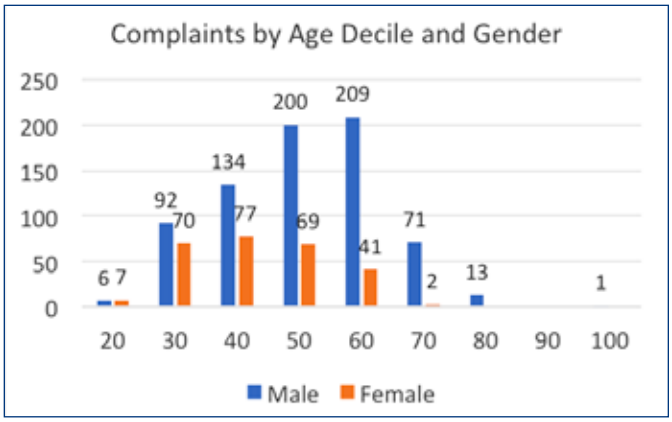
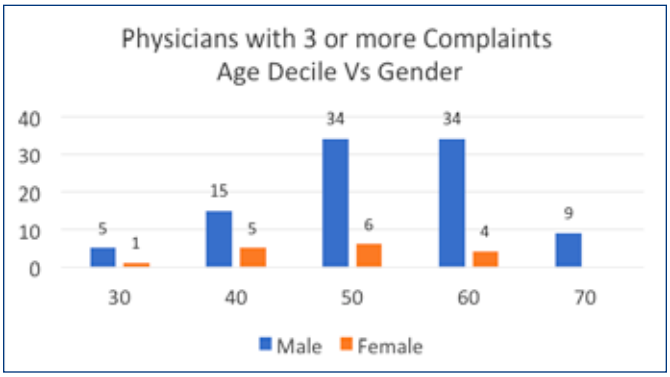


Figure 2. Number of physicians with 3 or more complaints by age decile and gender



physicians with three or more complaints was in the fifth decade of life. Notably, the highest number of complaints received by a single physician was 32.

Regarding specialties, physicians in internal medicine, family practice, and psychiatry received the highest number of complaints, both overall and among physicians with three or more complaints.

During the period of study, 667 or approximately 40% of the complaints were opened for investigation. The BMLD investigated 274 complaints in 2018, 224 in 2019, and 169 in 2020, averaging 222 investigations per year. Of the opened complaints, 80% (534) targeted male physicians, while 20% (133) targeted female physicians. The average age of physicians with opened complaints was in the fourth decade of life.

The primary allegations in opened complaints were failure to meet the minimum standard of care, inappropriate prescribing, and disciplinary actions in another jurisdiction. The specialties with the highest number of opened complaints were internists, family physicians, psychiatrists, surgeons, and diagnostic radiologists (including physicians with multiple complaints).

Figure 3 presents the board decisions or findings on opened complaints. Out of 667 opened complaints, 256 (38%) were voted as No Unprofessional Conduct (NUPC), indicating no apparent violation of rules, regulations, or laws. Only 17% (112) of opened complaints resulted in a Public Adverse Action, indicating a disciplinary action (e.g., consent order, reprimand, suspension, surrender). Thirteen percent (13%) of complaints were vacated, (used when the facts support a complaint that would not normally have been opened), 9% received a non-disciplinary letter (used when after review, investigation and closing the case a decision was made not to issue NUPC; this may include advice or other recommendations), and 23% were administratively closed (used when the Investigative Committee decided not to make a final decision at this time and may revisit the matter later).

Figure 3. Shows board findings as a percentage of complaints opened for investigation

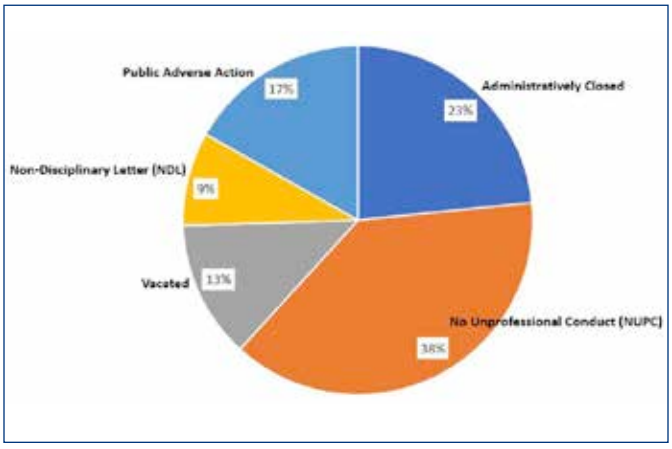
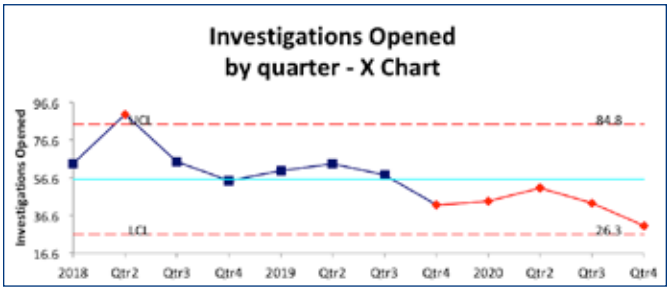


Figure 4. Shows the X chart from an XmR chart, which shows the rate of the rate of complaints opened per quarter.



The statistical detection rules applied for this chart are enumerated in the methods section. Points and trends detected as statistically significant outliers are highlighted in red. LCL: Lower Control Limit, UCL: Upper Control Limit.

Figure 4 displays Statistical Process Control X charts depicting investigations opened per quarter. Control limits were set at 3 standard deviations, with the WE SPC rules applied. Points outside of statistical control are shown in red. This XmR chart revealed special cause variation or a statistically significant change according to WE SPC rules, indicating a significant downward trend in investigations opened starting in Q4 of 2019. The average rate of investigations opened per quarter decreased from 65.1 to 42.2 after this change.

We also analyzed by process control methods, but are not shown, the number of complaints received per quarter, and adverse actions per quarter. The rate of complaints received per quarter did not show any statistically significant change, suggesting a stable process under statistical control. On average, the BMLD received 139 complaints per quarter. Future rates are predicted to fall within the control limits, with a lower limit of 44.5 and an upper limit of 234.1 complaints per quarter.

Similarly, the rate of Public Adverse Actions per quarter, indicated a stable process under statistical control. An average of 10 Public Adverse Actions per quarter was observed, and future rates are predicted to fall below the upper limit of 20.8 Public Adverse Actions per quarter.

DISCUSSION

Complaint investigations play a vital role in upholding the mission of the Board of Medical Licensure and Discipline (BMLD) to enforce standards for medical licensure and ongoing clinical competence.[7] In our dataset covering a three-year period, we identified 1,672 complaints submitted to the Rhode Island Department of Health (RIDOH), excluding those filed against unknown individuals. Our analysis, employing process control methods, revealed that the rate of complaints remained stable throughout the study period.

Between 2018 and 2020, approximately 40% of the complaints were opened for investigation. Previous analysis conducted by the BMLD from 2000 to 2009 reported an average

of 400 complaints per year, with 60% of those complaints being opened for investigation.[8]

Our process control analysis, **Figure 4**, detected a statistically significant shift, indicating a sustained decrease in the rate of complaints opened after the fourth quarter of 2019. The decrease in opened complaints observed in our study may be attributed to two factors: the COVID-19 pandemic and the introduction of RIDOH's new Framework for Just Culture. The Framework for Just Culture, implemented in the fall of 2019, aimed to streamline the decision-making process of complaint investigations; the resulting process changes were previously published in the Journal of Medical Regulation.[9] Our process control analysis suggests that the timing of the implementation of the Framework for Just Culture coincided with a statistically significant decrease in the number of complaints opened for investigation starting in the fourth quarter of 2019. In addition, the public health emergency related to the COVID-19 pandemic was declared in March 2020. This pandemic changed almost every aspect of healthcare delivery and presents an important additional explanation for the shift. While the timing of the decrease in complaints opened predates the onset of the pandemic, it is important to note that because we are analyzing this as a process over time and not before and after one point in time, changes related to the pandemic could still contribute to this shift.

Our analysis found that the rate of public adverse outcomes remained stable throughout the period of study without any statistically significant change noted despite fewer complaints being opened for investigation.

Combined, the BMLD received a stable rate of complaints, and administered a stable rate of public adverse outcomes. However, beginning in the fourth quarter of 2019, the BMLD changed its process for opening complaints in accordance with Framework for a Just Culture, and at that time we note a statistically significant decrease in the rate of complaints being opened for investigation.

From 2000 to 2009, acts of physician negligence were the most common type of complaint received by the BMLD.[8] Similarly, between 2018 and 2020, the most common allegation for complaints was failure to meet the minimum standard of care, accounting for 60% of the total number of complaints.

It is important to note that not all complaints investigated by the BMLD will result in a public adverse action, which refers to a disciplinary action such as a consent order, reprimand, suspension, or surrender. For a physician to be found guilty of unprofessional conduct, they must be in violation of one or a combination of the items outlined in General Law 5-37-5.1.

Our findings regarding age and gender align with previous Rhode Island studies on disciplinary actions and malpractice settlements. Male physicians, and those in their fourth decade of life, are more likely to have complaints filed against them compared to their female counterparts and physicians in other age deciles. In our dataset, 77% of complaints were filed against male physicians, with the average age being in the fifth decade of life. It is worth noting that one male physician falls in the 100th decile; however, this physician was not actively practicing. The BMLD receives complaints regarding retired, inactive, and deceased physicians as well.

Regarding specialty, the specialties with the highest number of opened complaints were internists, family physicians, psychiatrists, surgeons, and diagnostic radiologists. However, it is important to understand that the number of complaints does not necessarily indicate the extent of liability. Our licensing data indicates that internal medicine, family practice, and psychiatry are also the most common specialties in Rhode Island.

CONCLUSION

Our analysis using process control methods provides valuable insights into the patterns of complaints, investigations, and outcomes within the Rhode Island physician community. The implementation of the Framework for Just Culture appears to have influenced the number of investigations initiated, while the stability of adverse outcomes suggests thorough examination of the complaints that had the potential to lead to disciplinary actions. Understanding the factors associated with complaints and their investigation can help inform targeted interventions and improve the overall quality of medical practice in Rhode Island.

Limitations

Several limitations should be considered when interpreting the findings of this study. First, our analysis relied on data from the Rhode Island Department of Health's complaint tracker. As noted, there were complaints against unknown individuals which were removed from the analysis suggesting incomplete information. Additionally, the dataset only included complaints submitted to RIDOH, which may not capture all instances of potential misconduct or substandard care.

Furthermore, the categorization of complaints into specific allegation types may introduce subjectivity and potential misclassification. While efforts were made to standardize the categorization process, individual judgments and interpretations could have influenced the assignment of allegations.

The study's generalizability is limited to the Rhode Island context and may not be representative of other states or regions. Variations in healthcare systems, cultural norms, and reporting mechanisms can influence the frequency and nature of complaints against physicians. Therefore, caution should be exercised when extrapolating these findings to other jurisdictions.

It is important to acknowledge that the results presented in this study are descriptive in nature and do not establish causal relationships. Factors contributing to the observed patterns, such as age, gender, and specialty, require more comprehensive investigations to understand their underlying mechanisms and potential confounding variables.

Lastly, process control charts do not establish causal relationships, but are used to show statistically significant changes in a process, termed special cause variation. Thus, while a significant decrease in complaints opened was noted during the course of our analysis, we can only say that the process change resulting from the Framework for a Just Culture, and the COVID-19 pandemic timing occurred at the time of the observed decrease.

Despite these limitations, this study provides valuable insights into the patterns of complaints, investigation rates, and outcomes among Rhode Island physicians. Future research should address these limitations and explore additional factors that may influence the occurrence, investigation, and resolution of complaints, ultimately leading to improved physician accountability and patient care.

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Disclaimer

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Comparing Sexual Orientation and Gender Identity Documentation Between Adolescent and Pediatric Primary Care Clinics

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ABSTRACT

PURPOSE: Recent literature suggests that sexual orientation and gender identity (SOGI) documentation is poor. We hypothesized that an adolescent clinic would have higher rates of SOGI documentation than a pediatric primary care clinic.

METHODS: We performed a single-center, retrospective, observational study of patients ages 10–26 presenting to the primary care or adolescent medicine clinics of a tertiary care hospital from 2019 to 2021. Electronic medical record (EMR) data were analyzed using Python and Stata/MP 16.1.

RESULTS: Patients in the adolescent clinic were five times more likely to have to have complete SOGI documentation compared to primary care. Gender diverse youth were over six times more likely to have a recorded sexual orientation than cisgender youth across both clinics.

CONCLUSION: Adolescent providers document SOGI more often than primary care providers. Sexual orientation information for cisgender patients remains poor across environments. This study emphasizes the need for ongoing provider education on SOGI documentation.

KEYWORDS: sexual orientation and gender identity, adolescent health, data privacy, confidentiality, transgender health

INTRODUCTION

Despite increased provider awareness regarding use of correct pronouns and gender identities, sexual orientation and gender identity (SOGI) documentation in the electronic medical record (EMR) has struggled to keep pace. There are nearly two million gender diverse youth (GDY) in the United States, including those who may identify as lesbian, gay, bisexual, transgender (LGBT).[1] This population has historically struggled to disclose their gender identity to healthcare providers due to fear of discrimination.[2] Yet it is critical that providers know a patient's gender identity, as misgendering an individual or using their non-chosen name can be emotionally harmful and undermine the patient provider relationship.[2] Adult LGBT clinic patients surveyed regarding SOGI questions overwhelmingly agree that it is not only appropriate to ask these questions, but very important.[3–6] Transgender youth have also indicated that asking gender identity questions is both important and expected, with a majority (79%) preferring EMR-wide documentation of chosen name and pronouns.[7,8]

SOGI information is important for individual patient care and also for public health and research initiatives seeking to improve the health of the gender diverse population, especially given that GDY are a vulnerable group disproportionately reported to suffer adverse outcomes.[9–11] On an individual level, documenting SOGI information helps providers order appropriate sexual health screening.[12] On a population level, improving SOGI documentation allows researchers to accurately identify this group of patients in order to illustrate disparities in insurance coverage, access to care, and outcomes.[2,9,10,13,14] Broadly, SOGI completion can enable clinics to cultivate a GDY patient registry, ensuring standardization of patient care, including: preventative healthcare screenings, sexually transmitted infection testing and treatment, mental health resources, and more.[3,15,16] These data, coupled with race and ethnicity data, would also allow improved understanding of racial disparities within LGBT health.[3]

In 2013, the World Professional Association for Transgender Health EMR Working Group released recommendations regarding how to appropriately solicit and document SOGI.[17] These recommendations focused the "two-step" approach, which first asks asserted sex, then birth sex. Guidelines suggested that EMRs should provide at least three fields to capture this data: legal sex, gender identity, and sex assigned at birth.[5,18] LGBT advocacy organizations also endorse SOGI documentation. For example, The Human Rights Campaign's Healthcare Equality Index factors organizations' documentation of SOGI into their Healthcare Equality Index scoring system.[19] The 2015 Centers for Medicare and Medicaid Services (CMS) and the Office of the National Coordinator for Health Information Technology recommended that all EMRs certified for Meaningful Use (a popular CMS incentive program) must include dedicated SOGI fields.[20] Subsequent studies have shown improved documentation after inclusion of a SOGI section in the chart.[21]

Despite this guidance, EMR SOGI information is rarely completed. When documentation does occur, it lacks

standardization both in terms of chart location and its entry as structured data.[11,22] In one survey, less than a third of clinics reported that their EMR supported structured SOGI documentation.[22] Even those with a dedicated SOGI section identified documentation rates of less than 50%.[21–25] One study examining data at an adolescent subspecialty clinic found rates of 84% following an EHR update, but most existing SOGI studies are done with adult data.[26] None that we could find appear to compare differences in documentation between types of pediatric clinics within an institution.

Our institution's EMR includes a dedicated "SOGI SmartForm" that includes structured information about the patient's sexual orientation, legal sex, gender identity, and sex assigned at birth, as well as pronouns and an organ inventory. The data entry form also includes standardized buttons for "transition steps," such as whether a patient has changed their legal name or sex, if they dress according to their gender identity, and if they plan to transition in the future.

In this study, we reviewed the frequency of pediatric SOGI form documentation at a gender-focused adolescent subspecialty clinic compared to a general primary care setting at our tertiary medical center. Given the gender-focused training of the adolescent subspecialty and the fact that this clinic provides gender affirming care, we hypothesized that the adolescent clinic would have higher rates of SOGI form documentation compared to the general primary care clinic. Our aim is to illustrate if and how often pediatric providers elicit this sensitive data in different settings.

METHODS

We performed a single-center retrospective observational study of patient medical records to evaluate type and frequency of SOGI documentation among GDY and cisgender youth across two outpatient medical settings. Our institution is in an urban center and both the primary care and adolescent clinics are affiliated with our academic hospital. The adolescent clinic provides primary care, as well as specialized eating disorder services and gender-affirming treatment. This study was approved by our health system's Institutional Review Board and a waiver of patient consent was obtained.

Population Selection

This study included patients aged 10 to 26 years presenting to the primary care (n = 5500) or adolescent medicine (n = 1870) clinics from March 6, 2019 (when our EMR's structured SOGI section was rolled out) through December 31, 2021. Qualifying adolescent medicine encounters required at least one visit with one of five subspecialty attending physicians certified in adolescent medicine. Patients who had multiple encounters were only counted once. Analyzed data was pulled from only the most recent encounter. A small portion (n = 140) of patients were seen in both adolescent and primary care clinic. Due to exposure to adolescent providers, they were included in the adolescent cohort.

Data Extraction & Analysis

Structured data were extracted from our institution's version of Epic EMR including basic demographic information, patient problem list, recorded gender, gender identity, sex assigned at birth, sexual orientation, transition steps, and organ inventory. Qualifying patients that did not have associated SOGI data were categorized as "No Data."

Gender diversity was identified using 1) problem list diagnoses E34.9 (Endocrine disorder, unspecified) or F64 (Gender dysphoria in adolescent and adult) under the international classification of diseases (ICD-10); or 2) if documented gender identity was "Transgender Male-to-Female," "Transgender Female-to-Male," or "Other;" or 3) if documented "gender identity" different than their "legal sex" or "sex assigned at birth." Patients were categorized as cisgender if they 1) had only "legal sex" documented in the EMR without associated transgender diagnoses; or 2) their "legal sex," "gender identity," and "sex assigned at birth" were congruent.

Sexual orientation categories included "Straight (not lesbian or gay)," "Don't know," "Bisexual," "Gay," "Something else," "Choose not to disclose," "Lesbian or Gay," and "Lesbian." For patients with multiple responses, if one of their orientation selections was "something else" or "don't know" they were classified as such. Patients with both "straight" and an LGB orientation were classified as LGB, and those with "bisexual" and "lesbian or gay" were classified as bisexual.

The distribution of all variables is described. Categorical variables are reported with frequencies and percentages. Odds ratios were estimated using simple logistic regression models and are reported with 95% confidence intervals (CI). Data were analyzed using Python 3.10 and Stata/MP 16.1.[27]

RESULTS

Chart review identified 7370 patients meeting inclusion criteria. Most patients (n = 5500) were seen in the primary care clinic, compared to 1870 in the adolescent clinic (**Tables 1a,b**).

Compared with all patients in the primary care clinic, patients in the adolescent clinic were five times more likely (16% vs. 4%, Odds Ratio (OR) = 5.0, 95% Confidence Interval (CI) [4.2, 6.1], p-value < 0.001) to have complete SOGI documentation (sexual orientation, legal sex, sex assigned at birth, and gender identity). Patients in the adolescent clinic were also nearly five times more likely to have a sexual orientation recorded than in the primary care clinic (16% vs. 4%, OR = 4.9, 95% CI [4.1, 5.9], p-value < 0.001). They were twelve times more likely to have a gender identity documented (41% vs. 5%, OR = 12.5, 95% CI [10.7, 14.5], p-value < 0.001).

Table 1a. Sexual orientation and gender identity demographic information of primary care and adolescent clinic populations

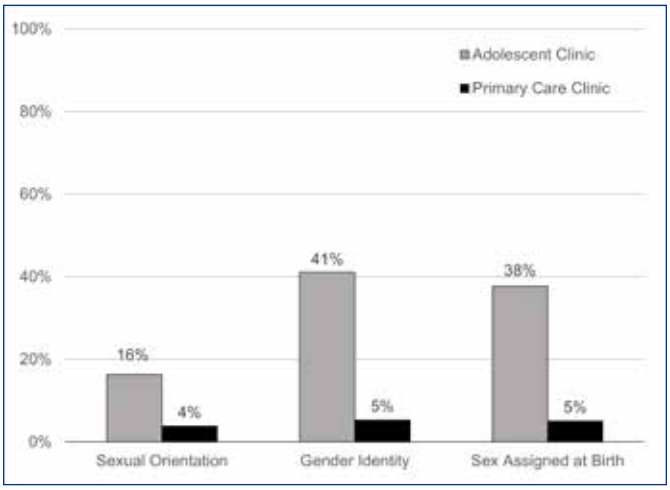
N = 7370	Primary care clinic (n=5500) n (%)	Adolescent clinic (n=1870) n (%)
Legal sex		
Female	2779 (50.5)	1349 (72.1)
Male	2720 (49.5)	517 (27.7)
Nonbinary	1 (0.02)	3 (0.16)
Unknown	0 (—)	1 (0.05)
Sex assigned at birth		
Female	182 (3.3)	529 (28.3)
Male	92 (1.7)	169 (9.0)
Choose not to disclose	3 (0.05)	7 (0.37)
Uncertain	0 (—)	1 (0.05)
No data	5223 (94.9)	1164 (62.3)
Gender identity		
Female	174 (3.2)	207 (11.1)
Male	98 (1.8)	213 (11.4)
Other	15 (0.27)	272 (14.6)
Transgender female/MTF	1 (0.02)	23 (1.2)
Transgender male/FTM	3 (0.05)	53 (2.8)
Choose not to disclose	1 (0.02)	1 (0.05)
No data	5208 (94.7)	1101 (58.9)
Sexual orientation		
Straight	136 (2.5)	101 (5.4)
Bisexual	34 (0.62)	81 (4.3)
Gay/Lesbian	14 (0.25)	21 (1.1)
Something else	8 (0.15)	56 (2.9)
Don't know	11 (0.20)	31 (1.7)
Choose not to disclose	7 (0.13)	16 (0.86)
No data	5290 (96.2)	1564 (83.6)
Pronouns		
She/her/hers	60 (1.1)	176 (9.4)
He/him/his	47 (0.85)	323 (17.3)
They/them theirs	12 (0.22)	74 (3.9)
No data	5381 (97.8)	1297 (69.4)
Transition steps documented		
No steps documented	5460 (99.3)	1521 (81.3)
≥1 step documented	40 (0.73)	349 (18.7)
Organ inventory		
No data	5421 (98.6)	1537 (82.2)
Data	79 (1.4)	333 (17.8)
Complete SOGI (sex assigned at birth, gender identity, and sexual orientation)	194 (3.5)	290 (15.5)

Table 1b. Race and ethnicity demographic information of primary care and adolescent clinic populations

N = 7370	Primary care clinic (n=5500) n (%)	Adolescent clinic (n=1870) n (%)
Insurance		
Private	2338 (42.5)	1277 (68.3)
Public	3098 (56.3)	573 (30.6)
No data	64 (1.2)	20 (1.1)
Race		
White	1179 (21.4)	1123 (60.1)
Black/African American	1709 (31.1)	231 (12.4)
Asian	118 (2.2)	36 (1.9)
American Indian/Alaskan Native	32 (0.58)	3 (0.16)
Native Hawaiian/Pacific Islander	12 (0.22)	1 (0.05)
Multi-racial	135 (2.5)	38 (2.0)
Other	2285 (41.6)	307 (16.4)
Unreported/refused	30 (0.55)	131 (7.0)
Ethnicity		
Hispanic/Latino	2819 (51.3)	373 (19.9)
Not Hispanic/Latino	2663 (48.4)	1364 (72.9)
Patient refused	5 (0.09)	34 (1.8)
Unknown	13 (0.24)	99 (5.3)

Figure 1. SOGI Documentation Across Clinical Settings

Sexual orientation and gender identity (SOGI) documentation rates in the adolescent clinic (n = 1870) compared to the primary care clinic (n = 5500).



All 7370 patients had a documented legal sex. However, sex assigned at birth was completed for only 13% of patients overall, with 38% completion in the adolescent clinic and 5% in primary care (**Figure 1**). Gender identity was complete for 14% of patients overall, with 41% in adolescent and 5% in primary care (**Figure 1**).

We identified 788 GDY patients receiving care in the adolescent clinic and 52 in the primary care clinic. Most GDY patients were identified by their ICD-10 code (97%), with 44% having a "trans" or "other" gender identity listed, and 76% with any discrepancy between gender identity fields (**Table 2**). Across both clinics, 94% of GDY patients had E34 in their problem list, with 46% having F64, and 44% who had both codes.

GDY patients in the adolescent clinic were twice as likely to have a recorded gender identity than GDY in primary care clinic (79% vs. 62%, OR = 2.4, 95% CI [1.3, 4.2], p-value = 0.004). The difference in sexual orientation documentation for GDY between the two clinics was insignificant. However, across both clinics, GDY were over six times more likely (24% vs. 5%, OR= 6.1, 95% CI [5.1, 7.5], p-value < 0.001) to have a recorded sexual orientation than cisgender youth.

For GDY patients, 63% had a documented chosen pronoun, and 40% had at least one documented transition step. The most documented step was "fashion aligned with gender identity" (87%) (**Table 3**).

Table 2. Gender identity by medical setting

N = 7370	Primary care clinic (n=5500) n (%)	Adolescent clinic (n=1870) n (%)
Gender diverse youth Yes	 52 (0.95)	 788 (42.1)
Among Gender Diverse Youth:	n=52	n=788
Trans via ICD-10 code[a]	39 (75.0)	768 (97.5)
E34, Endocrine disorder, unspecified	33 (63.5)	753 (95.6)
F64, Gender dysphoria in adolescent and adult	10 (19.2)	378 (47.9)
Stated gender identity "Trans" gender identity "Other" gender identity	 4 (21.1) 15 (78.9)	 76 (21.8) 272 (78.2)
Discrepancy in one or more SOGI[b] fields	29 (55.8)	613 (77.8)
Among Cisgender:	n=5448	n=1082
Gender identity data No gender identity data Full gender identity data Partial data	 5177 (95.0) 239 (4.4) 32 (0.6)	 934 (86.3) 139 (12.9) 9 (0.83)

a – International classification of diseases
b – Sexual orientation and gender identity

Table 3. Frequency of types of "transition steps" documented for gender diverse youth. Transition steps are a structured data entry option in our electronic medical record. Patients may have one or multiple steps documented.

n = 840	Primary care clinic (n=52) n (%)	Adolescent clinic (n=788) n (%)
Transition steps documented No steps documented ≥1 step documented	 43 (82.7) 9 (17.3)	 462 (58.6) 326 (41.4)
Preferred Name Aligned with Gender Identity	6 (11.5)	284 (36.0)
Fashion Aligned with Gender Identity	8 (15.4)	282 (35.8)
Future Transition Plans	2 (3.9)	56 (7.1)
Gender Identity (free text)	12 (23.1)	276 (35.0)
History of Medical/Surgical Intervention	3 (5.8)	104 (13.2)
Legal Name Aligned with Gender Identity	1 (1.9)	56 (7.1)
Legal Sex Aligned with Gender Identity	0 (—)	26 (3.3)
Sexual Orientation (free text)	4 (7.7)	42 (5.3)

DISCUSSION

Our results support our hypothesis that a gender-focused clinic will complete SOGI data at a higher rate than a non-specialty clinic. Despite the improved documentation rates in adolescent clinic compared to primary care, overall documentation completion rates of gender identity for all youth remain low at 14%, lower than other studies done in the field for adults and teens which have found rates between 35–46%.[15,22–24] Other SOGI-related fields, such as organ inventory and transition steps, were complete even less of the time, though we did not identify any known studies for comparison.

These overall low rates of SOGI structured documentation may stem from patients' and/or providers' perceived privacy concerns. Though there is a push to record SOGI data more often, and many GDY indicate they want these data recorded, the recent implementation of the 21st Century Cures Act in April 2021 means that most all patient data – including notes, lab results, and SOGI information – are readily viewable in online patient portals.[8,28] While this sensitive health information should be readily available to the patients, many remain concerned about who else is accessing these portals. Since implementation, several institutions reported that over 50% of adolescent accounts were accessed by a parent or guardian at least once.[29] This may give pause to providers caring for GDY, considering that surreptitious outing of these patients to their families could lead to serious physical and emotional harm.[29,30]

Higher documentation rates in the adolescent clinic probably stems primarily from that fact that this clinic is, in part, a medical home for gender-affirming care, including gender-affirming hormonal treatment. As such, this clinic is staffed by adolescent medicine providers who have received more advanced training in sexual health and gender health. Due to their specialty expertise, adolescent clinic providers encounter GDY more often than primary care pediatricians do. Almost half of this clinic's patients identify as GDY, compared to 4.5% nationally.[1] The adolescent clinic also schedules more time per patient visit than the primary care clinic does, which may contribute to the observed differences in SOGI documentation.

The ICD-10 code was the most common way we identified GDY – 97% of patients were identified using either E34 or F64. Utilizing billing codes is an imperfect but practical way of identifying transgender patients for chart review, which has been used by multiple previous studies.[23,31–33] Some codes used in similar adult studies, such as F65.1 "Transvestic Fetishism," or Z87.890 "Personal History of Sex Reassignment," were not present in our population. While the exclusion of the latter is likely due to the age, multiple interviews with gender-affirming care providers in our adolescent clinic revealed that providers prefer to use E34.9 "Endocrine disorder, other" for patients, as it is a less stigmatizing diagnosis. The use of E34.9 was specific

to providers in the adolescent clinic, who indicated they did not use this code for patients other than those in the gender program. Together, these codes captured more patients than gender identity fields would alone (**Table 2**).

Legal sex, which is completed at the time of hospital registration, was the only SOGI field that was consistently completed for all patients. Even when an additional gender field was complete, providers frequently did not fill all the GI categories. For instance, the documentation rate for sex assigned at birth lags behind other institutions at 13%, which has been recorded as high as 48%.[23] We posit that providers may not distinguish between legal sex and gender assigned at birth, and therefore consider documentation of legal sex to be sufficient. That said, in our state, there is a legal path for minors to change their legal sex from that which was assigned at birth. In addition, user workflow interface issues may lead providers to miss the entry field for these data altogether. To address the rates of incomplete gender identity information, institutions should consider prompting staff who are changing the patient's gender identity field to also enter or confirm the sex assigned at birth.

In this study, the odds of reporting sexual orientation were six times higher for gender diverse compared to cisgender youth. This may be due to providers being more likely to record sexual orientation for GDY because they feel it is relevant, or because they were more likely to have discussed SOGI generally. Overall, providers completely documented sexual orientation for 7% of patients; this is lower than prior studies, which noted 23–25% completion rate.[24,34] Around two-thirds of our patients with sexual orientation information identified as straight, much lower than the estimated national average of 97%, suggesting that most of the patients who had no sexual orientation recorded would likely have identified as heterosexual.[24] This may reflect a bias in healthcare providers who assume that patients are heterosexual and cisgender by default, and thus don't feel the need for documentation.[35] The lower rates of sexual orientation documentation compared to gender identity documentation may also reflect that patients tend to voluntarily share *only* their gender identity with their provider; patients may not disclose their sexual orientation if they think it is irrelevant to their chief complaint.[36]

Limitations

This retrospective observational study has several limitations. First, our analysis was limited to structured data. It is possible that some providers prefer to document SOGI data in unstructured formats due to workflow efficiencies or privacy concerns as described above. A future study could use natural language processing (a capability we did not have) to examine how frequently this data appears in free-text notes. Second, our method of GDY identification by ICD-10 code is subject to error, as patients may carry these diagnoses without identifying as gender diverse.[11,23] Moreover, ICD-10 codes likely do not capture the entire gender diverse patient population as many patients will not have a code associated with their chart. Though ICD-10 codes are a specific finding, their sensitivity is low, and are best used in combination with keyword, gender identity corroboration, and manual chart review – which we were unable to perform.[23,32] Third, due to limitations of data extraction from our EMR, our analysis was unable to capture changes to patients' SOGI documentation over time. In particular for adolescents, SOGI can be dynamic, illustrating adolescents' fluctuating identities.[3,11,12] Finally, we did not sort SOGI documentation by provider type – e.g., attending physician, resident physician, or advance practice provider. Given that prior studies have shown significant differences in social documentation between these groups, future study of provider-specific documentation patterns for each group will be key to guiding educational efforts.[37]

CONCLUSION

Structured documentation of SOGI remains poor across adolescent and primary care environments. However, adolescent clinic providers documented structured gender identity data more often than providers in the primary care clinic. Providers may enter SOGI information more consistently once they better understand the preferences of and benefits to the patient, such as encouraging use of chosen names, mitigating misgendering pronouns, and more consistently addressing their specific health needs (such as gender-affirming and/or customized sexual health care).[11,38] In addition, EMR solutions such as dedicated clinical decision support and improved user interfaces could improve documentation by prompting providers to complete the SOGI data in an efficient manner. Last, ensuring the privacy of SOGI data is vital to these patients' care and could lead to increased SOGI documentation. Overall, our study highlights the need for ongoing provider education on thorough SOGI documentation, as well as EMR interface improvements.

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Accidental Drug Overdose Deaths in Rhode Island: January 1, 2016–December 31, 2022

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KEYWORDS: fatal overdose, drug overdose, substance use, opioid, fentanyl

INTRODUCTION

From 2019 to 2021, overdose deaths in Rhode Island (RI) dramatically increased, and in 2021 RI experienced the highest number of overdose fatalities in state history.[1] This coincides with nationwide trends, which show that after steadily increasing for decades, the number of fatal overdoses increased 51% from 2019 to 2021.[2] To inform future prevention efforts in RI, this work aims to monitor changes in fatal overdoses and impacted populations over time.

METHODS

We analyzed fatal overdose data from the Office of the State Medical Examiners (OSME) for accidental drug overdose deaths that occurred in RI from January 1, 2016 to December 31, 2022. Cause and manner of death are determined by the medical examiner and are based on information gathered from toxicology reports, scene investigations, autopsy reports, and decedent medical history.

For this analysis, we created four mutually exclusive race and ethnicity categories. Individuals who were Hispanic or Latino of any race were classified as Hispanic or Latino. Individuals who were not Hispanic or Latino were classified based on race as non-Hispanic White, non-Hispanic Black, and "Other" which captures individuals who were not Hispanic or Latino and belonged to another or unknown race category.

Categories for substances contributing to the cause of death were not mutually exclusive, as more than one substance can contribute to cause of death. Overdoses in which any opioid, cocaine, alcohol, benzodiazepines, or amphetamines did not contribute to death was categorized as "Other".

To compare the rate of fatal overdose by decedent race and ethnicity, counts were restricted to overdoses occurring among RI residents. Population estimates were obtained from CDC Wonder.[3]

All counts with fewer than five individuals are listed as <5 to comply with the Rhode Island Department of Health (RIDOH) Small Numbers Policy. Categories were compared by year of death using chi-square and Fisher's exact tests. Analyses were performed in SAS [Version 9.4].

FINDINGS

From January 1, 2016, to December 31, 2022, 2,535 fatal overdoses occurred in RI, with fatal overdoses increasing by 29.2% from 2016 to 2022 (**Table 1**). Overall, the highest proportion of deaths occurred among individuals ages 25-54 (72.0%), males (72.2%) and non-Hispanic White individuals (77.8%). When accounting for the underlying RI population, from 2019 to 2022 the rate of overdose deaths was consistently highest among the non-Hispanic Black population (**Figure 1**). In 2022, the rate of fatal overdose deaths was highest among non-Hispanic Black individuals (54.3 per 100,000), followed by Hispanic or Latino individuals (38.3 per 100,000), and lowest among non-Hispanic White individuals (34.1 per 100,000). While the rate of fatal overdoses decreased from 2021 to 2022 for non-Hispanic White individuals (38.0 per 100,000 to 34.1 per 100,000), the rate among Hispanic or Latino residents increased by 50%, from 25.6 per 100,000 in 2021 to 38.3 per 100,000 in 2022 and remained significantly elevated (54.3 per 100,000) among non-Hispanic Black residents. While most decedents were 25–55 years of age, the greatest increase in overdose deaths occurred among those ages 55–64; from 72 fatalities in 2021 to 90 fatalities in 2022. Among those with a known location, most fatal overdoses in RI continued to occur in private locations (83.6%) (**Table 1**).

Illicit substances continue to drive fatal overdoses in RI, with 64.8% of overdoses caused by illicit drugs alone, and an additional 23.9% of overdoses caused by a combination of prescription and illicit substances (**Table 2**). The substances most commonly contributing to cause of death were opioids (85.1%), fentanyl (70.3%), and cocaine (47.0%). From 2016 to 2022, RI experienced an increase in the proportion of overdoses involving fentanyl (58.6% to 74.4%), cocaine (38.1% to 50.5%), alcohol (21.7% to 25.4%), and amphetamines (3.0% to 9.7%). In contrast, benzodiazepine-involved deaths decreased during the same timeframe (2016: 23.2%; 2022: 10.8%).

Table 1. Demographics for individuals who died of an accidental overdose in Rhode Island: January 1, 2016–December 31, 2022.

	Overall n=2,535 n (%)	2016 n=336 n (%)	2017 n=324 n (%)	2018 n=314 n (%)	2019 n=308 n (%)	2020 n=384 n (%)	2021 n=435 n (%)	2022 n=434 n (%)	p-value[1]
Demographic Characteristics									
Age									
0–18	9 (0.4)	<5	<5	<5	<5	<5	<5	<5	0.1062
19–24	139 (5.5)	23 (6.9)	17 (5.3)	15 (4.8)	17 (5.5)	20 (5.2)	25 (5.8)	22 (5.1)	
25–34	610 (24.1)	96 (28.6)	84 (25.9)	69 (22.0)	78 (25.3)	86 (22.4)	105 (24.1)	92 (21.2)	
35–44	623 (24.6)	64 (19.1)	83 (25.6)	92 (29.3)	82 (26.6)	97 (25.3)	99 (22.8)	106 (24.4)	
45–54	591 (23.3)	97 (28.9)	77 (23.8)	59 (18.8)	65 (21.1)	93 (24.2)	105 (24.1)	95 (21.9)	
55–64	445 (17.6)	49 (14.6)	49 (15.1)	60 (19.1)	55 (17.9)	70 (18.2)	72 (16.6)	90 (20.7)	
65+	118 (4.7)	6 (1.8)	12 (3.7)	18 (5.7)	10 (3.3)	16 (4.2)	28 (6.4)	28 (6.5)	
Sex									
Female[2]	705 (27.8)	91 (27.1)	106 (32.7)	66 (21.0)	84 (27.3)	95 (24.7)	141 (32.4)	122 (28.1)	0.0072
Male	1,830 (72.2)	245 (72.9)	218 (67.3)	248 (79.0)	224 (72.7)	289 (75.3)	294 (67.6)	312 (71.9)	
Race/Ethnicity									
Non-Hispanic White	1,972 (77.8)	292 (86.9)	257 (79.3)	253 (80.6)	234 (76.0)	299 (77.9)	334 (76.8)	303 (69.8)	0.0008
Non-Hispanic Black	211 (8.3)	13 (3.9)	27 (8.3)	22 (7.0)	30 (9.7)	36 (9.4)	42 (9.7)	41 (9.5)	
Hispanic or Latino	319 (12.6)	28 (8.3)	37 (11.4)	37 (11.8)	40 (13.0)	45 (11.7)	53 (12.2)	79 (18.2)	
Other	33 (1.3)	<5	<5	<5	<5	<5	6 (1.4)	11 (2.5)	
Location of Overdose[3]									
Private	1,770(69.8)	237 (70.5)	210 (64.8)	228 (72.6)	213 (69.2)	272 (70.8)	310 (71.3)	300 (69.1)	<0.0001
Public	139 (5.5)	16 (4.8)	10 (3.1)	17 (5.4)	12 (3.9)	20 (5.2)	28 (6.4)	36 (8.3)	
Semi-Private	136 (5.4)	9 (2.7)	17 (5.3)	15 (4.8)	18 (5.8)	11 (2.9)	43 (9.9)	23 (5.3)	
Unknown/Missing	490 (19.3)	74 (22.0)	87 (26.9)	54 (17.2)	65 (21.1)	81 (21.1)	54 (12.4)	75 (17.3)	

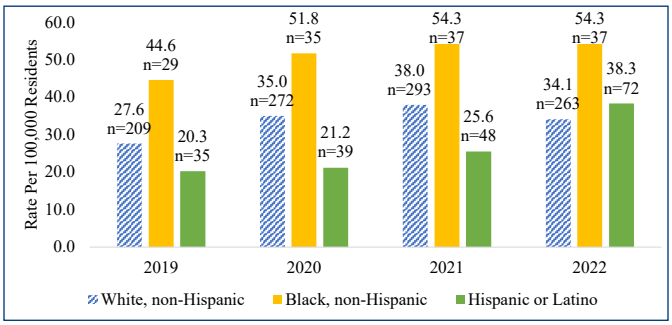
Source: Office of the State Medical Examiners.
1 Chi-square test. 2 Inclusive of individuals who are transgender female. 3 Private included apartment or residence, semi-public included hotel, motel, shelter, nursing home, hospital, prison, group home, assisted living, or treatment facility, while public included theater, concert, show, office, park, school, bar/restaurant, roadway, or cemetery.

Table 2. Substances that contributed to death for individuals who died of an accidental overdose in Rhode Island: January 1, 2016–December 31, 2022.

	Overall n=2,535 n (%)	2016 n=336 n (%)	2017 n=324 n (%)	2018 n=314 n (%)	2019 n=308 n (%)	2020 n=384 n (%)	2021 n=435 n (%)	2022 n=434 n (%)	p-value[1]
Drug Type									
Illicit	1,643 (64.8)	214 (63.7)	180 (55.6)	213 (67.8)	197 (64.0)	275 (71.6)	281 (64.6)	283 (65.2)	<0.0001±
Illicit and Prescription	606 (23.9)	66 (19.6)	86 (26.5)	66 (21.0)	85 (27.6)	76 (19.8)	119 (27.4)	108 (24.9)	
Prescription	284 (11.2)	56 (16.7)	58 (17.9)	35 (11.2)	26 (8.4)	33 (8.6)	35 (8.1)	41 (9.5)	
Unknown/Missing	<5	0	0	0	0	0	0	<5	
Drug Class									
Opioid	2,158 (85.1)	289 (86.0)	286 (88.3)	272 (86.6)	256 (83.1)	323 (84.1)	375 (86.2)	357 (82.3)	0.2523
Fentanyl	1,783 (70.3)	197 (58.6)	207 (63.9)	226 (72.0)	214 (69.5)	282 (73.4)	334 (76.8)	323 (74.4)	<0.0001
Cocaine	1,192 (47.0)	128 (38.1)	119 (36.7)	143 (45.5)	157 (51.0)	194 (50.5)	232 (53.3)	219 (50.5)	<0.0001
Alcohol	663 (26.2)	73 (21.7)	80 (24.7)	92 (29.3)	91 (29.6)	109 (28.4)	108 (24.8)	110 (25.4)	0.1884
Benzodiazepine	419 (16.5)	78 (23.2)	79 (24.4)	46 (14.7)	41 (13.3)	55 (14.3)	73 (16.8)	47 (10.8)	<0.0001
Amphetamines	183 (7.2)	10 (3.0)	14 (4.3)	13 (4.1)	21 (6.8)	29 (7.6)	54 (12.4)	42 (9.7)	<0.0001
Other[2]	42 (1.7)	6 (1.8)	6 (1.9)	7 (2.2)	<5	<5	8 (1.8)	11 (2.5)	0.2499

Source: Office of the State Medical Examiners.
1 Chi-square test. ± Fisher's exact test. 2 Individuals who had none of the pre-selected drug categories contributing to their cause of death were classified as other.

Figure 1. Rate of accidental overdose deaths among Rhode Island residents, by decedent race and ethnicity: January 1, 2019–December 31, 2022.



Source: Office of the State Medical Examiners.
Note: Population denominator based on CDC WONDER single-race population estimates for each year accessed September 9, 2022; 2021 estimate applied for 2022 rates.

DISCUSSION

Consistent with national trends, RI experienced a spike in overdose fatalities beginning in the fall of 2019.[2] After the number of overdose fatalities peaked in 2021, overdose counts stabilized in 2022, signaling the first decrease in deaths since 2019. This aligns with trends in neighboring states, with Connecticut experiencing a 4.7% decrease and Massachusetts experiencing a 2.5% increase in overdose deaths from 2021 to 2022, respectively.[4,5]

These data demonstrate how the populations disproportionately impacted by fatal overdose and the substances contributing to death continue to change over time. While most overdose deaths occurred among non-Hispanic White individuals, population-based rates highlighted that a disproportionate burden of overdose remained among non-Hispanic Black residents, and the rate of overdose had doubled among Hispanic or Latino population from 2021 to 2022. Racial disparities observed in overdose fatality data have also been observed in Connecticut, where overdose mortality rates among non-Hispanic Black (71.6 per 100,000) and Hispanic individuals (46.0 per 100,000) surpassed that of non-Hispanic White individuals (37.0 per 100,000) in 2022.[4] In 2022, individuals ages 55-64 contributed to over 20% of fatal overdoses for the first time since 2016, with deaths increasing by 25% among this population in a single year (2021: n=72; 2022: n=90).

Opioids and fentanyl continue to contribute to most overdose fatalities in RI, while the contribution of prescription drugs to the overdose epidemic has declined. Although data are not currently available, xylazine is expected to contribute to a growing proportion of overdose deaths in RI based on data from neighboring states.[6] In June 2023, the RI State Health Laboratories added xylazine to the opioid toxicology panel, allowing RIDOH to monitor the future impact of this substance over time, as the number of xylazine-involved fatal overdoses in RI is currently unknown.

The State of RI has invested in multiple statewide programs to reduce the impact of fatal overdoses among high-burden populations. In July of 2021, legislation to establish the state's first Harm Reduction Center was passed with the goal of connecting individuals to treatment and support services. The Harm Reduction Center is currently scheduled to open in the spring of 2024 in Providence, RI. State-funded community organizations have significantly increased efforts to disseminate harm reduction tools, with 36,694 naloxone kits, 14,317 safer-smoking kits, and 45,355 safer-injection kits distributed in 2022.[7] In October 2023, the RIDOH Drug Overdose Prevention Program will begin funding select organizations to expand outreach efforts among Black, Indigenous, People of Color (BIPOC) communities at risk of overdose.

Future analyses should aim to investigate additional disparities that may exist based on age, overdose setting, and substances contributing overdose, and be utilized to ensure prevention efforts appropriately target the highest burden communities.

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

VITAL EVENTS	REPORTING PERIOD		
	JANUARY 2023	12 MONTHS ENDING WITH JANUARY 2023	
	Number	Number	Rates
Live Births	893	11,183	10.6*
Deaths	1,040	10,865	10.3*
Infant Deaths	7	44	3.9#
Neonatal Deaths	4	32	2.9#
Marriages	242	7,022	6.6*
Divorces	258	2,697	2.5*

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

Underlying Cause of Death Category	REPORTING PERIOD			
	JULY 2022	12 MONTHS ENDING WITH JULY 2022		
	Number (a)	Number (a)	Rates (b)	YPLL (c)
Diseases of the Heart	198	2,418	220.3	3,472.0
Malignant Neoplasms	199	2,201	200.6	4,279.5
Cerebrovascular Disease	36	512	46.7	644.5
Injuries (Accident/Suicide/Homicide)	88	1,115	101.6	15,711.0
COPD	37	466	42.5	422.5

(a) Cause of death statistics were derived from the underlying cause of death reported by physicians on death certificates.
(b) Rates per 100,000 estimated population of 1,097,379 for 2020 (www.census.gov)
(c) Years of Potential Life Lost (YPLL).

NOTE: Totals represent vital events, which occurred in Rhode Island for the reporting periods listed above.
Monthly provisional totals should be analyzed with caution because the numbers may be small and subject to seasonal variation.

Improving Access to HIV Prevention to End the Epidemic in Rhode Island

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KEYWORDS: PrEP, disparities, MSM, HIV, cost

The HIV epidemic continues to cause a significant amount of morbidity and mortality. Globally, over 38 million people were living with HIV and 1.5 million acquired HIV in 2021.[1] In the United States, there were over 36,000 cases of HIV diagnosed in 2021.[2] Additionally, significant disparities persist among gay, bisexual, and other men who have sex with men (MSM). In the United States, MSM have a one in six lifetime risk of acquiring HIV, which increases to as high as a one in five lifetime risk among Hispanic/Latino MSM, and a one in two lifetime risk among Black/African American MSM.[3] In Rhode Island, remarkable progress has been made across the last couple of decades in addressing HIV.[4] Advances and improved approaches in HIV testing and treatment have led to these significant declines. The United States Preventative Services Task Force (USPSTF) and the Centers for Disease Control and Prevention (CDC) all recommend routine HIV testing.[5]

Rhode Island now has fewer than 100 new HIV cases per year… the state has been a leader in expanding PrEP to people who need it most.

PRE-EXPOSURE PROPHYLAXIS (PrEP)

Pre-exposure prophylaxis (PrEP) is a medication used by HIV-negative persons to prevent HIV acquisition.[6] Multiple studies have demonstrated the efficacy of PrEP.[7] There are now three medications approved as PrEP. Tenofovir disoproxil fumarate (TDF) and emtricitabine (FTC) was the first fixed-combination oral medication approved in the United States in 2012. TDF/FTC is approved as a single pill once a day in all people for the prevention of HIV due to sex or injection drug use. The CDC also supports "event-driven" PrEP for HIV prevention around the time of sex. In this approach, two pills of TDF/FTC are taken before sex, one pill 24 hours after sex, and a fourth and final pill 48 hours after sex (i.e., referred to as 2-1-1 dosing).[8] TDF/FTC has been approved for HIV treatment since 2004 and has a favorable safety profile. Side effects are minimal for most people. TDF can affect renal function as well as bone mineral density, which should be considered in people who are at risk of these conditions or have pre-existing disease (i.e., renal disease, osteopenia, etc.). For the treatment of HIV, the standard of care is still generally "three active medications". A fully active treatment for HIV would include TDF/FTC in addition to another medication (recent regimens can include two medications in certain circumstances).

Tenofovir alafenamide and emtricitabine (TAF/FTC) was approved in 2019 as the second PrEP medication to prevent HIV. TAF/FTC has not been studied in cisgender women and is not recommended for people assigned female at birth who are at risk for HIV through receptive vaginal sex.[8] TAF/FTC is also not recommended for people who inject drugs or for event-driven PrEP because it has not been studied in these cases. TAF/FTC may have fewer renal and bone mineral density side effects than TDF/FTC, but both prevent HIV at similarly high rates. TAF/FTC is associated with slightly more weight gain.[8] In people on both medications, baseline laboratory testing for creatinine, hepatitis B serologies, HIV, and other sexually transmitted infections (STIs) such as syphilis, gonorrhea and chlamydia is recommended. People should generally follow up every 3–6 months.

In 2021, the first injectable PrEP medication was approved, called cabotegravir. Cabotegravir is administered as an intramuscular injection in the gluteus muscle at baseline, one month, and then every two months thereafter. This new formulation has a favorable safety profile and may be useful for populations with concerns about non-adherence or for patients who prefer not to take a daily medication. Routine monitoring for HIV and other STIs should occur every 3-6 months.[8] Individuals who are at risk for HIV may prefer injectable PrEP for several reasons, including not having to remember to take a daily pill, less potential side effects, and less stigma due to not having an "HIV medication" bottle around.[9] In contrast with oral PrEP, there are no renal contraindications to this medication. The clinical trials comparing injectable PrEP to oral PrEP demonstrated increased efficacy of injectable PrEP due to improved adherence.[10,11] However, significant real-world challenges have limited injectable PrEP in the United States.

BARRIERS

Costs continue to be a challenge

One of the foremost challenges to scaling PrEP has been the significant out-of-pocket costs associated with taking the medication. Our team and others have demonstrated the consequential impact this has on PrEP use.[6,12] Importantly, out-of-pocket costs associated with PrEP include not just the medication, but also costs associated with laboratory testing and clinic visits. Out-of-pockets costs related to co-pays and deductibles associated with these three components of care can be in excess of thousands of dollars each year. TDF/FTC is now generic with a cost of approximately $30–60 and is covered by most insurers. Brand name TDF/FTC (i.e., Truvada) costs $1,949 for a 30-day supply compared with $2,283 for brand name TAF/FTC (i.e., Descovy) and $3,964 for brand name cabotegravir (i.e., Apretude).[13] In addition, the cost for STI testing and laboratory monitoring can be significant. Current recommendations support extragenital gonorrhea and chlamydia testing. Historically, nucleic acid amplification testing (NAAT) of urine samples has been used for detection of gonorrhea and chlamydia of the urogenital tract. However, in people who perform oral sex or have receptive anal sex, gonorrhea and chlamydia infection can occur at these sites that isn't detected by the urine NAAT. Therefore, testing of oral and rectal specimens for gonorrhea and chlamydia is routine in most sexual health clinics. From a cost perspective, a single NAAT test for chlamydia (or gonorrhea) is typically >$100. Costs associated with oral, rectal, and urogenital gonorrhea and chlamydia testing in addition to HIV and syphilis testing can be prohibitively expensive, even in patients with insurance. In addition to high out-of-pockets costs, prior authorizations for many types of medication and specifically PrEP can consume considerable time and resources of clinical staff. At this time, prior authorization for injectable PrEP has limited implementation of this PrEP modality.

In March of 2023, a Texas judge issued a decision which prevented the government from enforcing a requirement of the Affordable Care Act (ACA) that insurers need to cover specific preventative care services without out-of-pocket costs.[14] PrEP should be covered under current ACA mandates. In practice, a significant number of patients experience out-of-pocket costs associated with PrEP care.[15] Given that PrEP is part of the national cornerstone of HIV prevention and Ending the HIV Epidemic (i.e., the federal initiative to address HIV in the United States) as well as here in Rhode Island, efforts need to focus on reducing the burden of out-of-pockets costs for people that are at risk of HIV, many of whom come from underserved communities. This is also important as we work to achieve health equity for different communities who are disproportionately impacted by HIV.

RI ADVANCES

New law limits PrEP costs, allows pharmacists to dispense

Rhode Island now has fewer than 100 new HIV cases per year. One reason is that the state has been a leader in expanding PrEP to people who need it most. According to CDC estimates, Rhode Island ranks third (tied with Vermont and behind NY and MA) for PrEP coverage at 30% for those indicated.[16] In 2023, the Rhode Island state legislature also passed a bill that would further improve HIV preventative care in the state.[17] The bill requires insurers to cover all PrEP modalities without cost-sharing and limited prior authorizations.[18] This is a major advance that should remove a commonly cited barrier for PrEP care in Rhode Island and fully cover this important preventative service. In addition, the bill allows pharmacists to dispense PrEP without a prescription by a physician, which will improve access across the state.

To end the HIV epidemic in Rhode Island, we will need to continue to expand access to PrEP. Out-of-pockets costs associated with the medication as well as laboratory testing and clinic visits can be a significant barrier to PrEP use among people at highest risk for HIV acquisition. Rhode Island has been a leader in PrEP implementation and recent legislative bills have the potential to enhance access. Oral PrEP can easily be administered by primary care physicians in outpatient settings, or at sexual health specialty centers such as Open Door Health, The Miriam Hospital Infectious Diseases Clinic, Planned Parenthood, Thundermist, and Providence Community Health Centers, among others. Open Door Health and The Miriam Hospital Infectious Diseases Clinic are also offering injectable formulations. Expanding access to these HIV-prevention technologies has the potential to eliminate HIV in the state of Rhode Island. ❖

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Maternal Health Workforce as a Structural Driver of Postpartum Mental Health Equity: A Call to Action in Rhode Island

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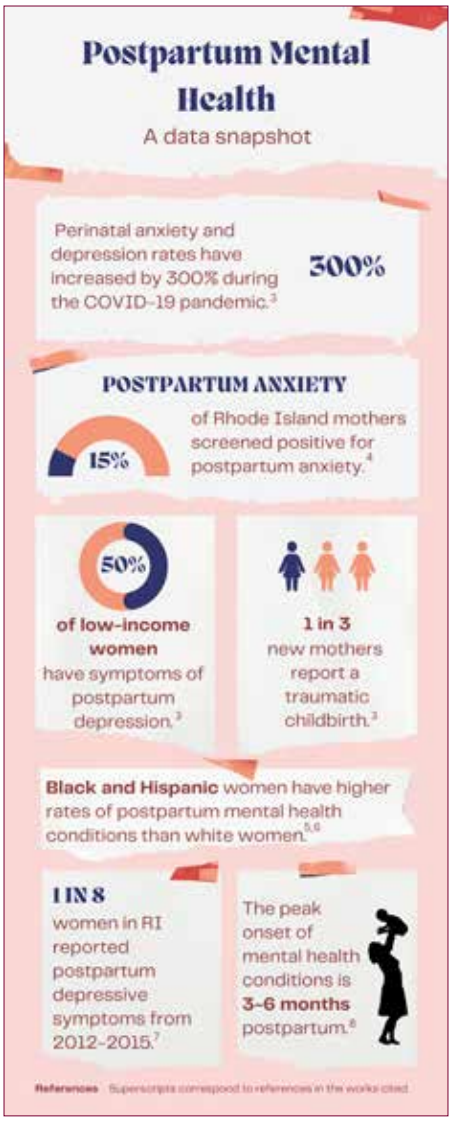
The leading cause of death for women in the first year after childbirth is self-harm, including death by suicide and overdose.[1] Postpartum mental health conditions adversely affect mothers and families, and do not affect all mothers equally (**Figure 1**).[2,3] While a range of structural factors contribute to postpartum mental health conditions, this commentary focuses on laws, policies, and programs related to maternal health workforce development in Rhode Island. We include specific recommendations for legislative and institutional actions to improve the structural landscape of postpartum mental health in Rhode Island, including maternal health workforce development, home visit service expansion, and expanding birth-setting options to advance postpartum mental health equity.



MATERNAL HEALTH WORKFORCE

SISTA Fire, a community organization in Providence, RI, which fights for reproductive justice, has pointed to the overwhelmingly White workforce at Women & Infants (W&I), the primary birthing hospital in Rhode Island.[9] Lack of diversity in the maternal health workforce negatively impacts Black, Indigenous, People of Color (BIPOC) families, who are more likely to experience racism and discrimination when seeing a White provider.[10] To increase the number of professionals of color, SISTA Fire recommends that W&I collaborate with the Community College of Rhode Island and Rhode Island College.[9] The proposed collaboration would provide an advancement ladder for medical professionals with two-year healthcare degrees by hiring and supporting them in completing a four-year degree while they are employed. This program can create employment and advancement opportunities while bolstering entry of BIPOC individuals into maternal health care.

Diversifying the maternal health workforce also requires increased workforce numbers across disciplines. Birth-worker workforce expansion is anticipated since passage of The Doula Act in 2021. Sustained support for perinatal doula reimbursement is an important avenue to improve postpartum mental health equity. As the Doula Act implementation rolls out, the RI General Assembly should monitor workforce metrics and appropriate funds for increased payment rates through Medicaid to minimize doula attrition. Existing programs to advance training and diversify the workforce of International Board-Certified Lactation Consultants (IBCLCs), Certified Lactation Consultants (CLCs), and Community Health Workers (CHWs) can have a bigger impact with increased support from state legislation and policy. The Health Provider Loan Repayment Program, for instance, can be expanded to make a broader range of disciplines eligible for the program, and shifted to prioritize applications from individuals from underrepresented backgrounds.

Finally, there is a significant shortage of specialized perinatal mental health providers. Postpartum mental health evaluations and treatment fall to primary care providers and obstetricians, who may not be comfortable initiating treatment for postpartum women.[4] RI MomsPRN, a pilot program run by the Rhode Island Department of Health (RIDOH), enhances postpartum mental health equity by ensuring greater access to specialized mental health support and reducing barriers to care experienced by those most at risk for mental health challenges postpartum. This program is currently funded through an HRSA

grant, with RIDOH seeking a follow-on grant to sustain funding. To sustain the program long-term without depending on federal grants, the Rhode Island General Assembly should appropriate funding to RI MomsPRN.

HOME VISITING EXPANSION

Rhode Island has a robust home visiting program; scale-up of this successful program can prevent people from falling through care coordination gaps and expand support for families in RI. Home visiting is cost effective, and the RI program is already large, with approximately 18,000 home visits conducted in 2021.[11] It is feasible to scale this program up further – replacing the current "opt-in" model with an "opt-out" model – where all birthing families receive home visits by default. It is worth noting that the United States is the only country among 10 peer nations that does not provide guaranteed home visiting services, and 26 states (not including RI) guarantee home visit services for Medicaid recipients.[12]

RI can leverage federal funding streams to cover home visiting expansion costs. For example, competitive grant funds are available through the Maternal, Infant, and Early Childhood Home Visiting Program. As an alternative to federal funding, some states support home visiting through tobacco tax revenue or settlement funds. State legislation should be promulgated to expand home visiting for all postpartum families in RI, through a revised Family Visiting Act with an opt-out service model. Home visiting scale-up can be combined with other efforts to diversify and incentivize maternal health workforce development. These activities could increase postpartum mental health equity by increasing screening, support and referrals for mothers experiencing mental health challenges postpartum. Diversifying home visiting personnel additionally may alleviate concerns among low-income women of color who have reason to fear that home visiting could further expose them to child protective services (CPS) intervention.

MATERNAL HEALTH INSTITUTIONS

W&I, part of the Care New England network, delivers over 80% of the births in RI. As the primary birthing hospital, W&I's institutional policies and practices affect nearly all birthing people in the state. SISTA Fire has identified an array of practices at W&I that are harmful to birth justice in RI, with each of the identified gaps presenting an opportunity to improve systems, structures, and consequently, postpartum mental health equity.[9] Efforts to improve diversity, equity and inclusion (DEI) are underway at Care New England – the largest healthcare provider in Rhode Island – where a chief diversity officer was appointed April 2023 and DEI programs and initiatives are underway.[13]

Birthing centers

RI advocates can also support birth justice by defining a pathway through which freestanding community-based birthing centers can open. RIDOH's efforts to promulgate birth center regulations were paused during the COVID-19 pandemic; regulations are in the process of being updated as of May 2023. It is important that these regulations be finalized to support birthing centers in RI. Birthing centers prioritize the needs of the mother over institutional policies. Women of color are less likely to experience bias or discrimination at community-based birth centers staffed by a diverse workforce. Freedom to choose a birth setting is likely beneficial for postpartum mental health, as mothers who report higher levels of birth satisfaction and lower levels of trauma experience during labor and delivery also report lower levels of postpartum mental health challenges.[14]

CONCLUSION

We can do more to achieve postpartum mental health equity in RI. Many RI mothers are impacted by a postpartum mental health condition, with associated adverse effects on mothers, babies, and families. While Rhode Island has promising laws and programs in place, each can be improved to better support women and families postpartum. This work reviewed relevant laws, policies, and programs in Rhode Island and provides specific recommendations for legislative and institutional actions to improve postpartum mental health. First, Rhode Island should invest in the maternal health workforce, increase funding for specialized mental health services, expand the home visiting program, and promulgate regulations for freestanding birth centers. Nearly all these actions can be undertaken by the State General Assembly, minimizing reliance on the federal government for action. However, where appropriate, initiatives to access federal grant opportunities can accelerate progress. Together, these initiatives would ensure that perinatal women in Rhode Island are supported by a variety of health professionals to bolster against mental health challenges postpartum, while ensuring access to adequate supports if mental health challenges occur.

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Disclaimer

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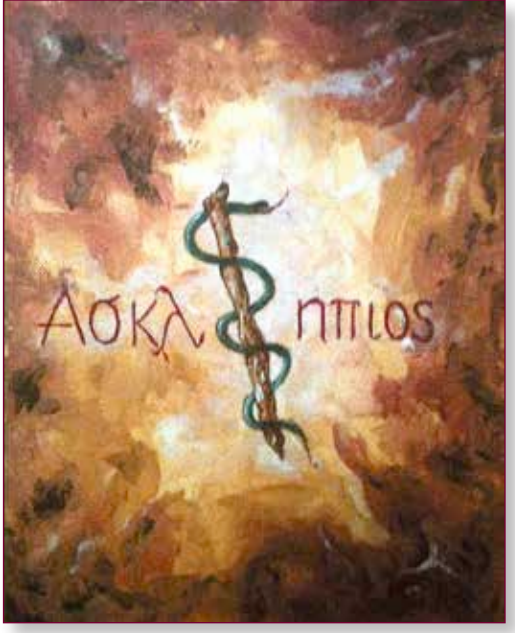


The Rod of Asclepius and the Caduceus – A Serpentine Story

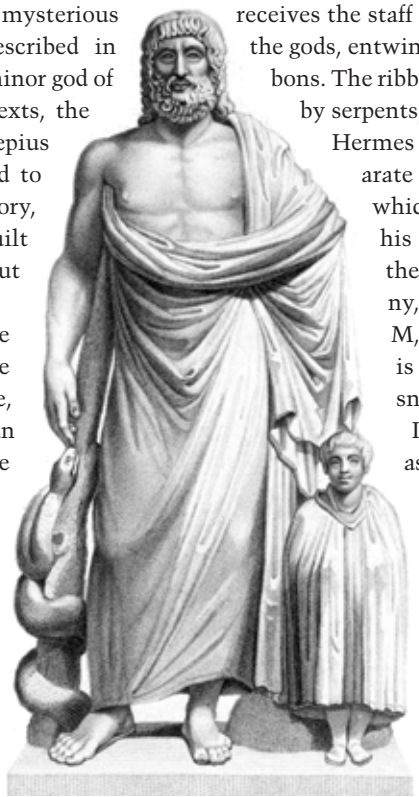
MARY KORR
RIMJ MANAGING EDITOR

The Rod of Asclepius, acrylic on canvas painting by Stanley M. Aronson, MD. [2014, RHODE ISLAND MEDICAL JOURNAL]

A staff and a snake – or two – have been symbols of medicine from ancient to modern times. A painting by the late **STANLEY M. ARONSON, MD**, former editor-in-chief of RIMJ, depicts the Rod of Asclepius – a rough piece of bark entwined by a single serpent – against a fiery background.

Asclepius, in Greek mythology the son of Apollo, was the god of medicine and thought to be a historical figure renowned for his healing arts. An illustration of a marble statue, circa 1860, in the Louvre, shows Asclepius with his rod. Standing beside him is a small mysterious figure, Telesphoros, described in Greek mythology as a minor god of healing, and in some texts, the son of Asclepius. Asclepius was ultimately elevated to divine status in history, and healing temples built in his name throughout the Mediterranean.[1]

In the modern era, the Rod of Asclepius became a symbol of medicine, used by the American Medical Association, the World Health Organization, and others.



Asclepius, from the marble statue in the Louvre. Engraving by Jenkins (London, circa 1860) [NATIONAL LIBRARY OF MEDICINE]

The Caduceus

The Caduceus, which depicts two intertwined snakes encircling a winged staff, is also used as a medical symbol. In the ancient world, this staff was a symbol of the messenger god, Hermes, or Mercury in Roman terms. The word Caduceus is derived from the Greek word *kērykeion*, which meant the herald's staff.

In Greek mythology, the winged Hermes was an intermediary between the gods and humans, and a guide to the underworld. In one account, he is given the staff by Apollo. "In another version, he receives the staff from Zeus, the king of the gods, entwined with two white ribbons. The ribbons were later replaced by serpents, as one story tells that Hermes used the stick to separate two fighting snakes, which then coiled around his staff and remained there in balanced harmony," writes Biggs B, Remy M, in their article, "Why is the medical symbol a snake on a stick?"[2]

It probably was first used as a medical emblem in the 16th century, suggests Shampo MA, Kyle RA, in "Medical symbols: the Caduceus." These authors note it is also a symbol of peace and commerce, "apparently serving to protect the bearer by indicating that he was engaged in a peaceful mission. Originally, the Caduceus may have been an olive branch with three leaves, an important Greek symbol of peace."[3]

The United States Public Health Service used the Caduceus on its insignia as early as 1798, when marine hospitals opened.

The Rod of Asclepius is on the insignias of the American Medical Association and the World Health Organization. [AMA, WHO]

The Caduceus was a symbol of Hermes, or the Roman Mercury, who was primarily a messenger god, or herald, linked with commerce. [NATIONAL LIBRARY OF MEDICINE]

Why a snake?

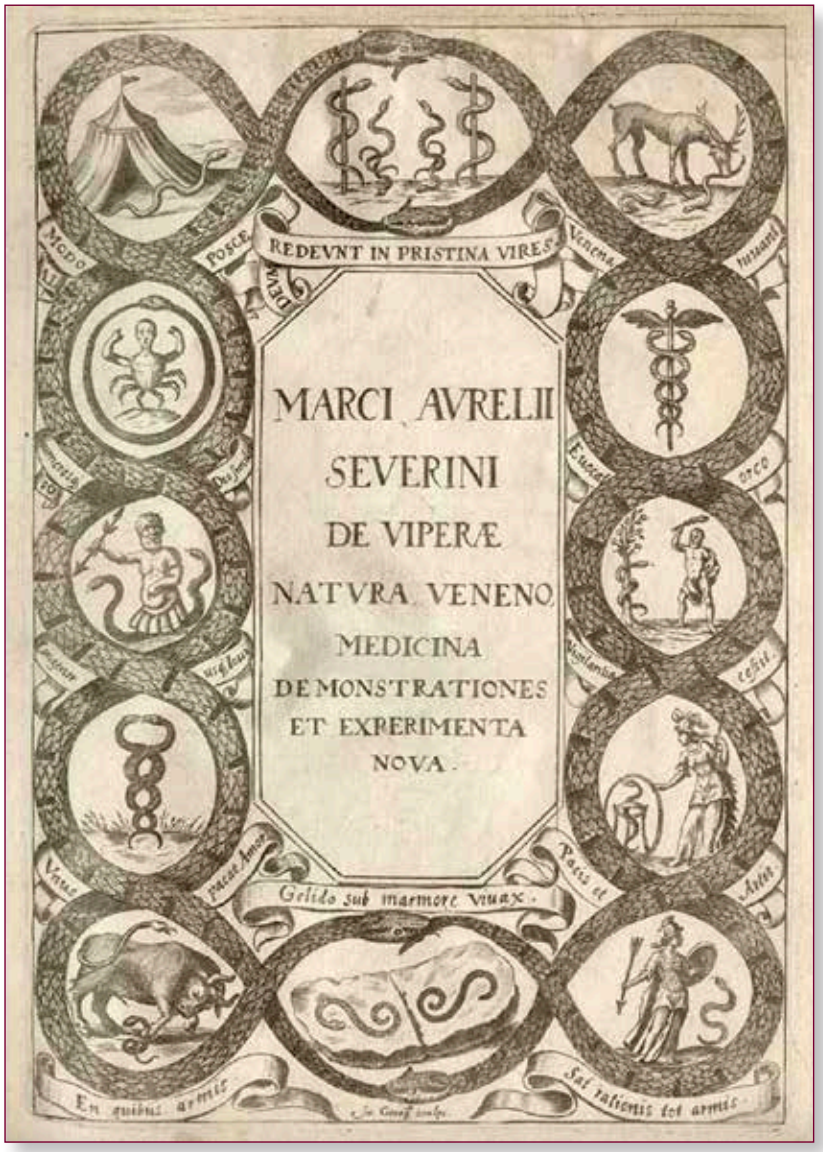
As snakes shed their skin through sloughing, the reptiles symbolized rebirth, transformation, immortality, and healing in many ancient cultures. In addition, the snake was thought to possess benevolent properties, able to cure a patient or a wounded person just by touch. The snake is also connected with pharmacology and antisepsis, as snakes possess an antivenom against their own poison.[4]

Its connection with medicine and alchemy came later on. A National Library of Medicine illustration from the 17th century depicts the single-snake Rod of Asclepius and the double-snake staff of the Caduceus, along with other ancient medical images involving snakes.[1]

George Bohigian, MD, in his historical perspective, "The Caduceus vs. the Staff of Aesculapius – One Snake or Two?" presents a history of both symbols and their usage in modern times, and concludes that the Staff of Aesculapius [another version of the spelling] "representing medicine since 800 BCE is the only true symbol of medicine."[5]

The painting by Dr. Aronson, founding dean of Brown's medical school, seems to attest to this conclusion. ❖

The US Public Health Service used the Caduceus as one of the symbols on its insignia from 1798 when it inaugurated its marine hospitals. [NATIONAL LIBRARY OF MEDICINE]



This 17th-century title page, the single-snake staff of Asclepius and the double snake of the Caduceus, appear with other ancient medical images involving snakes. Taken from: Marco Aurelio Severino. *Viper Pythia*. [NATIONAL LIBRARY OF MEDICINE]

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9. Philippines
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RIMJ Associate Editor **Kenneth S. Korr, MD**, checks the latest issue of the Journal at Jones Beach State Park on the south shore of Long Island, NY, in front of the famous Boardwalk Music Shell.

JONES BEACH STATE PARK, WANTAGH, NY

The RI roots of Jones Beach

Jones Beach State Park has Rhode Island roots stemming back to Colonial days. Capt. Thomas Townsend, a trader, Portsmouth resident and sheriff, acquired land in South Oyster Bay, Long Island, in 1688.

Two years later, Thomas Jones, a privateer, left Ireland and landed in Rhode Island. Here he became acquainted with Capt. Townsend, and met and eventually married his daughter, Freelove. While his future son-in-law was absent on the high seas for three years, Townsend moved to South Oyster Bay with Freelove and deeded the land to his daughter and son-in-law after their marriage in 1695.

Among his many commercial endeavors, Jones set up a whaling station near the present state park in the early 1700s. The land was eventually ceded to the Long Island State Park Commission by his descendants.

Jones Beach State Park opened to the public in August 1929 in the presence of lead developer Robert Moses and then NY Gov. and future President Franklin Delano Roosevelt. It is the most visited oceanfront state park on the East Coast, with over six million visitors a year.

RIMJ Managing Editor **Mary Korr**, and her brother, **James Thornton**, on the Jones Beach boardwalk, which stretches 2.5 miles along the Atlantic Ocean beachfront.

Jonesy the Whale, a 32-foot metal sculpture, looms in front of the Beaux Art East Bath House. The mesh giant, installed several years ago, is designed to educate the public on the consequences of ocean pollution. Jonesy "gobbles" up plastics and debris during beach clean-up days.

Water tower modeled on Venetian campanile

The brick and sandstone Jones Beach water tower was built in 1930, and designed to reflect the bell tower of St. Mark's Basilica in Venice. It encases a 315,000-gallon steel tank, which stores water from three 1,000-foot-deep wells. The tower provides all the fresh water for the park. It received a $6.2 million upgrade in 2010.

Vintage postcard of the water tower. [BOSTON PUBLIC LIBRARY]

The iconic water tower seen from the boardwalk at Jones Beach State Park. [PHOTOS: MARY KORR]

Wherever you may be, or wherever your travels may take you, check the Journal on your mobile device, and send us a photo: **mkorr@rimed.org**.

RHODE ISLAND MEDICAL SOCIETY

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The Squantum Association, East Providence

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JACK RESNECK, Jr., MD Immediate Past President of the AMA

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Working for You: RIMS advocacy activities

August 1, Tuesday

RIMS Physician Health Committee (PHC): **Herb Rakatansky, MD**, Chair

August 2, Wednesday

RIMS Presentation to Kent Hospital Medical Staff: **Thomas Bledsoe, MD**, President; and Stacy Paterno, staff

August 3, Thursday

Rhode Island Quality Institute meeting: **Thomas Bledsoe, MD**, President; **Heather Smith, MD, MPH**, Incoming President; and Stacy Paterno, staff

Warren Alpert Medicine School at Brown University (WAMS) Community Resource Fair: Stacy Paterno, and Ali Walz, staff with AMA staff

August 7, Monday

RIMS Council meeting: **Thomas Bledsoe, MD**, President

Protect our Health Care Policy Group: Stacy Paterno, staff

August 8, Tuesday

Blue Cross & Blue Shield of Rhode Island Leadership meeting: **Thomas Bledsoe, MD**, President; **Heather Smith, MD, MPH**, Incoming President; **Elizabeth Lange, MD**, Past President

AMA State Advocacy Roundtable: Stacy Paterno, staff

August 9, Wednesday

Rhode Island Department of Health (RIDOH) Board of Medical Licensure and Discipline (BMLD): Stacy Paterno, staff

Governor's Overdose Intervention and Prevention Task Force: **Sarah Fessler, MD**, Past President

AMA State Advocacy Roundtable: Stacy Paterno, staff

August 10, Thursday

CTC-RI Prior Authorization Steering Committee: **Peter Hollmann, MD**, Chair; **Elizabeth Lange, MD**, Past President; Stacy Paterno, staff

AMA State Advocacy Roundtable: Stacy Paterno, staff

August 15, Tuesday

National Government Services Key Stakeholder Meeting: Stacy Paterno, staff

August 16, Wednesday

Rhode Island Chapter of the American Cancer Society Meeting: Stacy Paterno, staff

August 17, Thursday

Rhode Island Foundation Long-term Health Planning Committee meeting with Governor McKee staff: Stacy Paterno, staff

MMJUA of Rhode Island introductory lunch for new board members: Stacy Paterno, staff

Rhode Island Health Center Association Employee Appreciation Celebration: Stacy Paterno, staff

August 22, Tuesday

RIMS/WAMS Student Leaders Meeting : Stacy Paterno and Ali Walz, staff

August 28, Monday

RIMS Presentation to Newport Hospital Medical Executive Committee: **Thomas Bledsoe, MD**, President; **Matthew Smith, MD**, Treasurer;and **Roberto Ortiz, MD**, Secretary

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Q&A: RI Physicians Sound Clarion Call on Climate Change

MARY KORR
RIMJ MANAGING EDITOR

The *Rhode Island Medical Journal* (RIMJ) reached out to the leadership of the Rhode Island Medical Society's (RIMS) Climate Change and Health Committee (CC&H), inaugurated in 2022, to further introduce its efforts to physicians, healthcare providers, and medical students in the State who may be interested in combatting what the World Health Organization (WHO) has termed one of the greatest threats to global health.

In its short existence, the group has made its presence known to policymakers and stakeholders. It has testified at the State House on budget measures affecting funding of the RI Act on Climate, as well as submitting written testimony on bills regarding the use of gasoline powered lawn equipment, pyrolysis, and the adoption of California emissions standards. Members also testified at the United States Senate Finance Committee in Washington, DC, on the effects of climate change on human health.

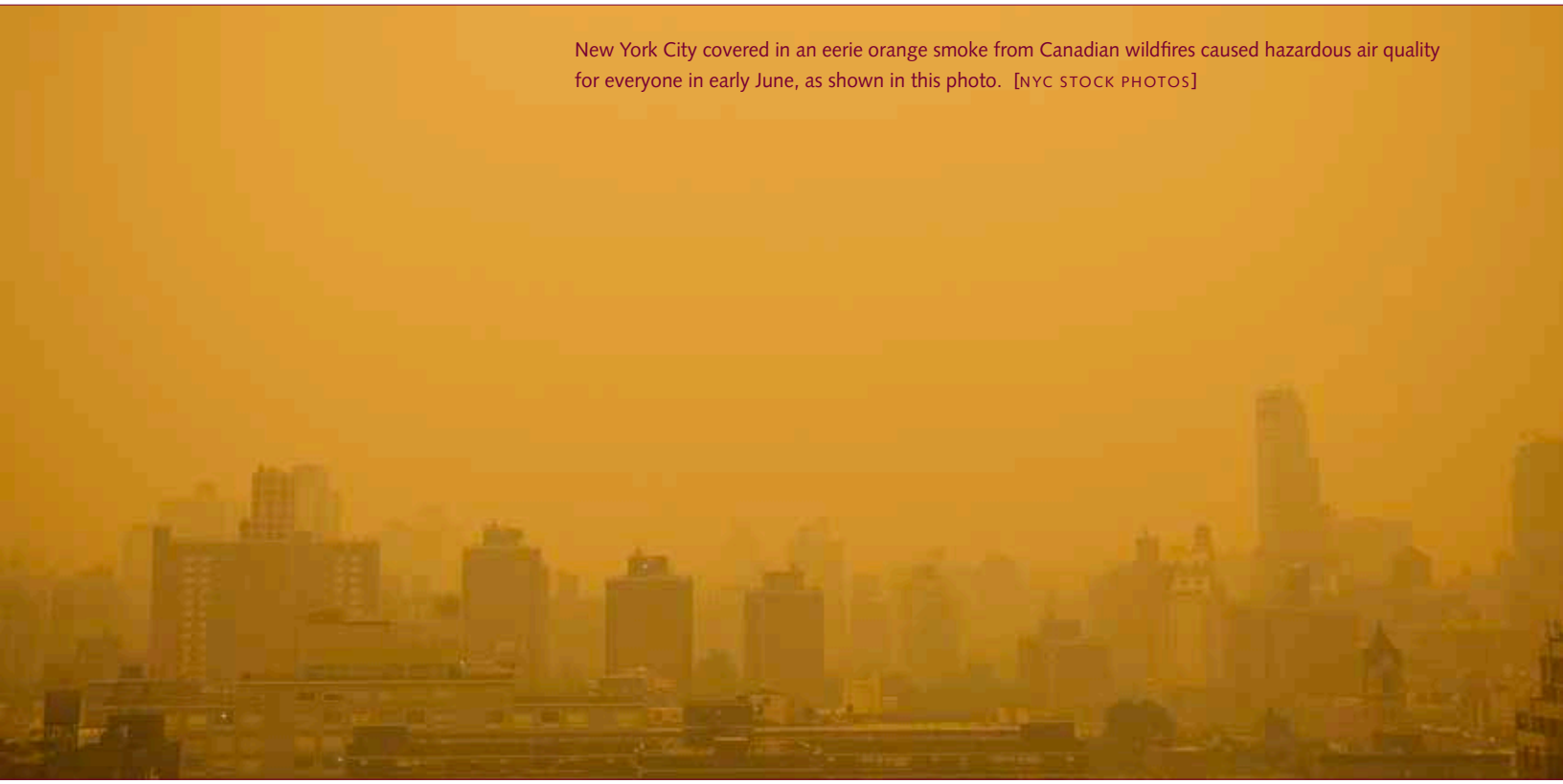
Alison Hayward, MD, MPH

Kelly McGarry, MD

Loree Kalliainen, MD

The group meets monthly, on the third Thursday evening of each month from 7–8 p.m., (next meeting September 21) and hosts guest speakers who discuss the importance of the impact climate change has on the healthcare industry, patients, and communities and populations at risk.

Inaugural and outgoing Chair of the group **ALISON HAYWARD, MD, MPH**, Assistant Professor in the Divisions of Education and Global Health in the Department of Emergency Medicine at the Alpert Medical School (AMS), and incoming co-chairs, AMS Professor of Medicine **KELLY MCGARRY, MD**, and Associate Professor of Surgery, **LOREE KALLIAINEN, MD**, responded to the following inquiries from RIMJ on accomplishments during the past year, ongoing climate issues and challenges, and upcoming plans for a spring 2024 symposium.



New York City covered in an eerie orange smoke from Canadian wildfires caused hazardous air quality for everyone in early June, as shown in this photo. [NYC STOCK PHOTOS]

Q. Physicians can play a unique role in educating their colleagues and communities about climate change and its health impacts, and in advocating for policies to address this problem. Why did you get involved with climate change and why is it important to be involved?

A. AH: I've always been very passionate about environmental issues, and it has become clear that climate change is the environmental emergency our planet is currently facing. This issue requires our utmost attention. In recent years as the effects of climate change are becoming more and more apparent, touching our daily lives, the importance of physicians speaking out about climate change and advocating for planetary health is paramount. The sweeping effects that climate change is having and will continue to have on our patients cannot be understated. Physician testimony and advocacy on important topics is very influential and should not be underestimated. We can all make a difference.

Physician testimony and advocacy on important topics is very influential and should not be underestimated. We can all make a difference.
—Alison Hayward, MD

Q. Are there populations most impacted by the effects of climate change on human health?

A. AH, KM, LK: As we know, climate change impacts people's health and well-being by altering the frequency and intensity of extreme weather events. The result is reduced air quality and the spread of various diseases. The burdens of pollution, toxic waste, and contaminated resources are not distributed equally across society. Those most vulnerable to these effects include people who have lost their jobs because of flooding or drought, who may not have money to pay for needed medications or for food. The health effects of climate change have disproportionate impact on communities of color, resulting in disparities termed environmental racism and resulting in the movement for environmental justice. Those experiencing socioeconomic inequality cannot choose as easily where they live and often live in cities ("heat islands"), and locations more vulnerable to natural disasters.

The elderly and those with housing insecurity may also have difficulty escaping excessive heat, and the heat may be more a challenge on their systems. Climate change can contribute to air pollutant levels through increased usage of electricity for cooling, resulting in smog, increased levels of fine particulate matter, and acid rain. These environmental phenomena in turn cause exacerbation of illness in people of all ages with cardiac and pulmonary disease, as well as heat-related illness. Those who work outdoors, or children who tend to spend more time outdoors are additionally uniquely vulnerable to these health issues, as well as potentially to the increased geographic range of vector-borne infectious diseases that continues to extend from tropical weather zones into what had traditionally been more temperate climates.

Q. What positive impact has the committee had on the intersection of climate change and health in Rhode Island?

A. AH, KM, LK: The Climate Change and Health Committee has been able to provide both in-person and written testimony on a number of important pieces of legislature being considered by our State in the past year. We have sent letters to the speakers of the House and Senate to advise them of what we feel are the greatest legislative priorities for the health of our patients related to climate change and environmental concerns. We have also provided a forum for speakers from various medical specialties to address an interdisciplinary audience of like-minded physicians and medical students on topics related to climate change and health, and to share ideas about how to lessen negative environmental effects/reduce our carbon footprint in the healthcare system.

Q. How are the physicians of tomorrow being prepared to address the health impact of climate change?

A. AH, KM, LK: Brown's Alpert Medical School has been at the forefront of incorporating climate change effects on health into the medical school curriculum. Members of the CC&H committee have participated in the Planetary Health Curriculum Task Force, ensuring that climate change and health issues are integrated throughout the courses that students at AMS take. A Planetary Health elective has also recently been offered.

Q. Can you offer some details on the climate change & health symposium planned by the committee in 2024 in Rhode Island.

A. AH, KM, LK: Planned for spring 2024, the Climate Change and Health Symposium has received grant funding through a Brown University Office of Sustainability and Resiliency "Sustainability Seed Grant". The symposium is expected to bring together local and regional speakers on topics related to climate change and health advocacy, research, and other public health initiatives. We hope to include panel discussions and action-oriented workshops where participants from all sectors of the Brown University community, as well as the greater Rhode Island community, can network and collaborate on ideas. The symposium will be designed to minimize carbon footprint/environmental impact through various means, including electronic posters, virtual participation options, and collaborative community transportation options. ❖

Contact information

For more information on the committee, read about it on RIMS website: https://rimedicalsociety.org/climate-change-and-health-committee, or contact Stacy Paterno at spaterno@rimed.org.

NSF awards $6M to multidisciplinary climate research team from Brown, URI, RIC, RIH

PROVIDENCE – Leading researchers at Brown University, the University of Rhode Island (URI), Rhode Island College, and Rhode Island Hospital are rethinking coastal community approaches to climate change impacts and adaptation. And now, thanks to a new $6 million federal grant, these Ocean State institutions will partner on ambitious, multidisciplinary five-year project to develop strategies to enhance coastal resilience, particularly during floods.

U.S. Senators **JACK REED** and **SHELDON WHITEHOUSE** announced that Rhode Island will receive the federal funds through the U.S. National Science Foundation's (NSF) Established Program to Stimulate Competitive Research (EPSCoR) program. EPSCOR is designed to fulfill NSF's mandate to promote scientific progress nationwide. Through the program, NSF establishes partnerships with government, higher education and industry that are designed to effect lasting improvements in a state's or region's research infrastructure, research and development (R&D) capacity and hence, its national R&D competitiveness.

The NSF has invested $56 million in 11 projects, spanning a total of 21 institutions in 19 jurisdictions, through NSF's Established Program to Stimulate Competitive Research(EPSCoR). [NSF]

This award for Rhode Island is one of 11 projects totaling $56 million in EPSCOR funding to receive NSF's Research Infrastructure Improvement Track-2 awards. The federal funds for Community-Driven Coastal Climate Research & Solutions (3CRS) for the Resilience of New England Coastal Populations will develop a community-driven hub for knowledge, data, modeling and human network infrastructure. This project aims to gather data to answer important questions and develop strategies to enhance coastal resilience, particularly during floods.

The $6 million five-year study will support the following research teams:

Brown University, $2,941,689
University of Rhode Island, $700,761
Rhode Island College, $539,871
Rhode Island Hospital, $173,195

"This is a promising project that can help decisionmakers effectively strengthen resiliency in vulnerable coastal areas. I commend Brown, URI, RIC, and Rhode Island Hospital for collaborating on this study, which will provide valuable insight. I will continue championing EPSCOR dollars for Rhode Island and nationally and doing everything I can to strengthen our research infrastructure and help solve pressing challenges like coastal resiliency," said Senator Reed, a senior member of the Appropriations Committee who brought the head of the NSF, **SETHURAMAN PANCHANATHAN, PhD**, to Rhode Island this spring to meet with faculty at URI, Brown, RIC and other research institutions for a firsthand look at how Rhode Island-based researchers are advancing NSF-supported scientific discovery, innovation, and education.

"As evident from EPSCoR's impact, investing in research infrastructure is a powerful catalyst for strengthening our nation's security, competitiveness, and fostering groundbreaking scientific advancements," said Dr. Panchanathan.

"Rhode Islanders are seeing the effects of the climate crisis all around us – from rising sea levels to extreme weather events," said Senator Whitehouse, who created the National Coastal Resilience Fund to invest in resiliency efforts in Rhode Island and across the country. "As we race to lead the planet to safety from climate change, we must address the urgent challenges facing coastal communities. This federal funding will allow Rhode Island's world-class research institutions to collaborate on boosting resiliency in the Ocean State for generations."

"The concept of the New England 3CRS Hub stems from the fact that in the past, a lot of coastal communities, sometimes in connection with the research institutions, have been addressing solution strategies for resilience on their own," said **EMANUELE DI LORENZO, PhD**, a professor in the Department of Earth, Environmental and Planetary Sciences at Brown who will serve as principal investigator. "This has led in general to a fragmented approach to coastal resilience where individual communities are trying to develop their own strategies and there is often little learning from each other, especially for underserved communities. This hubs aims at building an expert and stakeholder network of people to help waterfront communities share data, tools and human infrastructure to essentially accelerate the process of designing strategies for climate and health resilience."

"The University of Rhode Island is leading critical research in coastal resilience, which has the potential to not only improve but protect the lives of Rhode Islanders and people across the country," said URI President **MARC B. PARLANGE**.

"Collaborating with other state partners, we will use this award to expand URI-developed coastal monitoring tools and train the next generation of coastal scientists."

"We are grateful to Sens. Reed and Whitehouse for their leadership in bringing this important funding to Rhode Island. It's crucial for the Ocean State to lead the way in developing new approaches to coastal climate resiliency. Rhode Island College is proud to be a part of this effort alongside our fellow institutions of higher learning," said **JACK WARNER**, president of Rhode Island College.

"Rhode Island Hospital is pleased to be a partner on this grant, which will allow us to further our understanding of the impacts of climate change on coastal communities," said **DEAN ROYE, MD**, senior vice president for medical affairs and chief medical officer at Rhode Island Hospital. "By studying the health effects of flooding and developing strategies to enhance coastal resilience, we hope to provide valuable insights that can inform policy decisions and help communities better prepare for future challenges."

EPSCoR awards are made through merit-based proposal reviews and are designed to ensure competitive U.S. research dollars reach diverse geographic areas, including smaller states like Rhode Island.

Through his work on the Appropriations Committee, Senator Reed has led efforts to ensure Rhode Island's EPSCoR eligibility since 2004, and now Rhode Island's current percentage of NSF funding is one of the highest of EPSCoR-eligible states. With this latest award, Rhode Island has now received over $94 million in EPSCOR funding since 2004 for collaborative research projects. ❖

CDC awards RI $915K to develop suicide-prevention program for those at high risk

PROVIDENCE – On Aug. 1, Governor **DAN MCKEE** announced that Rhode Island has been awarded $915,000 in federal funds from the Centers for Disease Control and Prevention (CDC) to develop a coordinated, data-driven suicide prevention program for higher-risk populations.

For the initiative, the Rhode Island Department of Health's Violence and Injury Prevention Program will convene a new multi-sector partnership, including partners across the Executive Office of Health and Human Services. It will focus on suicide prevention amongst working-aged men (25 to 64), military-affiliated individuals (Veterans, active duty, National Guard), and first responders (public safety officers, firefighters, emergency medical services personnel) who are age 18 or older.

Suicide is a public health crisis in Rhode Island and across the country. In 2021, 121 people died by suicide in Rhode Island, up from 99 suicide deaths in 2020. From 2012–2021, Rhode Island averaged 120 suicides per year. Suicide deaths are more likely to be seen among males and middle-aged adults. In 2019, deaths of working-age men (ages 25–64) accounted for almost 60 percent of all suicides in Rhode Island.

"Here in Rhode Island, we recognize that suicide is a public health crisis, and it's on all of us to be part of the solution. This coordinated program is data-driven and unites state agencies to ensure this critical work is done across the whole of government," Governor McKee said. "I thank the Centers for Disease Control and Prevention for providing these crucial funds to help save lives."

The comprehensive approach will continue to build on the State's investment in suicide prevention that began in 2009. Rhode Island will implement Statewide approaches with the goal of reducing suicide-related injuries and fatalities by 10 percent in the identified populations from 2022–2027.

The collaborative effort will also strengthen data and service infrastructure to better understand and address differences in suicide risk among Rhode Islanders. For example, some numerically small populations in Rhode Island – such as LGBTQ+ people; Native American/American Indian people; people who are survivors of previous suicide attempts; people who are homeless; and people who are survivors of domestic violence – have disproportionately high rates of suicide.

Rhode Island will continue to focus on reducing access to lethal means as a way to lower suicide deaths. In Rhode Island, rates of firearm-related suicides among working-age men increased by more than 12 percent from the period of 2010–2014 to 2015–2019. Additionally, intentional drug overdose deaths, or suicides by drug poisoning, remain a concern.

This new funding is in addition to the $750,000 Staff Sergeant Parker Gordon Fox (SSG Fox) Suicide Prevention Grant from the US Department of Veterans Affairs that RIDOH recently received to coordinate with the Providence Veterans Administration Medical Center, the Rhode Island Office of Veterans Services, other State agencies, and community partners to address the issues of mental health and suicide among Rhode Island Veterans and their families. ❖

CDC recommends RSV vaccine for infants, some older babies

WASHINGTON, DC – The Centers for Disease Control (CDC) is recommending a new immunization starting this fall to help protect all infants under 8 months and some older babies at increased risk of severe illness caused by respiratory syncytial virus (RSV).

In early August, CDC director **MANDY COHEN, MD, MPH**, adopted the CDC Advisory Committee on Immunization Practices' (ACIP) recommendation for the use of nirsevimab, trade name Beyfortus™, a long-acting monoclonal antibody product, which has been shown to reduce the risk of both hospitalizations and healthcare visits for RSV in infants by about 80 percent.

"This new RSV immunization provides parents with a powerful tool to protect their children against the threat of RSV," said Dr. Cohen. "RSV is the leading cause of hospitalizations for infants and older babies at higher risk and today we have taken an important step to make this life saving product available."

CDC recommends one dose of nirsevimab for all infants younger than 8 months, born during – or entering – their first RSV season (typically fall through spring). For a small group of children between the ages of 8 and 19 months who are at increased risk of severe RSV disease, such as children who are severely immunocompromised, a dose is recommended in their second season.

Nirsevimab, which was approved last month by the U.S. Food and Drug Administration (FDA), is administered as an injection and provides infants and toddlers with antibodies to protect against severe RSV illness. It provides critical protection during a baby's first RSV season, when they're most at risk for severe illness.

Nirsevimab is expected to be available this fall. Expectant parents and parents of infants under the age of 8 months, as well as those with older babies, should talk with their healthcare providers and request this added layer of protection against RSV this season.

ACIP voted to include nirsevimab in the Vaccines for Children program, which provides recommended vaccines and immunizations at no cost to about half of the nation's children. CDC is currently working to make nirsevimab available through the Vaccines for Children program. Healthcare providers will be a key partner in CDC's outreach efforts. Additional clinical guidance and healthcare provider education material will be provided by CDC in the coming months. ❖

FDA approves first oral treatment for postpartum depression

SILVER SPRING, MD – On August 4, the U.S. Food and Drug Administration approved Zurzuvae (zuranolone), the first oral medication indicated to treat postpartum depression (PPD) in adults. PPD is a major depressive episode that typically occurs after childbirth but can also begin during the later stages of pregnancy. Until now, treatment for PPD was only available as an IV injection given by a health care provider in certain health care facilities.

"Postpartum depression is a serious and potentially life-threatening condition in which women experience sadness, guilt, worthlessness – even, in severe cases, thoughts of harming themselves or their child. And, because postpartum depression can disrupt the maternal-infant bond, it can also have consequences for the child's physical and emotional development," said **TIFFANY R. FARCHIONE, MD**, director of the Division of Psychiatry in the FDA's Center for Drug Evaluation and Research. "Having access to an oral medication will be a beneficial option for many of these women coping with extreme, and sometimes life-threatening, feelings."

The efficacy of Zurzuvae for the treatment of PPD in adults was demonstrated in two randomized, double-blind, placebo-controlled, multicenter studies. The trial participants were women with PPD who met the Diagnostic and Statistical Manual of Mental Disorders criteria for a major depressive episode and whose symptoms began in the third trimester or within four weeks of delivery. In Study 1, patients received 50 mg of Zurzuvae or placebo once daily in the evening for 14 days. In Study 2, patients received another zuranolone product that was approximately equal to 40 mg of Zurzuvae or placebo, also for 14 days. Patients in both studies were monitored for at least four weeks after the 14-day treatment. The primary endpoint of both studies was the change in depressive symptoms using the total score from the 17-item Hamilton depression rating scale (HAMD-17), measured at day 15. Patients in the Zurzuvae groups showed significantly more improvement in their symptoms compared to those in the placebo groups. The treatment effect was maintained at Day 42 – four weeks after the last dose of Zurzuvae.

The labeling contains a boxed warning noting that Zurzuvae can impact a person's ability to drive and perform other potentially hazardous activities. Patients also may not be able to assess their degree of impairment. To reduce the risk of harm, patients should not drive or operate heavy machinery for at least 12 hours after taking Zurzuvae.

The most common side effects include drowsiness, dizziness, diarrhea, fatigue, nasopharyngitis (the common cold), and urinary tract infection. Use of Zurzuvae may cause suicidal thoughts and behavior. Zurzuvae may cause fetal harm. Women should use effective contraception while taking, and for one week after taking, Zurzuvae.

The daily recommended dose for Zurzuvae is 50mg. It should be taken once every day, for 14 days, in the evening with a fatty meal.

The FDA granted this application Priority Review and Fast Track designation.

Approval of Zurzuvae was granted to Sage Therapeutics, Inc. ❖

RIAG, RIDOH deem The Centurion Foundation HCA application for CharterCARE incomplete

PROVIDENCE – On Aug. 11th, Rhode Island Attorney General **PETER F. NERONHA** and Rhode Island Department of Health Interim Director **UTPALA BANDY, MD, MPH**, the two state regulators empowered to oversee hospital conversions in Rhode Island, notified the parties involved in a proposed hospital conversion involving Roger Williams Medical Center and Our Lady of Fatima Hospital that their application has been deemed incomplete. The two hospitals are operated by CharterCARE.

Under the Hospital Conversion Act (HCA), transacting parties seeking the transfer of ownership of a hospital must first complete an Initial Application which is filed with the Office of the Attorney General and the Rhode Island Department of Health. The two agencies then review the Initial Application for completeness. Following review of the submission from Prospect Medical Holdings and The Centurion Foundation, the Attorney General and the Department of Health determined that the submitted materials do not contain sufficient information necessary for the State to conduct its review under the HCA.

The parties were notified of the numerous deficiencies in a letter from the Attorney General and the Department of Health. The letter outlined the application's deficiencies, including the lack of detail surrounding the structure of the entities and how the parties intend to achieve the goals proposed in the Application. The applying parties must correct the deficiencies within 30 working days, or on or before September 26, 2023. Information contained in the letter is presumed confidential at this stage of the review.

Once the Application is deemed complete, the Attorney General and the Rhode Island Department of Health will review it under the HCA and issue their decision. ❖

School of Public Health holding 10-year anniversary kickoff event

PROVIDENCE – On Sept. 27th Brown's School of Public Health will begin a year-long celebration on the occasion of its 10th anniversary. The kickoff event will feature a speaking program followed by a reception at 5 p.m. in Alumnae Hall. Exhibits will showcase the school's history and areas of impact, said Dean **ASHISH K. JHA, MD, MPH**, in an August 15 letter to the Brown University community. At the event Dr. Jha will join Brown President **CHRISTINA H. PAXSON**, to explore the past, present, and future vision for public health at Brown.

This photo appeared in a themed issue of RIMJ in June 2013 on the new School of Public Health. It shows Brown's leadership team: Rear, from left, department chairs **Christopher Kahler** (Behavioral and Social Sciences), **Stephen Buka** (Epidemiology), and **Constantine Gatsonis** (Biostatistics). Front, **Ira Wilson** (Health Services, Policy and Practice) and **Terrie Fox Wetle**, inaugural dean. [BROWN, SCOTT KINGSLEY]

In June 2013, the *Rhode Island Medical Journal* (RIMJ) featured a themed issue on the school's inauguration, and the history of public health endeavors in Rhode Island. (http://rimed.org/rimedicaljournal/2013/06/2013-06-20-bsph-complete.pdf)

Inaugural Dean **TERRIE FOX WETLE, PHD**, wrote in the introduction to the section:

"The School's mission is to improve population health by conducting research to better understand disease risk factors and effective health promotion, educating future generations of health researchers and policy makers, and providing public service by translating research into public policy and improved practice.

"The nation's newest school of public health, to be established July 1, 2013, boasts research and teaching that is collaborative, multidisciplinary, and innovative. The products of this work have real impact on people's lives."

In his announcement letter of the anniversary, Dr. Jha celebrated the school's history and challenges going forward. "From revolutionizing how substance use is understood and treated, to guiding people and policymakers through the COVID-19 pandemic, to improving access to public health leadership by establishing the Health Equity Scholars program, our School of Public Health is building towards addressing the pressing public health challenges of our time," Dr. Jha wrote.

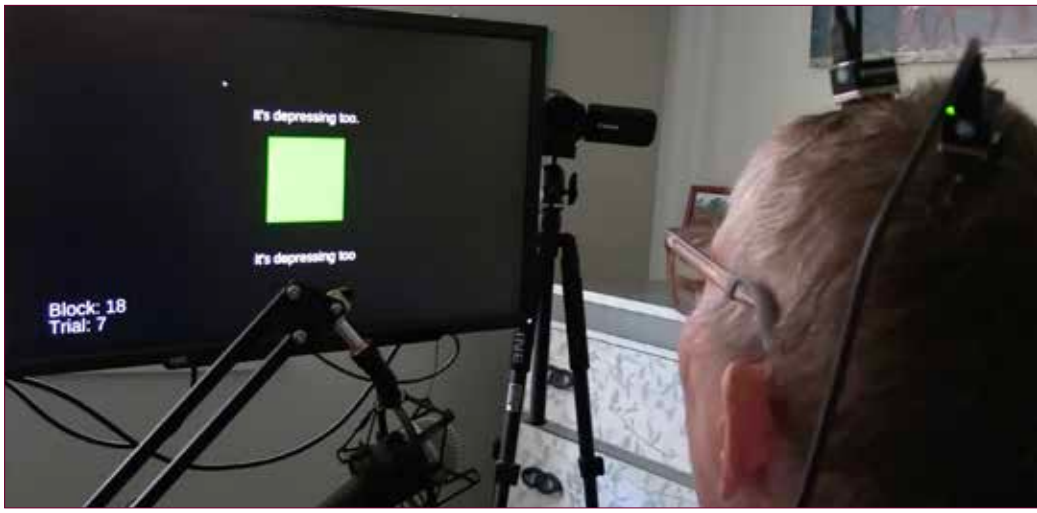
"This academic year, we are celebrating our history while looking towards the future. What can we learn from our faculty's groundbreaking accomplishments in the fields of aging, substance use, children's health, biostatistics and health care policy? What do we need to do next to tackle complex challenges such as the impact of climate change on health, information disorders and the erosion of trust in public health, or the opioid epidemic?"

According to the announcement of the anniversary on the school's website, the year's events will include the Dean's Conversation Series, where distinguished speakers from around the world will discuss pressing public health challenge. Registration is available for the kickoff at: https://sph.brown.edu/events/10-year-anniversary. ❖

Stanford clinical trial shows advances in brain-computer interfaces (BCIs) in woman with ALS, speech deficit

Participant in Brown, VA BrainGate consortium

MARY KORR
RIMJ MANAGING EDITOR



Supplementary video from the *Nature* article shows participant during the study. The implanted sensors, square arrays of silicone electrodes arranged in grids, are attached to fine gold wires that emerge from pedestals screwed to the skull, which are then hooked up by cable to a computer.

On Aug. 23rd, the journal *Nature* published the article by Willett FR, Kunz EM, Fan C, et al, "A high-performance speech neuroprosthesis,"[1,2] describing the results of a clinical trial at Stanford University, a participant in the multi-institutional BrainGate consortium,[3] which demonstrated that a woman with amyotrophic lateral sclerosis (ALS) incapable of intelligible speech, after several months of training sessions, was able to have her brain signals translated into text via a speech brain-computer interface (BCI).

A co-author of the *Nature* study, **LEIGH HOCHBERG, MD, PhD**, a neurologist and researcher affiliated with the Providence VA, Brown University and the Massachusetts General Hospital, is principal investigator and director of the collaborative of clinicians, neuroscientists and engineers working to create and advance the usage of BCIs to restore communication, mobility, and independence for those suffering with neurologic diseases, injury, and limb loss.

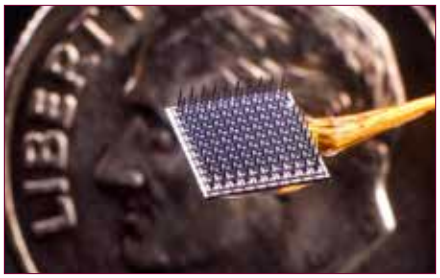
Trial volunteer Pat Bennett. [STEVE FISCH, COURTESY OF STANFORD UNIVERSITY/MEDICINE]

BCI potential

As described in the *Nature* Abstract on the recent Stanford study: "Speech brain-computer interfaces (BCIs) have the potential to restore rapid communication to people with paralysis by decoding neural activity evoked by attempted speech into text or sound."

The Stanford clinical trial participant, Pat Bennett, 68, was diagnosed in 2012 with ALS. As a result, she can no longer use the muscles of her mouth to speak clearly. The Stanford scientists, in 2022, connected four sensors implanted in Bennett's outer cerebral cortex associated with speech to computers, with software undergoing meticulous adjustments to decode how her brain signals correspond to speech.

According to the Stanford Medicine News Center article by Bruce Goldman, "Brain implants, software guide speech-disabled person's intended words to computer screen,"[4] describing the trial: "An artificial-intelligence algorithm receives and decodes electronic information emanating from Bennett's brain, eventually



Brain-computer interfaces use tiny electrodes to record signals in the brain. [BRAINGATE.ORG]

teaching itself to distinguish the distinct brain activity associated with her attempts to formulate each of the 39 phonemes that compose spoken English. It feeds its best guess concerning the sequence of Bennett's attempted phonemes into a so-called language model, essentially a sophisticated autocorrect system, which converts the streams of phonemes into the sequence of words they represent."

JAIMIE HENDERSON, MD, who performed the implant surgery and is co-senior author of the paper, said in the news article, "Bennett's pace begins to approach the roughly 160-word-per-minute rate of natural conversation among English speakers We've shown you can decode intended speech by recording activity from a very small area on the brain's surface."

Frank Willett, PhD, a Howard Hughes Medical Institute staff scientist affiliated with the Neural Prosthetics Translational Lab, shares lead authorship of the study, is shown in this image operating the software that translates Pat Bennett's speech into words on the screen. [STEVE FISCH, COURTESY OF STANFORD UNIVERSITY/MEDICINE]

According to the article in *Nature*, Bennett was able to generate 62 words per minute on a computer screen simply by attempting to speak. "This is more than three times as fast as the previous record for assisted communication using implanted BCIs and begins to approach the roughly 160-word-per-minute rate of natural conversation among English speakers," the authors wrote. "Our demonstration is a proof of concept that decoding attempted speaking movements with a large vocabulary is possible using neural spiking activity. However, it is important to note that it does not yet constitute a complete, clinically viable system."

Proof of concept – and hope

"This is a scientific proof of concept, not an actual device people can use in everyday life," said **FRANK WILLETT, PhD**, lead author of the study said in the Stanford news article. "But it's a big advance toward restoring rapid communication to people with paralysis who can't speak."

But for Bennett, the results of the study offer hope. "Imagine," she wrote, "how different conducting everyday activities like shopping, attending appointments, ordering food, going into a bank, talking on a phone, expressing love or appreciation – even arguing – will be when nonverbal people can communicate their thoughts in real time."

Usage, funding

The device described in the study is licensed for investigative use only and is not commercially available. The study was funded by the National Institutes of Health (grants U01-DC017844 and U01-DC019430), the U.S. Department of Veterans Affairs, Stanford Wu Tsai Neurosciences Institute, HHMI, the Simons Foundation, and Larry and Pamela Garlick. ❖

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2. https://www.nature.com/articles/s41586-023-06377-x
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Study at RIH finds differences in microorganisms causing infection after cranial and spinal surgeries

PROVIDENCE – A new retrospective study conducted at Rhode Island Hospital has revealed significant differences in the microorganisms causing surgical site infections (SSIs) following craniectomies/craniotomies and open spinal surgery. The study, which examined surgeries performed in over 19,000 patients, aimed to shed light on the pathogens associated with infections at specific surgical sites. The study was led by **LEONARD A. MERMEL, DO, ScM**, Medical Director of the Department of Epidemiology and Infection Control, at Lifespan health system in Rhode Island.

The findings of the study, published in the *Journal of Neurosurgery*, highlight the causative pathogens at each surgical site and type of surgery at each site. The study found that Klebsiella aerogenes, Serratia marcescens, and Enterobacter cloacae were significantly more likely to be associated with craniotomy/craniectomy SSIs compared to spine surgeries while Pseudomonas aeruginosa and Escherichia coli, were significantly more often associated with lumbosacral SSIs compared to craniotomy/craniectomy SSIs or cervicothoracic SSIs. The authors believe that the microorganisms causing infections in the lumbosacral spine likely emanate from patient's gastrointestinal and genitourinary tract; however, some of the microorganisms causing infections after craniotomy/craniectomy such as Serratia marcescens and Enterobacter cloacae, may have environmental sources.

The implications of these findings are significant for SSI prevention. The study suggests considering intraoperative preparation of cranial, cervical, and upper thoracic surgical sites with benzoyl peroxide, in addition to other cutaneous antiseptic agents. Managing fecal or urinary incontinence should also be prioritized to minimize soilage in the early postoperative period. Furthermore, broader gram-negative coverage should be considered for antibiotic prophylaxis in lumbar/lumbosacral fusion surgeries. Attention should be paid to craniotomy/craniectomy sites in the early postoperative period to prevent contamination from the surrounding environment. Lastly, the study recommends routine preoperative screening for MRSA and MSSA, with appropriate decolonization measures for colonized patients or those with a history of infection.

Further research is needed to validate these results and explore additional preventive measures. ❖

Senators Reed and Whitehouse tour the Brown University Labor and Delivery Center and Women's Health Research Institute at Women & Infants Hospital

PROVIDENCE – On Tuesday, August 15, 2023, U.S. Senators **JACK REED** and **SHELDON WHITEHOUSE** joined Care New England and hospital leadership to tour the construction site of the new Brown University Labor and Delivery Center and the Women's Health Research Institute at Women & Infants Hospital, a project which is currently underway and expected to be completed in December 2024. The senators assisted in securing $803,000 in federal funding for the completion of this project.

Dimeo Construction Company ceremonially broke ground on May 10, 2023.

The project will comprise a three-story addition including twenty (20) labor and delivery rooms, nurses' stations, a staff lounge, a locker room, and management offices. Plans for the new Brown University Labor & Delivery Center also include larger rooms to accommodate a greater variety of birthing practices. Ultimately, the new unit will help meet Women & Infants Hospital's goal of eliminating disparities in care and elevating every mother's birthing experience. And, the Women's Health Research Institute will tackle important projects including much-needed health equity research.

Shannon Sullivan, president and COO, of Women & Infants Hospital, toured the construction site of the new facility with Rhode Island Senators Reed and Whitehouse. [CARE NEW ENGLAND]

"I am thankful that our state's elected leaders understand and are invested in this project, which will impact Rhode Island families for generations to come. It's my distinct pleasure to take members of our congressional delegation on a tour of the mock-up labor and delivery center, to show how it will enhance patient experience and answer any questions they may have," said **SHANNON SULLIVAN**, president and COO, of Women & Infants Hospital.

"Woman & Infants and its outstanding team of doctors, researchers, and health professionals help to care for so many Rhode Island families during some of the most significant days of their lives. I was proud to team up with Senator Whitehouse to secure $803,000 in federal funding to help make this new Labor and Delivery Center a reality," said U.S. Senator Jack Reed, a senior member of the Senate Appropriations Committee. "I look forward to watching the progress of this project as Brown University and Women & Infants team up to ensure Rhode Islanders have the state-of-the-art resources needed to improve health care for mothers in our state."

"Women & Infants Hospital provides high-quality care for moms and newborns across Rhode Island," said Senator Whitehouse. "These new state-of-the-art facilities, funded in part by the federal earmark we secured, will help strengthen maternal care and give babies the healthiest possible start."

The Campaign to Deliver Our Future, the philanthropic effort raising critical funds, is proudly led by a very invested, all-woman steering committee. To date, the campaign has raised $25.4 million of the estimated $40 million necessary to complete the project. To try to meet the financial obligations of the new building, Women & Infants seeks not only to continue raising capital for this project but to include the entire community in its effort.

Among its notable distinctions, Women & Infants Hospital has been recognized as a Baby-Friendly USA hospital. *US News and World Report* ranked Women & Infants Hospital's Department of Obstetrics and Gynecology the 12th best in the nation. ❖.

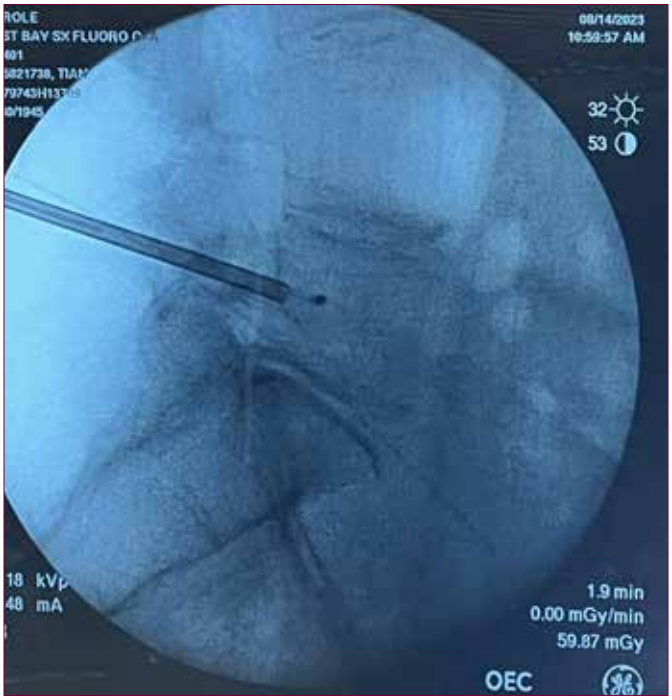
S. Chris Tian, MD, introduces innovative procedure to relieve chronic vertebrogenic low back pain

EAST PROVIDENCE – University Orthopedics announced on Aug. 23rd that **DR. S. CHRIS TIAN**, an expert in interventional pain management, recently became the first in Rhode Island to offer an innovative treatment for patients seeking relief from a distinct type of chronic low back pain (CLBP) known as vertebrogenic pain.

Dr. Tian successfully performed two Intracept® Procedures at University Orthopedics' East Bay Surgery Center in East Providence. The minimally invasive, outpatient procedure takes about an hour and is implant-free, so it preserves the overall structure of the spine. It works by targeting the basivertebral nerve (BVN) in the spine with radiofrequency energy. During the procedure, Dr. Tian used a probe to heat the BVN, rendering it unable to transmit pain signals to the brain.

The Intracept Procedure is supported by multiple clinical studies, including two Level I randomized controlled trials and five-year data on patient outcomes. Key findings include:

- Long-term improvements in pain and function, sustained more than 5 years[1]
- Sustained decrease in patients using opioids and injections long-term[1]
- Nearly 80% of patients indicated they would have the procedure again for the same condition[1]
- Less than 0.3% rate of serious Intracept Procedure-related complications reported.[2]



Dr. Tian successfully performed two Intracept® Procedures at University Orthopedics' East Bay Surgery Center in East Providence. [UNIVERSITY ORTHOPEDICS, COURTESY OF PRACTICE MARKETING & COMMUNICATIONS]

"With the Intracept Procedure, we are embarking on a paradigm shift in the treatment and diagnosis of vertebrogenic pain," Dr. Tian said. "Not only is the procedure proven to be safe and durable but it also provides patients with the opportunity to get back to living without the burden of chronic low back pain."

The indicated patient for the Intracept Procedure has chronic low back pain of at least six months duration, has not responded to at least six months of conservative care, and presents with degenerative vertebral endplate changes consistent with Type 1 or Type 2 Modic changes at L3 through S1 on an MRI. ❖

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2. Relevant data on file as of January 2023.

Robotic Bronchoscopy System now in use at Kent

WARWICK – In April 2023, Kent Hospital acquired the Ion Endoluminal Robotic Bronchoscopy System, a cutting-edge, robotic-assisted platform that offers physicians unprecedented stability and precision to access small lung nodules deep in the lungs. "This technology dramatically enhances our ability to both diagnose and treat early-stage lung cancers," said **DR. MATTHEW POMMERENING**, a thoracic surgeon at Brigham and Women's Hospital and Care New England who is leading the program at Kent Hospital. He added, "with the Ion robotic bronchoscope, we can not only diagnose early-stage lung cancers with increased accuracy and precision, but we can also inject a dye to help us find the tumor during surgery. This allows us to remove less lung tissue and complete both diagnosis and surgical resection all in one single procedure."

Ion is made by Intuitive, the company that makes the da Vinci robotic surgical system, which is also being used to perform minimally invasive robotic lung resections at Kent. ❖

Since launching the program in April, over 50 robotic lung biopsies have been performed at Kent Hospital. [CNE]

14th Annual Swim Across America – RI Open Water Swim raising funds to support cancer research at W&I

PROVIDENCE – On Saturday, September 9, 2023, Swim Across America – Rhode Island Open Water Swim (SAA-RI) will hold its 14th annual charity swim at scenic Roger Wheeler State Beach, located at 100 Sand Hill Cove in Narragansett. Funds raised through this event will directly support crucial and often life-saving cancer research at Women & Infants Hospital. Established in 2010, SAA-RI has raised over $2 million to date, to fund cancer research at Women & Infants Hospital.

Each year, the Rhode Island charity swim attracts over 600 swimmers and volunteers who enthusiastically show up to support this worthy cause, including notable Olympian and Rhode Island native **ELIZABETH BEISEL**.

"I encourage Rhode Islanders from across our great state to help us make a splash this year! This event is a fun time for the whole family while giving everyone the opportunity to simultaneously support crucial cutting-edge gynecological and breast cancer research that may ultimately save lives. Every year, millions of Americans are beating cancer through advancements in treatments, which funded research helps make possible. I hope you'll all join us on Saturday, September 9th, at one of Rhode Island's most picturesque beaches for this truly meaningful charity swim," said **SHANNON SULLIVAN**, president, and COO of Women & Infants Hospital.

This year's open water swim will include three swim options and one virtual option: a 1-mile, 0.5-mile, or 0.25-mile open water swim, or SAA My Way (virtual).

While hundreds of local swimmers, and water and land volunteers join in the swim, the Rhode Island event is known for having more college swim teams participate than any other swim in the country.

To learn more about Swim Across America or to register to swim, volunteer or donate, please visit swimacrossamerica.org/rhodeisland. ❖

W&I, Israeli tech form to collaborate on optimizing AI for fertility patients

[BROWN UNIVERSITY, FERTIL AI]

PROVIDENCE – The Rhode Island Israel Collaborative (RIIC), a nonprofit organization promoting collaboration between Israeli and Rhode Island businesses, academics, and science projects, recently announced Women & Infants Hospital will collaborate with the Israeli technology firm FertilAI to enhance clinical outcomes for fertility patients and optimize operations efficiency.

Under this research agreement, FertilAI will leverage Women & Infants Hospital's data retrospectively to validate the accuracy of its artificial intelligence algorithms. These algorithms were specifically developed to improve clinical outcomes and operations efficiency for fertility patients. By analyzing Women & Infants Hospital's data, the algorithms can be trained and validated on diverse patient populations, ensuring their effectiveness and applicability in various clinical settings.

MAY-TAL SAUERBRUN-CUTLER, MD, Division of Reproductive Endocrinology and Infertility at Women & Infants Hospital, Assistant Professor of Obstetrics and Gynecology, Alpert Medical School of Brown University, and **ROHI HOURVITZ, MBA**, CEO and Co-Founder FertilAI, signed the research agreement.

For more information: https://www.theriic.org; https://fertilai.com. ❖

Sturdy Health, Tufts Medicine enter into a new clinical partnership; initially to focus on cardiovascular services

ATTLEBORO, MA – Sturdy Health and Tufts Medicine have entered into a new clinical partnership to expand access to comprehensive specialty care with an initial focus on cardiovascular services.

Together, Sturdy Health and Tufts Medicine will jointly recruit top-talent cardiologists to Sturdy Health. These physicians and surgeons will have reciprocal hospital privileges at Tufts Medical Center.

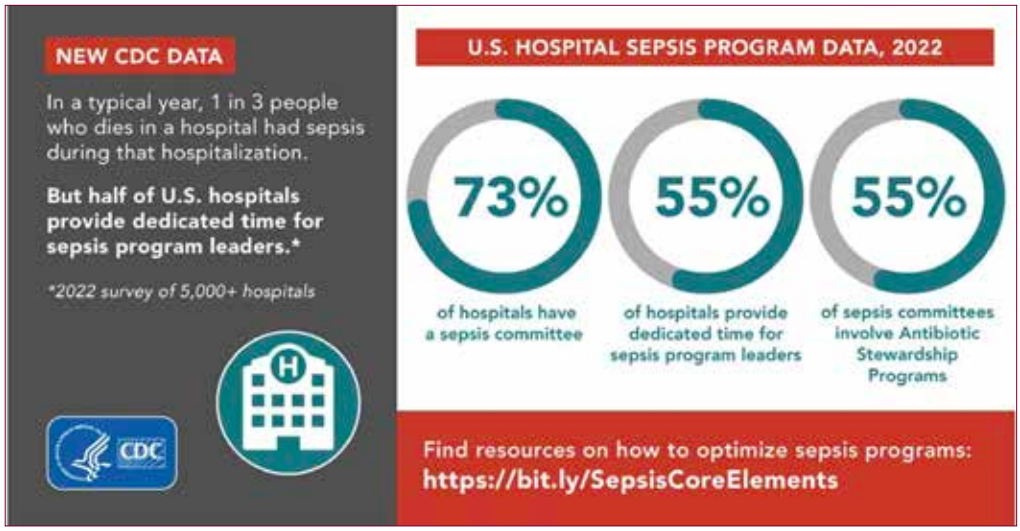
Tufts Medical Center is home to the largest advanced heart failure program in New England. The Hypertrophic Cardiomyopathy Association (HCMA) named Tufts Medical Center one of only four Centers of Excellence in the treatment of this condition. Since 2000, Tufts Medical Center has performed more adult heart transplants than any other hospital in New England.

"This clinical partnership further expands our ability to provide the highest quality care in the communities we serve as an independent, locally owned and operated non-profit health system," said **AIMEE BREWER**, president and chief executive officer at Sturdy Health. "Not only will Sturdy Health patients have the advantage of broader service offerings locally, they will also benefit from a seamless experience for their tertiary care needs."

"As an integrated health system, Tufts Medicine works closely with hospital partners like Sturdy Health to ensure advanced care is offered in the most convenient location for patients," said **MICHAEL TARNOFF, MD**, chief executive officer of Tufts Medical Center. "We look forward to providing a streamlined pathway to well-coordinated, complex care services to Sturdy Health and their patients."

Sturdy Health will continue its longstanding clinical partnership with Boston Medical Center and Shields Health, as well as its radiation oncology joint venture with Mass General Brigham and McLean Hospital for behavioral health services. ❖

CDC launches effort to strengthen survival, recovery rates for sepsis patients



WASHINGTON, DC – The Centers for Disease Control and Prevention (CDC) is launching the Hospital Sepsis Program Core Elementsto support all U.S. hospitals in ensuring effective teams and resources are in place to be able to quickly identify sepsis and save more lives. This new, critical resource is intended to help hospitals implement, monitor, and optimize sepsis programs and improve survival rates. CDC's latest survey of 5,221 hospitals found 73% report having sepsis teams, but only half (55%) report thatteam leaders are provided with dedicated time to manage sepsis programs.

"Sepsis is taking too many lives. One in three people who dies in a hospital has sepsis during that hospitalization. Rapid diagnosis and immediate appropriate treatment, including antibiotics, are essential to saving lives, yet the challenges of awareness about and recognition of sepsis are enormous. That's why CDC is calling on all U.S. hospitals to have a sepsis program and raise the bar on sepsis care by incorporating these seven core elements," said CDC Director **MANDY COHEN, MD, MPH**. "Seven elements provide an organizational framework and key concepts that guide hospitals as they work to improve early recognition and treatment to save lives."

The Sepsis Core Elements are intended to be a "manager's guide" to organizing staff and identify the resources that will help bring sepsis rates down and survival rates up. Sepsis care is complex. The Sepsis Core Elements approach is an important step to help hospitals structure their sepsis programs to coordinate multiple departments and disciplines and effectively manage the multifaceted care needed. Based on CDC's 2022 National Healthcare Safety Network Annual Survey of hospitals, only half (55%) report that they integrate Antibiotic Stewardship Programs, for example, to monitor and review antibiotic and antifungal use in sepsis care. This presents an opportunity to improve a vital component of a patient's successful recovery from sepsis.

Modeled after CDC's Core Elements of Antibiotic Stewardship, which has proven to be an impactful resource to protect patients from the harms caused by unnecessary antibiotic use and to combat antimicrobial resistance, the Sepsis Core Elements were created with the expectation that all hospitals, regardless of size and location, would benefit from this resource and incorporate the following elements into the foundation of a strong sepsis program:

1. **Leadership Commitment:** Dedicating the necessary human, financial, and information technology resources.
2. **Accountability:** Appointing a leader responsible for program outcomes and setting concrete program goals.
3. **Multi-professional expertise:** Engaging key partners throughout the organization.
4. **Action:** Implementing structures and processes to improve the identification of, management of, and recovery from sepsis.
5. **Tracking:** Measuring sepsis epidemiology, outcomes, progress toward program goals, and the impact of sepsis initiatives.
6. **Reporting:** Providing usable information on sepsis treatment and outcomes to relevant partners.
7. **Education:** Providing sepsis education to healthcare professionals during onboarding and annually.

"CDC's Hospital Sepsis Program Core Elements are a guide for structuring sepsis programs that put your healthcare providers in the best position to rapidly identify and provide effective care for all types of patients with sepsis," says **RAYMUND DANTES, MD, MPH**, CDC medical advisor. "The seven elements complement clinical guidelines by describing the leadership, expertise, tracking, education, and other elements that can be implemented in a wide variety of hospitals to improve the quality of sepsis care." ❖

Appointments

Patrick McGann, MD, named to Obama Foundation's Leaders USA program

Patrick McGann, MD, PhD [LIFESPAN]

PROVIDENCE – Lifespan announced in August that **PATRICK MCGANN MD, PhD**, director of The Lifespan Comprehensive Sickle Cell Center and associate professor of pediatrics and medicine at The Warren Alpert Medical School of Brown University, is among the first cohort of 100 emerging changemakers selected to participate in the Obama Foundation's Leaders USA program.

The Obama Leaders program is a six-month virtual program that supports and connects emerging leaders in the United States, Africa, Asia-Pacific, and Europe through a values-based leadership framework inspired by the ideals and legacy of President and Mrs. Obama. Chosen from a highly competitive pool of applications, Dr. McGann was selected to join the program for his commitment to improving the lives of individuals with sickle cell disease through a focus on anti-racism and health equity both locally and internationally.

The inaugural cohort of United States "Obama Leaders" is composed of values-driven changemakers from every corner of the country.

Since joining Lifespan in September 2021 as Director of the Lifespan Comprehensive Sickle Cell Center, Dr. McGann has worked to develop an innovative "lifespan" approach to sickle cell care that aims to provide seamless, high-quality and equitable care across the lifespan, directly addressing the well described challenges related to transition from pediatric to adult care. Dr. McGann leads many US-based and global research studies related to sickle cell disease with funding from the National Institutes of Health, Doris Duke Charitable Foundation, and American Society of Hematology.

As part of the six-month program, Dr. McGann will convene virtually each week with the United States Obama Leaders cohort for interactive sessions designed to help them drive change by honing their leadership skills, building deep relationships with their peers, and engaging with thought leaders and members of the Obama Foundation community. Dr. McGann will also have an opportunity to engage with President Obama, participate in various virtual experiences and special events, including one-on-one conversations with experienced mentors in the Foundation's global network.

Obama program started in Africa in 2018

These emerging leaders from around the world, generally 24–45 years old, forge societies and communities rooted in shared values, where all people belong, participate, and thrive.

The Leaders program launched in Africa in 2018, expanded to Asia Pacific in 2019, and inaugurated in Europe in 2020, and in 2023 in the United States.

The Obama Foundation Leaders program is composed of emerging leaders from around the world, generally 24-45 years old, and was first launched in Africa in 2018, Asia Pacific in 2019, Europe in 2020, and now in 2023 in the United States. [OBAMA FOUNDATION]

Obama Foundation Leaders hail from a wide variety of nations and territories, work across public, private, and nonprofit sectors, and address a full range of social impact issues.

The Leaders program offers practical skill building for social change, leadership coaching, discussion of critical issues, and small group support. As participants, Leaders self-define a values-based foundation for sustained leadership, cultivate relationships with others to catalyze more inclusive, lasting change, and prepare to engage with issues at the systems level.

Upon completion of the program, Leaders will have gained a deeper understanding of how values-based leadership advances their ability to enact change. They will be inspired to take further action, propelled by new ideas and skills. Most importantly, Leaders will continue to gain a broader continental and global perspective, joining the Obama Leadership Network, a growing global alumni community of nearly 900 active changemakers.

To learn more about this program and the individuals who make up the inaugural cohort, visit obama.org/leaders. ❖

Appointments

Francesca Beaudoin, MD, PhD, and Brandon Marshall, PhD, appointed to new positions at Brown School of Public Health

PROVIDENCE – On Aug. 25, the Brown School of Public Health (SPH) announced that **FRANCESCA BEAUDOIN, MD, PhD**, will take on the role of Interim Academic Dean at the School of Public Health. In addition to her continued role as the Chair of the Department of Epidemiology, she will assume responsibility for helping to guide the school's academic mission, serve as the school's chief academic officer, and a key member of the leadership team. She will work in partnership with department chairs, center directors, and associate deans to carry out our shared vision for the school and represent SPH in critical moments both within and beyond the university. This will include working with advancement in meetings with supporters and collaborating with key senior leaders across Brown. Dr. Beaudoin's dedication to advancing public health research and education makes her an exceptional fit for this pivotal role.

BRANDON MARSHALL, PhD, has agreed to be Vice Chair of the Department of Epidemiology and Director of the Center for Epidemiologic Research. As Vice Chair, Professor Marshall will collaborate closely with Dr. Beaudoin to identify and develop additional actions that will amplify the department's strategic initiatives and further the commitment to advancing the field of epidemiology. ❖

Bassel G. Diebo, MD, joins University Orthopedics' Center for Spine Health

EAST PROVIDENCE – University Orthopedics recently announced the addition of **BASSEL DIEBO, MD**, to the practice's Center for Spine Health. His areas of focus are complex and revision spinal reconstruction, flatback syndrome, adolescent and adult scoliosis, Hip-Spine Syndrome, full-body, three-dimensional alignment and posture.

Dr. Diebo attended medical school at Aleppo University in Syria before fleeing the war-torn country. He completed his residency in orthopedic surgery at The State University of New York in Brooklyn, New York. Previously, he completed research fellowships in spine surgery at the Hospital for Special Surgery and NYU Langone Medical Center's Hospital for Joint Diseases, both in New York. Most recently, Dr. Diebo completed a fellowship in complex adolescent and adult spine and scoliosis surgery at The Warren Alpert Medical School of Brown University and took part as an inaugural traveling fellow with the International Spine Study Group (ISSG).

In 2023, Dr. Diebo was the recipient of Brown University's Lucas-Palumbo Award for Excellence in Orthopaedic Spine Surgery; was named one of Becker's Spine Review's "Ten Spine Surgeons Under 45 to Know" in 2022; and in 2020 he was listed among North American Spine Society's "20 under 40." ❖

Breton N. Roussel, MD, joins University Gastroenterology

PROVIDENCE – University Gastroenterology announced gastroenterologist **BRETON N. ROUSSEL, MD**, is joining the practice.

Dr. Roussel is a fellowship-trained gastroenterologist interested in the treatment of all GI diseases, specifically Crohn's disease and ulcerative colitis. He's no stranger to Rhode Island, completing both his GI fellowship and his internal medicine residency at the Warren Alpert Medical School of Brown University and his undergraduate degree at Providence College. He earned his medical degree at Rutgers University's Robert Wood Johnson Medical School in New Jersey, where he also earned a master's in biomedical science.

"Many of the mentors and teachers I've worked with while at Brown University are from University Gastroenterology, so I was already familiar with the practice. Not only are the doctors and staff here on the forefront of medicine, they care about their patients, and they care about teaching the next generation of GI doctors like myself," Dr. Roussel said. ❖

Appointments

Cynthia Ring, MBA, named CNE's new EVP Chief People Officer

WARWICK – **CYNTHIA RING, MBA**, has been named Care New England's new EVP Chief People Officer. She brings with her 30 years of experience in business and human resources, and has served as a trusted visionary, coach, mentor, and thought partner to executive teams she has worked with throughout her career.

Previously, as an Executive Vice President and Chief People Officer for Harvard Pilgrim, a VP of HR for UMASS Memorial Healthcare, and serving as a Consultant and Executive Coach while the Principal of her own consulting firm, her focus has always been on fostering connections and delivering tangible business outcomes, which will greatly benefit CNE's mission and goals.

Helping clients through successful business turnarounds, managing through growth and change, and achieving a collaborative, results-driven culture is her specialty. Under her leadership, Harvard Pilgrim celebrated seven straight years of achieving a 100% rating on the Human Rights Campaign and Corporate Equity Index; 'Best Places to Work' designation, and was one of the first organizations in MA to sign onto the Wage Compact; an entity focused on transparency in wage equity.

She holds an MBA from Bryant University and a BA from Framingham State College. She also holds professional credentials as a Lean-Green Belt and ACC-ICF Credentialed Coach, showcasing her commitment to continual growth and excellence.

As a thought leader, Cynthia's contributions extend to publications such as "Ensuring Equity in the Digital Age" and "Beyond ROI: Measuring the Value of Well-Being Programs." Her professional recognition includes the Bob Gatti Mentor of the Year Award and the HR Leadership Excellence Award from HRLF.

Her first day will be September 18th. ❖

[BROWN SCHOOL OF PUBLIC HEALTH]

Seth Berkley, MD, AMS alum, joins Brown Pandemic Center

PROVIDENCE – In a press statement on Aug. 28th, the Brown School of Public Health announced that Brown '81 alum **SETH BERKLEY, MD**, returns to Brown University to advise the Pandemic Center.

JENNIFER NUZZO, director of Brown's Pandemic Center, announced that beginning September 1, Dr. Berkley will join the School of Public Health as a senior advisor to the Pandemic Center and as adjunct professor of the practice in the Department of Epidemiology.

"Dr. Berkley joins our Pandemic Center team at an important moment, bringing his unmatched experience as a global change-maker to our shared work to improve pandemic preparedness and response," Nuzzo said. "He has made life-changing and life-saving differences around the globe and we look forward to working with him to continue to improve public health."

Following his training at the Warren Alpert Medical School, he worked at the Centers for Disease Control and Prevention (CDC), and then to Uganda, where he worked as an epidemiologist at the Ministry of Health during the rise of the country's AIDS epidemic. He then spent eight years with the Rockefeller Foundation managing programs in epidemiology, public health, medical and nursing education, vaccination, AIDS, STIs, and reproductive health in Africa, Asia and Latin America.

From 2011 to 2023, Dr. Berkley served as CEO of Gavi, the Vaccine Alliance. During his tenure at Gavi, he led a team that worked toward broadening global immunization access, resulting in more than half of the world's children being vaccinated annually. His leadership was equally significant in co-founding and spearheading COVAX, an initiative that facilitated the distribution of over 2 billion COVID-19 vaccine doses to 146 nations.

"The work of my life is to improve public health and to confront the global threat of infectious disease," Dr. Berkley said. "This aligns well with the work of the Pandemic Center. I am eager to join them to meet the challenges we face as a global commons now, and knowing the evolutionary certainty of further outbreaks ahead, to advance our shared values. The health and quality of life of people around the globe demands our urgent attention and action." ❖

Recognition

U.S. News & World Report names Miriam top hospital in state

PROVIDENCE – The Miriam Hospital has been recognized by U.S. News & World Report as the Top Hospital in Rhode Island in its 2023–2024 Best Hospitals report released in August. The Miriam Hospital has earned this honor for 12 straight years, starting with the first state rankings in 2012–2013.

U.S. News also ranked The Miriam Hospital the top hospital in the Providence metro area (which includes Providence, Pawtucket, Fall River, and New Bedford), and gave the hospital a "high performing" ranking or distinction for its care and treatment in 11 conditions and adult specialty areas, as follows:

Hip replacements
Knee replacements
Colon cancer surgery
Heart failure
Heart attack
Stroke
Kidney failure
Diabetes
Leukemia Lymphoma & Myeloma
Prostate Cancer
Surgery

For the 2023–2024 rankings and ratings, *U.S. News* evaluated more than 4,500 hospitals across 15 specialties and 21 procedures and conditions; only 12% of evaluated hospitals earned a Best Hospitals ranking. Hospitals awarded a "Best" designation excelled at factors such as clinical outcomes, nursing care and patient experience. State and metro area rankings reflect the highest performing hospitals in the area across multiple areas of care. ❖

Kent Hospital named among *U.S. News* High Performing Hospitals; Hospital at Home recognized by PBN

WARWICK – Kent Hospital was named among *U.S. News* "High Performing Hospitals" in its Best Hospitals 2023-2034 rankings and ratings. *U.S. News* evaluated over 4,500 hospitals and their specialties, procedures, and conditions. According to U.S. News, only 6% to 33% of hospitals were rated High Performing.

Kent Hospital was specifically recognized for medical care in treating heart failure, stroke, and chronic obstructive pulmonary disease (COPD).

In addition, *Providence Business News* announced its 27 honorees for the 2023 Fastest Growing & Innovative Companies Awards program. Kent Hospital at Home won a PBN 2023 Innovative Companies Award in the category of Health & Wellness. Members of the Hospital at Home Program and other winners will be honored at the 12th Annual Fastest Growing & Most Innovative Companies Awards Ceremony on September 20th at the Graduate Hotel from 5:30 p.m. to 8 p.m. ❖

Rhode Island Hospital recognized as High Performing in Lung Cancer Surgery by *U.S. News & World Report*

PROVIDENCE – Rhode Island Hospital has been named a high performing hospital for lung cancer surgery by *U.S. News & World Report* in their prestigious 'Best Hospital' rankings for 2023–2024. Rhode Island Hospital was the only hospital in the state to receive the high performing rating in lung cancer surgery. Hospitals that earned a high performing rating scored significantly better than the national average.

The lung cancer surgery score is determined based on several data categories including patient survival rates after undergoing lung cancer surgery, prevention of long hospitalizations, treating a high volume of patients, nurse staffing ratios, and prevention of Emergency Room visits after chemotherapy. Rhode Island Hospital's outstanding performance in these areas sets it apart from its peers.

"Lung cancer is a devastating disease that affects millions of individuals worldwide. With advancements in medical technology and treatment options, it is crucial for patients to receive care from hospitals that excel in lung cancer surgery," said **ABBAS ABBAS, MD**.

"As Rhode Island Hospital continues to prioritize excellence and innovation, this recognition as a high performing hospital in lung cancer surgery further solidifies its position as a trusted healthcare provider," said **DEAN ROYE, MD**, senior vice president for medical affairs and chief medical officer at Rhode Island Hospital. "Patients can have confidence in the hospital's ability to deliver exceptional care and achieve positive outcomes."

Rhode Island Hospital was also ranked high performing in this year's rankings for aortic valve surgery, diabetes care, and stroke treatment. More information about Rhode Island Hospital's scores is available on the *U.S. News & World Report* website: https://health.usnews.com/best-hospitals/area/ri/rhode-island-hospital-6150150. This resource offers a comprehensive overview of the hospital's performance.

Recognition

Westerly Hospital recertified from The Joint Commission for its Acute Stroke Ready Hospital program

WESTERLY – Westerly has been re-certified by The Joint Commission for its Acute Stroke Ready Hospital program, a validation that patients presenting with stroke symptoms will be treated quickly and safely to prevent brain loss.

The Acute Stroke Ready Hospital (ASRH) certification was developed in collaboration with the American Heart Association/American Stroke Association. These hospitals become part of a larger stroke system of care in which the hospital is equipped to evaluate, stabilize and provide emergency care to patients with acute stroke symptoms. Westerly was first certified in 2019 after implementing Yale New Haven Health's Telestroke program which provides 24/7 communication with stroke-trained neurologists.

"This recertification reflects the commitment of our employees and medical staff to provide the greatest of care to our patients," said **RICHARD LISITANO**, president, Westerly Hospital. "Being a member of the Yale New Haven Health Stroke Network our Stroke team has adopted a comprehensive set of evidence-based care guidelines and performance measures that leads to better outcomes for our patients. Being able to offer this level of care in Westerly further demonstrates that delivering high-quality health care to our patients is our number one priority."

By collaborating with EMS, a Yale School of Medicine Telestroke neurologist, ED providers, nurses, Radiology, Lab and Pharmacy, patients received timely coordinated care from the time of arrival at the hospital. In addition, engagement and sharing of best practices allows the hospital to continually improve its stroke care program to meet the needs of a continually changing health care environment.

"For a small community hospital like Westerly, Acute Stroke Ready Hospital certification means that our patients can be certain they will receive the greatest of care during a very time-sensitive emergency," said **LISA BEDARD, APRN**, stroke program manager. ❖

NRC Health recognizes Brown Medicine with Excellence in Patient Experience Award

PROVIDENCE – NRC Health honored Brown Medicine with the 2023 Excellence in Patient Experience Award, recognizing the top-performing hospitals and health systems in the nation for their excellence in delivering outstanding patient experiences across the continuum of care.

This award recognizes organizations for their commitment to enhancing care experiences for each patient. They selected health systems and hospitals based on their Net Promoter Score (NPS) for the "Would Recommend Facility" question during the time period of April 1, 2022-March 31, 2023.

"We are extraordinarily proud to receive this recognition, especially since it comes from our patients," said **DR. LOUIS B. RICE**, Chair of Medicine at Brown Medicine. "It reflects the efforts of every member of our organization to provide top-notch health care in a welcoming, patient-centered environment." ❖

Recognition

Landmark Medical Center recognized by Lown Institute as one of the most socially responsible hospitals

WOONSOCKET – Landmark Medical Center, a member of Prime Healthcare, has been recognized by the Lown Institute as one of the most socially responsible hospitals in America, receiving "A" grades in Health Equity, Value, and Outcomes on the 2023–24 Lown Institute Hospitals Index.

Lown evaluated more than 3,600 hospitals and Landmark is among only 54 nationwide to earn Honor Roll status with "A" grades in all top categories.

Landmark ranked #1 out of 9 hospitals in Rhode Island and #39 nationally on the Social Responsibility metric. According to the Index, the hospital also performed well on Equity and Outcomes metrics. These are independent rankings and hospitals do not apply or pay to be listed.

"This distinguished award from the Lown Institute reflects the incredible generosity and altruism of our employees," said **MICHAEL SOUZA**, CEO at Landmark Medical Center. "I am proud of the great work that is taking place at Landmark for the benefit of our patients and communities of Northern Rhode Island and neighboring Massachusetts."

"Few hospitals are able to deliver high-quality, high-value care while prioritizing equity at the same time," said **VIKAS SAINI, MD**, president of the Lown Institute. "That's why it's so important to hold up the hospitals on our Honor Roll as examples for others to follow."

The Lown Hospitals Index for Social Responsibility is the only ranking to include metrics of health equity and value of care alongside patient outcomes, creating a holistic view of hospitals as total community partners. In the fourth annual and largest set of rankings to date, the 2023–24 Lown Index evaluates hospitals on 50+ measures–including novel metrics such as community benefit, racial inclusivity, and avoidance of overuse – for more than 3,600 hospitals nationwide. Data sources include Medicare fee-for-service and Medicare Advantage claims, CMS patient safety data and hospital cost reports, and IRS 990 forms, among others. Full methodology can be found on the Lown Index website.

Learn more at www.LownHospitalsIndex.org. ❖

[LANDMARK MEDICAL CENTER]

Recognition

Lifespan Hospitals honored by American Heart Association

PROVIDENCE – Three Lifespan hospitals have again been recognized by the American Heart Association (AHA) for their exceptional commitment to quality care and patient outcomes.

Rhode Island Hospital, The Miriam Hospital, and Newport Hospital each received the prestigious Get With The Guidelines®-Stroke GOLD PLUS Quality Achievement Award for reducing barriers to prompt treatment for cardiovascular events and providing coordinated patient care that results in shorter recovery times and reduces the need for hospital readmission. All three hospitals also received AHA's Target: Type 2 Diabetes Honor Roll designation for providing exceptional diabetes care. This designation is given to hospitals that meet quality measures with over 90% compliance for the "Overall Diabetes Cardiovascular Initiative Composite Score" over a one-year period.

Additionally, Rhode Island Hospital received the AHA's Target: Stroke Elite Plus Honor Roll and Target: Stroke Advanced Therapy Honor Roll designations, and The Miriam Hospital received AHA's Target: Stroke Honor Roll designation. These additional accolades highlight the hospitals' commitment to providing advanced stroke care and implementing innovative therapies.

"We are honored that the American Heart Association has bestowed these awards to Lifespan's stroke centers," said **MELISSA HARMON, MSN, RN**, Manager, Comprehensive Stroke Program at Rhode Island Hospital. "It is a great accomplishment for all three centers to have achieved these awards for so many years. This is a testament to our staff's dedication across affiliates to providing top quality stroke care that produces the best possible outcome for our patients."

"Our dedicated staff's commitment to providing exceptional care to stroke patients has been recognized once again," said **KAREN SCHAEFER, MSN, APRN, AGCNS-BC, ASC-BC, FCNS** stroke program manager for The Miriam Hospital and Newport Hospital. "We believe that this recognition highlights the exceptional care our staff provides. We are grateful for their dedication and proud of their accomplishments." ❖

Center for Advanced Orthopedic Surgery at South County Hospital earns national accreditation from The Joint Commission for Advanced Total Hip and Knee Replacement

WAKEFIELD – South County Hospital's Center for Advanced Orthopedic Surgery, a joint partnership between South County Health and Ortho Rhode Island, has earned The Joint Commission's Gold Seal of Approval® for Advanced Total Hip and Knee Replacement Certification by demonstrating the highest standards for quality and safety in joint replacement procedures.

"This serves as yet another indicator of the world class orthopedic program Rhode Islanders have come to know us for through our outstanding partnership with Ortho Rhode Island," said **AARON ROBINSON**, President & CEO, South County Health.

MICHAEL BRADLEY, MD, MBA, MS, President & CEO of Ortho Rhode Island said, "Ortho Rhode Island is honored to partner with South County Hospital to deliver innovative orthopedic care that has earned Advanced Total Hip and Knee Replacement Certification. This recognition is a testament to our collaborative effort and shared commitment to world-class care that puts patients first. We are grateful to work together to provide the high-quality care our community members deserve."

South County Hospital underwent a rigorous, onsite review in May. The certification focused on the pre-surgical orthopedic consultation, hospitalization, rehabilitation activities, and follow-up visit with the orthopedic surgeon. The review process included interviews with team members and evaluated compliance with certification standards developed in consultation with health care experts, providers, and patients. ❖

Obituaries

CHARLES FRANK JOHNSON, III, MD, of Providence passed away peacefully of natural causes on the morning of June 1, 2023, at the age of 85.

In 1960, he graduated from Princeton University, where he majored in biology, and then completed his MD at the Johns Hopkins School of Medicine in 1964.

After completing residencies at the University of Chicago and the University of Rochester, as well as a stint in the US Public Health Service with the National Cancer Institute, he launched his own private practice in plastic and reconstructive surgery in Pawtucket. Board-certified in both general surgery and plastic and reconstructive surgery, for more than three decades he attended patients at Miriam Hospital and Blackstone Valley Surgicare.

He was a member of the Plastic and Reconstructive Surgery Society and for many years served as associate clinical faculty at Brown University's Medical School. He developed a particular expertise in the delicate work of hand surgery and, always an enthusiastic adopter of technology, in the 1980s wrote a groundbreaking software program on hand surgery for Hewlett-Packard devices.

Dr. Johnson was a man of many interests. He loved to explore the New England coast in his boat, the Kraken, and to scuba dive when in warmer waters. He also delighted in art, particularly painting. A watercolorist himself, he enjoyed experimenting with new techniques, and spoke of how surgery and painting similarly fed his creativity. Other interests included photography, tennis, commodities trading, trolls and gnomes, and growing cacti and orchids.

He will be remembered for his sense of humor, with sly and terrible puns and cards that burst to life with a sudden flutter of wings; for his many enthusiasms; and for his deep calm and kind heart.

He is survived by his children who will miss him dearly: Charles "Ted" Johnson of Chicago, IL; Robert Johnson and wife Valerie Weiss of Los Angeles, CA; and Amanda "Amy" Johnson of Somerville, MA; his two granddaughters, Annabelle Johnson and Tabitha Johnson; his sisters, Charlotte Frisbie of Edwardsville, IL and Ann Kupferberg of Leesburg, FL.

Donations may be made in his memory to Ocean Conservancy (www.oceanconservancy.org). ❖

ROGER D. LANDRY, MD, 79, passed away peacefully on July 30, 2023 at Hope Hospice and Palliative Care in Providence. He was the husband of 49 years to the late Patricia A. (Travers) Landry.

Dr. Landry graduated from St. Raphael Academy, and later completed his undergraduate education at Providence College and received his medical degree from University of Montpellier, France. He was a cardiologist who loved his work and patients, practicing mostly in northern Rhode Island with affiliations at Landmark, Fogarty, Rhode Island, Roger Williams and Miriam Hospitals.

He was a talented baseball player in his youth. He turned down a professional opportunity for his calling to serve others as a physician.

Roland was a hardworking, loving, family man—an exemplary figure, known as one of the "good guys." He was a kind and gentle soul, leaving a positive impact on all who know him.

He leaves his daughter Michele Landry and her companion David Carrington of Narragansett, his daughter, Melissa Quinn and her husband Stephen of Hopkinton, MA; his three grandchildren, Sydney Carrington, Ryan and Kyle Quinn; his brother, Marc Landry and his wife Frances of Rehoboth; his sister-in-law, Marianne Landry of Cumberland; as well as several nieces and nephews. He was the brother of the late Gerald Landry.

Donations may be made in his memory to St. Jude Children's Research Hospital, 262 Danny Thomas Place, Memphis, TN 38105. Online Memorial: jjduffyfuneralhome.com. ❖

FRANK GEORGE ROTHMAN, PhD, of Wayne, Pennsylvania, 92, formerly of Naples, FL, and Providence, died at home on Oct. 23, 2022. He was predeceased by his wife, Joan T.K. Rothman. He is survived by his four children, five grandchildren and one great-grandchild.

He attended the University of Chicago and received his Bachelor of Science degree at the age of 18 in 1948, and his Master's of Science in Chemistry, in 1951. He attended Harvard University and received his Doctorate in Chemistry in 1955, where Robert Woodward was his thesis advisor.

In 1954-1956, he served in the Army where he was assigned to the Walter Reed Army Institute of Research, Washington, DC. After the army, he and his wife and young family moved to Madison, Wisconsin where he held a postdoctoral fellowship in the Departments of Chemistry and Bacteriology, University of

Wisconsin. During that time, he attended a conference on the relatively new field of molecular biology. He became so excited about its possibilities that he decided to switch his career focus. He received a National Science Foundation post-doctoral fellowship and worked at the Massachusetts Institute of Technology to broaden his training into molecular genetics.

In 1961, he joined the faculty of Brown University in the Division of Biology and Medicine, and taught biochemistry, genetics, and molecular biology at all undergraduate and graduate levels. In 1984, he was named Dean of Biology and, in 1990, he was appointed Provost.

His research focused on the regulation of gene expression in bacteria and cellular slime molds and was funded by nine consecutive grants from the National Science Foundation between 1961 and 1984. In 1987, he expanded his area of research to the biology of aging and studied the life cycle of the nematode. He was elected a Fellow of the American Association for the Advancement of Science in 1993.

He retired from Brown in 1997, and then worked with Project Kaleidoscope, a national organization that works to improve curricula and facilities for STEM teaching. Through his interest in the biology of aging he became aware of Hutchinson-Gilford progeria syndrome, and connected with the Progeria Research Foundation and worked as a member of their Medical Research Committee, and a co-organizer of five national/international workshops. Working with these two organizations gave him great joy.

To honor his memory, a celebration of his life will be held on Oct. 27th, 2023 at 4 p.m. in Manning Chapel at Brown University. The celebration will be virtual as well as in person. For more information about the celebration or to rsvp, please Maria Rothman Boyd at mrothman123@yahoo.com.

In his memory, the family suggests donations to either the Coalition for Immokalee Workers (https://ciw-online.org/) or the Progeria Research Foundation https://www.progeriaresearch.org/). ❖