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**Fitthink: Saving Humanity, One Brain at a Time**

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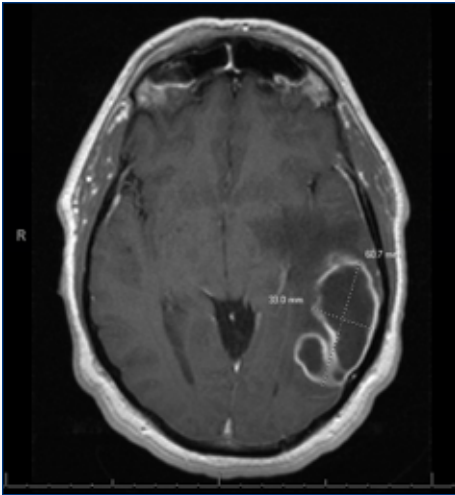
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# Seizure as First Manifestation of Hemolytic Uremic Syndrome with Bacteremia due to Shiga Toxin-Producing *Escherichia coli*

LAURA SCHWARTZ, MD; JEFFREY RIESE, MD

## ABSTRACT

Hemolytic uremic syndrome (HUS) often causes neurologic symptoms, but they typically occur as a later symptom of the syndrome. In addition, the Shiga toxin-producing *E. coli* (STEC) which causes HUS rarely causes bacteremia. We present the case of a 10-year-old male with Smith-Magenis syndrome who was admitted to the hospital due to STEC gastroenteritis, who was initially improving with supportive care, and then subsequently developed fever and had multiple seizures which were different from his typical seizure semiology. Over the subsequent 48 hours he gradually developed microangiopathic hemolytic anemia consistent with HUS. His course was further complicated by *E. coli* bacteremia and oliguric renal failure requiring renal replacement therapy, depressed mental status, and difficult-to-control hypertension. This case demonstrates the importance of neurologic manifestations as a harbinger of developing HUS.

**KEYWORDS:** hemolytic uremic syndrome; Shiga toxin; seizures; bacteremia

## CASE REPORT

A 10-year-old male with Smith-Magenis syndrome (a neurodevelopmental disorder caused by 17p11.2 deletion, with primary symptoms of autism, developmental delay, and epilepsy) was admitted to a large New England tertiary care children's hospital due to abdominal pain, bloody diarrhea and non-bloody emesis. A stool PCR panel was positive for Shiga toxin-producing *E. coli* (STEC). The patient had no recent travel, unusual food intake, ill household members, or livestock exposures. Thus, the source of his infection was unknown. His admission workup was otherwise significant for normal hemoglobin, mildly low platelets (196,000/ $\mu$ L), and normal renal function. He was initially admitted to the Pediatric Hospital Medicine service for intravenous (IV) hydration and supportive care, appropriate standard of care for symptomatic STEC infection. Complete blood counts and basic metabolic panels were monitored twice daily due to the etiology of the stool pathogen and to monitor for laboratory findings of HUS. He remained hospitalized due to the persistence of his pain and stool output requiring IV fluid replacement. His hemoglobin and renal function remained

normal for the first five days of his admission. Platelets decreased to 127,000/ $\mu$ L on the morning of hospital day three but then improved to >190,000/ $\mu$ L and were stable on multiple rechecks between hospital days three and five.

Overnight on hospital day five, the patient became febrile for the first time during his illness, to a temperature of 104 degrees Fahrenheit. Shortly thereafter, he had two episodes of loss of consciousness with associated tachycardia and eyelid fluttering, followed by somnolence. These episodes were concerning for seizures with post-ictal periods. Although the patient had seizures at baseline, his typical semiology was absence seizures with preserved consciousness; he had no history of seizures with associated loss of consciousness. The patient had not missed any doses of his anti-epileptic medications. Additionally, he was outside the age typically seen with febrile seizure.

Repeat laboratory examinations drawn following the event showed a mild decrease in platelets to 137,000/ $\mu$ L from 191,000/ $\mu$ L, a slight increase in serum creatinine from 0.4mg/dL to 0.5mg/dL, and a mildly elevated INR to 1.4. His urine output was normal. However, due to the acute change in his neurologic status, the patient was transferred to the pediatric intensive care unit (PICU) for closer monitoring.

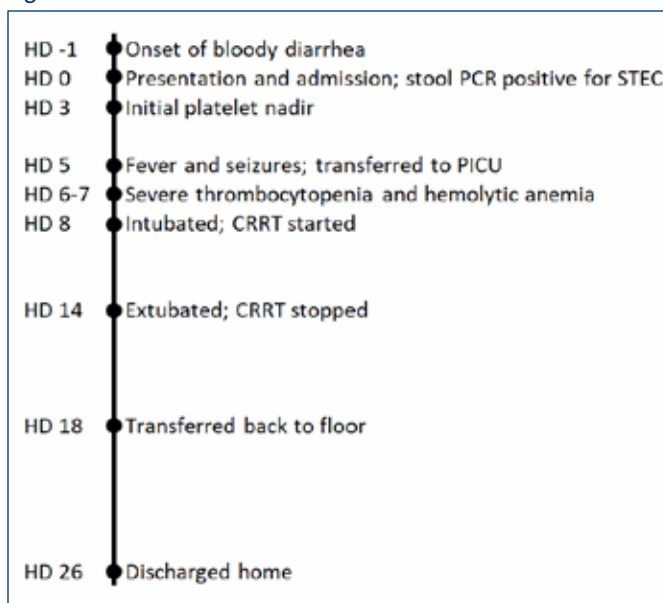
In the PICU, over the next 48 hours, the patient developed worsening thrombocytopenia to a nadir of 37,000/ $\mu$ L, as well as epistaxis. He then developed anemia with schistocytes and non-oliguric acute kidney injury, all consistent with HUS. He also remained febrile to a maximum temperature of 106 Fahrenheit, and significantly somnolent. An MRI brain without contrast, performed due to somnolence, was unremarkable. A lumbar puncture was not performed. Subsequently, blood cultures collected on the day of PICU transfer resulted with Gram negative rods, found to be pan-sensitive *Escherichia coli* (*E. coli*). Despite the risk of worsening HUS, ceftriaxone was started on hospital day seven due to the greater risk of untreated gram negative sepsis. Antibiotics were narrowed to ampicillin after sensitivities resulted.

On hospital day eight, he developed oliguric renal failure, hyperkalemia, and volume overload, with respiratory distress requiring intubation. A tunneled dialysis catheter was placed on hospital day nine and he was started on continuous renal replacement therapy (CRRT). Repeat blood cultures prior to central access placement were negative.

Despite multiple complications during his PICU course including extensive thrombophlebitis (requiring broadening antibiotics to ampicillin-sulbactam for better *Staphylococcal* coverage in addition to *E. coli*), profound thrombocytopenia and anemia (requiring multiple transfusions), and persistent electrolyte abnormalities, the patient was ultimately extubated and CRRT was discontinued on hospital day 14. He received one hemodialysis session while his renal function was still recovering, but did not require further renal replacement therapy after hospital day 16. He was transferred back to the floor on hospital day 18.

The patient's course after return to the pediatric hospital medicine service was significant for hypernatremia, refractory hypertension, and poor oral intake. Hypertension management was complicated by behavioral disturbances around blood pressure measurements. Ultimately, after a 26-day total hospitalization, the patient was discharged home with oral amoxicillin-clavulanic acid to complete a four-week total antibiotic course, as well as lisinopril and amlodipine for ongoing blood pressure control. When he was seen in nephrology follow-up one month later, his renal function had fully normalized and he was able to stop anti-hypertensive therapy. He has had no other sequelae of this acute illness to date. (Figure 1)

Figure 1.



## DISCUSSION

Hemolytic-uremic syndrome occurs in 15–20% of pediatric patients with STEC infection, and on average occurs approximately seven days after onset of diarrhea.<sup>1</sup> Rapidly progressive thrombocytopenia is typically the cardinal manifestation, followed by other signs of intravascular

hemolysis. Approximately 25% of patients with STEC-associated HUS develop neurologic manifestations,<sup>2</sup> with these manifestations being associated with more severe disease.<sup>3</sup> There is a paucity of objective data in pediatrics, but in adult patients, neurologic symptoms have typically followed onset of hemolytic symptoms by a mean of four days.<sup>4</sup> The timing of this patient's symptoms was unusual in that his seizure activity and acute change in clinical status on hospital day five preceded other signs and symptoms diagnostic for HUS, thus posing a diagnostic challenge. While his platelets and creatinine were each slightly worse when rechecked after his seizure, neither was yet outside normal limits. Another challenge was interpreting the clinical meaning of a seizure in a patient with known epilepsy, but who had never had a seizure with loss of consciousness before, even with prior illnesses and fevers. Only over the next 48 hours did it become clear that the patient had indeed developed HUS.

Additionally, bacteremia is highly unusual in STEC gastrointestinal infections. STEC is typically considered a non-invasive infection whose serious sequelae are caused by microvesicular toxin spread.<sup>5</sup> This non-invasive nature is important in that it allows for avoidance of antibiotics, as there is evidence that antibiotics can worsen clinical outcomes.<sup>1</sup> There are case reports of STEC-associated bacteremia in adults,<sup>6,7</sup> as well as of HUS associated with verocytotoxin-producing *E. coli* bacteremia<sup>8</sup> and non-toxin-producing *E. coli* bacteremia.<sup>9</sup> Of the two adults mentioned above with STEC, only one had *E. coli* O157:H7, and that adult had a urinary tract infection rather than a diarrheal illness.<sup>6</sup> The other adult patient with STEC-associated bacteremia had a novel hybrid strain of *E. coli*, O80:H2, and presented with seizure, posterior circulation cerebral infarcts, and non-bloody diarrhea.<sup>7</sup> To our knowledge, this is the first case reported of a pediatric patient with bacteremia associated with Shiga toxin-producing *E. coli*. Unfortunately, serotyping of our patient's strain was not available. It is possible that our patient was infected with a more virulent serotype such as O80:H2, which has been increasingly common in Europe,<sup>10</sup> although the patient had no recent travel.

It is also possible that our patient's underlying diagnosis of Smith-Magenis syndrome played a role in the development of bacteremia. Smith-Magenis syndrome is caused by 17p11.2 deletions which can have immunologic consequences, including impaired antibody production and decreased response to vaccination.<sup>11</sup> However, our patient underwent testing of his IgA, IgG, and IgM levels the year prior to his illness, all of which were normal. He also had hepatitis B surface antibody testing which was within the expected range for protective immunity after vaccination. In addition, the infections to which individuals with Smith-Magenis syndrome are more prone tend to be sinopulmonary infections<sup>11</sup> rather than invasive gastrointestinal infections.



## CONCLUSION

Hemolytic uremic syndrome due to Shiga toxin-producing *E. coli* is a well-known clinical entity which frequently causes neurologic symptoms. However, seizure as the initial sign of developing HUS is uncommon. In addition, bacteremia associated with STEC HUS is quite rare. In a patient with known STEC infection, an acute clinical change such as new fever, change in neurologic exam or mental status, or seizure should prompt immediate workup for developing HUS, as well as consideration of escalation of care given the risk of rapid decompensation.

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## Authors

Laura Schwartz, MD, Resident Physician, Internal Medicine-Pediatrics Residency Program, Warren Alpert Medical School of Brown University/Rhode Island Hospital, Providence, RI.

Jeffrey Riese, MD, Attending Physician, Department of Pediatric Hospital Medicine, Hasbro Children's Hospital, Assistant Professor, Clinician Educator, Pediatrics, Warren Alpert Medical School of Brown University, Providence, RI.

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## Correspondence

Laura Schwartz, MD  
245 Chapman St  
Providence, RI, 02905  
401-444-6118  
Fax 401-444-8804  
lschwartz@lifespan.org

# Brain Abscess Secondary to *Streptococcus Intermedius* Following an EGD with Biopsy in a Patient with Eosinophilic Esophagitis

N. BEGUM OZTURK, MD; TATJANA BLAZIN, MD; APARNA HARIHARAN, MD; NAVEEN REDDY, MD

## ABSTRACT

Brain abscess is a rare complication of esophagogastroduodenoscopy (EGD) with few reported cases in the literature. In this report, we discuss a patient presenting with altered mental status, headache, and dysarthria due to brain abscess caused by *S. intermedius* shortly after an EGD with an esophageal biopsy showing a new diagnosis of eosinophilic esophagitis. We highlight the rare association of EGD and brain abscess, and discuss the importance of prompt diagnosis and treatment.

**KEYWORDS:** esophagitis, brain abscess, *Streptococcus intermedius*

## INTRODUCTION

Esophagogastroduodenoscopy (EGD) is a relatively safe procedure, and complications resulting from it are uncommon. *Streptococcus intermedius* (*S. intermedius*) is a gram-positive bacterium that is commonly found in various sites as part of the normal flora including the gastrointestinal tract. In this case report, we present a patient who developed altered mental status, headache, and dysarthria due to brain abscess caused by *S. intermedius* shortly after an EGD with an esophageal biopsy that resulted in a new diagnosis of eosinophilic esophagitis.

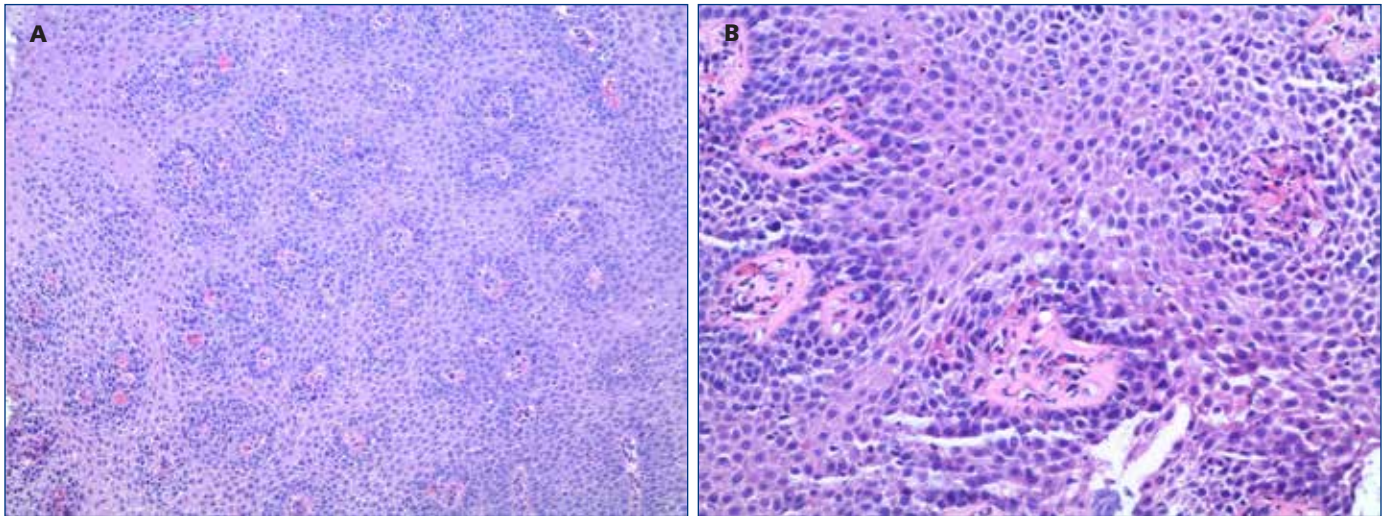
## CASE PRESENTATION

A 53-year-old man with no significant past medical history presented to the emergency department (ED) with complaints of food impaction, dysphagia to solids and liquids, and retrosternal pain of one day. He was eating a piece of boneless chicken when he felt it got stuck in his throat one day prior to his presentation. Remarkably, he had similar symptoms about three years prior that resolved on their own. In the ED, his vital signs were within normal limits and he was afebrile. Initial laboratory work-up was unremarkable. X-ray imaging of the neck, chest and abdomen was negative for acute obstructing foreign body, and no free air was visible. An esophagogram was obtained and showed no evidence of contrast extravasation. EGD was performed and showed a large food bolus in the distal esophagus which was removed easily with a Roth net. In addition, a large 5 cm x 1 cm deep

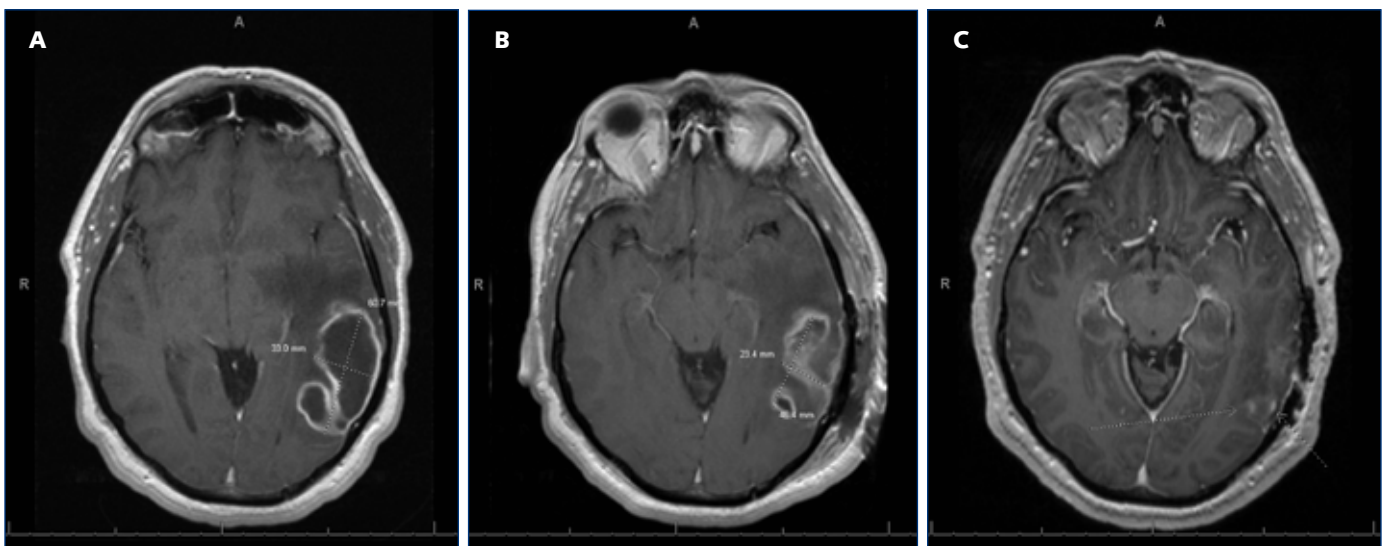
esophageal ulceration was noted underneath the food bolus without obvious perforation. Multiple linear esophageal furrows with rings were also noted in the esophagus which was suggestive of eosinophilic esophagitis, along with grade B reflux esophagitis. Proximal and distal esophageal biopsies were obtained, and the patient was discharged with pantoprazole 40 mg twice daily without complications. The histological evaluation showed squamous mucosa with basal cell hyperplasia, increased intraepithelial eosinophils (up to 25-30/high power field), and lymphocytes on both proximal and distal esophagus tissue samples consistent with a diagnosis of eosinophilic esophagitis (**Figures 1 A,B**).

Nine days after his discharge, the patient presented to the ED with altered mental status, oriented to self only, severe headache, word finding difficulties and dysarthria. No signs of meningitis were present. Laboratory work-up showed mild leukocytosis at  $13.3 \times 10^9/L$  (3.5–10.1). CRP and ESR were within normal limits. Computed tomography (CT) head with and without contrast was remarkable for 55 x 26 mm ring-enhancing left temporal occipital mass in the area of vasogenic edema with midline shift, consistent with brain abscess. Blood cultures were obtained. Treatment with vancomycin, cefepime, metronidazole, dexamethasone and levetiracetam were initiated. Magnetic resonance imaging (MRI) with and without gadolinium and combined with diffusion weighted images, and magnetic resonance venography of brain were performed, and showed a left temporal occipital mass measuring 61 x 33 x 20 mm with extensive surrounding vasogenic edema, 5 mm of rightward midline shift and effacement of the left lateral ventricle suggestive of abscess versus mass (**Figure 2A**). Cavernous and paranasal sinuses, and mastoid air cells were intact. A panoramic dental x-ray was obtained and it did not show any evidence of osteomyelitis. Transthoracic echocardiography was obtained and no major valve abnormalities or valvular vegetation were observed. A decision to proceed with urgent craniectomy was made as patient started having worsening headache. Left temporal craniectomy was performed with evacuation of the abscess containing copious purulent yellow-green fluid. Aerobic, anaerobic, fungal, and acid-fast bacillus cultures were collected. Gram stain reported few neutrophils but no organisms were seen. Surgical cultures showed the presence of pan-susceptible *S. intermedius*, and fungal and acid-fast bacillus were negative. Patient remained

**Figure 1A,1B.** Squamous mucosa with basal cell hyperplasia, increased intraepithelial eosinophils and lymphocytes on esophageal tissue samples consistent with a diagnosis of eosinophilic esophagitis. (H&E, **A**: 10x, **B**: 40x magnification.)



**Figure 2.** Brain MRI images at presentation (**A**: T1 FLAIR), after craniotomy (**B**: Contrast-enhanced T1), and at 6-week follow-up (**C**: Contrast-enhanced T1 MP-RAGE).



afebrile with normal vital signs while admitted, his mental status improved and dysarthria has resolved. Blood cultures remained with no growth. Peripherally inserted central line was placed, and his antibiotic regimen was modified to Ceftriaxone. Post-surgical MRI of brain with and without gadolinium showed post-surgical changes with no definitive abscess cavity, significantly improved surrounding edema, and absence of mass effect on the left lateral ventricle or midline shift, and marked decrease in the degree of diffusion restriction (**Figure 2B**). Patient remained on Ceftriaxone for six weeks with close follow-up, and repeat MRI showed continued improvement of left temporo-parietal abscess with no discrete abscess cavity, no mass effect on the lateral ventricle or midline shift (**Figure 2C**).

## DISCUSSION

Central nervous system infections, such as brain abscess, can occur due to direct extension from nearby structures such as teeth, middle ear, sinuses, mastoid, hematogenous spread from other sites, or as a result of penetrating trauma, and neurosurgical interventions.<sup>1</sup> Prompt recognition and treatment of brain abscesses is crucial as they can be potentially fatal. Despite advancements in diagnostic imaging, neurosurgical interventions and the use of broad-spectrum IV antibiotics, the mortality rate of brain abscess remains high at 10–15%.<sup>2,3</sup> Brain abscess is a rare complication of EGD, in particular if no esophageal dilation, variceal ligation or sclerotherapy is performed, with only a few reported cases in the literature.

Mucosal or deeper tissue trauma during endoscopic procedures can cause bacteremia consisting of endogenous bacterial flora.<sup>4</sup> However, this bacteremia rarely leads to clinically significant infections as due to its transient nature and insufficient inoculum to cause an infection in an immunocompetent host.<sup>5</sup> High-risk endoscopic procedures with the highest rate of bacteremia include dilation of an esophageal stricture, endoscopic sclerotherapy of varices, and endoscopic retrograde cholangiography (ERCP).<sup>4</sup> Although bacteremia is relatively common after gastrointestinal procedures, infectious complications are uncommon, and routine use of prophylactic antibiotics is not recommended. Routine upper endoscopy and biopsies are considered low-risk procedures, and mean reported rate of bacteremia is estimated to be 4% for both gastroscopy without biopsy and colonoscopy.<sup>4</sup> Most patients undergoing gastrointestinal procedures, including those with valvular heart disease or prosthetic joints, do not require routine antibiotic prophylaxis.<sup>4</sup> However, certain procedures may require antibiotic prophylaxis, such as percutaneous endoscopic gastrostomy or jejunostomy tube placement to reduce the risk of peristomal wound infection, ECRP in patients with biliary obstruction that is unlikely to be endoscopically drained, patients with mediastinal cysts undergoing endoscopic ultrasound-fine needle biopsy, patients who have severe neutropenia, and patients with cirrhosis in the setting of ascites and undergoing a procedure with high-risk bacteremia.

Brain abscess after esophageal dilation due to caustic substance ingestion-related esophageal stricture in children has been reported following esophageal dilation in five adults and eight pediatric patients.<sup>6-9</sup> Endoscopic sclerotherapy has also been associated with brain abscess development.<sup>10-13</sup> A case of brain abscess has also been reported after a removal of a foreign object in a pediatric patient.<sup>14</sup> In addition, a case of brain abscess due to streptococcus group F has been reported after endoscopic variceal ligation.<sup>15</sup> Another case was also reported the presence of *S. intermedius* brain abscess in the setting of previously undiagnosed esophageal squamous cell carcinoma.<sup>16</sup>

*S. intermedius* is a beta-hemolytic gram-positive bacterium that is a member of the Streptococcus anginosus group (SAG) and is a part of normal human flora of oropharynx, gastrointestinal tract, and genitourinary tract. SAG consists of three species: *S. anginosus*, *S. intermedius*, and *S. constellatus*. A meta-analysis reporting all 101 cases of *S. intermedius* infections (between years 1996–2019) with available metadata on the literature and it showed that brain abscess was the most common infection (41.6% cases).<sup>17</sup> Dental procedures and sinusitis have been identified as the two most important underlying risk factors for *S. intermedius* infections.<sup>17</sup> In cases where the cause of brain abscess is not evident, investigations to identify the foci of infection should include echocardiography for endocarditis, chest

X-ray to detect lung infections, evaluation for sinusitis and mastoiditis, and examination of teeth.<sup>1</sup>

For management, neurosurgical intervention for diagnosis and decompression, along with antimicrobial treatment is recommended.<sup>3</sup> The recommended duration of antimicrobial treatment is typically 6–8 weeks.<sup>1</sup> Cranial imaging should be performed post-operatively and at least biweekly until a clinical recovery is observed.<sup>3</sup>

To the best of our knowledge, this is the first reported case of a brain abscess caused by *S. intermedius* following an EGD and esophageal biopsy in a patient diagnosed with eosinophilic esophagitis. The short time duration between the EGD and the development of brain abscess suggests a possible causal relationship in an otherwise healthy patient. This case highlights the significance of recognizing the risk of serious infections after an EGD, and the urgency of prompt diagnosis and treatment for brain abscesses.

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### Authors

N. Begum Ozturk, MD, Department of Internal Medicine, Beaumont Hospital, Royal Oak, Michigan.

Tatjana Blazin, MD, Department of Internal Medicine, Beaumont Hospital, Royal Oak, Michigan.

Aparna Hariharan, MD, Department of Pathology, Beaumont Hospital, Grosse Pointe, Michigan.

Naveen Reddy, MD, Division of Gastroenterology and Hepatology, Beaumont Hospital, Royal Oak, Michigan.

### Disclosures

The authors report no conflict of interest or financial disclosures to report.

### Correspondence

N. Begum Ozturk, MD  
 Department of Internal Medicine  
 Beaumont Hospital  
 3535 W. 13 Mile Rd.  
 Royal Oak, Michigan, 48073  
[nazlibegum.ozturk@corewellhealth.org](mailto:nazlibegum.ozturk@corewellhealth.org)

# A Subtle Case of Type 2 Acute Macular Neuroretinopathy

JAMES O. ROBBINS, MD; DAVID N. BOOY, MD

**KEYWORDS:** Acute macular neuroretinopathy, Humphrey visual field, Ocular coherence tomography, Paracentral scotoma

## INTRODUCTION

Acute macular neuroretinopathy is a poorly understood disruption of the outer retinal layers leading to central visual deficits. Here, we present a case of a young woman with undiagnosed vision loss, found to have acute macular neuroretinopathy after a detailed history and by subtle findings on ophthalmic testing.

## CASE

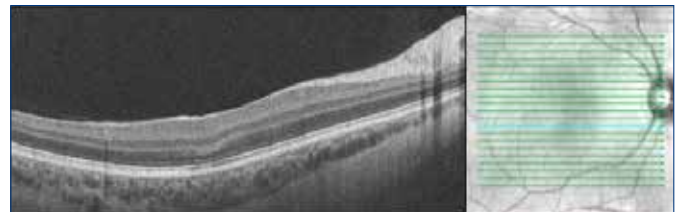
A 28-year-old female was referred to clinic for an “avocado-shaped” blind spot in her right eye that began nine months prior. She had seen both her primary optometrist and ophthalmologist with no etiology identified. She denied preceding illness or significant ocular history. Her daily

medications included fluoxetine and combination oral contraceptive pills (OCPs).

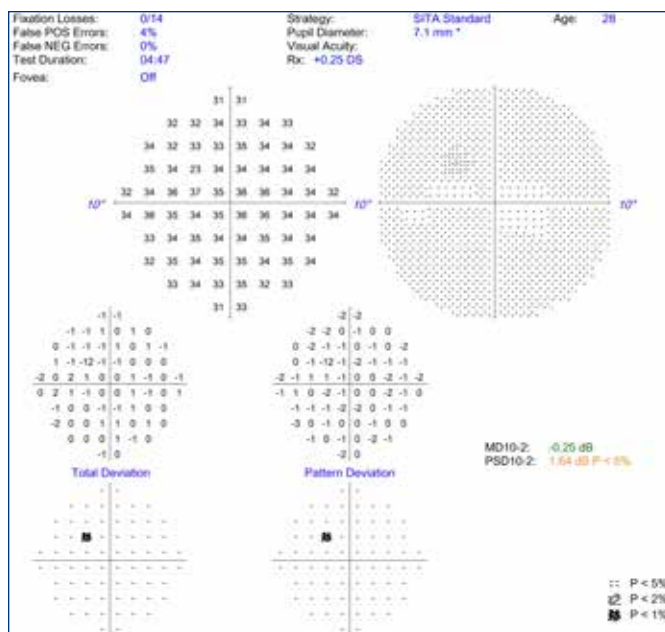
10-2 Humphrey visual field (HVF) demonstrated a right-side paracentral scotoma, superonasal to fixation (**Figure 1**). Color, infrared, and autofluorescence fundus photos were unrevealing for a focal lesion (**Figures 2,3**). Spectral-domain ocular coherence tomography (SD-OCT) of the right macula was significant for focal disruption of the ellipsoid zone (EZ) layer (**Figure 4**).

The patient was diagnosed with acute macular neuroretinopathy (AMN) based on these findings.

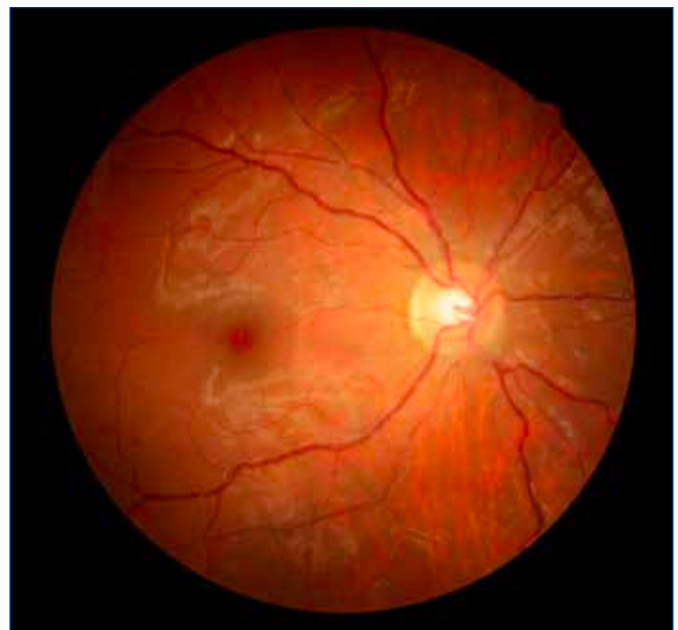
**Figure 2.** SD-OCT of the macula of right eye with a focal disruption of the outer plexiform layer and corresponding outer nuclear layer atrophy.



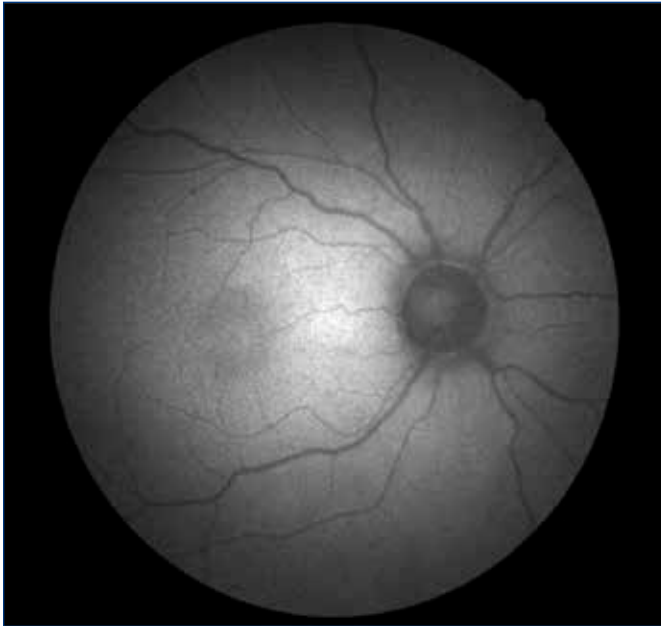
**Figure 1.** Reliable 10-2 Humphrey visual field of right eye, demonstrating a paracentral scotoma superonasal to fixation.



**Figure 3.** Color fundus photograph of right eye unrevealing for a focal lesion.



**Figure 4.** Autofluorescence photograph of right eye unrevealing for a focal lesion.



## DISCUSSION

AMN classically presents with complaint of a paracentral, petaloid scotoma in otherwise healthy young women.<sup>1</sup> With AMN, OCT typically demonstrates focal ellipsoid zone disruption correlating with the scotoma. This case can be further categorized as Type 2, involving the outer plexiform layer with outer nuclear layer atrophy.<sup>2</sup> In certain cases, petaloid lesions can be observed on fundus examination within days to months after symptom onset and may be best visualized with near infrared photography.

While the pathogenesis of AMN is poorly understood, several strong associations suggest that microvascular ischemia plays a role. Causes for ischemia may include inflammation, secondary to autoimmune processes or recent infection, hypotension, or catecholamine-induced vasoconstriction from sympathomimetics like epinephrine and caffeine.<sup>3</sup> Of note, a strong risk factor for AMN is OCP use; however, there is no evidence to suggest that discontinuation of OCPs is beneficial to prognosis. Therefore, this patient was not recommended to stop her medication or switch to another form of contraception. There are currently no effective interventions for AMN and symptoms can be expected to remain stable or improve gradually over time.

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## Authors

James O. Robbins, MD, Department of Ophthalmology, Duke University, Durham, NC.

David N. Booy, MD, Division of Ophthalmology, Alpert Medical School of Brown University, Providence, RI.

## Disclosures

None

## Correspondence

James Robbins, MD  
 Department of Ophthalmology, Duke University  
 2351 Erwin Rd, Durham, NC 27705  
 802-249-2538  
[james.o.robbs@duke.edu](mailto:james.o.robbs@duke.edu)

## Superficial Acral Fibromyxoma on the Thumb-Nail Bed

KYRA DIEHL, BS; CARA BARBER, MD; OLIVER J. WISCO, DO, FAAD, FACMS; JOHN YOUNG, MD; SANDRA OSSWALD, MD; LISA COHEN, MD

### ABSTRACT

Superficial acral fibromyxoma, also known as digital fibromyxoma, is a benign soft tissue tumor. The acral regions, including the palms, soles, fingers, toes, and nail units, are the commonly affected locations. The sub-ungual region of the great toe is the most common site reported in current literature. The tumor is slowly progressive and benign in nature. Histology commonly reveals a fibromyxoid neoplasm with immunoreactivity to CD34 and CD99 markers.<sup>1,2,3</sup> We present the case of a 39-year-old female with a nine-year history of repetitive digital trauma presenting with superficial acral fibromyxoma of the thumb-nail bed. Our case is unique due to the tumor location and the patient's prior long history of trauma to the tumor site.

**KEYWORDS:** digit, fibromyxoma, nail, neoplasm, superficial acral fibromyxoma

### CASE REPORT

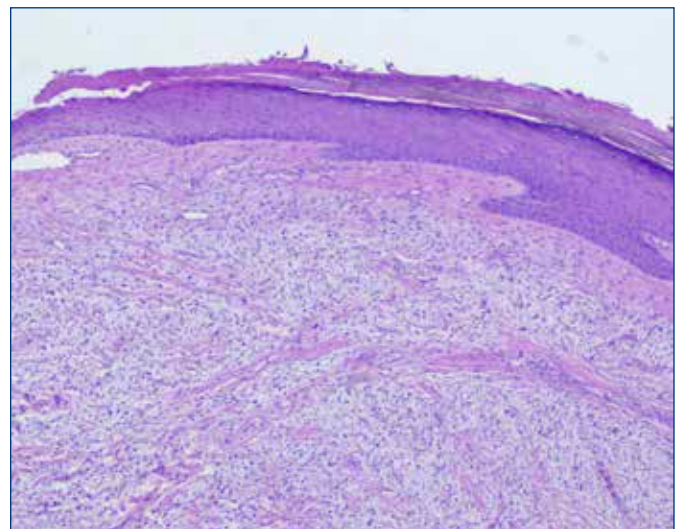
A 39-year-old woman presented with a painful, slowly progressive growth on her right thumb-nail bed. She reported a nine-year history of repetitive trauma to the thumb from both physical and chemical factors. On physical examination, a skin-colored nodular growth was present on the right thumb-nail bed with overlying nail plate fragility and onycholysis (**Figure 1**). A nail-bed biopsy was conducted to rule out malignancy as well as to provide therapeutic relief to the patient.

The histopathology and clinical findings confirmed the diagnosis of superficial acral fibromyxoma (SAF). Histopathology showed a dermal proliferation of spindle cells embedded in a myxoid stroma with scattered mast cells. (**Figure 2**). There was no significant cytologic atypia. An Alcian-blue stain highlighted markedly increased mucin. Immunostains for CD34 and CD99 showed spotty positivity (**Figures 3,4**). An immunostain for SOX-10 was negative. Epithelial membrane antigen was negative. An immunostain for Ki-67 showed no significant increase in the dermal proliferation index.

**Figure 1.** Nodular growth with overlying nail plate fragility and onycholysis on the right thumb-nail bed.

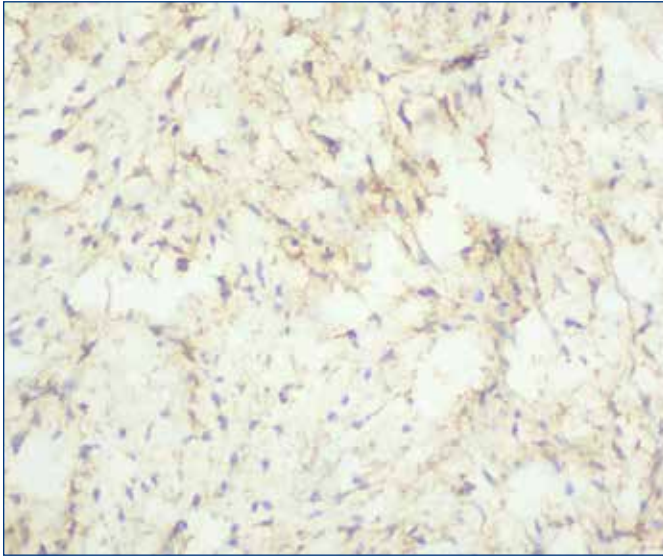


**Figure 2.** A dermal proliferation of spindle cells embedded in a myxoid stroma with scattered mast cells is present on tissue pathology (H&E, original magnification X 40).

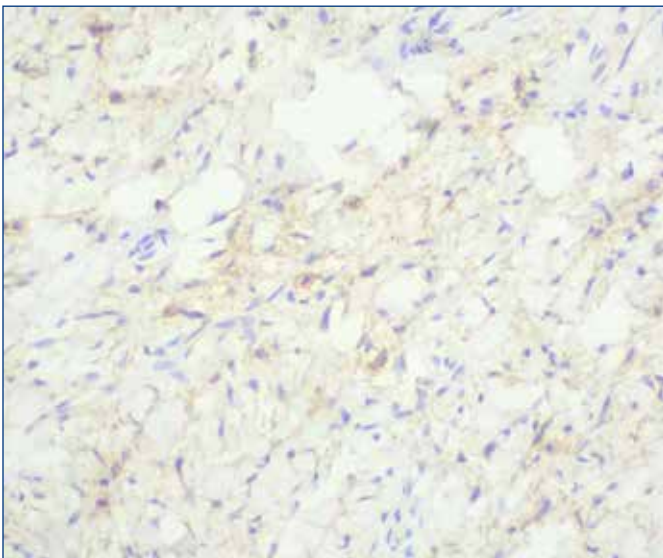




**Figure 3.** Tumor cells demonstrated spotty positivity for CD34 staining (original magnification X 200).



**Figure 4.** Tumor cells demonstrated spotty positivity for CD99 staining (original magnification X 200).



## DISCUSSION

SAF is a rare benign soft tissue tumor first described in 2001 by John Fetsch et al.<sup>4</sup> There are currently 314 reported cases in the literature.<sup>5</sup> It presents as a pink to flesh-colored nodule that is slow-growing and asymptomatic.<sup>1,2</sup> SAF is located most commonly on the acral regions, mainly the toes (45.8%) and fingers (39.1%).<sup>5</sup> This neoplasm occurs most commonly in men (male:female ratio of 2:1) in their 40s (range = 4–91 years, mean = 47 years).<sup>4,5</sup> The growth is dome-shaped, verrucous, or polypoid, and the mean size of these lesions is 1.75 cm in diameter (range = 0.5 to 5.0 cm).<sup>6</sup> Dermatoscopy may show yellow-white hyperkeratotic areas, white and red structureless areas, small arborizing vessels, and vascular structures at the periphery of the lesion.<sup>1,2</sup>

Due to the nonspecific features and rarity of SAF, it is difficult to diagnose clinically. Malignant processes in the differential diagnosis include squamous cell carcinoma, subungual melanoma, and rarely, dermatofibrosarcoma protuberans and myxofibrosarcoma. Benign lesions in the differential diagnosis include acquired digital fibrokeratoma, periungual fibroma, neurofibroma, glomus tumor, sclerosing perineurioma, osteoma, or subungual exostosis. Biopsy and histopathology findings are necessary to confirm the diagnosis.<sup>1,2,3</sup>

Histology of SAF may show a fibromyxoid neoplasm covered by hyperkeratosis or an epithelial collarette. In the dermis, elongated, spindle- or star-shaped neoplastic cells with a myxoid stroma without atypia are seen.<sup>4</sup> Mast cells are usually present. Tumor cells are typically positive for CD34, epithelial membrane antigen, and CD99. Tumor cells are usually negative for S100, desmin, CK40, and CK48. Immunoreactivity to these immunohistochemical markers has been reported to vary among lesions, with the strongest historical reactivity to CD34 and CD99 markers.<sup>2,3</sup>

Imaging studies may be useful in the work-up of superficial acral fibromyxoma as bone involvement has been reported in 36% of cases.<sup>6</sup> Plain radiography may show underlying bone erosions and scalloping.<sup>4</sup> Magnetic resonance imaging with T2-signal may show hyperintensity, consistent with myxoid content. Fine needle aspiration will show a cluster of loose spindle cells in myxoid material.<sup>1,2</sup>

Management of SAF is with complete surgical excision but with no specific margin guidelines in the literature other than obtaining a clear histological margin.<sup>7</sup> Recurrence of the tumor is rare if initial margins are negative. However, recurrence is approximately 20–25% in cases where excision had initially positive margins. The average time of local recurrence is 27 months.<sup>6</sup> Follow-up after excision is recommended and recurrences can be managed with re-excision.<sup>4,5</sup> Mohs surgery has been proposed as an alternative treatment for greater control of margins and to reduce the risk of recurrence.<sup>1,3,7</sup>

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## Authors

- Kyra Diehl, BS, Western University of Health Sciences, College of Osteopathic Medicine, Pomona, CA.  
 Cara Barber, MD, Silver Falls Dermatology, Salem, OR.  
 Oliver J. Wisco, DO, FAAD, FACMS, Department of Dermatology, Warren Alpert Medical School of Brown University, Providence, RI.  
 John Young, MD, Silver Falls Dermatology, Salem, OR.  
 Sandra Osswald, MD, University of Texas Health San Antonio, San Antonio, TX.  
 Lisa Cohen, MD, StrataDx, Lexington, MA; Tufts University School of Medicine, MA.

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## Correspondence

Kyra Diehl, BS  
 6601 Avenida La Reina  
 La Jolla, CA, 92037  
 619-952-1229  
[kyra.diehl@westernu.edu](mailto:kyra.diehl@westernu.edu)

## Black Bronchoscopy

AFEERAH MUMTAZ, MD; ALLISON NAVARRETE-WELTON, MD<sup>24</sup>; RABEEA AHMED, MBBS; TARO MINAMI, MD; KAMRAN MANZOOR, MD

### INTRODUCTION

Black Bronchoscopy refers to the presence of black pigmentation (hyper-pigmentation) in the mucosa of the endobronchial tree. It is a rare finding, and many etiologies have been noted including inborn errors of metabolism, melanosis, ochronosis, *Aspergillus niger* infection, healed tuberculosis, anthracosis, metastatic melanoma,<sup>1,2</sup> charcoal aspiration, and teratoma<sup>1</sup>. We report a patient who presented with dyspnea and hemoptysis while on warfarin therapy with a supratherapeutic INR. Bronchoscopy revealed black discoloration of the mucosa which subsequently resolved after holding anticoagulation.

### CASE REPORT

A 75-year-old woman with a past medical history significant for hypertension, hyperlipidemia, and atrial fibrillation on warfarin presented with progressive shortness of breath for several days. She had also been coughing up bright red blood for the past three days. There was no history of recent fever, night sweats, weight loss, hematemesis, or melena. On admission, vital signs were notable for hypoxemia with oxygen saturation in the mid-80s, requiring 4 Liters of supplemental oxygen via nasal cannula. Her admission ECG was consistent with atrial fibrillation. The laboratory workup revealed anemia with a 2 g/dL drop in hemoglobin (baseline 9.5 g/dl) and PT/INR elevation to 5.2. The CT chest was unremarkable. Warfarin was held. Given ongoing hemoptysis, a bronchoscopy was performed, which revealed multiple areas of extensive mucosal ecchymosis (Figures 1,2). Bronchoalveolar lavage revealed no evidence of diffuse alveolar hemorrhage, the infectious workup was

negative, and no malignant cells were identified. After holding the warfarin, the patient's hemoglobin level remained stable, and hypoxemia resolved. Bronchoscopy five weeks later showed complete resolution of the extensive mucosal hyperpigmentation, and there was no evidence of submucosal abnormalities.

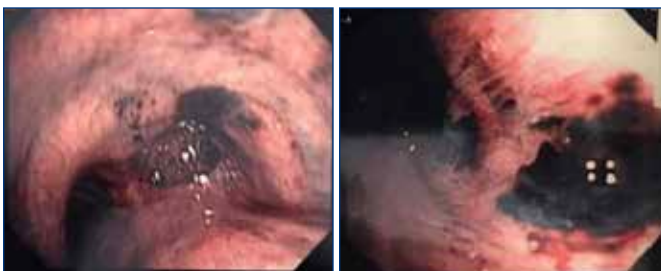
### DISCUSSION

The term "black bronchoscopy" was first used by Packham and Yeow in 2003 to describe endobronchial metastasis from malignant melanoma.<sup>1,3</sup> Since then, many other causes of black bronchoscopy have been identified, including warfarin use.

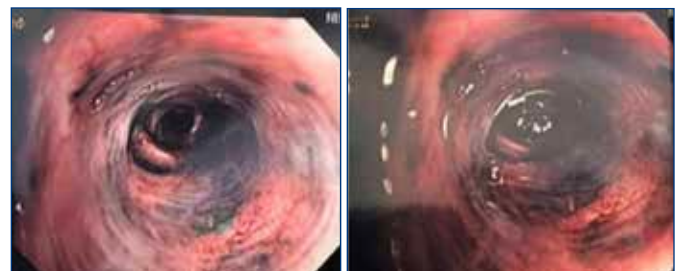
Our patient's initial presentation with progressive dyspnea and hemoptysis with anemia warranted airway surveillance with bronchoscopy that revealed black pigmentation of the airways. In the absence of occupational exposure and thermal inhalation injuries, a black bronchoscopy raises concerns for infections (tuberculosis and fungal)<sup>4</sup>, an inborn error of metabolism (ochronosis, alkaptonuria),<sup>5</sup> substance use (marijuana, crack cocaine, or tobacco smoking)<sup>5,6</sup> and malignancy (malignant melanoma, melanotic schwannoma, or melanotic carcinoid tumor). In this case, the history, physical examination, and diagnostic tests with anemia and elevated INR strongly suggest the presence of bleeding in the airway.<sup>7</sup> While endobronchial biopsy could not be performed due to ongoing hemoptysis and the patient's anticoagulated status, the resolution of the black pigmentation within several weeks of holding warfarin supported this diagnosis.

The etiology of black bronchoscopy can be determined by reviewing the history for the risk factors such as recent

**Figure 1a,b.** Bronchoscopy images reveal extensive mucosal ecchymosis at the level of the carina and right main bronchus.



**Figure 2a,b.** Bronchoscopy images reflect circumferential segmental and subsegmental dark airway pigmentation.



inhalational injury, occupational and substance use exposures, immunocompromised status (which increases the risk of both fungal infections and malignancy), exposure to tuberculosis, amiodarone usage, and a history of multiple joint replacements or degenerative arthritis (which may be suggestive of alkaptonuria). A careful physical examination should include a skin examination for melanoma and an eye and ear examination for the darkened sclera and ear cartilage of alkaptonuria. Anthracosis, the deposition of carbon particles in airways, is found in smokers and those who reside or work in areas polluted with environmental soot.<sup>7,8</sup> Inhalation injury, mostly with characteristic findings of facial burns and nostril edema, affects airways and lung parenchyma.

More than eight million people in the United States are currently on anticoagulation,<sup>9</sup> and it is essential to recognize an associated bleeding risk to airways (pertinent to our case) and other sites in the body.

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## Authors

Afeerah Mumtaz, MD, King Edward Medical University, Lahore, Pakistan.

Allison Navarrete-Welton, MD<sup>24</sup>, The Warren Alpert Medical School of Brown University, Providence, RI.

Rabeah Ahmed, MBBS, King Edward Medical University, Lahore, Pakistan.

Taro Minami, MD, The Warren Alpert Medical School of Brown University, Providence, RI; Division of Pulmonary, Critical Care, and Sleep Medicine, Care New England Health System, Providence, RI.

Kamran Manzoor, MD, The Warren Alpert Medical School of Brown University, Providence, RI; Division of Pulmonary, Critical Care, and Sleep Medicine, Care New England Health System, Providence, RI.

## Correspondence

afeerah.mumtaz@gmail.com

# Fluoroscopic Retrograde Brush Cytology Through Ileal Conduit

KAMIL MALSHY, MD; BORIVOJ GOLIJANIN, BS; SARI KHALEEL, MD; LIANG CHENG, MD; ALI AMIN, MD; BRYAN JAY, MD; DRAGAN GOLIJANIN, MD

## INTRODUCTION AND OBJECTIVES

The prevalence of upper tract transitional cell cancer after cystectomy varies between 0.75% and 6.4%.<sup>1</sup> Due to the significant anatomical changes, urologists face a considerable challenge when performing retrograde diagnostic ureteroscopy, particularly in locating the ureteral orifice. This often necessitates the use of antegrade kidney puncture and guidewire transition in a “through-n-through” manner.<sup>2</sup> Interventional radiologists possess an advantage in navigating small tracts through blind procedures using contrast and very fine guidewires and microcatheters.<sup>3</sup> In this video, we present a unique approach to retrograde brush cytology for assessing upper tract suspicious lesions following radical cystectomy and urinary diversion.

## METHODS

A retrospective analysis was conducted, encompassing cases involving both loopography and retrograde ureteral brush cytology. Clinicodemographic information and detailed procedural specifics were systematically collected, with brush cytology results graded according to “the Paris classification.”<sup>4</sup>

The video recording method adhered to a protocol that mandated the acquisition of specialized consent for video recording. Images were captured for research and presentation purposes. Intraoperative videos and fluoroscopy sequences were recorded, while video editing was executed using Windows Movie Maker software. Voiceovers were incorporated using the “Text Magic” software.

## RESULTS

Three patients underwent loopography and retrograde brush cytology in the technique described with median age of 61, two cases of right side and one left. Upper, middle and uretero-ileal anastomosis lesion was suspected in each of the three patients. Median procedure time was 46 minutes. Two patients had positive cytology results (one had diagnostic ureteroscopy and later radical nephroureterectomy and one is under workup. The third patient with negative results continued f/u. All procedures were out-patient. **Table 1** describes the patients’ path.

**Table 1.** Patients’ Clinicodemographic Parameters and Outcome

	Patient 1	Patient 2	Patient 3
Age	52	78	61
Gender	m	m	m
Location	Upper Ureter	Uretero-ileal Anastomosis	Mid Ureter
Procedure time	46 minutes	16 minutes	52 minutes
Cytology results (PARIS)	Suspicious for HG (4)	Negative (2)	Suspicious for HG (4)
Complications	—	—	—
Follow-up surgery	Due for ureteroscopy	—	Diagnostic ureteroscopy (HG) → RNU
Outpatient	v	v	v

## DISCUSSION

As a result of significant anatomical changes following cystectomy and urinary diversion, urologists are faced with a challenging diagnostic scenario when performing retrograde diagnostic ureteroscopy. Using fluoroscopic-guided retrograde brush cytology, this video presents a novel approach for evaluating suspicious upper tract lesions in a puncture-free approach. Three cases were safely performed, with two cytology results being positive and one being negative, demonstrating its diagnostic utility.

Interventional radiologists, who are adept at navigating small tracts through blind procedures, play an important role when tracking invisible uretero-ileal anastomosis. These cases illustrate the successful application of the technique, with suspected lesions identified at various anatomical sites and positive cytology results prompting further diagnostic and therapeutic efforts.

Besides streamlining the diagnostic process, this innovative diagnostic approach demonstrates the close collaboration between urologists and interventional radiologists. The video establishes a promising avenue for improving diagnostic accuracy and improving post-cystectomy suspicious lesions less invasive diagnosis.

Confirmatory ureteroscopy should be considered in the majority of cases, especially when the lesion is small and can be treated by endoscopy, or when a suspicious lesion has been revealed to be benign. Looking ahead, a hybrid

approach that combines radiographic guidewire tract and ureteroscopy may offer a promising combination for future procedures.

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## Authors

Kamil Malshy, MD, Minimally Invasive Urology Institute, The Miriam Hospital, Warren Alpert Medical School of Brown University, Providence, RI.

Borivoj Golijanin, BS, Clinical Research Assistant, Minimally Invasive Urology Institute, The Miriam Hospital, Warren Alpert Medical School of Brown University, Providence, RI.

Sari Khaleel, MD, Clinical Research Assistant, Minimally Invasive Urology Institute, The Miriam Hospital, Warren Alpert Medical School of Brown University, Providence, RI.

Liang Cheng, MD, Pathology Department, The Miriam Hospital, Warren Alpert Medical School of Brown University, Providence, RI.

Ali Amin, MD, Pathology Department, The Miriam Hospital, Warren Alpert Medical School of Brown University, Providence, RI.

Bryan Jay, MD, Interventional Radiology Department, The Miriam Hospital, Warren Alpert Medical School of Brown University, Providence, RI.

Dragan Golijanin, MD, Minimally Invasive Urology Institute, The Miriam Hospital, Warren Alpert Medical School of Brown University, Providence, RI.

## Correspondence

Kamil Malshy, MD  
86 8th St., Providence, Rhode Island, 02906  
401-712-8203  
Kamilmalshy@gmail.com  
kmalshy@lifespan.org

## VIDEO TRANSCRIPT

During this video, we will discuss a unique technique for diagnosing a suspicious upper tract lesion after radical cystectomy and ileal conduit urinary diversion

A 51-year-old male was diagnosed with muscle invasive bladder cancer in July 2020. Following neo-adjuvant chemotherapy, he underwent robotic radical cystoprostatectomy. A year later, he was diagnosed with left upper tract urothelial carcinoma and had a left nephroureterectomy.

## Video Link

[https://drive.google.com/file/d/1AFmCUmvUEqol7n9YAfbgG-om9lyle-hSs/view?usp=drive\\_link](https://drive.google.com/file/d/1AFmCUmvUEqol7n9YAfbgG-om9lyle-hSs/view?usp=drive_link)



On recent imaging, his single kidney is shown to have an upper ureteral filling defect. Diagnostic right ureteral brush cytology under fluoroscopy was planned.

A 16 French Foley catheter was advanced into the ileal conduit via the patient's urostomy stoma. A small amount of contrast was then injected via the Foley catheter to opacify the ileal conduit. There was prompt reflux of contrast into the right ureter and renal collecting system

A 5 French Kumpe catheter and a Glidewire were then advanced in parallel to the Foley catheter, and the catheter and wire combination used to engage the right ureteral anastomosis.

The wire was then exchanged for a microwire which was advanced in retrograde fashion across the anastomosis and up the ureter to the collecting system under fluoroscopic guidance. A microcatheter was then advanced into place over the wire, with the tip of the catheter advanced to the level the renal pelvis.

Contrast was then injected for the purposes of performing a nephrostogram and ureterogram. No filling defects or obvious abnormalities were noted within the renal collecting system. A filling defect at the level of the upper ureter was observed.

The cytology brush was advanced into place and brushings were obtained at the focal area of mid ureteral narrowing. The sheath was gradually pulled down to the ureteral anastomosis and additional cytology brushings were obtained across the area of the anastomosis.

Urine was then obtained using a syringe through the ureteral catheter

The sheath was then removed over a guidewire. A 10 French single-j ureteral stent was then advanced into place over the wire, with the loop of the catheter positioned at the renal pelvis

The total procedure time was 46 minutes. The patient was discharged home a few hours after the procedure. No complications were observed. The ureteral stent was removed after one week.

Throughout all diagnostic procedures, no percutaneous nephrostomy was required. Cytology result showed positive for high-grade urothelial carcinoma.

# Pediatric Injury Trends in Rhode Island During the COVID-19 Pandemic

JEFFREY R. SAVARINO, MD, MPH; HOLLY R. HANSON, MD, MS; WENDY J. POMERANTZ, MD, MS;  
MARK R. ZONFRILLO, MD, MSCE; MARGARET K. FORMICA, PhD; STEPHANIE M. RUEST, MD, MPH

## ABSTRACT

**BACKGROUND:** Pediatric Emergency Department (PED) visits nationally decreased while the proportion of injury-related PED visits increased during the COVID-19 pandemic. Little is known about the trends in Rhode Island (RI).

**METHODS:** This is a planned sub-analysis of RI data from a retrospective study of pediatric injury-related visits to 40 PEDs for children <18 years old from January 2019–December 2020. We calculated frequencies and compared patient demographics, injury types, severity, and mechanisms for 3/17/2019–12/31/2019 (pre-COVID-19) versus 3/15/2020–12/31/2020 (study period).

**RESULTS:** Despite a 31.4% decrease in total injury-related PED visits from 2019 to 2020, the proportion of injury-related PED visits increased by 8.1% ( $p < 0.001$ ) in 2020. The mean age of patients decreased from 8.3 (SD 5.4) to 7.7 (SD 5.4) years old ( $p < 0.0001$ ), with a higher proportion of female ( $p = 0.0018$ ), privately insured ( $p = 0.0274$ ), and non-Hispanic White children ( $p < 0.001$ ) in 2020. There was a higher proportion of trauma activations, admissions, and injuries caused by intentional self-harm (all  $p < 0.0001$ ).

**CONCLUSIONS:** In RI, the total number of injury-related PED visits decreased while the proportion of injury-related PED visits increased during the COVID-19 pandemic, similar to national trends. There were significant demographic, mechanism, and intent shifts among injured patients, highlighting epidemiologic changes during the pandemic and identifying high-risk groups that would benefit from targeted education and interventions.

**KEYWORDS:** Pediatrics, Trauma, Injury, COVID-19

## INTRODUCTION

Injuries are the leading cause of death and nonfatal emergency department (ED) visits among children <18 years old.<sup>1</sup> In 2020, there were over 12,000 deaths and 4.1 million ED visits attributable to injuries within this age demographic in the United States.<sup>1</sup> The risk of injury among children is multifactorial, including social, economic, and environmental

factors, among several others.<sup>2</sup> The COVID-19 pandemic, caused by the international spread of a novel coronavirus known as SARS-CoV-2, represents an example of one such environmental factor. At the beginning of the COVID-19 pandemic in March 2020, to curb the spread of the SARS-CoV-2 virus by encouraging social distancing, states began to close schools, daycares, and nonessential businesses, and cancel extracurricular activities and sports. With these closures, children spent most of the time at home, and parents and caregivers were often tasked with working from home while simultaneously caring for children and managing education at home.<sup>3</sup>

Rhode Island declared a state of emergency in response to the COVID-19 pandemic on March 9, 2020.<sup>4</sup> By March 22, 2020, in-person dining, public recreation and entertainment venues, gyms, and barbershops were all shut down.<sup>4</sup> Over the next several days, schools were required to transition to remote learning and out-of-state travelers were required to quarantine, and on March 28, 2020, a stay-at-home order was issued and all non-essential businesses were closed.<sup>4</sup>

While pediatric ED (PED) visits decreased significantly in the first few months after the pandemic began, conflicting hypotheses about the impact of lockdowns and school and childcare closures on pediatric traumatic injuries arose; while studies ubiquitously reported an overall decrease in all-cause PED visits, data differed about whether the proportion of ED visits related to injuries increased or decreased within studied populations.<sup>5–9</sup> Several single and multi-center studies have subsequently described changes in pediatric injury patterns due to the pandemic, including automobile-related injuries, burns, non-accidental trauma, and bicycle and motorbike injuries.<sup>10–17</sup>

A recent 40-site multi-center cross-sectional study describing pediatric injury patterns across the United States demonstrated an increase in the proportion of PED visits due to injuries in 2020 compared to the same time period in 2019 despite an overall decrease in PED visits, a younger median age of injured children, and changes in injury mechanisms.<sup>17</sup>

To date, no data has been reported about the impact of the pandemic on pediatric injury patterns in the state. By performing a planned sub-analysis of the above-described 40-center study, we aimed to describe PED injury patterns at the only pediatric Level 1 trauma center in RI during the 2020 COVID-19 pandemic compared to the prior year.

## METHODS

### Study Design and Population

This was a planned secondary analysis of RI data from a cross-sectional study of children less than 18 years old presenting with an injury to one of 40 PEDs in the United States and Canada between January 1, 2019 and December 31, 2020.<sup>17</sup> A multidisciplinary coalition of pediatric physicians and surgeons and injury prevention experts, the Injury Free Coalition for Kids, supported the primary study. Hanson et al previously described the study design and methods.<sup>17</sup> Pediatric ED visits with at least one International Classification of Disease – 10th revision (ICD-10) code for bodily injury (S00 – T78) were used to identify patients for inclusion. The first three ICD-10 codes for mechanism and intent of injury (V00-X58 = unintentional, X71-X83 = intentional self-harm, X92-Y09 = assault, Y21-Y33 = undetermined Intent, Y35-Y38 = legal intervention) were also collected, when documented. The nature, mechanism, and injury extent were classified by the Centers for Disease Control and Prevention (CDC) National Center for Health Statistics Injury Diagnosis Matrices and External Cause-of-Injury (E-Code) Matrices.<sup>18,19</sup> This sub-analysis included all PED visits at the RI study site. Visits for the same injury within seven days of the primary visit and injuries occurring secondary to complications of surgical and/or medical care (ICD-10 codes T80-88 or Y65.8) were excluded. De-identified data was abstracted from the institutional electronic health record and uploaded data into a secure REDCap database at Cincinnati Children’s Hospital Medical Center, the study’s data coordinating center.<sup>20</sup> The institutional review board at the study site approved this study. The methods pertinent to this secondary analysis are described here.

### Measures

For each injury-related PED visit, demographic data were obtained from the medical record. Discrete variables included age, sex, race, ethnicity, primary language, insurance payor, triage emergency severity index (ESI), if the visit was associated with a trauma activation, intent and mechanism of injury, PED disposition, admission unit (when applicable), PED and hospital length of stay, and final hospital disposition (alive/deceased). Sex, race, ethnicity, and language were reported by the patient, parent, or guardian, or were assigned by registration staff at the time of PED check-in. Injury mechanism, intent, nature, and associated activity were derived from ICD10 codes, when documented. Using a previously described validated tool, injury severity scores (ISS) were calculated for each PED visit based on mapped abbreviated injury scale (AIS) scores and were grouped according into categories ranging from mild injury to very severe injury.<sup>21-23</sup>

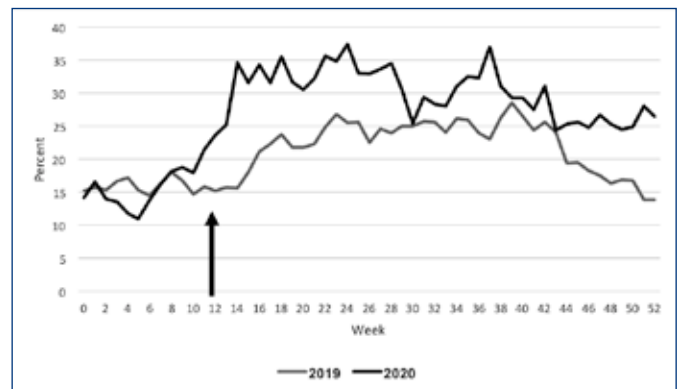
### Data Analysis

Data analysis was performed at Cincinnati Children’s Hospital Medical Center and the State University of New York Upstate Medical University. PED visits starting on March 17, 2019 and ending on December 31, 2019 were included and compared to visits starting on March 15, 2020 and ending on December 31, 2020; this allowed comparison between pre-COVID-19 pandemic PED visits and visits that occurred after the national public health emergency declaration for the COVID-19 pandemic, issued on March 15, 2020. Descriptive statistical analyses were performed, and results were reported as frequencies and proportions, with median and interquartile ranges calculated. Chi-square tests and Wilcoxon rank sum tests were performed for comparative analyses, when appropriate. All statistical analyses were conducted using SAS® (version 9.4, SAS Institute, Inc.).

## RESULTS

From March through December 2019, there were 9,581 reported PED visits attributable to traumatic injuries compared to 6,575 injury visits during the same timeframe in 2020, representing a 31.4% decrease in injury-related PED visits during the study period. Despite this significant decrease in total injury-related PED, the proportion of all PED visits that were injury-related increased by 8.1% ( $p < 0.001$ ) in 2020 (Figure 1).

**Figure 1.** Pediatric ED Injury-Related Visits as a Percentage of all ED Visits, January 1, 2019–December 31, 2020\*



\*Arrow denotes the first full week of COVID in 2020. This figure represents all visits from January 1, 2019 through December 31, 2020, with an N of 56,585 ED visits in 2019 and 35,472 in 2020.

### PATIENT DEMOGRAPHICS

The mean age of patients presenting with injuries was 7.7 (SD 5.4) in 2020 compared to 8.3 (SD 5.4) years in 2019 ( $p < 0.0001$ ). There was a 4.8% increase in the proportion of children <5 years old and a 4.7% decrease in the proportion of children ages 5–17 ( $p < 0.0001$ ) in 2020. During the COVID-19 pandemic, there was an increase in the proportion of



injury-related PED visits among children who were female (41.9% in 2019 versus 44.4% in 2020,  $p=0.0018$ ), White (54.7% versus 58.9%,  $p<0.0001$ ), non-Hispanic (66.8% versus 71.1%,  $p<0.0001$ ), privately insured (75.1% versus 76.4%,  $p=0.0274$ ), and English speaking (86.9% to 88.9%,  $p=0.0014$ ) (Table 1).

**Table 1.** Demographic Characteristics of Study Population Before and During COVID (N=16,156)

Characteristic	Pre-COVID (2019) Mean (SD), Median (IQR)	During COVID (2020) Mean (SD), Median (IQR)	P-value
Age (years)	8.3 (5.4), 7.6 (3.2–13.1)	7.7 (5.4), 6.4 (2.8–12.6)	<0.0001
	Pre-COVID (N=9,581) N (%)	During COVID (N=6,575) N (%)	
<b>Age Category (years)</b>			<0.0001
<1	469 (4.9)	398 (6.1)	
1 to 4	3,060 (31.9)	2,334 (35.5)	
5 to 9	2,263 (23.6)	1,562 (23.8)	
10 to 14	2,287 (23.9)	1,355 (20.6)	
15 to 18	1,502 (15.7)	926 (14.1)	
<b>Sex</b>			0.0018
Male	5,568 (58.1)	3,658 (55.6)	
Female	4,013 (41.9)	2,917 (44.4)	
Non-Binary & Unknown	NA	NA	
<b>Race</b>			<0.0001
White	5,238 (54.7)	3,871 (58.9)	
Black	1,115 (11.6)	671 (10.2)	
American Indian/Alaska Native	23 (0.2)	15 (0.2)	
Native	130 (1.4)	85 (1.3)	
Asian	3,075 (32.1)	1,933 (29.4)	
Other/unknown			
<b>Ethnicity</b>			<0.0001
Hispanic	3,111 (32.5)	1,845 (28.1)	
Non-Hispanic	6,396 (66.8)	4,672 (71.1)	
Unknown	74 (0.8)	58 (0.9)	
<b>Insurance Type</b>			0.0274
Public	1,812 (18.9)	1,201 (18.3)	
Private	7,198 (75.1)	5,024 (76.4)	
Military	92 (1.0)	83 (1.3)	
Self	258 (2.7)	145 (2.2)	
Other/unknown	221 (2.4)	122 (1.8)	
<b>Primary Language</b>			0.0014
English	8,329 (86.9)	5,847 (88.9)	
Spanish	1,099 (11.5)	635 (9.7)	
Other	146 (1.5)	91 (1.4)	
Unknown	7 (0.1)	2 (0.0)	

**PED ACUITY AND INJURY SEVERITY**

In 2020, there was an increase in the proportion of visits associated with trauma activations (+2.5%  $p<0.0001$ ). The proportion of high acuity ESI visits (ESI 1 and 2) remained unchanged across both years, with a 1.7% decrease in moderate acuity visits (ESI 3) and a 1.5% increase in the proportion of low acuity visits (ESI 4 and 5) ( $p<0.001$ ) (Table 2). ED length of stay was noted to be longer for visits occurring in 2020 (3.6 hours) compared to 2019 (3.4 hours) ( $p=0.0001$ ).

**Table 2.** Injury Characteristics Before and During COVID (N=16,156)

Characteristic	Pre-COVID (N=9,581) N (%)	During COVID (N=6,575) N (%)	P-value
<b>Triage ESI Code</b>			<0.0001
1	9 (0.1)	6 (0.1)	
2	2,072 (21.6)	1,411 (21.5)	
3	4,619 (48.2)	3,059 (46.5)	
4	2,733 (28.5)	2,008 (30.5)	
5	139 (1.5)	66 (1.0)	
Unknown	9 (0.1)	25 (0.4)	
<b>Trauma Activation</b>			<0.0001
Yes	115 (1.2)	241 (3.7)	
No	9,466 (98.8)	6,334 (96.3)	
<b>Injury Severity Score Categories*</b>			0.1665
0	2,065 (21.7)	1,338 (20.5)	
1–8 (mild)	7,327 (77.0)	5,075 (77.8)	
9–15 (moderate)	121 (1.3)	105 (1.6)	
16–24 (severe)	3 (0.0)	3 (0.1)	
≥25 (very severe)	3 (0.0)	3 (0.1)	
<b>Intent*</b>			<0.0001
Unintentional	7,885 (95.9)	5,307 (95.6)	
Intentional self-harm	144 (1.8)	159 (2.9)	
Assault	177 (2.2)	76 (1.4)	
Undetermined Intent	10 (0.1)	6 (0.1)	
Legal Intervention	3 (0.0)	1 (0.0)	
<b>ED Disposition</b>			<0.0001
Admit	641 (6.7)	561 (8.5)	
Discharge	8,877 (92.7)	5,934 (90.3)	
Transferred	39 (0.4)	64 (1.0)	
Left	12 (0.1)	9 (0.1)	
Died	0 (0.0)	1 (0.0)	
Unknown	12 (0.1)	6 (0.1)	
<b>Admitting Unit*</b>			0.3277
ICU	67 (10.5)	68 (12.1)	
OR	69 (10.8)	73 (13.0)	
Ward	504 (78.6)	420 (74.9)	
Unknown	1 (0.2)	0 (0.0)	
<b>Final Encounter Status</b>			0.3757
Lived	9,578 (99.9)	6,571 (99.9)	
Died	3 (0.0)	4 (0.1)	
Unknown	NA	NA	

Abbreviations: ESI – emergency severity index; ED – emergency department; ICU – intensive care unit; OR – operating room.

\*Injury severity score categories are among N=16,043 classifiable injury severity scores; Intent is among N=13,768 with classifiable external cause codes; admitting unit is among N=1,202 admitted.

Despite an increase in the proportion of trauma activations in 2020, injury severity categories (mild, moderate, severe, and very severe) were not statistically different during the pandemic compared to the year prior ( $p=0.1665$ ) (Table 2). There were proportionate increases in hospital admissions and transfers (primarily to psychiatric inpatient units) during the pandemic ( $p<0.0001$ ) (Table 2). Hospital length of stay among admitted patients was also noted to be longer in 2020 (83.0 hours, SD 166.8) than 2019 (59.3 hours, SD 83.6) ( $p=0.0064$ ). There were no statistically significant differences in PED disposition to the wards versus intensive care unit (ICU) or operating room (OR); however, the raw number and proportion of admissions to the ICU and OR did increase in 2020. Of note, while there was also no significant difference in the proportion of patients who died ( $p=0.3757$ ), there were four deaths in the PED for injuries in 2020 with three deaths 2019, despite a decrease in over 3,000 visits for injuries in 2020.

### INJURY MECHANISM AND INTENT

Among the 13,774 visits in 2019 and 2020 with classifiable mechanism codes, falls represented the most common mechanism of injury in both 2019 and 2020, comprising 41% of all injury-related visits during both years. The mechanisms with the largest increases in the proportion of total visits in 2020 were pedal cyclists (bicycle) (+2.2%) and cut/pierce injuries (+2.8%), while the largest decrease was seen in injuries caused by children being struck by or against something (-5.8%).

There were significant differences in injury intent, when classified, with a 1.1% increase in the proportion of self-inflicted injuries and a 0.8% decrease in assaults ( $p<0.001$ ) (Table 2). Among the 16,156 visits for which the nature of the injury was classified, open wounds decreased by 11.4% ( $N=2,397$  versus 2,123 in 2019 vs 2020) and poisonings increased by 7.4% ( $N=249$  versus 269 in 2019 vs 2020).

### DISCUSSION

The COVID-19 lockdown resulted in the closure of schools, playgrounds, and many workplaces, and coincided with dramatic changes in children's lives. Not only was most schooling relocated to the child's home, but other activities such as sports, clubs, and afterschool jobs were shut down. Previous publications have demonstrated that these changes impacted injury-related PED visits with reported total-visit decreases of 26–40% but increases in the proportion of PED visits for injuries.<sup>10,17,24</sup> In line with these national publications, we saw a 31.4% decrease in the total number of pediatric injury-related visits at a RI pediatric Level 1 trauma center from March 2020 to December 2020 compared to the same timeframe from 2019, but a statistically significant increase in the proportion of all injury-related PED visits.

Our data show significant demographic shifts, including an increase in PED injury-related visits among children who were female, White, non-Hispanic, privately insured, and English speaking, as well as a lower mean age of patients. These observations are consistent with previously described literature which has showed a younger mean age, more females and White non-Hispanic children, and a reduction in overall ED utilization among publicly insured and less resourced individuals during the pandemic.<sup>16,24</sup> While this dataset cannot elucidate the reasons for these findings, the cause is likely multifactorial. Less-resourced populations may have been more likely to delay seeking medical care or avoid the hospital altogether.<sup>25,26</sup> Additionally, ability to access medical care may have been disproportionately limited in this population due to increased childcare responsibilities caused by the closing of schools and daycares.<sup>27</sup>

Although there was no significant change in the ISS categories between 2019 and 2020, injury-related visits during 2020 resulted in a statistically significantly higher proportion of trauma activations, admissions, and longer PED and hospital lengths of stay. These other surrogates of severity suggest that injuries seen in the hospital during the pandemic may have been more severe than pre-pandemic. Similar patterns have been documented in previous studies.<sup>16,23</sup> These findings may be related to an overall decrease in presentation to PEDs for minor injuries due to avoidance of medical facilities, and/or simultaneously, due to an increase in higher-severity injuries.

There were several observed changes to mechanisms of injury contributing to PED visits when comparing 2019 to 2020. Mechanisms attributable to sports and recreational activities, such as injuries caused by being struck by/against something or by overexertion, markedly decreased during the pandemic. This change corresponds with an overall decrease in organized sport participation because of COVID-19 shut-downs.<sup>28,29</sup> Conversely, our institution saw an increase in injuries due to pedal cycling and cuts/piercings as well as an increase in poisonings. The former is likely driven by an increase in purchase of personal-use recreational equipment that has been well-described in the lay press and previous publications.<sup>24,30-32</sup> The latter are likely, at least in part, due to the 1.1% increase in intentional self-harm observed in our site-specific population, potentially from a higher prevalence of psychosocial stressors and social isolation. While PED visits across RI that were attributable to a mental health condition decreased by 26% from 2019 to 2020, the number of hospital admissions for mental health conditions remained steady (1,841 to 1,825); this indicates a higher severity of these conditions after the onset of the pandemic.<sup>33,34</sup> Additionally, and/or alternatively, more unsupervised time at home could have led to increased opportunities to sustain unintentional lacerations or have exposure to unsecured medications and/or cleaning products due to inadequate supervision or unsafe play environments. During

our study period, there was a notable decrease in problem-related pediatric clinic visits observed nationally compared to 2019.<sup>35</sup> Combined with an increase in opportunity for injuries as discussed above, decreased availability of urgent and primary care appointments may have also contributed to the observed proportionate increase in PED visits for injuries.

This study has several limitations. Data were collected retrospectively through the electronic medical record. Some variables, such as demographic data, injury mechanism, nature and activity, were not consistently documented. The population was identified by ICD-10 codes, and inaccurate ICD-10 coding may have led to misclassification of injury type and severity. Additionally, these data are from a single, pediatric Level 1 trauma center and may not be representative of all patients who presented to RI community hospitals or to trauma centers outside of RI. Children who presented to the ED in other facilities may have variations in demographics, injury mechanisms, or injury severity that were not captured in this study.

## CONCLUSION

These state-specific results highlight epidemiologic pediatric injury changes during the COVID-19 pandemic. Despite an overall decline in PED visits, the proportion of injury-related PED visits increased during the COVID-19 pandemic in our single-center cohort, with a higher proportion of admissions and a longer mean hospital length of stay. Injury mechanisms relating to organized sports declined substantially in frequency while mechanisms related to single-person activities (cycling), cuts/piercings, and poisonings were noted to increase.

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## Authors

Jeffrey R. Savarino, MD, MPH, Department of Emergency Medicine, Warren Alpert Medical School of Brown University, Rhode Island Hospital, Providence, RI.

Holly R. Hanson, MD, MS, Division of Pediatric Emergency Medicine, Cincinnati Children's Hospital Medical Center, University of Cincinnati, Cincinnati, OH.

Wendy J. Pomerantz, MD, MS, Division of Pediatric Emergency Medicine, Cincinnati Children's Hospital Medical Center, University of Cincinnati, Cincinnati, OH.

Mark R. Zonfrillo, MD, MSCE, Departments of Emergency Medicine and Pediatrics, Warren Alpert Medical School of Brown University, Rhode Island and Hasbro Children's Hospitals, Injury Prevention Center of Rhode Island Hospital-Hasbro Children's Hospital, Providence, RI.

Margaret K. Formica, PhD, Department of Public Health and Preventive Medicine, SUNY Upstate Medical University, Syracuse, NY.

Stephanie M. Ruest, MD, MPH, Departments of Emergency Medicine and Pediatrics, Warren Alpert Medical School of Brown University, Rhode Island and Hasbro Children's Hospitals, Injury Prevention Center of Rhode Island Hospital-Hasbro Children's Hospital, Providence, RI.

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## Correspondence

Stephanie M. Ruest, MD, MPH  
 Department of Emergency Medicine  
 55 Claverick Street, 2nd Floor,  
 Providence, RI, 02903  
[Stephanie\\_Ruest@brown.edu](mailto:Stephanie_Ruest@brown.edu)

# Unplanned Operative Delivery is Associated with Decreased Perception of Control over Labor

ANNA R. WHELAN, MD; OLIVIA RECABO, MD; NINA K. AYALA, MD; MELISSA A. CLARK, PhD;  
ADAM K. LEWKOWITZ, MD, MPH

## OBJECTIVE

There is increasing understanding that a sense of control during labor may mitigate perinatal mental health disorders.<sup>1</sup> However, not much is known regarding the factors that are associated with perceived control over labor. Patients who undergo unplanned cesareans or operative vaginal delivery (uCD/OVD) may experience relinquished control over their birth experience and this has been postulated to mediate the risk of perinatal mental health disorders.<sup>2</sup> However, this potential association remains understudied. The Labour Agency Scale (LAS) is a validated instrument that assesses patient perception of control during childbirth.<sup>3</sup> We aimed to examine whether patients who underwent uCD/OVD had lower LAS scores compared to patients who underwent spontaneous vaginal delivery (SVD).

## STUDY DESIGN

This was a secondary analysis of a cross-sectional survey study of patients admitted to labor and delivery at a tertiary care center from June–July 2021. Eligible participants were nulliparous, English-speaking, and had singleton pregnancies at gestational age  $\geq 37$  weeks and were approached on the postpartum unit. After obtaining consent, participants completed the LAS.<sup>3</sup> Trained medical personnel then performed a detailed chart review.

The primary outcome for this analysis was the LAS score. Participants who underwent uCD/OVD were compared to those who underwent SVD using Fisher's exact and Wilcoxon Rank-sum tests. Multivariable linear regression was performed to assess for confounders identified from the bivariate analysis. Prior to study initiation, approval from our institutional review board was obtained (#1691795).

## RESULTS

Fifty of 149 participants (33.6%) underwent uCD/OVD. Maternal body mass index (BMI) was higher in the group that underwent uCD/OVD as compared to SVD (median 33.2 vs 30.1,  $p < 0.03$ ). Additionally, length of labor and gestational age (GA) were both higher among those who underwent uCD/OVD as compared to SVD (median 22 hours vs 14 hours,  $p < 0.02$ ; median 40.2 weeks versus 39.6 weeks,  $p < 0.02$ ).

LAS scores were significantly lower for participants who underwent uCD/OVD than those who underwent SVD (median 146 (IQR 131,161)) versus (median 164 (IQR 146, 181),  $p < 0.01$ ). These findings remained significant after controlling for BMI, length of labor, and GA (Scores were 16.09 ( $\pm 4.64$ ) points lower among those who underwent uCD/OVD compared to SVD,  $p < 0.01$ ).

## CONCLUSION

In this study, those who underwent uCD/OVD had significantly lower LAS scores than those who underwent SVD. These findings are consistent with a prior study by Floris et al,<sup>4</sup> though their cohort was smaller – with 78 participants – and their analyses did not control for factors such as length of labor that may be associated with labor experience.<sup>4</sup>

Perceived labor control has been demonstrated to be a key mediator of development of perinatal mood and anxiety disorders (PMAD),<sup>5</sup> impacting up to 15–20% of birthing people.<sup>6</sup> If the perception that losing control over childbirth mediates development of PMAD is correct, interventions to increase the experience of control must be examined. These could incorporate psychotherapeutic approaches such as cognitive behavioral therapy or education-based interventions designed to increase patient engagement in decision making during labor. Regardless of the exact intervention, it is crucial to further explore whether improving patient perceptions of control during childbirth may decrease rates of perinatal mental health disorders.

(See **Table 1**).

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**Table 1.** Unplanned Cesarean Delivery and Operative Vaginal Delivery to Spontaneous Delivery

	Cesarean Delivery/ Operative Vaginal Delivery (n=50)	Spontaneous vaginal delivery (n=98)	p-value
<b>Demographics</b>			
Maternal age, median (IQR)	29.5 (26,33)	28.5 (24,31)	0.08
Maternal BMI, median (IQR)	33.2 (29.1,40.9)	30.1 (27.5,35.7)	<b>0.03</b>
Maternal race/ethnicity			0.12
Black	2 (4.0)	6 (6.1)	
Latina	12 (24.0)	14 (14.3)	
Indigenous	1 (2.0)	4 (4.1)	
Asian/Pacific Islander	2 (4.0)	0	
Caucasian	33 (66.0)	74 (75.5)	
Primary insurance			0.64
Public	13 (26.0)	32 (32.7)	
Private	37 (74.0)	65 (66.3)	
Self-pay/none	0	1 (1)	
Highest level of education			0.35
12th grade or less	19 (38.0)	29 (29.6)	
Greater than 12th grade	31 (62.0)	69 (70.4)	
Medical comorbidity*	20 (40.0)	28 (28.6)	0.19
Depression and/or anxiety	29 (58.0)	44 (44.9)	0.17
<b>Delivery characteristics</b>			
Admitted for:			0.14
Labor	23 (46.0)	59 (60.2)	
IOL (sched)	21 (42.0)	25 (25.5)	
IOL (from triage)	6 (12.0)	14 (14.3)	
Length of labor (hours), Median (IQR)	22 (15,34)	14 (10,22)	<b>&lt;0.01</b>
Gestational age at delivery, Median (IQR)	40.2 (39.3,41)	39.6 (38.7,40.6)	<b>0.02</b>
NICU admission	7 (14.6)	6 (6.1)	0.12
Neonatal therapy**	6 (12.0)	14 (14.3)	0.80
<b>Labour Agency Scale Scores</b>			
Total LAS Median (IQR)	146 (131,161)	164 (146,181)	<b>&lt;0.01</b>

Data are N(%) unless otherwise stated. Significance at p<0.05.

Fisher's exact and Wilcoxon Ranksum tests used for analysis.

IQR = interquartile range, BMI = body mass index, IOL = induction of labor, NICU = neonatal intensive care unit

\*Maternal medical comorbidities include chronic hypertension, gestational hypertension, preeclampsia, pregestational diabetes and gestational diabetes, thyroid disease and SARS-CoV-2 infection.

\*\*Neonatal therapy includes the need for supplemental O<sub>2</sub>, phototherapy for jaundice, neonatal antibiotics

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### Authors

Anna R. Whelan, MD, Division of Maternal-Fetal Medicine, Women & Infants Hospital of Rhode Island, Alpert Medical School of Brown University, Providence, RI.

Olivia Recabo, MD, Department of Obstetrics and Gynecology, New York Medical College, Valhalla, NY.

Nina K. Ayala, MD, Division of Maternal-Fetal Medicine, Women & Infants Hospital of Rhode Island, Alpert Medical School of Brown University, Providence, RI.

Melissa A. Clark, PhD, Division of Maternal-Fetal Medicine, Women & Infants Hospital of Rhode Island, Alpert Medical School of Brown University; Department of Health Services, Policy and Practice, Brown University School of Public Health, Providence, RI.

Adam K. Lewkowitz, MD, MPH, Division of Maternal-Fetal Medicine, Women & Infants Hospital of Rhode Island, Alpert Medical School of Brown University, Providence, RI.

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### Correspondence

Anna R. Whelan, MD  
101 Dudley St.  
Providence, RI, 02905  
401-274-1122  
anna.whelan.md@gmail.com

# Bystander Presence and Response During Accidental and Undetermined Drug Overdose Deaths: Rhode Island, January 1, 2016–December 31, 2021

JUSTINA OMARI, MPH; HEIDI R. WEIDELE, MPH; BENJAMIN D. HALLOWELL, PhD

## ABSTRACT

With timely intervention from a bystander, drug overdose victims are more likely to survive. To characterize the frequency of bystander presence and identify overdose response barriers, we analyzed data from overdose fatalities occurring in Rhode Island from 2016 to 2021. Overall, about half (n=1,039; 48.7%) of all overdose deaths in Rhode Island had at least one bystander present. Among decedents who had at least one bystander who was unable to respond (n=338), top reasons of non-response were because they were spatially separated (64.8%), failed to recognize the signs of overdose (54.1%), or were unaware the victim was using drugs (40.2%). To promote bystander presence and address barriers to bystander response during an overdose, intervention strategies should include efforts that reduce solitary drug use and maximize bystander efficacy, including increasing awareness on the dangers of using drugs alone, increasing the availability of naloxone, and education on recognizing signs of overdose.

**KEYWORDS:** fatal overdose, substance use disorder, opioids, bystanders, naloxone, harm reduction

## INTRODUCTION

Opioid overdose is the leading cause of injury-related deaths in the United States, and from 2020 to 2021, overdose deaths increased by 15% nationally.<sup>1,2</sup> Rhode Island (RI) aligns with national trends and experienced a 13% increase from 2020 to 2021, and a majority of deaths were opioid-involved.<sup>3</sup> Individuals who overdose outside of clinical settings are more likely to survive if they receive a timely intervention from a bystander and/or emergency personnel.<sup>4</sup> Bystanders can reduce harm during an overdose, particularly when they are equipped with knowledge and life-saving resources to improve the efficacy of their response.<sup>5</sup> To guide intervention efforts, we describe the frequency of bystander presence, factors associated with bystander presence, describe bystander response during an overdose, and identify barriers bystanders face to timely intervention among overdose decedents in Rhode Island.

## METHODS

We obtained overdose fatalities of accidental or undetermined intent occurring between 2016 to 2021 from the RI State Unintentional Drug Overdose Reporting System (SUDORS). Abstractors for SUDORS capture information from death certificates, medical records, medical examiner or coroner reports, forensic toxicology results, and scene investigation reports when available.

In SUDORS, a potential bystander is classified as an individual aged 11 years and older who was physically nearby during or shortly preceding the drug overdose and had the opportunity to respond to the overdose; however, persons in different self-contained parts of larger buildings would not be considered as potential bystanders (e.g., a person in a different apartment in the same apartment building would not be considered a potential bystander).<sup>6</sup> Bystander data are restricted to fatal overdoses with documentation of bystander presence from the scene investigation or the police, emergency medical services, and emergency department reports. Therefore, bystander data are likely underestimated. For this analysis, overdoses where there were no documented bystanders present at the scene or if it was unknown if a bystander was present were classified as having no bystander present at the time of overdose. We considered a bystander response to have occurred if any of the following circumstances were captured in SUDORS; bystander provision of sternal rub, stimulation, breathing or oxygen, CPR, naloxone administration, or other intervention. We created additional response categories (bystander called 9-1-1, provided transport to emergency department or police station) using the other bystander intervention free text field. We classified an overdose as having no bystander response if reasons for no response were captured for the fatal overdose (bystander did not recognize any abnormalities, they reported abnormalities but did not recognize them as signs of overdose, they did not know the victim was using drugs, they were using drugs and impaired, they were spatially separated, they were in public, or did not respond for another specified reason) and naloxone was not administered by a bystander. We created additional reason for no response categories (bystander was asleep) using the other reason for no response free text field. As more than one bystander could be present at the time of overdose, it is possible for response

and non-response, as well as multiple interventions or reasons for lack of intervention, to be reported for a single overdose.

We categorized the reported location of overdose into public (businesses, parks, sidewalks, roadways, schools, etc.), semi-public (treatment or residential facilities, such as hotels, motels, hospitals, and nursing facilities), and private settings (a private residence).

All cells with small cell count (<5) were suppressed due to RIDOH's Small Number Reporting Policy. Statistical significance was determined using chi-square tests. All analyses were performed in SAS [Version 9.4]. This work was part of the Rhode Island Department of Health's (RIDOH) response to the opioid overdose epidemic in Rhode Island and did not require institutional review board approval.

**RESULTS**

From January 1, 2016, to December 31, 2021, 2,133 individuals died of an accidental or undetermined drug overdose in RI. Overall, 1,039 (48.7%) victims had at least one bystander present at the time of the fatal overdose (Table 1). Bystander's presence during an overdose increased from 42% in 2016 to 53% in 2021 (Figure 1).

Most overdose decedents were male (71.6%), non-Hispanic White (78.3%), and over the age of 25 (94.2%). When compared to individuals without a bystander present, decedents with a bystander present had a higher proportion of individuals who were younger (p<0.0001) and female (p=0.0321). No significant differences were observed in bystander presence by race/ethnicity. Opioids were a contributing cause in most fatal overdoses (85.7%), followed by fentanyl (67.0%), and cocaine (42.9%) (Table 2). No significant differences were found in substances contributing to cause of death when stratified by bystander presence. Additionally, most fatal overdoses occurred in private settings (81.1%) irrespective of bystander presence.

Among the 1,039 overdoses with documented bystander presence, the types of bystanders present at the time of overdose were most often family members (19.0%), intimate partners (15.0%), friends (12.5%), or roommates (7.5%) of the decedent (Table 3). Though bystanders were present, only 319 (30.7%) overdoses involved at least one bystander who responded to the overdose victim. Of these, 56.7% involved a bystander who called 9-1-1, 34.2% involved a bystander who performed CPR, and 27.6% involved a bystander who administered naloxone.

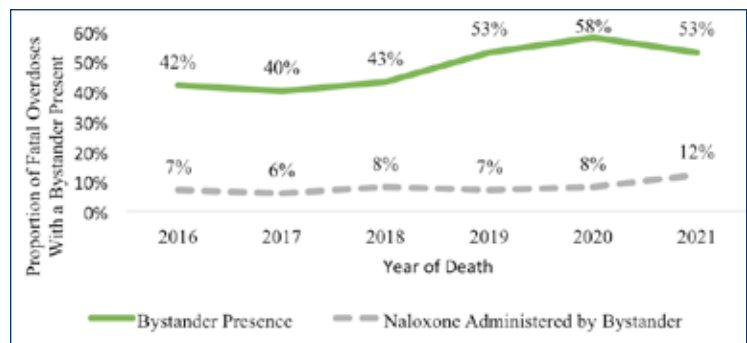
From 2016 to 2021, 338 (32.5%) of overdoses with a bystander present involved a bystander that was unable to respond to the overdose (Table 3). Among these overdoses, 64.8% involved bystanders who reported that they were

**Table 1.** Fatal overdose decedent demographics occurring by bystander presence, Rhode Island: 2016–2021

Demographics	Overall n=2,133 n (%)	One or More Bystanders Present n=1,039 n (%)	No Bystander Present n=1,094 n (%)	p-value <sup>1</sup>
<b>Decedent Age</b>				
<25	124 (5.8)	76 (7.3)	48 (4.4)	<0.0001*
25–34	520 (24.4)	282 (27.1)	238 (21.8)	
35–44	522 (24.5)	273 (26.3)	249 (22.8)	
45–54	497 (23.3)	220 (21.2)	277 (25.3)	
55+	470 (22.0)	188 (18.1)	282 (25.8)	
<b>Decedent Sex</b>				
Male	1,528 (71.6)	722 (69.5)	806 (73.7)	0.0321*
Female	605 (28.4)	317 (30.5)	288 (26.3)	
<b>Decedent Race/Ethnicity<sup>2</sup></b>				
White, non-Hispanic	1,648 (78.3)	806 (78.2)	842 (78.3)	0.3811
Black, non-Hispanic	155 (7.4)	71 (6.9)	84 (7.8)	
Hispanic or Latino	272 (12.9)	142 (13.8)	130 (12.1)	
Non-Hispanic, Additional Category	31 (1.5)	12 (1.2)	19 (1.8)	

Source: State Unintentional Drug Overdose Reporting System (SUDORS). <sup>1</sup>Chi-square test. <sup>2</sup> Excludes decedents with unknown race or ethnicity information. \*Indicates statistical significance p<0.05 Note: Due to rounding, percentages may add to more than 100%.

**Figure 1.** Bystander presence and naloxone administration among fatal overdoses occurring in Rhode Island by year of death, 2016–2021.



Source: State Unintentional Drug Overdose Reporting System (SUDORS).

spatially separated from the decedent (e.g., in different rooms, but in the same house), 54.1% involved bystanders who reported they did not recognize the overdose, 16.6% involved bystanders who reported using drugs and were too impaired to respond, 10.1% involved bystanders who were asleep at the time of the overdose, 40.2% involved bystanders who were unaware victim was using drugs, and 10.1% reported abnormalities, but did not recognize the overdose. Overall, of the 1,039 overdoses with documented bystander presence, bystander response information was unknown for 453 (43.5%) overdoses.



**Table 2.** Circumstances surrounding accidental and undetermined fatal overdose in Rhode Island by bystander presence, 2016–2021

	Overall n=2,133 n (%)	One or More Bystanders Present n=1,039 n (%)	No Bystander Present n=1,094 n (%)	p-value <sup>1</sup>
<b>Substances Contributing to Cause of Death<sup>2</sup></b>				
Opioid	1,828 (85.7)	899 (86.5)	929 (84.9)	0.289
Fentanyl	1,429 (67.0)	726 (69.9)	703 (64.3)	0.0058*
Cocaine	916 (42.9)	456 (43.9)	460 (42.1)	0.3906
Benzodiazepine	380 (17.8)	182 (17.5)	198 (18.1)	0.7256
Alcohol	541 (25.4)	275 (26.5)	266 (24.3)	0.2533
<b>Fatal Overdose Setting<sup>3</sup></b>				
Private	1,730 (81.1)	866 (83.4)	864 (79.0)	0.005*
Semi-Public	119 (5.6)	54 (5.2)	65 (5.9)	
Public	117 (5.5)	59 (5.7)	58 (5.3)	
Unknown/Other	167 (7.8)	60 (5.8)	107 (9.8)	

Source: State Unintentional Drug Overdose Reporting System (SUDORS).

<sup>1</sup> Chi-square test. <sup>2</sup> Substance categories are not mutually exclusive. More than one substance can contribute to cause of death. <sup>3</sup> Private includes personal apartment or residence, semi-public includes hotel, motel, shelter, nursing home, hospital, prison, group home, assisted living, or treatment facility, public includes theater, concert, show, office, park, school, bar/restaurant, roadway, or cemetery.

\*Indicates statistical significance  $p < 0.05$  Note: Due to rounding, percentages may add to more than 100%.

Overall, the availability and administration of naloxone during an overdose has been increasing over time from 7% in 2016 to 12% in 2021 (**Figure 1**). Among overdoses where naloxone was administered by a bystander (n=88), naloxone was commonly administered by a family member (28.4%), intimate partner (28.4%), or a friend (29.6%) of the individual experiencing fatal overdose. The number of doses administered to the decedent was unknown for 15.9% of overdoses, while 51.1% involved the administration of one dose of naloxone, and the remaining 32.9% involved the administration of two or more doses.

## DISCUSSION

In RI, approximately half of all fatal overdoses had a bystander present (48.7%) at the time of death, indicating that many individuals continue to use drugs alone. While there was slight variation, the percentage of individuals with a potential bystander present was similar when stratified by age, sex, race/ethnicity, substances contributing to cause of death, and overdose location, highlighting the need for education across all population subgroups. Among overdose fatalities with a bystander present, roughly one-third had documented reasons a bystander was unable to respond, with the most common reasons because they were spatially separated, did not recognize the overdose, or did not know that the individual was using substances. Because bystanders can

**Table 3.** Bystander presence and reported response among accidental and undetermined fatal overdoses in Rhode Island, 2016–2021.

	Fatal Overdoses with One or More Bystanders Present n=1,039 n (%)
<b>Types of Bystanders Present<sup>1</sup></b>	
Family Member	197 (19.0)
Intimate Partner	156 (15.0)
Friend	130 (12.5)
Roommate	78 (7.5)
Stranger	26 (2.5)
Medical Personnel	10 (1.0)
Person Using Drugs	71 (6.8)
Other	51 (4.9)
<b>Reported Response to Overdose<sup>2</sup></b>	
One or More Bystanders Responded to Overdose	319 (30.7)
Called 9-1-1	181 (56.7)
Provided CPR	109 (34.2)
Administered Naloxone	88 (27.6)
Provided Stimulation	24 (7.5)
Transported to Emergency Department or Police Station	8 (2.5)
Provided Oxygen or Breathing	6 (1.9)
<b>Reported Not Responding to Overdose<sup>2</sup></b>	
One or More Bystanders Reported Not Responding to Overdose	338 (32.5)
Spatially Separated	219 (64.8)
Did Not Recognize Overdose	183 (54.1)
Was Asleep	34 (10.1)
Unaware Victim was Using Drugs	136 (40.2)
Was Using Drugs or Impaired	56 (16.6)
In Public Place	6 (1.8)
Reported Abnormality, but did not Recognize Overdose	35 (10.1)

Source: State Unintentional Drug Overdose Reporting System (SUDORS).

<sup>1</sup> More than one type of bystander may be present at time of fatal overdose.

<sup>2</sup> Categories are not mutually exclusive, more than one type of response may have been performed. Bystanders may have reported more than one reason for not responding to the overdose. Note: Due to rounding, percentages may add to more than 100%.

provide opportunities for a life-saving action when properly prepared and informed, reducing stigma around substance use, providing education on recognizing a drug overdose and overdose response strategies, and increasing access to harm reduction resources such as naloxone in non-clinical settings remain essential.

This analysis shows several potential points for overdose prevention. First, despite an increase in the proportion of fatal overdoses with a bystander present at the time of

death, 51% of victims experienced fatal overdose without a bystander present. Additionally, among overdoses with a bystander present, the most common reason a bystander did not respond to overdose was due to separation from the victim at the time of overdose (64.8%) (Table 3). Decreasing the number of individuals who use drugs alone, either through anti-stigma trainings, community education, communications campaigns, or using the National Never Use Alone Hotline, may reduce the number of individuals lost to overdose.<sup>7</sup> In a recent study that forecasted the potential impact of increasing witnessed overdoses and availability of naloxone between 2023 to 2025 in RI, a combined increase in naloxone availability in private and semi-private settings and a 60% probability increase in witnessed overdoses could avert as many as 37.4% of RI's opioid overdose deaths by 2025.<sup>8</sup> However, increasing naloxone availability with no change in bystander presence was only estimated to decrease overdose fatalities by 9%, highlighting the important role bystanders play in reducing overdose fatalities and the risk of solitary substance use.<sup>8</sup>

When an overdose occurs in non-clinical settings, bystanders can reduce the risk of a fatal outcome if they are trained and equipped to intervene in a timely manner.<sup>4</sup> Among incidents in which a bystander responded to the overdose victim and the response was recorded, the most common responses included calling 9-1-1 (56.7%), performing CPR (34.2%), and administering naloxone (27.6%). Fortunately, these responses do closely align with the recommended actions that RIDOH promotes, which include 1) try to keep the person awake, 2) call 9-1-1, 3) administer naloxone if available, 4) try to support breathing, but if the person is not breathing, begin CPR as directed by 9-1-1.<sup>9</sup> While naloxone distribution can help address the overdose crisis, naloxone is rarely self-administered in an emergency and bystanders are an important source of primary prevention.<sup>5</sup> In this analysis, fewer than 30% of bystanders who reported administering naloxone outside of a clinical setting, and while trends have been increasing over time (Figure 1), this work highlights the continued need of naloxone distribution and training, both for individuals who know people who use drugs, and those who use drugs themselves.

The bystander intervention process is complex and there are situational barriers that can prevent bystanders from intervening during an overdose.<sup>4</sup> Among the fatal overdoses in which a bystander reported not responding to the overdose, 54% of overdoses reported a bystander not recognizing that the victim was experiencing an overdose and 40% reported not knowing the victim was using substances. The inadequate knowledge among bystanders in recognizing an overdose calls for continued education to improve bystander efficacy by expanding education about the signs of drug overdose, overdose response strategies, and increasing access to harm reduction resources such as naloxone in private settings.<sup>10</sup>

Prioritizing advocacy for reducing stigma about substance use disorder include collaborating with persons who use drugs and their surrogates to reduce the harmful consequences associated with drug use while addressing misinformation that stigmatizes individuals who use drugs.<sup>11</sup> Most overdoses occurred in private locations, and bystanders present during an overdose event most often identified as a family member, intimate partner, or friend of the decedent as opposed to strangers or other members of the community. As many bystanders who did not intervene reported that they were spatially separated or unaware the individual was using substances, it is likely that stigma hindered communication around substance use and/or potential bystander intervention prior to the overdose event. When potential bystanders are unaware an individual uses drugs, they can easily misdiagnose the seriousness of the situation and may be insufficiently alarmed leading to nonintervention.<sup>12</sup> Efforts to reduce stigma around substance use can help better inform and direct bystanders' response before and during an overdose event. The Overdose Fatality Review Team at RIDOH continues to make equitable strides aimed at exploring missing opportunities and recommending intervention strategies to increase survival among overdose victims in RI, including proposing the following key strategies to prevent overdose in the state: 1) Expand messaging about illicit drug supply and safer drug use practices, 2) Provide anti-stigma education across systems, 3) Establish more resources for families.<sup>13</sup>

When comparing bystanders present during an overdose with surrounding states, RI (48.7%) had a slightly lower proportion of fatal overdoses in which a bystander was present when compared to Connecticut (54.6%) and Massachusetts (52.3%).<sup>14</sup>

Finally, it is important to acknowledge that this study was limited to fatal overdoses, and by design does not capture overdose situations where bystanders successfully responded to an overdose. In 2023, over 2,300 non-fatal opioid overdoses will be attended by healthcare professionals, including emergency medical services and the emergency department staff. While not easy to quantify, it is likely in most of these cases bystanders played a role in reversing the overdose through calling 9-1-1, providing naloxone, or CPR. This has likely been further enhanced by the RI E-9-1-1 Uniform Emergency Telephone System advanced telecommunicator training implemented in August 2022, which provides callers with additional instruction for administering naloxone and performing CPR prior to arrival of emergency medical services. Outside of this, prior work in RI has shown only 60% of bystanders call 9-1-1 when witnessing an overdose event, so it is likely bystanders additionally played a role in reversing at least another 1,500 overdoses in 2023 that never made it to the healthcare system.<sup>15</sup>

This study is subject to limitations. First, SUDORS data is limited to information and records available at the time

of case abstraction, which may potentially underestimate relevant circumstances surrounding the cause of death. Thus, the true number of overdoses where a bystander was present is likely to be undercounted. Second, bystander response and barriers to response at the time of overdose are reported by bystanders during scene investigations and cannot be entirely verified. Third, the analysis did not determine underlying barriers that may have prevented overdose intervention such as naloxone availability or bystander's reluctance to call law enforcement (such as for fear of arrest). Future analysis should explore potential underlying barriers faced by bystanders at the time of overdose, substance use treatment barriers, and missed intervention opportunities during the onset of the COVID-19 pandemic which can inform future emergency responses to reduce fatal overdoses. Finally, this study describes bystander presence and response among fatal overdoses and should not be used to describe or evaluate bystander effectiveness among non-fatal overdose events.

## CONCLUSIONS

With the increasing rate of fatal overdoses in the United States and in RI, bystanders act as primary sources of prevention during an overdose.<sup>5</sup> As such, future intervention efforts should aim at training potential bystanders to intervene and provide timely and actionable aid to overdose victims, thereby increasing efficacy to respond in emergency situations. Harm reduction strategies such as administering naloxone, recognizing signs of overdose, and stigma reduction are essential to embolden bystanders to diffuse the emergency and potentially avert the fatal outcome prior to the arrival of first responders.

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## Authors

Justina Omari, MPH, Substance Use Epidemiology Program, Rhode Island Department of Health, Providence, Rhode Island.

Heidi R. Weidele, MPH, Substance Use Epidemiology Program, Rhode Island Department of Health, Providence, Rhode Island.

Benjamin D. Hallowell, PhD, Substance Use Epidemiology Program, Rhode Island Department of Health, Providence, Rhode Island.

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## Correspondence

Benjamin Hallowell, PhD, MPH

Team Lead, Substance Use Epidemiology Program, Center for Health Data and Analysis

Rhode Island Department of Health

3 Capital Hill

Providence, RI 02908

[Benjamin.Hallowell@health.ri.gov](mailto:Benjamin.Hallowell@health.ri.gov)

# Integration of Partner Notification Services at a Sexually Transmitted Infections Clinic

PHILIP A. CHAN, MD, MS; DANIELLE L. LE BRAZIDEC, MPH; KEVIN CORMIER, BS; ALEXI ALMONTE, BA;  
SIENA NAPOLEON, MPH; LAURA C. CHAMBERS, PhD, MPH; JUN TAO, PhD; THOMAS E. BERTRAND, MPH, MA

## ABSTRACT

**OBJECTIVES:** PNS is critical to prevent the spread of STIs. We evaluated the feasibility of integrating PNS into an STI clinic focused on MSM.

**DESIGN/METHODS:** The RI STI Clinic, in partnership with the RIDOH, implemented a PNS program in 2019. Interviews with patients diagnosed with gonorrhea/syphilis were conducted. RIDOH attempted outreach to partners identified. We utilized interview data among MSM diagnosed with gonorrhea/syphilis in clinic from 1/1/19–12/31/2021. Bivariate analyses/multivariable logistic regression were conducted.

**RESULTS:** 341 MSM were diagnosed with gonorrhea/syphilis during the three-year period, and 233 (68%) interviews were completed. Partner information was provided in 173 (74%) interviews. At least one workable partner was provided in 110 (47%) interviews. No statistically significant associations between provision of workable partners and index patient age/race/ethnicity were found.

**CONCLUSIONS:** PNS at an STI clinic was successful, but challenges led to suboptimal information. Research is needed to identify barriers to integrate/optimize PNS in STI clinics.

**KEYWORDS:** partner notification services; sexually transmitted infections; partner outreach; LGBTQ health

## INTRODUCTION

Partner notification services (PNS) is a critical public health intervention to prevent transmission of sexually transmitted infections (STIs). It is widely accepted for syphilis and gonorrhea and is also recommended for chlamydia when resources allow.<sup>1</sup> PNS is similar to contact tracing approaches used for COVID-19 and other non-STIs. When an individual tests positive for an STI, a trained public health professional interviews them to provide education about the diagnosis, links them to care, and identifies partners who may have been exposed. Partners are then contacted to inform them of their possible exposure and provide education and referrals for testing and care.<sup>2,3</sup>

In the United States, PNS is usually conducted by disease intervention specialists (DIS) at health departments. These public health professionals have training and expertise in

contact tracing, case investigation, and health education.<sup>4</sup> PNS could also be integrated into STI clinic settings, and patients may be more comfortable providing information to staff with whom they have an existing relationship for clinical care. Individuals may also be more receptive if engaged at the time of care. However, outcomes of this approach are largely unknown. A small number of studies suggest that programs with embedded DIS in STI clinics have greater index patient engagement, including a higher percentage of index patients interviewed in person on the day of diagnosis, and a larger number of partners elicited from the index patient interviews.<sup>5,6</sup>

We aimed to integrate PNS within an STI clinic and describe the associated outcomes, including identifying index patient interviews that provided partner information and describing factors associated with providing enough information to attempt partner outreach. We focused our analysis on individuals testing positive for gonorrhea and/or syphilis who identify as men who have sex with men (MSM). MSM are disproportionately impacted by STIs, including gonorrhea and syphilis.<sup>7</sup> In 2021 in the US, MSM accounted for almost half of all male syphilis cases and were estimated to account for a third of all gonorrhea cases.<sup>7</sup>

## METHODS

### Design, setting, and population

The Rhode Island STI Clinic at The Miriam Hospital, in partnership with the Rhode Island Department of Health (RIDOH), implemented a PNS program in January 2019 to address increasing rates of STIs among MSM. MSM represented the majority of gonorrhea and syphilis cases at the clinic. Non-clinical staff offered PNS interviews to all MSM diagnosed with gonorrhea and/or syphilis at the STI clinic. Gonorrhea cases included urethral, oropharyngeal, and rectal infections. PNS interviews were conducted using a standard form that asked about demographics, HIV and STI history, sexual behaviors, questions about HIV pre-exposure prophylaxis (PrEP) knowledge and history of use, and partner information. Outreach by RIDOH was attempted to partners identified in these interviews.

### Statistical analysis

Our analysis included cases of gonorrhea and syphilis among MSM diagnosed at the clinic from January 1, 2019 to December 31, 2021. We first identified interviews that

provided any of the following partner information: first or last name; phone number; e-mail; address; Facebook, Instagram, or application screen name; date of birth; or age. We also identified interviews that provided workable partners, which were partners for whom we collected enough information to attempt outreach (at least a phone number or all of the following: first name, last name, and date of birth).

Since individuals could be interviewed more than once during this time period, we used only the first interview for each unique individual for all subsequent analyses of demographics and reported sexual behaviors. Demographics included age, race, and ethnicity. Sexual behaviors included: total number of sexual partners in the past 12 months; frequency of condom use (always, sometimes, never); and lifetime history of injection drug use, incarceration, prior STI, sex with an anonymous partner, meeting a partner on an internet or phone application, sex while intoxicated, sex while high on drugs, and exchanging sex for drugs or money. We used bivariate chi-squared tests and Fisher's exact tests to compare the index patient characteristics between patients who did and did not provide a workable partner, using only the first interview for each unique index patient. For each variable that was significant in bivariate analysis, we fit a separate multivariable logistic regression model adjusted for age, race, and ethnicity of the index patient. Review of data was approved by The Miriam Hospital Institutional Review Board.

## RESULTS

Overall, 341 MSM tested positive for gonorrhea and/or syphilis at the STI clinic during the three-year period (56% were diagnosed with gonorrhea only, 37% were diagnosed with syphilis only, and 7% were coinfecting with gonorrhea and syphilis). STI clinic staff completed 233 PNS interviews (68%). The most common reasons for not completing an interview included the patient refusing the interview (44%), the patient being missed by STI clinic staff (32%), and clinic staff being unable to contact the patient (18%). Any partner information was provided in 173 (74%) interviews. At least one workable partner was provided in 110 (47%) interviews. Among all partners given, the most common pieces of information provided were age (82%), first name (80%), and last name (46%).

During this period, 20 individuals were interviewed twice by STI clinic staff due to a subsequent positive test eligible for PNS. We included only their first PNS interview for subsequent analyses of demographics and sexual behaviors presented in **Table 1**.

Among these 213 PNS interviews, 21% of index patients were age 18–24 years and 42% were age 25–34 years. Most (69%) identified as White, 17% identified as Black or African American, and 33% identified as Hispanic or Latino. When asked about frequency of condom use, 70% of respondents said they sometimes use condoms, while 7% said they always use condoms and 23% responded that they never use condoms. Additionally, 61% reported ever having sex with

an anonymous partner, and 79% reported ever meeting a partner on an internet or phone application.

In bivariate analyses, index patient age, race, and ethnicity were not associated with provision of a workable partner. Notably, the percentage of index patients that reported ever having sex with an anonymous partner was smaller among individuals that provided a workable partner compared to individuals that did not provide a workable partner (52% vs. 69%,  $p=0.02$ ). Frequency of condom use was also associated with provision of a workable partner ( $p=0.03$ ). However, logistic regression models for these two variables adjusted for age, race, and ethnicity of the index patient found that neither association remained statistically significant.

## DISCUSSION

This was among the first studies to evaluate the integration of a PNS program within an STI clinic setting. Overall, 341 MSM tested positive for gonorrhea and/or syphilis during the three-year period, and 68% completed an interview. STI clinic staff were successful in obtaining partner information, as 74% of all index patient interviews by STI clinic staff resulted in at least one piece of information about at least one partner. However, only 47% provided at least one workable partner. This was notably lower than a previous pilot.<sup>3</sup> Conducting the current program during the COVID-19 pandemic may have contributed to this difference in outcomes.<sup>8,9</sup> Due to the pandemic, the clinic switched from a walk-in clinic to an appointment-only model. Additionally, STI clinic staff had to conduct more PNS interviews over the phone rather than in-person in the clinic. These changes may have affected the number of visits eligible for PNS, as well as the response rate and effectiveness of interviews conducted over the phone. Furthermore, conducting PNS interviews was somewhat of an obstacle, due to patient reluctance to provide partner information, as 44% of patients who were approached refused a PNS interview. This reluctance highlights the need for exploration in future studies.

Integration of PNS in the STI clinic was successful in many respects. We were able to train clinic staff to facilitate PNS interviews within the STI clinic setting, obtain actionable partner information, and establish processes for communicating with the health department and streamlining data transfer for timely reporting. This relieved some of the burden on health department staff. The organizations were also able to coordinate for partner notification, most of which was conducted by RIDOH due to the difficulty STI clinic staff encountered when attempting to contact partners. Having staff trained in PNS directly in the clinic enabled us to engage community members in high-risk groups in conversations about sexual health and behaviors during their PNS interviews. Additionally, the program established infrastructure for these services to be able to continue within the STI clinic in the event that the expertise of DIS at the health department are needed to assist with outbreak responses.

**Table 1.** Characteristics of PNS interviews among MSM and analysis comparing those that did and did not provide workable partners<sup>1</sup>

Characteristic, n (%)	Total patient interviews (N=213)		Provided at least one workable partner (N=100)		Did not provide any workable partners (N=113)		Bivariate analysis p-value <sup>3</sup>	Logistic regression AOR (95% CI) <sup>4</sup>
	n	% <sup>2</sup>	n	% <sup>2</sup>	n	% <sup>2</sup>		
<b>Age (years)</b>							0.38	
18–24	45	21.1	19	19.0	26	23.0		
25–34	90	42.3	44	44.0	46	40.7		
35–44	39	18.3	22	22.0	17	15.0		
45+	39	18.3	15	15.0	24	21.2		
<b>Race<sup>5</sup></b>							0.42	
White	118	69.0	58	73.4	60	65.2		
Black or African American	29	17.0	14	17.7	15	16.3		
Asian	10	5.8	4	5.1	6	6.5		
Other	5	2.9	1	1.3	4	4.3		
More than one race	9	5.3	2	2.5	7	7.6		
<b>Ethnicity<sup>6</sup></b>							0.30	
Hispanic or Latino	56	33.1	30	37.0	26	29.5		
Not Hispanic or Latino	113	66.9	51	63.0	62	70.5		
<b>Total sexual partners in past 12 months<sup>7</sup></b>							0.26	
0–4 partners	91	46.4	49	50.5	42	42.4		
5+ partners	105	53.6	48	49.5	57	57.6		
<b>Frequency of condom use<sup>8</sup></b>							0.03	
Always	13	7.0	9	9.7	4	4.3		Reference
Sometimes	131	70.1	57	61.3	74	78.7		0.17 (0.02, 1.88)
Never	43	23.0	27	29.0	16	17.0		0.38 (0.03, 4.54)
<b>Lifetime behavioral history (ever/never)</b>								
Injection drug use <sup>9</sup>	11	5.7	7	7.2	4	4.2	0.36	
Incarceration <sup>10</sup>	6	3.2	3	3.2	3	3.3	1.0	
Prior STI <sup>11</sup>	142	69.3	66	69.5	76	69.1	0.95	
Sex with anonymous partner <sup>9</sup>	117	60.6	49	52.1	68	68.7	0.02	0.68 (0.31, 1.50)
Met partners on internet/phone application <sup>12</sup>	149	78.8	74	77.9	75	79.8	0.75	
Sex while intoxicated <sup>13</sup>	89	46.6	42	43.3	47	50.0	0.35	
Sex while high on drugs <sup>14</sup>	54	28.4	25	25.8	29	31.2	0.41	
Exchanged sex for drugs/money <sup>13</sup>	6	3.1	3	3.1	3	3.2	1.0	

\*Data presented in this table represent only the first PNS interview for each unique individual;

<sup>2</sup> % among non-missing responses;

<sup>3</sup> Chi-squared test p-value reported, or Fisher’s exact test used for variables with small expected cell counts <5;

<sup>4</sup> Model 1 included frequency of condom use, adjusted for age, race, and ethnicity; N=115 included after removing unknown/declined to respond.

Model 2 included sex with anonymous partner (ever), adjusted for age, race, and ethnicity; N=119 included after removing unknown/declined to respond;

<sup>5,6</sup> Excludes 42 and 44 unknown/declined, respectively;

<sup>7,8</sup> Excludes 17 and 26 unknown/declined, respectively;

<sup>9,10</sup> Excludes 20 and 28 unknown/declined, respectively;

<sup>11,12</sup> Excludes 8 and 24 unknown/declined, respectively;<sup>1</sup>

<sup>3,14</sup> Excludes 22 and 23 unknown/declined, respectively.

## SUMMARY

In summary, integrating PNS at an STI clinic allowed clinic staff to engage a high-risk population in conversations about sexual health and obtain actionable partner information. We did not find any demographics or risk behaviors associated with whether index patient interviews resulted in a workable partner. All patients testing positive should be engaged in PNS as an opportunity to discuss sexual health, incorporate other public health interventions (e.g., PrEP), and educate about the importance of partner outreach to prevent the spread of STIs.

## Take-away Points

**What is already known on this topic:** Partner notification services (PNS) is critical to prevent the spread of sexually transmitted infections (STIs). However, outcomes associated with integrating PNS at STI clinics have not been well described.

**What this study adds:** Integrating PNS at an STI clinic was effective in training clinic staff to facilitate interviews with index patients, obtaining actionable partner information, offering referrals and linkage to care, and coordinating with the health department for partner outreach. In our program, any partner information was provided in 74% of index patient interviews, and at least one workable partner was provided in 47% of interviews.

**How this study might affect research, practice, or policy:** PNS programs integrated within an STI clinic offer an opportunity to engage high-risk populations in conversations about sexual health, provide referrals to care, and facilitate partner outreach. However, research is needed, as challenges remain in obtaining workable partners for many index patients.

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## Authors

Philip A. Chan, MD, MS, Department of Medicine, Brown University; Rhode Island Department of Health, Providence, RI.  
 Danielle L. Le Brazidec, MPH, Department of Medicine, Brown University, Providence, RI.  
 Kevin Cormier, BS, Department of Medicine, Brown University, Providence, RI.  
 Alexi Almonte, BA, Department of Medicine, Brown University, Providence, RI.  
 Siena Napoleon, MPH, Department of Medicine, Brown University, Providence, RI.  
 Laura C. Chambers, PhD, MPH, Department of Medicine, Brown University, Providence, RI.  
 Jun Tao, PhD, Department of Medicine, Brown University, Providence, RI.  
 Thomas E. Bertrand, MPH, MA, Rhode Island Department of Health, Providence, RI.

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Caroline L. Gummo, MHS, Rhode Island Department of Health, Providence, RI, contributing author.  
 John Beltrami, MD, MPH&TM, Centers for Disease Control and Prevention, Atlanta, GA, contributing author.  
 Jennine Kinsey, MS, Centers for Disease Control and Prevention, Atlanta, GA, contributing author.  
 Amanda Maguire-Wilkerson, MPH, Department of Medicine, Brown University, Providence, RI, contributing author.

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The contents are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention.

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## Correspondence

Philip A. Chan, MD, MS  
 Department of Medicine, Brown University  
 7 Central Street, Providence, RI 02907  
 401-644-2876  
[philip\\_chan@brown.edu](mailto:philip_chan@brown.edu)

# Primary Care Access for All: A Roadmap for Addressing the Primary Care Crisis in Rhode Island

JEFFREY BORKAN, MD, PhD; DENISE COPPA, PhD, APRN-CNP, FNP-C, PCNP-BC, FAANP, FAAN; PATRICIA FLANAGAN, MD; DEBRA HURWITZ, MBA, BSN, RN; ANDREW SAAL, MD, MPH; YOLANDA BOWES, BA; ELENA NICOLELLA, BA, MPH; PETER HOLLMANN, MD

## ABSTRACT

**BACKGROUND:** Primary care in Rhode Island is in crisis. The dearth of primary care providers is already affecting access to services and the situation is likely to worsen unless major steps are taken. There are inadequate numbers of trainees in primary care medical residencies, nurse practitioner (NP) and physician assistant (PA) training programs who plan to practice primary care in our state. The Care Transformation Collaborative of RI (CTC-RI) has assembled a broadly representative task force of physicians, NPs, PAs, and others to build a strong and robust primary care delivery system across the state that recruits, trains, retains, and sustains primary care providers.

**STUDY METHODS AND DESIGN:** Program directors from all primary care medical residencies, NP, and PA programs were asked to provide data on their programs, including the number of new trainees per year, total enrollment, and information on recent year graduates, including the total number, the number entering primary care, and the number entering primary care who plan to practice in RI.

**PRIMARY RESULTS:** Of the 106 graduates from primary care residencies in RI in academic year 2002–23, only 15 (14%) planned to provide primary care in Rhode Island. Similarly, of the 144 NP and PA graduates in primary care programs, only 48 (33%) planned to provide primary care in the state.

**PRINCIPAL CONCLUSIONS:** Given the high rate of primary care provider burnout, reduction in patient care hours, and retirement, primary care access will be further eroded unless major steps are taken. The CTC-RI Task Force on Primary Care Provider Workforce has produced a strategic roadmap to address these issues.

**KEYWORDS:** primary care; workforce; Rhode Island healthcare; training programs

## INTRODUCTION

Primary Care in Rhode Island is in crisis on all levels and the primary care providers (PCPs), whether they be physicians, NPs, or PAs, are in short supply. A 2021 American

Association of Medical Colleges report shows a national and regional shortage of primary care physicians.<sup>1</sup> Recent articles in the *Boston Globe*<sup>2</sup> and *Providence Journal*<sup>3</sup> report on the worsening problems patients are having when they attempt to make medical appointments with their primary care doctors and to access primary care in general. A pre-pandemic analysis by the American Academy of Family Physicians predicts that the Rhode Island PCP workforce will continue to decline and will likely have a deficit of nearly 100 PCPs by the end of the decade if nothing is done.<sup>4</sup> As we have emerged from the pandemic, our healthcare workforce crisis continues to worsen. Primary care providers are retiring earlier, while many more are now approaching retirement age. A review of primary care medical residency matching and NP graduations over a 10-year period recently published in *Health Affairs* shows that primary care physician matches have remained flat, while the percentage of graduating NPs entering primary care has dropped from 89% in 2018 down to only 70% in the last two years.<sup>5</sup> The entry of new graduates into the healthcare workforce cannot compensate for the retirement and loss of practicing primary care clinicians.

Several additional factors exacerbate Rhode Island's primary care shortage:

- The healthcare workforce crisis has also impacted the hiring of nurses, medical assistants, behavioral health clinicians and other key allied health staff. Managing ever-larger patient panels without adequate support increases clinician stress and leads to higher rates of self-reported burnout among primary care providers.
- Relatively lower salaries coupled with ever-higher student educational debt and increasing administrative burden leads to fewer students choosing primary care.
- Our aging population requires more intensive medical care, much of which must be both delivered and coordinated by primary care providers.

## METHODS

Program directors from all primary care medical residencies, NP, and PA programs were approached in the summer and fall of 2023 to provide data on their programs. Primary care residency programs were defined as those in Family Medicine, Internal Medicine, Pediatrics and Medicine-Pediatrics.



All residency programs in these disciplines in Rhode Island were included except the Internal Medicine residency program at Landmark Medical Center in Woonsocket, which has not yet graduated any classes. All NP and PA programs in RI were included except the NP training program at Rhode Island College since it does not have a primary care track. Data categories of interest included the number of new trainees per year, total enrollment, and information on recent year graduates, including the total number, the number entering primary care, and the number entering primary care who plan to practice in RI.

## RESULTS

As shown in **Table 1**, there are seven medical residency programs in Family Medicine, Internal Medicine, Pediatrics and Medicine-Pediatrics which had new enrollees and graduates in the 2022–23 academic year. These programs were all three years in length (after medical school), with the exception of Medicine-Pediatrics, which is four years in length. Total enrollment was 316. Of the 106 graduates from primary care residencies in RI in academic year 2002–23, only 15 (14%) planned to provide primary care in Rhode Island. Similarly, as shown in **Table 2**, there are five NP and PA training programs in RI with primary care tracks which had new enrollees and graduates in the 2022–23 academic year. Total enrollment was 417. Of the 144 NP and PA graduates in primary care programs, only 48 planned to provide primary care in the state. These included 31 NPs and 17 PAs.

## DISCUSSION

On June 17, 2022, The Care Transformation Collaborative of Rhode Island (CTC-RI) Clinical Strategy Committee held a panel discussion on “The State of Primary Care in Rhode Island Today and in the Next 10 Years: Where Are We Now and Where Are We Going?” The panelists represented primary care provider training programs and primary care organizations. Their message was startling and clear – there is a primary care crisis in Rhode Island. Since the pandemic, the provider shortage crisis has made it far more difficult for Rhode Islanders to establish a regular source of care and this situation is expected to worsen in the coming decade.

CTC-RI serves as a voice of primary care in Rhode Island. The organization supports primary care practices to transform their clinical systems to improve their quality of care as well as both patient and clinician satisfaction – all while promoting equity, lowering costs, and developing population health strategies needed to utilize alternative payment methodologies. As a statewide learning collaborative, CTC-RI has demonstrated success in convening stakeholders to address challenges, identify best practices, and implement programs to improve primary care delivery and patient health outcomes across the state.

Given the post-pandemic exacerbation of the lack of primary care access, the CTC-RI Board of Directors collaborated with state agency partners, payers, and a well-established learning collaborative network to address the worsening access to primary care access. CTC-RI convened the directors of primary care training programs – including physicians, NPs, and PAs – to create a task force to identify

**Table 1.** Medical Residency Programs in Primary Care in Rhode Island

Program	Discipline	Length of Program	# New Trainees Per Year AY2023–2024	Total Resident Enrollment – All Years AY2023–2024	# of Graduates from AY2022–2023		Residents Entering PC (count/#) graduates from AY2022–2023		Residents Entered PC, Stayed in Rhode Island (count/#) graduates from AY2022–2023	
					#	%	#	%	#	%
Brown Categorical Internal Medicine Residency Program (Lifespan-RIH/TMH)	Internal Medicine	3	29	87	29	0	0%	0	0%	
Brown General Internal Medicine	General Internal Medicine	3	10	30	10	5	50%	0	0%	
Roger Williams Internal Medicine Residency Program	Internal Medicine	3	18	48	18	2	11%	1	6%	
Hasbro Children’s Hospital Pediatric Residency	Pediatrics	3	16	49	16	5	31%	3	19%	
Brown Family Medicine Residency	Family Medicine	3	16	48	16	15	94%	9	56%	
Kent Hospital Internal Medicine Residency	Internal Medicine	3	13	38	13	2	15%	2	15%	
Brown Pediatric-Internal Medicine	Internal Medicine-Pediatrics	4	4	16	4	2	50%	0	0%	
<b>TOTALS</b>			<b>106</b>	<b>316</b>	<b>106</b>	<b>31</b>	<b>29%</b>	<b>15</b>	<b>14%</b>	

**Table 2.** Nurse Practitioner and Physician Assistant Training Programs in Rhode Island\*\*

Program	Discipline	Length of Program	# New Trainees Per Year AY2023–2024	Total Student Enrollment – All Years AY2023–2024	# of Graduates from AY2022–2023	Trainees Entering PC (count/#) graduates from AY2022–2023		Trainees Entered PC, Stayed in Rhode Island (count/#) graduates from AY2022–2023	
						#	%	#	%
University of Rhode Island Nurse Practitioner Program	Family Medicine and Adult Gerontology	2.5	30	31	23	19	83%	19	83%
Salve Regina University Graduate Nursing and Professional Studies*	Family Medicine	2.5	150	170	30	10	33%	5	17%
Bryant University PA Program	Primary Care	2.5	47	94	45	14	31%	14	31%
Johnson & Wales University PA Program	Primary Care	2	36	70	35	7	20%	3	9%
New England Institute of Technology	Family Medicine	2	11	22	11	11	100%	7	64%
<b>TOTALS</b>			<b>274</b>	<b>417</b>	<b>144</b>	<b>61</b>	<b>42%</b>	<b>48</b>	<b>33%</b>

\*\*Table only includes NP programs that train for primary care. Specialties are excluded (e.g., psychiatric)

and address critical workforce issues. The Primary Care Provider (PCP) Task Force on workforce development began its work in February 2023. It was the first time ever that the program directors from Brown University, the University of Rhode Island, Salve Regina College, Bryant University, and Johnson and Wales University had met to discuss the state of primary care, their program capacity, challenges, and potential solutions. It was also the first substantive meeting that included the broad leadership of primary care training programs for physicians, NPs and PAs in Rhode Island.

### Charge to the Task Force

The goal of the task force is to collaborate with training program leadership, state programs focusing on the healthcare workforce, and primary care experts to develop a data-driven roadmap to define and address the primary care crisis. This group seeks to identify best practices to diversify, enhance, and engage the primary care workforce – including the development of new models to train students in team-based care, creation of sustainable incentives for trainers and medical practices dedicated to education, and the promotion of strategies to improve the retention of primary care providers in Rhode Island.

### Task Force Process and Findings

Over the course of nine months, the task force members used their collective knowledge of primary care provider training programs and clinical care delivery systems to identify and the address key issues exacerbating the Rhode Island primary care crisis.

Priority areas identified by the task force include:

- Recruiting, training, retaining, and sustaining a diverse provider workforce
- Correcting the disparity in pay between primary care providers regionally and compared to specialists

- Reducing student debt, especially for those wishing to practice in primary care
- Enhancing primary care clinical training, and
- Increasing the state’s overall capacity for clinical training

The group assembled and reviewed data for enrollment in primary care physician residencies and NP and PA training programs – and determining how many graduates went into primary care, and of those graduates how many remained in Rhode Island to practice (Tables 1,2). The data demonstrated the low numbers of graduates from all training programs choosing to stay in Rhode Island and provide primary care. Though current data on retirements and reductions in patient care hours by primary care providers in RI do not exist, anecdotal evidence points to large reductions in this critical sector.

The task force identified goals, objectives, and action steps to address each factor including:

- Crafting legislative proposals to fund a scholarship program for medical, NP, and PA students who commit to providing primary care in RI
- Developing a new enhanced primary care curriculum and clinical training program and paying clinical sites for teaching medical, NP, and PA students
- Requesting legislative appropriations to expand the state’s loan repayment program

The task force also drafted a strategic roadmap (Table 3). The Task Force on Primary Care Workforce Capacity roadmap attempts to frame each of these overarching goals to identify short-term objectives and action steps. We see this as an iterative document for state legislators, state agencies, and community partners that will be amended over time to reflect ongoing changes in primary care and the American healthcare system.

**Table 3.** Strategic Roadmap: Primary Care Access for All

Vision
Rhode Island will become the best in the nation for all measures of population health, health equity, and health system performance by providing access to Advanced Primary Care for all its residents.
Mission
Rhode Island will build a strong and robust primary care delivery system across the state that recruits, trains, retains, and sustains a pipeline of primary care providers that deliver exceptional, accessible, patient-centered care.
Defining Advanced Primary Care
“High-quality primary care is the provision of whole person, integrated, accessible, and equitable health care by interprofessional teams who are accountable for addressing the majority of an individual’s health and wellness needs across settings and through sustained relationships with patients, families, and communities.” —NASEM Report <sup>6</sup>
Recommendations
To accomplish this mission, we must address six goals: 1. Reform payments and incentives to primary care providers to create specialty and regional parity. 2. Establish baseline data and performance targets for the primary care workforce using existing and to-be-developed data sources for ongoing monitoring. 3. Increase the recruitment of medical students, residents/fellows, nurse practitioners (NPs) and physician assistants (PAs) entering primary care. Support strategies to reduce tuition and educational debt for providers entering primary care practices in Rhode Island. 4. Expand the primary care workforce to better reflect the state’s diversity while fostering healthcare equity and inclusion (DEI) for all Rhode Islanders. 5. Increase the number of high-quality primary care training sites that are willing to educate the next generation of primary care students. 6. Enhance clinical training experiences within practices using advanced patient-centered medical home (PCMH) principles such as team-based care, integrated behavioral health, population health strategies, and value-based reimbursement.

The Office of the Health Insurance Commissioner’s (OHIC) recently published “Primary Care in Rhode Island: Current Status and Policy Recommendations.”<sup>7</sup> The report acknowledges many of the challenges facing the primary care delivery system in Rhode Island and describes primary care as the “foundation of an equitable and high-performing health care system” that is at risk due to the nationwide critical workforce shortage. OHIC seeks to ensure that primary care is a priority for state policy through its unique statutory authority to regulate commercial insurers. The OHIC recommendations align with and support many of the recommendations described by this strategic roadmap, including primary care payment enhancement, reduction of administrative burden, and efforts to attract, train, retain and sustain a primary care workforce to provide every

Rhode Islander with access to high-quality, coordinated, team-based, patient-centered primary care.

Solving the primary care crisis will require concerted efforts of all involved in healthcare and workforce training. The effort described here is a start, but more will need to be done to provide immediate and long-term relief to our primary care clinicians, and to facilitate access for all Rhode Islanders.

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## Authors

Jeffrey Borkan, MD, PhD, Department of Family Medicine, The Warren Alpert Medical School of Brown University, Providence, RI.

Denise Coppa, PhD, APRN-CNP, FNP-C, PCPNP-BC, FAANP, FAAN, College of Nursing, University of Rhode Island, Providence, RI.

Patricia Flanagan, MD, Department of Pediatrics, The Warren Alpert Medical School of Brown University, Providence, RI.

Debra Hurwitz, MBA, BSN, RN, Executive Director, Care Transformation Collaborative of RI, Providence, RI.

Andrew Saal, MD, MPH, Department of Family Medicine, The Warren Alpert Medical School of Brown University, Providence, RI.

Yolanda Bowes, BA, Program Manager Care Transformation Collaborative of RI.

Elena Nicoletta, BA, MPH, President and CEO, Rhode Island Health Center Association, Providence, RI.

Peter Hollmann, MD, Department of Family Medicine, The Warren Alpert Medical School of Brown University, Providence, RI.

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### Correspondence

Jeffrey Borkan, MD, PhD  
Department of Family Medicine  
111 Brewster Street, Pawtucket, RI 02860  
401-921-7982  
Fax 401-729-2856  
[jeffrey\\_borkan@brown.edu](mailto:jeffrey_borkan@brown.edu)

## Disparities in Tobacco Use Among Individuals With Mental Distress

ASHNITA RAUT, MPH, MPA; DEBORAH N. PEARLMAN, PhD; JULIA DOHERTY, MPH, MSW; KIRSTEN SKELLY, MPA; HEIDI HARTZELL, MA

### INTRODUCTION

Tobacco use remains the leading preventable cause of death and disease in the United States. In 2021, nearly one in five United States (US) adults currently used any tobacco product; more than one-third (31.4%) used both cigarettes and e-cigarettes.<sup>1</sup> These two tobacco products constitute the largest proportion of overall tobacco product use and are cause for concern as there is no safe level of exposure to tobacco.<sup>1</sup> Over time, overall smoking prevalence continues to decline, yet disparities in tobacco use persist. Tobacco use is generally higher among people experiencing poverty, people living with behavioral health conditions (BHC), and people with lower educational attainment; these groups are known to have greater health and economic challenges than the general US population.<sup>2</sup> Behavioral health broadly covers the areas of mental health, disorders related to substance use, challenges associated with life's stressors and crises, and physical symptoms that are a consequence of stress. According to the American Lung Association, 35% of individuals who smoke cigarettes have a BHC and account for 38% of all US adult cigarette consumption.<sup>3</sup> Nationally, in 2022, cigarette smoking in the past year was 1.5 times higher for those with mental illness (any mental, behavioral, or emotional disorder) (32.1%) compared to those without (22.0%).<sup>4</sup> The prevalence is further elevated to 36.8% when those with serious mental illness (mental, behavioral, or emotional disorder that disrupts major life activities due to significant functional impairment) are considered. This paper examines the prevalence of existing disparities in tobacco use among individuals with mental distress in Rhode Island. All references to tobacco in this article refer to commercial tobacco, not sacred and ceremonial tobacco used by many American Indian communities.

### METHODS

Data are from the 2020, 2021, and 2022 Rhode Island Behavioral Risk Factor Surveillance System (BRFSS) Surveys. Three years were combined for a reportable strata sample size and increased the precision and reliability of estimates. The aggregated sample size was 16,880 after combining three years. The RI-BRFSS is a telephone survey that is administered by the Rhode Island Department of Health (RIDOH) with support from the Centers for Disease Control and Prevention (CDC) and is used to measure risk

behaviors and the health of non-institutionalized adults at least 18 years of age. Detailed information on the methodology and sampling for the BRFSS is available from the CDC.<sup>5</sup> Current tobacco use was defined as using cigarettes, e-cigarettes or Electronic Nicotine Delivery systems (ENDS), and/or smokeless tobacco in the past 30 days. BRFSS does not specifically measure behavioral health conditions. Hence mental distress was used in this paper as a close measure of mental health status. Mental distress is defined as having poor mental health for 14 or more days out of 30 days in the past month, which is reported by respondents in the survey. Adults were classified as having a disability if they reported experiencing one or more of six types of disabilities: hearing impairment, vision impairment, cognitive difficulties, mobility limitations, challenges with self-care, or difficulties with independent living.

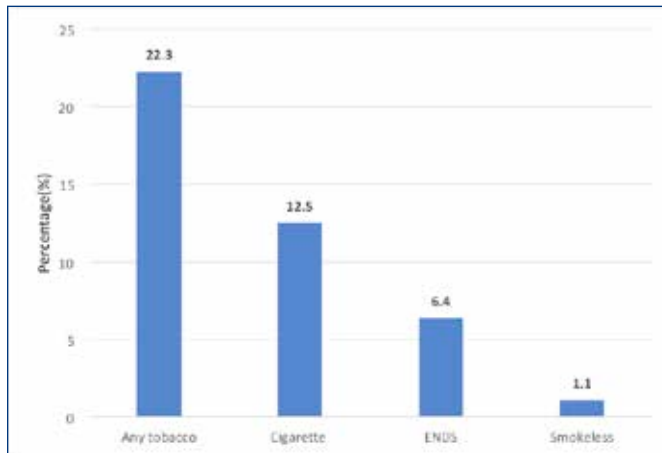
The overall burden of any tobacco use was analyzed for the Rhode Island adult population, and then by individuals' sociodemographic characteristics. Significance was determined by a p-value <.05 using the Chi-square test. Bivariate analyses were calculated to examine associations between individuals using tobacco products with and without mental distress by sociodemographic characteristics. Binary logistic regression was conducted to examine the association between tobacco use and mental distress, adjusting for gender, age, income, educational level, sexual orientation, and disability status. Data were weighted to adjust for survey nonresponse and to provide state-level representative estimates. All analyses were performed using SAS Version 9.4.

### RESULTS

The statewide prevalence of any tobacco use during 2020–2022 was 22.3%, equating to approximately one in five Rhode Island adults (**Figure 1**). Cigarette smoking was the most common tobacco product used (12.5%), while smokeless tobacco products had the lowest prevalence (1.1%).

Distribution of sociodemographic characteristics and prevalence of tobacco use is shown in **Table 1**. Non-Hispanic White adults, persons aged 25–44, and adults with a high school degree comprised the majority of individuals who used tobacco products in the past 30 days. Individuals who used any form of tobacco product and reported mental distress were more likely to identify as female (57.9%), have household incomes between \$25K–\$50K (37.6%), and

**Figure 1.** Tobacco use<sup>a</sup> prevalence by product among Rhode Island adults, 2020–2022 RI BRFSS



<sup>a</sup>Current use of any tobacco (use of cigarettes, ENDS, and/or smokeless tobacco in the past 30 days)

Note: ENDS=Electronic Nicotine Delivery System

have a high school degree (34.1%). When looking at individuals with college degrees, those noted as reporting mental distress had a higher prevalence of use (32.7%) versus those who did not (30.2%).

A notable 12.7% of individuals with mental distress who use tobacco identify as lesbian, gay, or bisexual compared to 6.5% among those without mental distress. Furthermore, a substantial 70.6% of tobacco users with mental distress reported living with some form of disability, which is much higher compared to individuals without mental distress at 28.8%. Nearly two-thirds (66.2%) of individuals who use any tobacco product and report mental distress attempted to quit compared to 56.2% among those without mental distress. (Table 2)

Results from the logistic regression model examining the association between tobacco use and mental distress revealed that tobacco use was significantly more likely among those with mental distress compared to those without [AOR=1.98, 95% C.I. 1.57–2.50], controlling for other variables. (Table 3)

**Table 1.** Distribution of sociodemographic characteristics and prevalence of tobacco use

Demographics		Tobacco use weighted %	p-value	Individuals that use any tobacco products with mental distress weighted %	Individuals that use any tobacco products without mental distress weighted %	p-value
Mental Distress	Yes	29.3	<.0001*	—	—	
	No	70.7		—	—	
Sex	Male	52.9	<0.01*	42.1	57.4	<.0001*
	Female	47.1		57.9	42.6	
Age group	18-24	13.8	<.0001*	21.8	10.8	<.0001*
	25-44	38.2		41.1	36.8	
	45-64	34.9		28.9	37.6	
	65+	13.1		8.2	14.9	
Race and Ethnicity	NH white	73.3	<0.05*	72.6	73.6	ns
	NH black	3.3		—	3.3	
	Hispanic	13.9		13.1	14.5	
	Other NH	9.5		11.0	8.7	
Household Income	<\$25000	22.2	<.0001*	29.8	18.8	<.0001*
	\$25,000–\$49,999	30.7		37.6	28.2	
	\$50,000–\$74,999	17		13.6	18.5	
	\$75,000+	30.1		18.9	34.5	
Educational level	<HS	16.0	<.0001*	22.2	13.4	<0.01*
	HS/GED	38		34.1	39.6	
	some college	30.8		32.7	30.2	
	College degree	14.9		11.0	16.7	
Sexual orientation	LGB <sup>†</sup>	8.1	ns	12.7	6.5	<0.05*
	Not LGB	91.9		87.3	93.5	
Insurance status	Yes	92.9	<0.01*	94	93.0	ns
	No	7.1		—	7.0	
Heavy Drinker	Yes	13.7	<.0001*	16.5	12.7	ns
	No	86.3		83.5	87.2	
Disability status	Yes	41.0	<.0001*	70.6	28.8	<.0001*
	No	59		29.4	71.2	

— Not applicable

<sup>†</sup> LGB = Lesbian, Gay, or Bisexual

\*Results of the chi-squared test were statistically significant (p<0.05)

**Table 2.** Cessation among current tobacco users by behavioral health conditions

	Individuals that use any tobacco products with mental distress weighted % [95% CI]	Individuals that use any tobacco products without mental distress weighted % [95% CI]
Tobacco users who have made a quit attempt*	66.2 [59.7–72.6]	56.2 [52.4–59.9]

\* Chi-square test  $p < 0.05$ **Table 3.** Binary Logistic Regression Results for Tobacco Product Use<sup>a</sup>

	Tobacco product use	
	AOR	95% CI
Mental Distress*	1.98	1.66–2.50

<sup>a</sup> Results display odds of any tobacco use among those who have mental distress compared to those without mental distress. The AOR is adjusted for gender, age, income, educational level, sexual orientation, and disability status.

\* Results of the chi-squared test were statistically significant ( $p < 0.05$ )

## DISCUSSION

In Rhode Island, people who report mental distress identify as lesbian, gay, or bisexual, have a lower socioeconomic status, and/or report living with some form of disability exhibit higher rates of tobacco use and may need tailored support in quitting. The results of this analysis highlight the heterogeneity of individuals who experience mental distress and use tobacco products. Focusing on a single attribute does not fully explain who is at increased risk of tobacco-related health disparities. Many factors impact tobacco-related health disparities such as documented predatory targeted marketing by the tobacco industry, trauma, stressors from discrimination and poverty, barriers to healthcare, and unequal distribution of resources.<sup>6</sup> As such, a social determinants of health approach is necessary to address tobacco-related disparities.

The CDC recommends the following strategies to address these tobacco-related health inequities: integrate clinical screening and treatment for tobacco use into all healthcare settings with all patients; increase access to culturally tailored cessation services; encourage 100% tobacco-free behavioral healthcare settings; and share health messages that feature people with a shared lived experience.<sup>7</sup> Results of this analysis show the prevalence of tobacco use is higher among those with mental distress; however, this demographic still wants to quit as demonstrated by the findings of this analysis revealing a greater percentage of people with mental distress reporting a quit attempt in the last year compared to those without mental distress. Healthcare professionals play an important role in connecting patients to appropriate resources to help them quit tobacco for good.

To help make these reported quit attempts more successful, patients should be connected to evidence-based treatments, such as a state Quitline.

Rhode Island's Quitline, the Rhode Island Nicotine Helpline (also called QuitNowRI.com),<sup>8</sup> helps healthcare professionals connect patients with free tobacco treatment and nicotine replacement therapy to Rhode Islanders at least 18 years of age, regardless of income, insurance status, or language. In response to the need for culturally tailored tobacco treatment, Rhode Island's Quitline offers a variety of specialty programs, including a protocol for anyone who self-reports mental health diagnoses or a dual-substance use disorder. In 2023, 55% of Quitline callers were eligible for the behavioral health protocol. The Quitline also has specialty landing pages for populations disproportionately impacted by tobacco to help assess their readiness for change, and link cessation to related health outcomes of interest such as lower long-term anxiety and depression, lower risk of infections, and better control of other medical conditions.

A component of Rhode Island's Quitline directed at healthcare professionals is QuitWorks-RI, which provides free accredited Continuing Medical Education (CME) modules on best practices for tobacco treatment, which includes a module on "Tobacco Cessation for Behavioral Health Populations" and "Screening and Responding to Vaping" to help clinicians engage with priority populations by learning to address patients in a compassionate, specific, and sensitive way.

## LIMITATIONS

The findings of our study have several limitations. First, data are self-reported and may be affected by recall bias and social desirability bias. A second limitation is BRFSS data are cross-sectional, and causality cannot be inferred from survey results. Third, analyses were limited to the core questions and state-added questions in the Rhode Island BRFSS survey. Measures of social determinants of health, such as living in poverty or experiences of discrimination, which can increase tobacco use and make it harder to quit, were not available in the BRFSS. We were unable to measure the severity of mental distress using self-reported mentally unhealthy days in the past 30 days. Lastly, the timeline 2020–2022 does overlap the COVID timeline and might have a potential impact on "frequent mental distress" responses. However, when compared to "frequent mental distress" data before 2020, the data presented here is comparable.

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### Authors

- Ashnita Raut, MPH, MPA, is a Senior Public Health Epidemiologist/Program Evaluator for the Tobacco Control Program at the Rhode Island Department of Health.
- Deborah N. Pearlman, PhD, is Associate Professor of Epidemiology Practice in the Department of Epidemiology, School of Public Health, Brown University, and Consulting Epidemiologist & Evaluator, Rhode Island Department of Health.
- Julia Doherty, MPH, MSW, is the Nicotine, Substance Use, & Addiction Treatment Coordinator for the Tobacco Control Program at the Rhode Island Department of Health.
- Kirsten Skelly, MPA, is the Program Manager for the Tobacco Control Program at the Rhode Island Department of Health.
- Heidi Hartzell, MA, is Policy and Partnerships Specialist for the Tobacco Control Program at the Rhode Island Department of Health.

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### Disclosure

The authors have no financial interests to disclose.

### Correspondence

Ashnita Raut  
[Ashnita.raut@health.ri.gov](mailto:Ashnita.raut@health.ri.gov)





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

VITAL EVENTS	REPORTING PERIOD		
	AUGUST 2023	12 MONTHS ENDING WITH AUGUST 2023	
	Number	Number	Rates
Live Births	1,004	10,947	10.3*
Deaths	7,76	10,809	10.2*
Infant Deaths	8	51	4.7#
Neonatal Deaths	6	33	3.0#
Marriages	720	6,673	6.3*
Divorces	210	2,564	2.4*

\* Rates per 1,000 estimated population

# Rates per 1,000 live births

Underlying Cause of Death Category	REPORTING PERIOD			
	FEBRUARY 2023	12 MONTHS ENDING WITH FEBRUARY 2023		
	Number (a)	Number (a)	Rates (b)	YPLL (c)
Diseases of the Heart	207	2,380	216.9	3,152.5
Malignant Neoplasms	177	2,199	200.4	4,719.5
Cerebrovascular Disease	48	505	46.0	652.0
Injuries (Accident/Suicide/Homicide)	91	1,075	98.0	14,029.5
COPD	38	460	41.9	407.5

(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](http://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.



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# Fitthink: Saving Humanity, One Brain at a Time

JOSEPH H. FRIEDMAN, MD\*

The recent dramatic advances in artificial intelligence (AI) have brought forth a host of intriguing possibilities of ways to determine how people think and what they think about. Brain waves have been analyzed for close to 100 years, primarily to diagnose seizure activity. Technical advances allowed the introduction of electrodes to be inserted onto or into the brain itself, allowing for recordings from variably sized regions ranging between several millimeters to single cells. These invasive recordings have been necessary because the skull interferes with any recording within it, but also due to the folds of the brain itself, so that electrically active cells are not near any surface that may allow non-invasive access.

Even so, the complexity of analyzing multiple regions simultaneously has been unachievable until recently. AI has changed things enormously so that recordings taken from outside the skull can reliably distinguish a variety of thought processes, such as trying to remember, planning, emotional reactions, day-dreaming, and problem solving. While each of these categories encompasses a huge number of possibilities, the general structure of brain wave activity in different regions provides a mechanism shown to be increasingly reliable at classifying thinking within particular categories, although some brain activity falls into more than one pattern.

## Fitthink – a cognitive measuring leap

New devices have been invented to capitalize on the expanded capability of this AI breakthrough. One device, now nearing marketing release, is the Fitthink (patent pending, JH Friedman). What Fitbit has brought to the world of physical fitness, Fitthink is expected to bring to the world of cognition and memory. Fitbit is thought to have enhanced the general physical “fitness” of Americans by 20% in those who own one, by helping them become more active, as they aim for a daily goal of 10,000 steps. It works by “inducing” exercise. Two large, prospective, long-term European studies have shown a dose-response inverse relationship between steps taken/day and all-cause dementia up to 8,000 steps/day, after which additional steps do not add further benefit. In other words, people who walked more were less likely to develop dementia. Fitthink was developed with the idea that

if walking reduces the risk of dementia, then actual thinking would be likely to reduce it even more. It is likely that Fitbit plus Fitthink will be synergistic and early testing of the Fitbitthink is promising.

As the reader knows, there are currently many attempts to enhance cognition and memory, as in numerous computer games, jigsaw puzzles, writing exercises, and do-it-yourself (DIY) books that are readily available, but none can provide “real-time” feedback. There have been numerous brain-wave analytic tools marketed to enhance brain-wave “synchronization” or to enhance the speed of background cortical activity, none of which have been proven to have any benefit in studies comparing baseline to outcome on cognitive testing. Unlike other approaches, Fitthink only measures actual thought processes and does not alter brain function. It is a measuring tool that can be used to assess actual interven-

tions. It can measure numbers of thoughts/d as well as time spent thinking. It indirectly enhances thinking by providing feedback just as Fitbit encourages exercise by providing objective data.

Similar to other wearable devices for activity monitoring, when no thought has been detected after one hour, a gentle electric shock followed by a soft verbal reminder, “think!”, is triggered. The length of time between thoughts or “volume” of thoughts can be easily adjusted to set appropriate goals for each person. Scores summarizing a day’s thinking activity are summed up with percentages of time spent in the different activity levels, varying from “brain freeze” (fewer than 5 thoughts/d), “brain fog” (6–10 thoughts/d), “average” (11–15 thoughts/d), “cruising” (15–50 thoughts/d) to “brain storm” (51+ thoughts/d).

## Early data & limitations

Once the device was shown to be reliable, it was tested on various populations. One study showed that small children think hundreds to thousands of thoughts per day,<sup>1</sup> but only children old enough to communicate could be involved in testing, so no children under age five were tested. As children matured, their total number of thoughts per day slowly dropped so that the average American in high school had an average number of 0.5 abstract thoughts/d.

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**Fitthink was developed  
with the idea that if walking  
reduces the risk of dementia,  
then actual thinking would be  
likely to reduce it even more.**

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Ai Artificial Intelligence, IoT Internet of Things, digital software development. Futuristic technology innovation, person using smartwatch with brain representing artificial intelligence.

[ISTOCK PHOTO, CREDIT: TIPPAPATT]

One criticism of the data focused on the ability of Fitthink to distinguish between everyday thoughts, such as, “What’s for dinner?”, serious thoughts, like, “What TV station should I watch now?”, and abstract thoughts, such as, “Why is the sky blue?” This hurdle has been surmounted and data will soon be publicly available to prove this point.

Because of patent and marketing concerns, most Fitthink data is not yet publicly available, so only limited data can be shared, much of it not yet confirmed. Studies are ongoing with an aim of applying for FDA approval within the next two years. An open label trial using a convenience sample of 100 non-demented adults with mini-mental state examination (MMSE) scores greater than 26, and no history of central nervous system injury, volunteered for this cost-free study. Electrodes were attached to four locations on the scalp, symmetrically opposed, at the intersection of Gall’s Brachycephalic (width) and Dolicocephalic (length) lines<sup>2</sup> as defined in classic phrenology texts, to each half of the skull. Subjects wore these continuously for 12 weeks. Half were randomly assigned to read books that had provocative topics with questions asked at the end of each chapter that required thought (eg, What was the protagonist thinking about before

he stole the bread?). The other half had non-provocative topics included in their reading sample, with questions that required no abstract thinking (eg, What TV shows will you watch tonight?).

### Results

Results were analyzed using the standard Fitthink brain-thought software package (patent pending), and were reportedly “encouraging.” One study of college professors who compared Fitthink results to self-reported diaries found that 40% of time self-recorded as thinking was actually spent in stages 1 and 2 sleep. The National Institute of Health is evaluating the device to monitor grant recipients for proof of thinking when working on their funded projects.

Potential investors may contact this journal or the *Journal of Retractable Results* (JRR), sponsors of Fitthink and Fitbitthink. Supplementary material, such as Fitthink data obtained on the author while composing this article, is readily available using the telekinetic tools described in his book, *Unleashing Your Mind*, which is free to all subscribers to JRR and the RIMJ. ❖

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### Disclosures

Conflict of interest: The author is the Editor-in-Chief of Open Source, LLC, *Journal of Retractable Results*. (Motto: Pay to publish, no charge for retractions)

April Fool’s column (in case you didn’t notice)

## Diversifying the Physician Workforce

To The Editor:

As a member of the Brown University Department of Dermatology Diversity Committee, I am quite cognizant of the challenges in developing more diverse resident and practitioner contingents. I applaud our colleagues in the Department of Orthopaedics for their multi-pronged outreach efforts in trying to balance their specialty in terms of gender, underrepresented minority (URM) and sexual and gender minority (SGM) representation, as noted in the article in the March issue of RIMJ, "Diversity, Equity, and Inclusion in Orthopaedic Surgery: Local and National Efforts," (<http://www.rimed.org/rimedicaljournal/2024/03/2024-03-22-contribution-piana.pdf>).

However, there may well be a ceiling that exists, above which continued efforts result in the law of diminishing returns. Several factors may lead to this. At the present time, many specialties are competing for the same small number of available individuals. Of particular note is that the absolute number of Black male applicants to medical school is currently less than it was three to four decades ago. Residency directors will be hard pressed to rectify this situation even with programs aimed at prospective high school students. Much of the solution for this falls more heavily on secondary education and medical schools. Without increased numbers of minority residency applicants, certain specialties will go begging no matter how hard they try.

An additional factor is the inherent nature of the different specialties and their attractiveness to different groups. For comparison, let's look at some demographics. Currently ObGyn has women at 87% of total practitioners, pediatrics is 74% female and my own specialty of dermatology is 62%. On the male-predominant side, Orthopedics is 80%, Interventional Radiology is 78%, and Neurosurgery comes in at 76%. One could claim that women have been relegated to the former specialties because of inhospitable residency programs in the latter. However, as with the construction trades, it may well be that the jobs themselves are more or less appealing to different groups. At the risk of dredging up objectionable stereotypes, I would note that in my graduating medical school class almost half of our rugby club entered orthopedics. The remainder of the class contributed a much lower percentage. This was at a time when women were only a very small percentage of those who matriculated, so while the observation is very anecdotal, it reflects not entirely unexpected male decisions. Individual preferences, therefore, may be somewhat true for other groups whether minority or not.

None of this should be taken to mean that the panoply of programs outlined by the orthopedists should be curtailed. But realistic goals may need to be set so that precious resources in

both time and money are optimally utilized. One major concern of the diversity, equity, and inclusion (DEI) movement is that the lack of diversity in one's specialty output may deny the underserved adequate health services, due to social unfamiliarity with those populations, or the tendency to direct one's practice to those more like one's background. While it is certainly more comfortable to work with those with whom one is familiar, this is not a requirement. By and large we are a smart, empathetic bunch (or should be or we don't deserve to be in the positions we are in). It may actually make more sense for those specialties that tend to attract more homogeneous contingencies (i.e., orthopedics) to concentrate on developing expertise in supporting currently underserved populations as a matter of course.

Some of the examples of these efforts are as follows. The Brown Dermatology Department has given practical talks by residents and attendings in hair salons catering primarily to individuals of color about issues aimed especially at that population. Skin cancer screenings are done at South County beaches every summer. The RI Free Clinic is staffed on a regular basis by socially committed residents. The department also runs a continuously scheduled clinic for ACI inmates. Intermittent outreach is offered at the larger city organized street fairs in kiosks. Interactions with select high school students are done by interested attendings. The department is very cognizant of trying to incorporate medical students of traditionally disadvantaged groups as applicants in the interview process for our residency program. As has been found by our colleagues in orthopedics, this latter attempt may well be the most difficult given the relative dearth in the absolute numbers of individuals in the pipeline.

If indeed the specialties that tend to be somewhat monomorphous in terms of gender or ethnicity do not feel qualified to deliver optimal care to minority populations because of cultural awareness disparities, the skills necessary should be able to be acquired. All that is needed is the will. ❖

Stephen E. Glinick, MD  
Associate Clinical Professor, Department of Dermatology,  
Alpert Medical School of Brown University

### Disclaimer

The opinions expressed by Dr. Glinick are his own and should not be considered those of the Brown Dermatology Diversity Committee.

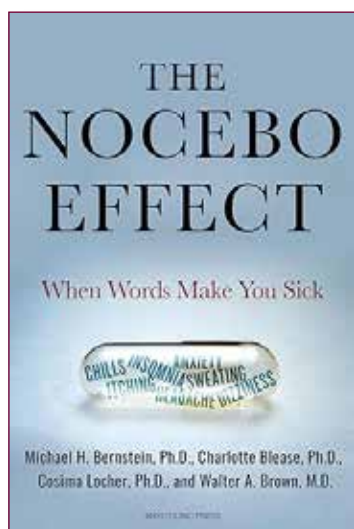
### Correspondence

[stephen.glinick@brownphysicians.org](mailto:stephen.glinick@brownphysicians.org)

# New Book Examines the Roots, Implications of the Nocebo Effect and Strategies to Address It

MARY KORR  
RIMJ MANAGING EDITOR

From the introduction to the conclusion, the recently released book by the Mayo Clinic Press, *The Nocebo Effect: When Words Make You Sick*, is a comprehensive review of up-to-date published studies on the topic, with chapters written by multidisciplinary experts in this emerging and understudied field, with a perspective from their first-hand experiences.



[COURTESY OF MAYO CLINIC PRESS]

## Etymology of Nocebo

The term nocebo stems from the Latin verb *nocēre*, meaning “to harm.” The noun nocebo is the first-person future indicative, meaning, “I will be harmful.” Contrast this with the noun placebo, which translates to, “I shall please,” and is derived from the Latin verb *placere*, to please.

In the mid-20th century medical literature, WP Kennedy published *The Nocebo Reaction* (*Med World*, 1961;(95):203-05) to denote this counterpart to the usage of the concept of placebo. Dr. Kennedy described it as a “quality inherent in the patient, not the remedy.”

The nocebo effect is a phenomenon that can be summarized as the occurrence of a harmful event that stems from consciously or subconsciously anticipating it. The book delves into real-world examples, such as the global administration of 12.7 billion COVID-19 vaccine doses, revealing that while vaccine hesitancy is often linked to reported side effects discussed in the media, a considerable portion of these side effects were not caused by the vaccine but by negative expectations – the nocebo effect in action.

Specific strategies are examined in several chapters in the book, directed at healthcare providers as well as patients (See **Table of Contents** for overview). Reading this book will do the reader no harm – it is sprinkled not only with strategies, examples of historical and mass “hysterical” and cultural “contagions,” (See **Book excerpts**, page 58), but humorous analogies as well.

For example, one chapter explores different psychotherapies using The Dodo Bird from *Alice is in Wonderland* as a comparative. In Part One, in the chapter, When Psychotherapy Harms, authors Cosima Locher and Helen Koechlin write: “In Lewis Carroll’s novel *Alice in Wonderland*, several characters needed to dry off after swimming around in Alice’s pool of tears. The Dodo Bird asked them to race around the lake until they were dry. Nobody cared to

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Michael H. Bernstein, Charlotte Blease,  
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measure when a competitor started to run, or how long it took them. When the characters asked the Dodo who had won the race, he thought for a long time and then replied: “Everybody has won and all must have prizes.”

...“Despite these very different theories about how psychotherapy works, CBT, person-centered, and other approaches, all “win,” just like all the runners in *Alice in Wonderland*. Different therapies lead to a similar improvement in depression, anxiety, or whatever other symptom is being treated. In other words, it doesn’t matter much what type of therapy is used. They all work equally well.”

The chapter also delves into examples of patient scenarios and the dearth of research on the nocebo effect in psychotherapy. It is enlightening, as well as entertaining for Lewis Carroll aficionados.

### Co-Editors

The four Co-editors of the book, two of whom are from Brown, include:

**MICHAEL BERNSTEIN, PhD**, an experimental psychologist and an Assistant Professor in The Department of Diagnostic Imaging at the Alpert Medical School. His work is focused on harnessing the placebo effect to reduce opioid use among pain patients. He is Director of the Medical Expectations Lab at Brown.

**CHARLOTTE BLEASE, PhD**, a philosopher and interdisciplinary health researcher at Digital Psychiatry, Beth Israel Deaconess Medical Center, Harvard Medical School, and the Department of Women’s and Children’s Health, Uppsala University, Sweden.

**COSIMA LOCHER, PhD**, a psychologist and researcher at the Department of Consultation-Liaison Psychiatry and Psychosomatic Medicine, University Hospital Zurich, University of Zurich, Switzerland. Dr. Locher is a co-founder of The Pain Net, an international network of researchers interested in Chronic Primary Pain, with a special focus on the placebo effect.

**WALTER A. BROWN, MD**, a Clinical Professor Emeritus of Psychiatry and Human Behavior at the Alpert Medical School. He has studied the placebo effect for the past 40 years, and is the author of three books, including *The Placebo Effect in Clinical Practice*.

In the conclusion they write that “...providers should be taught about the nocebo effect. We realize that medical education is already densely packed and adding more material to the curriculum is no easy feat. But even one or two seminars discussing the nocebo effect and the importance of expectation would be advisable. If doctors’ first duty is to ‘do no harm,’ then it only follows that they should be taught about the harms from the nocebo effect and ways of preventing it...Many questions remain, and we should focus our attention on answering them.”

This book is beyond a primer on the nocebo effect and side effects – it is well-researched, a fluid and focused read, illuminating as well as engaging. In the accompanying Q&A, RIMJ posed questions to Brown Co-editors, Drs. Michael Bernstein and Walter A. Brown, on the book’s genesis and focus (See Q&A). ❖

## Q&A with Brown Co-Editors

**Q. How did the conceptual framework for a book on this topic materialize among the four Co-editors?**

**A.** Several years ago, Walter realized that while there were many discussions of the placebo effect in both scholarly journals and popular media, very little had been written about the nocebo effect. The time was right to assemble what we know about the topic. It has important implications for healthcare.

**Q. Were there any surprising revelations the Co-editors uncovered as the contributions in the book were being selected?**

**A.** During the course of selecting chapter topics, we were surprised to see just how far-reaching the nocebo effect is. For instance, as discussed by some chapter authors, research suggests that the media can induce a nocebo effect and that nocebo is important in understanding health complaints after environmental exposure (e.g., powerlines).

**Q. Given the book’s subtitle, “When Words Make You Sick,” is the target readership for the book patients or healthcare providers, or both?**

**A.** The book is written for anyone interested in how the mind can impact your health. No special knowledge is required. We hope that both providers and the general public find it valuable.

**Q. The book chapters show that the nocebo effect has been understudied and underestimated compared to the placebo effect. But would you say there is a general awareness among healthcare providers of the nocebo effect and its implications for their patients?**

**A.** Many healthcare providers implicitly understand that expectations matter – both positive (placebo) and negative (nocebo) – from their own personal experience working with patients. However, few are probably familiar with the scientific literature on the topic. This book walks the reader through the relevant empirical evidence, and offers suggestions for how providers can minimize the impact of nocebo.

**Q. What are the key takeaways in the book for clinicians/healthcare providers?**

**A.** Be mindful of the language that you use, especially when conveying difficult information to patients. When prescribing treatments with minor side effects, consider first educating patients about the nocebo effect and then asking whether they want to learn about potential side effects. This admittedly time-consuming strategy preserves patient autonomy while likely reducing harm. ❖

**[Editor's note:** The following are excerpts from the book provided by its publisher, the Mayo Clinic Press, available at: <https://mcpress.mayoclinic.org/research-innovation/the-nocebo-effect-history-contemporary-applications/>]

### The History of Nocebo Research: Where Did It Come From?

In the 1950s, Dr. Henry Beecher, who served as a physician in World War II, published a series of seminal papers on the placebo effect. Beecher documented instances where he gave wounded soldiers saline – that is, salt water – but told them they were receiving a powerful painkiller. Beecher did not engage in this deception out of cruelty; in fact, it was just the opposite. Dr. Beecher was an anesthesiologist and faced the difficult task of rationing an all-too-limited supply of morphine. What Beecher noticed on the battlefield has sparked seventy years of modern-day science on the placebo effect: soldiers experienced substantial pain relief from the saline.

The field started as just a few papers on the placebo effect, but it has since blossomed into a full-fledged body of theoretical and empirical work. In 2023, scholars gathered for the fourth Society of Interdisciplinary Placebo Studies conference, founded by Dr. Charlotte Blease and colleagues, and devoted to the study of placebo science. Placebo research has been published in top academic journals, but it has also captured the public imagination, with leading popular press articles in nearly all major media outlets.

The topic of nocebo has emerged largely from work on the placebo effect. And while thorough reviews of nocebo are lacking, it is still a critical factor to consider in patient care. So where did the idea of the nocebo effect originate? The answer is more confusing than you might imagine...

### Psychogenic Illnesses: From the June Bug to Havana Syndrome

The mind's unfortunate ability to cause suffering is well established, and this phenomenon lies at the heart of the nocebo effect. One such example, known as "The June Bug," occurred in a textile factory in the United States in the early 1960s. Many employees began to feel dizzy and had an upset stomach. Some people vomited. Rumors of a mysterious bug that was biting employees began to circulate, and eventually sixty-two people who worked at the factory became ill. So what were these mysterious bugs? According to experts, they were nothing – literally. The CDC investigated this outbreak, but no bugs or any other cause of the illnesses could be identified. It instead appears to have been a case of what has often been labeled "mass hysteria," though it is now called *psychogenic illness*.

...But would such a mass outbreak occur today? It might be easier to imagine people from the Middle Ages, or even a half century ago, experiencing this type of bizarre illness than it would be to think of such a thing happening in the twenty-first century. During 2016 and 2017, however, twenty-one American diplomats in Cuba experienced a range of bizarre neurological symptoms such as hearing loss and nausea. News of what came to be known as "Havana Syndrome" spread, and eventually more than two hundred U.S. government personnel in diplomatic missions in several countries became ill. This case was more troubling than just a few individuals who got sick with unexplained symptoms. Speculation quickly mounted regarding nefarious acts by our foes abroad. One leading theory was that the Russian government was releasing invisible

microwaves that caused people to get sick. This might sound like a fringe conspiracy theory, but it has been discussed in leading news sources ranging from the *Washington Post* to NPR. In a 2021 meeting, the cause of Havana Syndrome was discussed among the secretary of state, the attorney general, the CIA director, and the FBI director. Would so many high-ranking U.S. officials meet if they believed that Russian interference was off the table as a potential cause?

To be clear, we do not yet know for certain the cause of these neurological conditions. It is even conceivable that the speculation about Russian interference will ultimately prove correct. However, there are plenty of similarities between what happened relatively recently in Cuba and what happened in the past in Loudun, France, and elsewhere. It should be concerning to scientists and the public alike that the *possibility* of a psychogenic reaction is not being taken seriously. As discussed by *New York Times* reporter Serge Schmemmann, the person who was hired to oversee the investigation into Havana Syndrome was pushed out of this role because she refused to take psychogenic illness off the menu of potential causes.

Germs are not the only way that illnesses can spread. Psychological outbreaks are very real, and Havana Syndrome fits the same pattern that has been observed so often before. As Mark Twain is alleged to have said, "History does not repeat itself, but it rhymes." Imagine if speculation about Russian interference gained more of a foothold. What if then-president Donald Trump had released inflammatory tweets about it? How would Vladimir Putin have responded? Could this have turned into a global incident? The nocebo effect is powerful indeed.



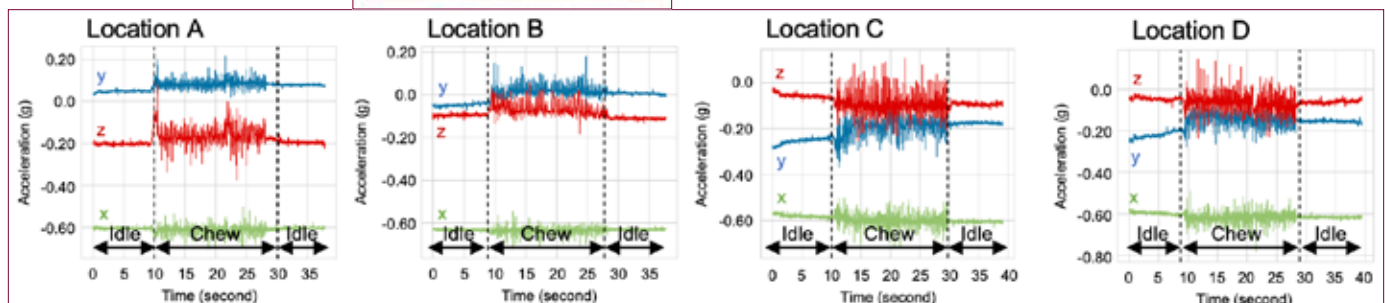
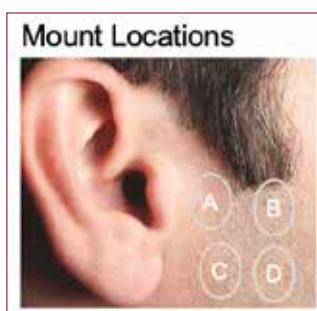
## URI, UT-Austin scientists to study real-world eating behaviors using wearable sensors and AI

KINGSTON, R.I. (URI) – A new National Institutes of Health-funded project by three scientists at the University of Rhode Island and The University of Texas at Austin aims to shed light on real-world eating behaviors, using AI-enabled wearable technology. The four-year, \$2.4-million grant from the National Institute of Diabetes and Digestive and Kidney Diseases supports the work of URI Nutrition Professor **KATHLEEN MELANSON, PhD**; Psychology Professor **THEODORE WALLS, PhD**, and UT-Austin Electrical and Computer Engineering Professor **EDISON THOMAZ, PhD**.

They plan to develop a system to detect detailed information on eating motions, potentially every bite and chew. The researchers will combine more than 60 years of expertise in nutrition, behavioral statistics, and engineering to deploy a novel interdisciplinary project that would give researchers more complete data on study participants' nutritional habits and behaviors.

"Eating behavior data collected in labs are most accurate, but people don't live in labs, so we don't know what they're doing in real-world, day-to-day living," Melanson said. "We want to compare the results from our new system to what we already have in the lab to ensure it is collecting data appropriately. The goal is to use this system in research so that we can test our interventions on modifications of ingestive behaviors."

**Figure 1.** Researchers at URI and UT-Austin are using wearable sensors, including a button-sized sensor that sits on participants' faces near the jawline, to measure volunteers' personal eating behaviors, including chewing rate and intensity. [COURTESY OF URI, UT-AUSTIN SCIENTISTS]



Kathleen Melanson, PhD



Theodore Walls, PhD



Edison Thomaz, PhD

The study employs two devices: a typical smart watch and a discreet, custom-made sensor that sits on a participant's jawline. The smart watch will capture the movement of arms and wrists when participants make typical eating gestures, measuring speed and frequency. It will be coupled with data captured by a small, button-sized sensor that will record jaw movements associated with chewing, recording the speed and intensity of the motion (**Figure 1**).

"The study moves through several successive experiments from an in-lab setting 'into the wild,' gradually moving from the internal validity of inferences in a lab-controlled setting to those grounded in the external validity of the real world," said Walls, whose research produces statistical tools to make sense of real-time intensive longitudinal health behavior data.

The researchers will study participants over the course of four progressive phases. After being fitted with the unobtrusive system, they will eat prescribed meals measured with standardized lab procedures and close supervision of the researchers. The next phase involves cafeteria-style eating, still under the close auspices of the researchers. The testing then moves into a restaurant setting where participants have more control over their meals. These phases will incrementally reflect more real-world eating conditions.

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The study moves through several successive experiments from an in-lab setting 'into the wild,' gradually moving from the internal validity of inferences in a lab-controlled setting to those grounded in the external validity of the real world — Theodore Walls, PhD

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“We’re trying to answer, can you tell when someone is eating something? That might sound like a very simple question, but it turns out it’s very hard to do if you’re not in a very controlled setting,” said Thomaz. “When we talk, the jawbone definitely moves, but it doesn’t move in the rhythmic way it moves when you are chewing food. Those are the kinds of hints we’re going to try to leverage with sensors and AI algorithms. We will connect the two devices and see if we can come up with a more powerful system for detecting these kinds of eating behaviors.”

Finally, study participants return to their usual lives, but wearing the sensors to monitor their eating habits. Researchers will measure such data as the speed of eating, chewing and oral processing, how long food stays in mouth before swallowing, and how quickly the food disappears from their plates.

“With these kind of chewing and oral processing behaviors – rapid eating, taking large bites, not pausing between bites, and not chewing sufficiently – people might be over-ingesting calories before the satiety signals have time to develop,” Melanson said. “So, by assessing these behaviors, we can help develop a system that can be used in interventions to help people adapt

their ingestive behaviors to maximize satiety and help with energy intake.”

Walls added that the study allows researchers to add other sensors, possibly one that monitors facial skin stretching. “We want to make sure we can make that progression out of the lab in a way that really works in an overall behavioral monitoring approach. Our ‘customers’ are people who want to start clinical trials using this system. This stage is just about the measurement, but later we will move on and test real programs to help people manage their eating behavior.”

Participants in the study will be those who would potentially benefit the most from it, those at risk for obesity-related harms. The researchers will recruit participants from the LatinX communities in both Rhode Island and Texas, enabling them to explore unique cultural food practices. Members of these communities experience higher prevalence of obesity and related health issues, on average.

Anyone interested in the study can contact the researchers at: [dibs@uri.edu](mailto:dibs@uri.edu). ❖

## Help your Patients Keep their Medicaid Coverage

Medicaid members will need to renew their eligibility with the State of Rhode Island to keep their health insurance.

You can help now by reminding your Medicaid patients to update their account information with their current address and phone number. Medicaid members can update their information by:

- Logging into their HealthSource RI account: <https://healthyrhode.ri.gov/>
- Calling HealthSource RI at 1-855-840-4774 (TTY 711)

Thank you from all of us at Neighborhood for your commitment and partnership in ensuring Rhode Island families keep their health care coverage!

 **Neighborhood Health Plan**  
OF RHODE ISLAND™

[www.nhpri.org](http://www.nhpri.org) 1-800-459-6019 (TTY 711)



Neighborhood members can scan the QR code to update their address through our new e-form or visit [www.nhpri.org](http://www.nhpri.org)



## Senate leaders unveil Rhode Island HEALTH Initiative

PROVIDENCE (STATE HOUSE) – Senate leaders recently unveiled a 25-bill legislative package aimed at improving health care access and affordability in Rhode Island.

To address the challenges facing the state's health care system, the Rhode Island HEALTH Initiative (Holistic Enhancement and Access Legislation for Total Health) focuses on four key pillars: consumer protection, provider availability and care quality, cost containment, and health system financial stability.

The initiative was announced by Senate President **DOMINICK J. RUGGERIO**; Senate Majority Leader **RYAN W. PEARSON**; Senate Health & Human Services Committee Chairman **JOSHUA MILLER**; Senate Environment & Agriculture Committee Chairwoman **ALANA M. DIMARIO**, who works as a licensed mental health counselor in private practice; and Senate Health & Human Services Committee Secretary **PAMELA J. LAURIA**, who works as a primary care nurse practitioner.

The initiative contained the following components:

### Consumer Protection

#### 1. Hospital determination of Medicare & Medicaid eligibility for uninsured patients (*Sponsored by Sen. Lauria, 2024-S 2714*):

This legislation would require all hospitals to screen uninsured patients for Medicaid, Medicare, and other financial assistance programs. It would require hospitals to hold all invoices/claims until 30 days after discharge for the purposes of application review and determination. It additionally establishes a complaint process at EOHHS for complaints and violations. The Attorney General is empowered to bring legal action against the hospital and can permit a corrective action plan in lieu of legal action.

#### 2. State purchase of medical debt through ARPA funding (*Sponsored by Sen. Mark McKenney, 2024-S 2712*):

This new bill would use federal American Rescue Plan Act funds to purchase medical debt for pennies on the dollar, and then eliminate that debt for eligible Rhode Islanders. To be eligible, residents would need to have outstanding medical debt that equals 5% or more of their annual income and more than \$600 of debt or have a household that is no more than 400% of the federal poverty line. The elimination of debt in this manner has been done in Connecticut, New York City, and Cook County, Illinois.

#### 3. Prohibition on medical debt reporting to credit bureaus (*Sponsored by Sen. Melissa Murray, 2024-S 2709*):

This bill would prohibit debt collectors from reporting all medical debt to credit bureaus. It also sets rules for communication with consumers, false and misleading representation by debt collectors, and a prohibition against collections during insurance appeals.

#### 4. Medical debt interest rate cap (*Sponsored by Sen. John Burke, 2024-S 2710*):

This bill would cap the interest rate on new medical debt at the interest rate equal to the weekly average 1-week constant maturity Treasury yield, but not less than 1.5 percent annum nor more than 4 percent annum, as published by the Board of Governors for the Federal Reserve System. The interest

rate would also be extended to judgments on medical debt. New debt is defined as debt incurred after the date of enactment.

#### 5. Prohibition on medical debt attachments (*Sponsored by Sen. Jacob Bissaillon, 2024-S 2711*):

This bill would prohibit the attachment of a lien to an individual's home because of medical debt.

#### 6. Surprise billing protections (*Sponsored by Sen. DiMario, 2024-S 2715*):

This legislation would include ambulance service as part of the emergency provisions of the insurance statutes. Providers would have to accept the patient's co-payment or deductible as payment for service, and the bill also continues to allow them to seek payment from worker compensation and other third-party payers. This expands many of the balance billing protections Rhode Island currently has in place, and it would put the state in line with many of its neighbors in New England.

### Provider Availability & Care Quality

#### 7. Enhanced Curriculum & Clinical Training (*Sponsored by Sen. Lauria, 2024-S 2716*):

This bill that would provide \$2.7 million to primary care practices to serve as enhanced interdisciplinary clinical training sites. It would recruit 30 advanced primary care training sites with one or more preceptors, increasing training slots by 50% for nurse practitioners, physician assistant students, and physician residents. The funds would also be used to develop a site curriculum, quarterly learning collaborative sessions, data collection, and project management. These sites are needed to train the next generation of providers, and since students often decide to work where they train, increasing training can improve access to care.

#### 8. Primary Care Scholarship Program (*Sponsored by Sen. Lauria, 2024-S 2717*):

This legislation would fund a 4-year scholarship program for primary care physicians, nurse practitioners, and physician's assistants. The students would either remain in Rhode Island after medical school or return to Rhode Island after residency training in Family Medicine, Pediatrics, or General Internal Medicine to practice primary care for 8 years. The goals would be to encourage medical students to practice in these fields due to the reduction or elimination of their student debt.

#### 9. Medicaid reimbursement for mental health intern work (*Sponsored by Sen. DiMario, 2024-S 2713*):

This bill would allow for Medicaid reimbursement for services provided by an intern to help offset the supervising facility's costs in having interns. Currently, intern spots in the state are reduced because facilities cannot afford to take many on; this would open that pipeline so prospective mental health providers could intern in Rhode Island and remain in-state.

#### 10. Uniform Telehealth Act (*Sponsored by Sen. Lauria, 2024-S 2179*):

This bill would allow for registered out-of-state health

care practitioners to provide telehealth services to patients, as long as the work is consistent with the provider's scope and standards.

**11. Social Work Interstate Licensure Compact** (*Sponsored by Sen. DiMario, 2024-S 2184*): This legislation would make Rhode Island one of the founding states in the compact, able to participate in rulemaking to establish the interstate licensure credential for social workers. It will provide increased access to mental health support for Rhode Island residents and increased work options for Rhode Island social workers.

**12. Counseling Compact** (*Sponsored by Sen. Matthew LaMountain, 2024-S 2183*): This legislation would adopt an existing compact, providing increased access to mental health support for state residents and increased work options for Rhode Island social workers.

**13. Audiology Compact** (*Sponsored by Senate President Pro Tempore Hanna Gallo, 2024-S 2173*): This legislation would adopt the Audiology and Speech-Language Pathology Interstate Compact and establish a commission to administer the provisions in the compact between the states. This act would take effect on the date that the 10th member state enacts the compact into law.

**14. Physician Assistant Compact** (*Sponsored by Sen. Bridget Valverde, 2024-S 2178*): This legislation would adopt the Physician Assistant Licensure Compact. The compact will be activated once the 7th state passes compact language into law.

**15. Occupational Therapy Compact** (*Sponsored by Sen. Miller, 2024-S 2623*): This legislation would adopt the Occupational Therapy Licensure Compact, which has been adopted by 27 states. This compact will become operational in the second half of 2024.

**16. NCLEX pending exemption** (*Sponsored by Senate Majority Whip Valerie Lawson, 2024-S 2083*): This legislation would allow for a nurse to be exempt from certain licensing requirements to practice before taking and receiving results from the NCLEX, the licensing examine developed by the National Council of State Boards of Nursing.

**17. Physical therapy licensing** (*Sponsored by Sen. Matthew LaMountain, 2024-S 2718*): This act would streamline physical therapy licensing.

### Cost Containment

**18. Creation of a drug affordability commission** (*Sponsored by Sen. DiMario, 2024-S 2719*): This legislation would create a drug affordability commission to receive and review manufacturers' submissions. The commission would determine whether the cost of a drug under review is affordable. If the commission finds that the cost in Rhode Island is not affordable to state health care systems and state residents, it is authorized to establish a cost or payment rate for the drug to which all state programs,

local governments, state-licensed commercial health plans (including state marketplace plans), state-licensed pharmacies, wholesalers and distributors must abide. These "covered entities" would be prohibited from paying more for the drugs than the commission established rate, with enforcement by the Attorney General.

**19. Pharma Coupons** (*Sponsored by Sen. Robert Britto, 2024-S 2720*): This bill would ensure that cost savings from pharmaceutical coupons are provided to the consumer, not the insurer, pharmacy benefit (PBM) manager, or some other party.

**20. Separate NPI for off-site procedures** (*Sponsored by Sen. Miller, 2024-S 2721*): This legislation would require a separate NPI (National Provider Identifier) for off-site procedures instead of using a hospital's NPI. This would prevent hospital systems from charging the more expensive hospitals rate for services rendered at offsite locations, such as primary care offices. Unique, separate, and distinct codes would have to be obtained for the main campus, each off-campus location, and each provider type when the hospital delivers medical care, services, or goods at either the hospital's main campus or an off-campus location.

**21. Price transparency** (*Sponsored by Senate Minority Leader Jessica de la Cruz, 2024-S 2078*): This legislation would codify Centers for Medicare & Medicaid Services rules that require hospitals to publish pricing information in two formats: a consumer-friendly list of 300 "shoppable services," and a comprehensive machine-readable file for all items and services. Placing this sunshine requirement into statute will help people understand and reduce costs.

### Health System Financial Stability

**22. OHIC dual mandate** (*Sponsored by Sen. Sosnowski, 2024-S 2722*): This legislation would shift the Health Insurance Commissioner's mandate to a dual mandate focused on both premiums and provider rates.

**23. Dental medical loss ratio** (*Sponsored by Sen. Gallo, 2024-S 2724*): This legislation would require carriers offering dental coverage to annually submit information that includes current and projected medical loss ratio (MLR) for claims. The MLR would be 85% for determining whether insureds are due a refund or premium credit. The percentage is the same for health MLR and within the same range of neighboring states.

**24. Adding primary care to rate review** (*Sponsored by Leader Pearson, 2024-S 2723*): This legislation would require OHIC to conduct a rate review of primary care rates in the state.

**25. Low-income drug program** (*Sponsored by Sen. Valverde, 2024-S 2725*): This legislation protects Rhode Island's most vulnerable residents' access to health care by protecting Rhode Island 340B providers from discriminatory practices used by pharmacy benefit managers, insurance companies, and drug manufacturers. ❖

## Governor McKee signs executive order establishing State Health Care System Planning Cabinet

PROVIDENCE – Governor **DAN MCKEE** signed an Executive Order establishing a State Health Care System Planning (HCSP) Cabinet that will take a unified, inter-departmental approach to evaluating and proposing recommendations for Rhode Island's health care system.

The HCSP Cabinet's will make recommendations focused on improving quality, affordability, and equity across the continuum of care to ensure Rhode Islanders have access to a health care system aligned with current and future needs. The Cabinet will integrate oversight and accountability of the health care system using data and make recommendations for establishing a framework for regulating and overseeing the entire system of care.

Per the Executive Order, members of the HCSP Cabinet are appointed by the Governor and include the:

- Secretary of the Executive Office of Health and Human Services (EOHHS)
- Assistant Secretary of EOHHS
- Medicaid Program Director
- Director of the Rhode Island Department of Health
- Director of the Department of Human Services
- Director of the Department of Behavioral Healthcare, Developmental Disabilities and Hospitals
- Director of the Department of Children, Youth and Families
- Director of the Department of Labor and Training
- Health Insurance Commissioner
- Postsecondary Education Commissioner

"There are already numerous committees, advisory groups, and work teams focused on health system activities across state government and in the community, and the HCSP Cabinet will provide us with a tremendous opportunity to bring the planning together to create a strong, unified health care plan," said EOHHS Secretary **RICHARD CHAREST**. "Part of the new health care planning process will include aligning these existing plans in an overarching interagency, public/private framework."

The Administration has identified \$500,000 to support the Cabinet's work for the remainder of state fiscal year 2024. Governor McKee's FY25 budget proposal includes approximately \$1 million in additional funding to support health care system planning.

The HCSP Cabinet will begin its work immediately and will produce its first report on or about December 1, 2024. ❖

## BCBSRI partners with Doulas of RI to support, diversify workforce through scholarships

PROVIDENCE – Blue Cross & Blue Shield of Rhode Island (BCBSRI) is partnering with Doulas of Rhode Island (DoRI) to expand a scholarship program aimed at supporting the doula workforce while enhancing diversity within the state's doula community.

Financial support from BCBSRI will allow DoRI to increase the number of doula scholarships offered to members of Rhode Island's BIPOC communities, providing financial assistance for training for both aspiring and current birth workers and bolstering efforts to reduce alarming disparities in maternal health disparities here and across the country.

In 2021, Rhode Island enacted legislation requiring that all health plans, including Medicaid and private insurers, provide coverage for doula services. Given the growing need for doulas in the state, BCBSRI and DoRI have been collaborating on efforts to support the expansion of Rhode Island's doula workforce.

With the additional funding from BCBSRI, DoRI is offering a total of seven scholarships for 2024, the largest number in the organization's 13-year history. Three \$1,000 scholarships are for BIPOC aspiring doulas to help pay for their doula training, one \$500 scholarship will be to support current DORI members interested in training as a certified lactation counselor and three \$500 scholarships are for current DoRI members to apply toward the cost of additional birthworker training and continuing education of their choice.

"BCBSRI is committed to supporting local solutions to the unacceptable rise in maternal health inequities, with Black women now three times more likely to die from pregnancy-related causes," said Carolyn Belisle, managing director of corporate social responsibility at BCBSRI. "Doulas provide invaluable support to birthing people before, during and after childbirth and expanding access to their specialized care in communities of color can contribute to efforts to improve maternal health outcomes. DoRI is an important partner and we're pleased to help them grow their scholarship program."

Applications for 2024 scholarships are available now and must be submitted by April 15. Visit [Doulasri.org/scholarships](https://Doulasri.org/scholarships) for more information or apply directly at DORI Scholarship Link

"These scholarships provide important financial assistance to equitably support and retain local doulas, who provide support to the families and communities of laboring and postpartum people," said **EMERALD ORTIZ**, DoRI's current Co-President. "Our scholarship program has been expanding and benefitting practicing and aspiring doulas for the past 6 years and we greatly appreciate BCBSRI stepping up to expand the program this year."

DoRI is a professional organization for doulas whose mission is to educate communities about the role of doulas and enhance access to doula services for families in Rhode Island, Connecticut and Massachusetts. It also provides professional support, skill sharing, and marketing opportunities for its members. It was founded in 2011 by two local doulas and its membership has since grown to approximately 70 local doulas. ❖

## CDC study shows effectiveness of RSV immunization for infants

ATLANTA — New data released March 8th in CDC's MMWR show that nirsevimab, a long-acting monoclonal antibody product, was highly effective in protecting infants from hospitalizations associated with respiratory syncytial virus (RSV). RSV is the leading cause of hospitalization among infants in the United States, and this finding supports CDC's recommendation to protect infants in their first RSV season by giving the infant nirsevimab if the mother did not receive the maternal RSV vaccine during pregnancy.

The current RSV season is the first time nirsevimab was available to protect infants from severe RSV, so the data released today are the first United States estimates of nirsevimab effectiveness in protecting infants against RSV-related hospitalization in their first season of potential exposure to the virus.

The study looked at 699 infants from October 2023 through February 2024 using early data from CDC's New Vaccine

Surveillance Network (NVSN), a population-based surveillance platform that monitors pediatric respiratory viruses to assess immunization effectiveness. Results show that nirsevimab was 90%

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**Early data from the  
New Vaccine Surveillance Network  
show nirsevimab is 90% effective  
in preventing infants from  
being hospitalized with RSV.**

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effective at preventing RSV-associated hospitalization in infants during their first RSV season. These results reflect a shorter surveillance period due to the introduction of this new product in August 2023. Nirsevimab effectiveness may be lower over a full RSV season (October through March in most of the United States). With increasing availability of

nirsevimab in future RSV seasons, CDC will assess its effectiveness over an entire season.

RSV prevention products remain our single most important tool to protect infants from RSV. Healthcare providers should recommend either:

- Infant immunization with nirsevimab for all infants who are younger than 8 months, born during or entering their first RSV season, if their mother did not receive the maternal RSV vaccine; or
- Maternal RSV vaccination – giving the RSV vaccine (Abrysvo) to pregnant people during weeks 32 through 36 of pregnancy if that period falls between September and January in most of the United States.

CDC continues to monitor the safety and effectiveness of nirsevimab and maternal RSV vaccines. ❖

## CMS announces model to improve access to high-quality primary care for underserved Medicare populations

BALTIMORE, MD – The U.S. Department of Health and Human Services (HHS), through the Centers for Medicare & Medicaid Services (CMS), recently announced a new voluntary model that empowers primary care providers in eligible Accountable Care Organizations (ACOs) to treat people with Medicare using innovative, team-based, person-centered proactive care. A key part of the Biden-Harris Administration's efforts to further promote competition in health care, the ACO Primary Care Flex Model (ACO PC Flex Model) will provide a one-time advanced shared savings payment and monthly prospective primary care payments to ACOs. The model aims to drive better outcomes for underserved populations by increasing access to higher-quality primary care, which can include unique services such as proactive care management, patient navigation, and behavioral health integration.

The CMS Innovation Center will test this new model within the Medicare Shared Savings Program. The model will focus on and invest in low revenue ACOs, which tend to be smaller and mainly made up of physicians. Low-revenue ACOs have

historically performed better in the Shared Savings Program, demonstrating more savings and stronger potential to improve the quality and efficiency of care delivery. The ACO PC Flex Model's payment structure also promotes competition by providing a pathway for low revenue ACOs, which often have fewer resources, to continue serving people with Medicare while providing an alternative for physicians to stay independent.

CMS anticipates releasing a model Request for Applications in the second quarter of 2024.

More information about the model can be found on the model webpage and in the ACO PC Flex Model press release. For updates on the model, please register for the model listserv.

A public overview webinar will be hosted to offer more information about the model:

2–3 p.m. EST on Thursday, April 4

Visit the webinar registration page to sign up

Questions about the model can be submitted to [ACOPCFlex@cms.hhs.gov](mailto:ACOPCFlex@cms.hhs.gov). ❖

## NAACOS statement on ACO Primary Care Flex Model

The following statement is attributed to **Clif Gaus, ScD**, President and CEO of the National Association of ACOs

The National Association of ACOs (NAACOS) applauds CMS for launching the ACO Primary Care Flex model, which will allow Medicare Shared Savings Program (MSSP) ACOs to offer prospective population-based payments for primary care. NAACOS has been advocating for this approach, which will bolster primary care practices in ACOs. Shifting to prospective payments provides primary care practices with stable and predictable cash flow needed to transform care delivery and provide comprehensive, team-based care. For more than a decade, the ACO model has improved beneficiary outcomes, generated savings to Medicare and allowed practices to invest shared savings into innovation and patient care. This model builds on the success of MSSP while recognizing we must continue to evolve the program in order to grow the program.

While we are extremely pleased with the model, we ask that CMS reconsider excluding high-revenue ACOs, which prevents independent primary care practices who have partnered with their local health systems from taking advantage of these much needed innovations. The premise of ACOs is to bring together providers from across the continuum of care to provide improved care for beneficiaries. ❖

## AMA: Patients, Physicians Continue to Endure Medicare Cuts

The following statement is from **Jesse M. Ehrenfeld, MD, MPH**, President, American Medical Association

“While we appreciate the challenges Congress confronted when drafting the current 2024 appropriations package, we are extremely disappointed that about half of the 2024 Medicare physician payment cuts will be allowed to continue. There were many opportunities and widespread support to block the 3.37 percent Medicare cuts for physician services that took place January 1, but in the end Congress opted to reverse only 1.68 of the 3.37 percentage payment reduction required by the Medicare Fee Schedule. The need to stop the annual cycle of pay cuts and patches and enact permanent Medicare payment reforms could not be more clear.

“Because of Congress’ failure to reverse these cuts, millions of seniors, like my parents, will find it more difficult to access high quality care and physicians will find it more difficult to accept new Medicare patients. This will become noticeable first in rural and underserved areas and with small, independent physician practices. Physicians are the only providers who do not receive automatic inflation updates to their Medicare payments, and they are the only group experiencing a payment cut this year despite high inflation. Adjusted for inflation in practice costs, Medicare physician pay declined 30 percent from 2001.

“As physicians, we are trained to run toward emergencies. We urge Congress to do the same. We encourage Congress to act if this policy decision is an emergency because – in fact – it is. It is well past time to put an end to stopgap measures that fail to address the underlying causes of the continuing decline in Medicare physician payments. In the coming months, Congress must turn its attention to Medicare reform. The AMA has been studying this issue and is eager to share solid policy proposals and a deep conviction that the current path is unsustainable.” ❖

## Reed delivers \$263,000 to Genesis Center to expand health care workforce training programs

PROVIDENCE – As more Rhode Islanders seek out opportunities to gain in-demand skills to enter the workforce, the Genesis Center (GC) in Providence is stepping up to expand and enhance their health care workforce training programs.

In an effort to prepare more health care professionals to enter the workforce in Rhode Island, U.S. Senator **JACK REED** recently joined GC President & CEO, **SHANNON CARROLL** and students actively enrolled in GC’s health care training programs to deliver a \$263,000 federal earmark to boost training for certified nursing assistants (CNA), medical assistants, dental assistants, pharmacy technicians, and other entry-level health care professionals.

Senator Reed secured this federal earmark in the fiscal year 2023 appropriations law. The funding will support GC in expanding the capacity of their workforce development programs by acquiring new clinical equipment, upgrading technology infrastructure, and adapting programs to provide new opportunities for even more Rhode Islanders.

“We are so grateful to be receiving this funding that signals a recognition that community members who traditionally lacked access to career opportunities have the cultural and linguistic competencies, skills, and motivation to add tremendous value to a critical segment of our workforce, specifically the care economy,” said Shannon Carroll, President & CEO of Genesis Center.

With the success and popularity of GC’s various adult education programs, the organization has seen growing demand from people across Rhode Island who are looking to gain new skills and enter the workforce ready to meet the needs of employers.

This funding will allow GC to modify and improve classroom space to mimic clinical settings and provide hands-on learning spaces that better prepare students for the realities of their future work spaces. Furthermore, tech upgrades will include the purchase of a new server, WiFi hotspots, and laptops for both student and staff use to allow for more hybrid class formats and expand GC’s reach across the state. ❖

## Women's Fund of Rhode Island publishes two essential reports on gender equity

PROVIDENCE – Women's Fund of Rhode Island (WFRI), a leader in the movement to improve policies that impact women and girls in Rhode Island, announced its publication of two essential reports, the *2024 Women's Well-Being Index* and the *2024 Census of Directors and Chief Executives of Rhode Island's Largest Nonprofit Organizations*. These reports share timely data to educate and promote discussion about inequities in our state.

The *Women's Well-Being Index (WWBI)* exists as Rhode Island's best evidence-based resource to demonstrate how women are faring in every city and town in regards to salary, economic security, representation in job sectors, educational attainment, and health and safety. Primarily based on U.S. Census data and published annually, the *WWBI* highlights the progress being made toward closing the gender, wage, wealth, health, education, and power gaps that exist in RI. When possible, *WWBI* investigates the intersection of gender inequity overlaid with race/ethnicity and age. A few highlights from this year's findings include the following:

- White women in RI earn .81 to each \$1 a man earns, which is a drop of 4% since last year; Black women earn .60 and Latina women earn .52.
- Salaries have risen for women in most occupations over the last year, ranging from an 8–16% increase, depending on the employment sector.
- RI's highest-paid sector for women is Healthcare Practitioners, where women earn an average of \$79,197. Men, in comparison, make an average of \$113,210 in this sector.
- In RI, 27% of all women (all races) have at least some college education and 90% have at least a high-school diploma.
- Black women are 2.6 times more likely to die due to a pregnancy-related cause than White women.
- The overall birth rate has decreased from 5% of RI's female population to 2.5%.
- Hispanic/Latinx women experience poverty at a rate above 10% in 26 RI cities and towns; Black women experience the same in 16 cities and towns.
- The poverty rate for American Indian/Alaskan Natives in RI surged from 16.5% in last year's *WWBI* to 38% now.

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Easily accessed online at <https://wfri.org/rhode-island-womens-well-being-index/>, the interactive tool provides data specific to geographic location and is aggregated for gender and race where possible. Handy policy briefs appear alongside the data to provide thoughtful analysis of each section.

**KELLY NEVINS**, CEO of Women's Fund of Rhode Island, summarizes, "The *Women's Well-Being Index* is a fact-based platform to highlight where gaps exist for women, and particularly for women of color, which our community can use to focus efforts for positive change."

WFRI's second report, the *2024 Census of Directors and Chief Executives of Rhode Island's Largest Nonprofit Organizations (Census)*, is an update to the 2019 report of the same name. Assisted by a class from Bryant University, WFRI collated data on 135 of our state's largest nonprofits, based on revenue. The *Census* demonstrates how RI is doing in regards to gender and racial diversity among these nonprofits' leadership circles. Key findings include:

- Current data shows a significant decline in the number of CEOs who are women: only 37 women (or 27%) lead at these 135 nonprofits. In 2019, women led at 44%. Only 3% of these CEOs are women of color.
- Similarly, the *Census* shows a drop in the percentage of women serving on the boards for these nonprofits: currently, women hold 872 or 21% of the board seats, compared with 38% in 2019.
- Representation by the BIPOC community has decreased on boards: currently, 8.45% of board members are BIPOC compared to 10% in 2019.

The policy briefs and the *Census* can be downloaded from the organization's website at [www.wfri.org/research](http://www.wfri.org/research). "Both reports provide sobering data on gender and racial equity in Rhode Island, along with some tangible steps we as community members can take to change the narrative. I'd like to point out that less than 1.9% of philanthropic funding is specifically earmarked for women and girls, and this data illustrates what happens when we don't use a gender lens to address community issues," said Nevins. ❖



## NRMP® releases Match Day results for over 44,000 applicants and almost 6,400 residency programs

WASHINGTON, D.C. – The National Resident Matching Program® (NRMP) released key results for the 2024 Match Day on March 15th. This year’s Match included 44,853 applicants who certified a rank order list (“active applicants”) and 41,503 certified positions in 6,395 residency training programs.

### Record High Applicant Participation

A total of 50,413 applicants registered in the 2024 Main Residency Match, an all-time high and increase of 2,257 or 4.7 percent over last year. The rise in applicants was driven largely by an increase of 1,986 non-U.S. citizen international medical graduates (IMGs) and 623 osteopathic (DO) seniors over last year.

Among all registrants, 44,853 certified a rank order list of training preferences, the highest number on record and an increase of 1,901 or 4.4 percent over last year. Of the applicants who certified a rank order list, 35,984 matched to a post-graduate year 1 (PGY-1) position, an increase of 1,162 applicants from last year. The PGY-1 match rate was 80.2 percent.

U.S. MD seniors remain the largest applicant group participating in the Match, and in 2024 numbered 20,296. This represents a decrease of 21 applicants compared to the 2023 Match; however, the number of U.S. MD seniors certifying a rank order list increased slightly to 19,755, seven more than last year.

### Applicant Match Rates Remain Steady

Match rates remained steady among each of the four main applicant types with less than a one percentage point difference compared to the 2023 Main Residency Match.

- U.S. DO seniors achieved a 92.3 percent match rate, an all-time high and an increase of 0.7 percentage points over last year. Since 2019, the DO senior match rate has increased 4.2 percentage points.
- U.S. MD seniors realized a 93.5 percent match rate, a decrease of 0.2 percentage points from last year. The U.S. MD senior match rate remains within the historic 92–95 percent range that has been steady since 1982.
- U.S. citizen IMGs realized a 67.0 percent match rate, a decrease of 0.6 percentage points from last year.

- Non-U.S. citizen IMGs realized a 58.5 percent match rate, a decrease of 0.9 percentage points since last year.

### Increased Program and Position Participation

The 2024 Main Residency Match included 6,395 certified programs offering 41,503 PGY-1 and PGY-2 training positions, the largest number in the NRMP’s 72-year history. Increases afforded applicants access to 125 more programs and 1,128 positions which is 2.8 percent more than the 2023 Main Residency Match.

“Upward trends in participating program rates and positions offered and filled demonstrate the success with which the NRMP ably and consistently grows to meet the needs of the undergraduate and graduate medical education communities,” said Dr. Lamb. “To support that growth, the NRMP is committed not only to expanding its data analyses and offerings for those in our community but also to leveraging Match data as a critical bellwether of the future physician workforce, informing national conversations about specialty and physician geographic distribution to improve population health outcomes.”

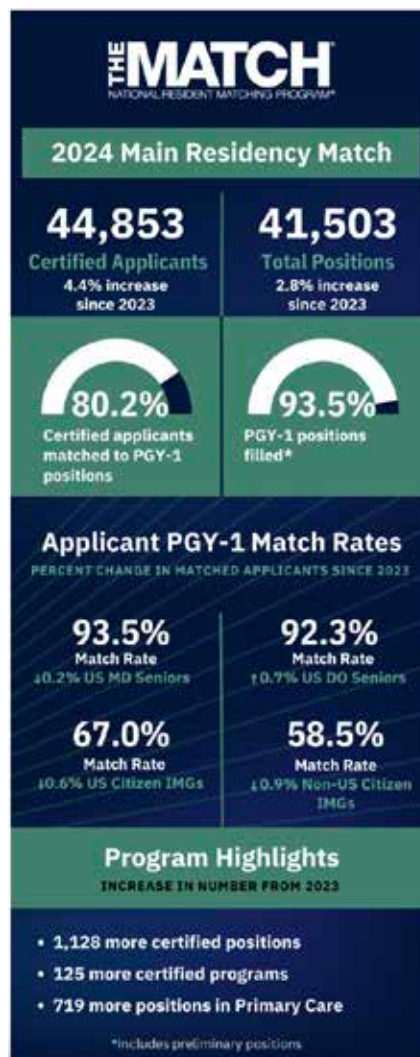
- Of all positions offered, 38,941 filled for a rate of 93.8 percent, a 0.5 percentage point increase over last year.
- Of the 6,395 total certified programs, 5,608 filled at a rate of 87.7 percent, an increase of 1.1 percentage points over last year.

### Fluctuation in Primary Care

Concerns remain about a shortage of primary care physicians across the U.S., and NRMP data offer insights into trends.

The 2024 Match offered 19,423 primary care positions, the largest number on record and 46.8 percent of all the positions offered in the Match. Primary care specialties are defined as categorical PGY-1 positions that provide the full training required for board certification in Family Medicine, Internal Medicine, Internal Medicine-Pediatrics, and Pediatrics. There were 719 more primary care positions offered in 2024, and the fill rate for the specialties combined was 92.9 percent.

While strong, the primary care fill rate fell slightly in 2024 by 1.4 percentage points, largely due to changes in Pediatrics.



In the 2024 Match, Pediatrics offered 3,139 categorical and primary positions, an increase of 93 over 2023, and filled 2,887 resulting in a fill rate of 92 percent compared to 97.1 percent in 2023. After the algorithm was processed, 252 Pediatrics positions were unfilled, an increase of 164 over last year. Notably, the percentage of U.S. MD seniors that matched to Pediatrics categorical positions in 2024 was 47.6 percent, a decrease of 7.2 percentage points from last year.

### Rebound in Emergency Medicine

After a two-year decline, Match data reflect a resurgence in Emergency Medicine fill rates. Emergency Medicine achieved its historically high fill rate of 98–99 percent in the 2017–2021 Matches. By 2023, the fill rate had dropped by 17.9 percentage points, driven in part by the strain the specialty experienced during the height of the COVID-19 pandemic. In 2024, Emergency Medicine offered 3,026 positions, an increase of 16 positions from 2023 and filled 2,891 to earn a 95.5 percent fill rate, an increase of 13.9 percentage points. There were 135 positions unfilled after the matching algorithm was processed compared to 554 unfilled positions in 2023.

### Continued Strength in Obstetrics and Gynecology

The specialty had another very strong Match, even with the two-year anniversary of the Dobbs v. Jackson Women's Health Organization Supreme Court decision approaching this summer. Only six categorical positions remained unfilled after the matching algorithm was processed. OB/GYN achieved a 99.6 percent fill rate in the 2024 Match, continuing a strong trend of filling over 99 percent of positions offered every year for the past five years and filling at least 90 percent of positions with U.S. MD and DO seniors.

### Specialty Highlights and Competitiveness

The results of the Match can indicate the competitiveness of specialties as measured by the percentage of positions filled overall and the percentage of positions filled by U.S. MD and DO seniors.

The specialties with 30 positions or more that filled with the highest percentage of U.S. MD and DO seniors were Internal Medicine/Emergency Medicine (96.8 percent), Thoracic Surgery (95.8 percent), Otolaryngology (95.8 percent), Internal Medicine/Pediatrics (94.6 percent), Orthopedic Surgery (92.1 percent), Interventional Radiology-Integrated (91.4 percent), and Obstetrics and Gynecology (90.7 percent).

The specialties with 30 positions or more that filled with the highest percentage of U.S. citizen IMGs and non-U.S. citizen IMGs were Internal Medicine (38.6 percent), Pathology-Anatomic and Clinical (37.4 percent), Family Medicine (31.8 percent), and Neurology (28.3 percent).

### Supplemental Offer and Acceptance Program® (SOAP®)

Eligible applicants who did not match to a residency position participated in the NRMP's Match Week Supplemental Offer and Acceptance Program (SOAP) to try to obtain the 2,562 positions in 787 programs that went unfilled after the matching algorithm was processed, 123 fewer positions than last year's Match. A total of 2,575 positions were placed in SOAP, including positions in programs that did not participate in the algorithm phase of the process. There were 83 fewer positions in SOAP in 2024, a decrease of 3.1 percent compared to last year's Match. Detailed SOAP results will be available in the 2024 Main Residency Match Results and Data Book, which is published in the Spring. ❖

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View the [Advance Data Tables](#), [Match by the Numbers](#), and [Match infographic](#) for additional data and information.

Brown Match Day list: <https://medical.brown.edu/md-2024-match-list>

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## URI Health Services certified as an LGBTQ Safe Zone by BCBSRI; CNE adds three more sites

PROVIDENCE – Blue Cross & Blue Shield of Rhode Island (BCBSRI) has designated an additional five healthcare sites, including University of Rhode Island Health Services, as new LGBTQ Safe Zones, bringing the total number of sites to more than 110. Safe Zone designation by BCBSRI certifies that these sites have demonstrated care designed to meet the specific needs of LGBTQ patients.

URI's Dr. Pauline B. Wood Health Services, which serves more than 17,000 undergraduate and graduate students, is the first university-based facility to become a BCBSRI Safe Zone. It offers a wide range of services, including ambulatory medical, psychiatric, pharmacy, laboratory, and sexual health, and collaborates with the university's Gender and Sexuality Center for faculty and staff trainings and on-campus events.

Care New England, which already has achieved Safe Zone designation for some sites, added three more: the Wound Recovery & Hyperbaric Medicine Center and Spaulding Outpatient Center, both at Kent Hospital, and the Fertility Center at Women & Infants Hospital.

Rounding out the group of new Safe Zones is From the Heart Nutrition,

which is based in Providence and offers services related to eating disorder recovery, body image healing, and nutrition for infants, children, families, and athletes.

"We're thrilled to now have a university site among the ranks of our Safe Zones and even more pleased that it's the largest institute of higher learning in the state. We also welcome three additional Care New England programs, expanding the breadth of Safe Zones located within Rhode Island's largest health systems," said **CAROLYN BELISLE**, managing director of corporate social responsibility at BCBSRI. "We applaud all our new and continuing Safe Zones for being responsive to the unique needs of LGBTQ individuals. It's not just respectful, it's essential to quality and equitable healthcare for this historically underserved community."

**JENNIFER HODSHON**, director of URI Health Services, said, "The Blue Cross & Blue Shield of Rhode Island Safe Zone facility designation is important to University of Rhode Island Health Services because it recognizes our longstanding commitment to a safe, supportive, and inclusive environment of care for our diverse student population. URI Health Services has highly educated

and skilled staff members who provide a nurturing environment for those with different identities, perspectives, and experiences, particularly those who may be stigmatized or marginalized. Health Services provides safe zone training for all employees."

BCBSRI launched the Safe Zone program in 2016. Today there are 111 sites. Each must recertify annually to ensure they continue to meet program criteria. In 2023, nearly 70 Safe Zones recertified, reaffirming their commitment to LGBTQ inclusion and annual staff training.

Certification requirements for BCBSRI LGBTQ Safe Zones include staff training specific to the care of LGBTQ patients, protection for patients and staff from discrimination based on gender identity or expression, gender neutral bathrooms, inclusive forms and procedures, and a public commitment to connecting with and serving the LGBTQ community.

BCBSRI solicits applications and designates new LGBTQ Safe Zones twice a year. To learn more about the program, or if you are a provider or care facility looking to become certified, visit the BCBSRI LGBTQ Safe Zone website. ❖

## Appointments

### Benjamin Greenberg, MD, PhD, named Director of the VA RR&D Center for Neurorestoration and Neurotechnology



PROVIDENCE – Leigh Hochberg, MD, PhD, Director of the VA RR&D Center for Neurorestoration and Neurotechnology (CfNN), announced his intent to step down as the Center's director on March 6, 2024. **BENJAMIN GREENBERG, MD, PhD**, CfNN's Associate Director, will become Director.

Dr. Hochberg has been CfNN's Director since 2018, and will return

to the role of Associate Director of CfNN, a role he held from the Center's founding in 2012 through 2018. He is also L. Herbert Ballou University Professor of Engineering and Professor of Brain Science at Brown University, Director of the Center for Neurotechnology and Neurorecovery at Massachusetts General Hospital, and Senior Lecturer on Neurology at Harvard Medical School. As Director of the BrainGate clinical trials and consortium, Dr. Hochberg's research is focused on the development and testing of intracortical brain-computer interfaces for Veterans and others with paralysis resulting from ALS, spinal cord injury, stroke, and other neurologic disorders. Dr. Hochberg was also the recipient of the 2022 Paul B. Magnuson Award for outstanding achievement in VA Rehabilitation Research.

Dr. Greenberg became the founding leader of CfNN's Mental Health Focus Area in 2012, and has been CfNN's Associate Director since 2018. He is also Professor of Psychiatry and Human Behavior at Brown University, and directs the COBRE Center for Neuromodulation at Butler Hospital. Dr. Greenberg's main research is on development of brain circuit-focused therapies, including non-invasive and invasive neuromodulation methods for conditions representing major burdens for Veterans and others including PTSD, depression, and OCD. He treats patients at the VA Providence Healthcare system in Trauma Recovery Services and in the Neuromodulation Clinic.

Dr. Greenberg commented, "I'm looking forward to continuing the great tradition of service-based leadership that Leigh has exemplified since CfNN was launched in 2012. Our mission to support Veterans Health is central to all of our research, and to our recruiting and training the next generation of researchers dedicated to improving the health and function of our nation's Veterans. I am proud to say that, across our fields of research, CfNN has made a real difference in interventions available to Veterans. Thanks to the groundwork Leigh has laid, and our dedicated, multidisciplinary team, we are poised to do even more in the future." ❖



### Stephen Hendricksen, MD, FACEP, appointed Medical Director of the Wound Care Center and Hyperbaric Medicine at Kent

WARWICK – **STEPHEN HENDRICKSEN, MD, FACEP**, has been appointed Medical Director of the Wound Care Center and Hyperbaric Medicine at Kent Hospital. Dr. Hendrickson will divide his time between Kent Hospital's Emergency Department and the Wound Center.

He attended The Warren Alpert Medical School of Brown University and the Robert Wood Johnson Medical School, in New Jersey. He completed his residency training in Emergency Medicine with Brown University at Rhode Island Hospital and the Miriam Hospital, where he did additional training in Undersea and Hyperbaric Medicine.

He continued his training at the University of Pennsylvania with a Diving and Hyperbaric Medicine fellowship. ❖



### Jeffrey Cabral named Chief Philanthropy Officer at Care New England Health System

PROVIDENCE – **JEFFREY CABRAL, BA, MFA**, has been named Chief Philanthropy Officer at Care New England Health System effective April 1. As a native Rhode Islander and someone passionate about advancing healthcare and positively

impacting the well-being of the State's patient communities, he is the ideal professional to lead the system's strategic philanthropic efforts into the future.

Most recently, he served as the Vice President of Development at the University of Rhode Island Foundation, where he provided strategic vision for a comprehensive \$300M campaign, as well as managerial oversight to all URI's college and unit-based, athletic, regional, annual fund, and planned giving development officers.

Before his role at URI, he was the Senior Director of Development for the New York Program & Brown Arts Initiative at Brown University. While there, he directed Brown's fundraising strategy and team in New York and managed the Cultivating Creative Expression campaign, a \$256M arts fundraising campaign inclusive of the Brown Arts Initiative, and the Performing Arts Center.

An undergraduate of Rhode Island College, he earned a BA and later attended Wayne State University where he earned an MFA in Theatre Management. In 2022, he attended Cornell University, where he received a certificate in Diversity and Inclusion. ❖

## Appointments

### Chris Thanos, PhD, appointed to Rhode Island Life Science Board of Directors

PROVIDENCE – Governor **DAN MCKEE** recently announced the appointment of **DR. CHRIS THANOS** to serve on the Rhode Island Life Science Hub Board. This appointment completes the board and fulfills the statutory requirement that the Governor appoint a senior executive of a Rhode Island-based life science company specializing in bio-manufacturing and design.



Currently, Thanos is the Vice President of Engineering Sciences and Providence Site Research Head for Vertex Pharmaceuticals and leads the company's efforts on device design and translational bioengineering research to develop novel cell and delivery platforms. He is the lead inventor of the immunoprotected cell delivery platform used in Vertex's VX-264 program to treat Type 1 Diabetes (T1D).

Before that, Thanos was a founder of CytoSolv, Inc., a cell therapy company that was later acquired by Semma Therapeutics where he served as vice president of delivery. In 2019, Vertex Pharmaceuticals acquired Semma to commercialize the technology for T1D.

Thanos earned his PhD in Biomedical Sciences from Brown University in 2001 and completed his undergraduate degree at Brown in 1997. He has been an editorial consultant for multiple scientific

journals, and his research has been published in more than 50 journals and has resulted in numerous patents for his work.

"I am honored to be selected to the Rhode Island Life Science Hub Board and to work with Governor McKee, Neil Steinberg, and fellow Board members to catalyze innovation in life sciences in Rhode

Island," said Thanos. "From exposure to unparalleled technical expertise to working through local mechanisms that enabled me to start and grow a business, Rhode Island has been instrumental in helping me advance science to the clinic. I am excited to contribute to the life science hub's effort to expand opportunities in Rhode Island and to establish a framework to help future endeavors in the life sciences to impact patients."

The appointment of Thanos completes the Life Science Board of Directors:

- **Neil Steinberg**, Chairman (Sr. Exec. Banking, Grant Making & Fundraising)
- Secretary **Liz Tanner**, RI Commerce, Vice Chair (Ex-officio)
- **Ernest Almonte**, Treasurer (Public Member, CPA & member of the RI Society of CPAs) Director of Economic Development, City of Providence (Ex-officio)

- **Christina Paxson, PhD**, President, Brown University (Ex-officio)
- **Jack Warner, EdD**, President, Rhode Island College (Ex-officio)
- **Marc Parlange, PhD**, President, University of Rhode Island (Ex-officio)
- **Armand Sabitoni** (Representative of Organized Labor/ Designee)
- **John Fernandez** (President/chief executive officer of the Lifespan Corporation/designee)
- **Michael Wagner, MD FACP**, President & CEO, Care New England (Ex-officio)
- **Mukesh K. Jain, MD**, Dean, Warren Alpert Medical School, Brown University (Ex-officio)
- **Patrice Milos, PhD** (Life Science Trade Association/ Designee)
- **Chris Thanos, PhD** (Sr. Exec. RI-based Life Science Company specializing in Biomanufacturing/Designee)
- **Brian Britson** (Sr. Exec. RI-based Life Science Company specializing in Bio-manufacturing/Designee)
- **Kerry Evers, PhD** (President/Sr. Exec of RI-based Life Science Company/Designee)

## Appointments

### Brown Physicians, Inc. announces Ann Kashmanian, CPA, MBA, as Chief Financial Officer

PROVIDENCE – Brown Physicians, Inc. announced the appointment of **ANN KASHMANIAN, CPA, MBA**, as the Chief Financial Officer effective March 1, 2024. With a proven track record in financial leadership and strategic planning, Kashmanian brings a wealth of experience to her new role. As the CEO of Brown Medicine, Kashmanian has demonstrated a deep understanding of the organization's mission and values, making her transition to CFO a seamless and natural progression.

In her new position, Kashmanian will play a vital role in steering Brown Physician's Inc. towards continued financial success and sustainable growth. Her dedication to innovative financial strategies aligns with the organization's commitment to delivering exceptional healthcare services. Brown



Physicians, Inc. looks forward to the continued success under Kashmanian's financial leadership.

She has been active in financial management in the health care sector of Rhode Island since 1987. She served in a number of executive roles for the Lifespan Corporation for over 16 years, including Senior Vice President of Financial Operations and Care Management for the Lifespan System, Vice President Finance for Rhode Island Hospital and The Miriam Hospital, and Treasurer and CFO of Newport Hospital.

She is a graduate of the College of the Holy Cross and received Masters' degrees in Business Administration, and the Science of Accounting, at Northeastern University. ❖

### Norman Prince Neurosciences Institute names Christine K. Lee, MD, PhD, Director of Endoscopic Skull Base Surgery Program, Co-Director of Skull Base Surgery

PROVIDENCE – Norman Prince Neurosciences Institute recently announced the addition of **CHRISTINE KYUYOUNG LEE, MD, PhD**, as the Director of Endoscopic Skull Base Surgery Program and Co-Director of Skull Base Surgery. Dr. Lee brings her exceptional expertise in neurosurgery, with a specialization in skull base, pituitary, and brain tumor surgery.

Dr. Lee's educational background includes an MD and PhD in Neuroscience from Stanford University School of Medicine. She furthered her skills during her neurosurgery residency at Massachusetts General Hospital in Boston. Dr. Lee then completed a prestigious fellowship in skull base surgery at Stanford University, working alongside Dr. Juan C. Fernandez-Miranda, a globally recognized authority in endoscopic and open skull base surgery.

"Norman Prince Neurosciences Institute is already a world-class program. Still, we are steadfast in our commitment to constantly advance our capabilities," stated Ziya L. Gokaslan, MD,



neurosurgeon-in-chief at Rhode Island Hospital and The Miriam Hospital. "We recruited Dr. Lee because of her incomparable skills and training. The value she adds to our team and the care she can provide our patients is unmatched in the region."

In her new role, Dr. Lee will collaborate with Brown Neurosurgery to expand the skull base surgery division, partnering with Curtis Doberstein, MD, director of cerebrovascular and skull base surgery program at Rhode Island Hospital. She will focus on establishing a leading multi-disciplinary

endoscopic skull base program, aiming to become a regional and national referral center for pituitary lesions, complex cranial tumors, and skull base pathologies.

Additionally, Dr. Lee will serve as the Director of the Translational Skull Base Laboratory. Her research will involve identifying therapeutic targets in chordomas, investigating the cancer neuroscience of skull base tumors, and developing innovative tumor imaging tools. ❖

## Recognition

### AMA names Thundermist Health Center a 2023 Joy in Medicine™ Recognized Organization

WOONSOCKET – The American Medical Association (AMA) named Thundermist Health Center a 2023 Joy in Medicine™ recognized organization in early October. Thundermist is the only healthcare provider in Rhode Island to receive the Joy in Medicine recognition. The AMA grants this prestigious distinction only to organizations that attest to the rigorous criteria of the Joy in Medicine™ Health System Recognition Program and demonstrate a commitment to preserving the well-being of clinical care team members through proven efforts to combat work-related stress and burnout. Thundermist first received the Joy in Medicine recognition in 2021 at the Bronze level and progressed this year to the Silver level.

“Thundermist is at the cutting-edge of promoting healthcare worker well-being,” says **MATTHEW MALEK, MD, MPH**, medical director of clinician wellness at Thundermist. “At Thundermist, we understand the primary driver of burnout among healthcare professionals is not a lack of resiliency among the clinicians, but rather the broken system in which they practice. As such, our wellness work focuses on optimizing the system in which our clinicians practice.”

“The Joy in Medicine recognition doesn’t mean that we are done,” he adds. “To the contrary, this recognition means that we have put into place the infrastructure to really accelerate, and then sustain, our wellness efforts with our staff.” Currently, there are 120 medical providers at Thundermist Health Center.

Burnout rates among the nation’s physicians and other healthcare professionals spiked dramatically as the COVID-19 pandemic placed acute stress on care teams and exacerbated long-standing system issues. While the worst days of the pandemic are over, the lingering impact of work-related burnout remains.

“Health organizations that earned recognition from the AMA’s Joy in Medicine Health System Recognition Program are leading a national movement that declared the well-being of health professionals to be an essential element for providing high-quality care to patients, families, and communities,” says AMA President **JESSE M. EHRENFELD, MD, MPH**. “Each Joy in Medicine recognized organization is distinguished as among the nation’s best at creating a culture of wellness that makes a difference in the lives of clinical care teams.”

Since its inception in 2019, the Joy in Medicine™ Health System Recognition Program has recognized more than 100 organizations across the country. In 2023, a total of 72 health systems nationwide earned recognition with documented efforts to reduce system-level drivers of work-related burnout



Matthew Malek, MD, MPH, medical director of clinician wellness at Thundermist. [COURTESY OF THUNDERMIST]

and demonstrated competencies in commitment, assessment, leadership, efficiency of practice environment, teamwork, and support.

Learn more about the AMA Joy in Medicine Health System Recognition Program at [ama-assn.org/joyinmedicine](http://ama-assn.org/joyinmedicine).

## Recognition

### Rhode Island Hospital named among World's Best Hospitals

PROVIDENCE – Rhode Island Hospital has been recognized as one of the world's best hospitals in Newsweek's World's Best Hospitals 2024 ranking. This annual ranking, conducted in partnership with Statista, evaluates hospitals from around the globe.

Rhode Island Hospital also received an Infection Prevention Award included in this ranking. The Infection Prevention Award identifies which hospitals featured on the list were above the national average based on reported measures.

The comprehensive list includes data on 2,400 hospitals across 30 countries, with each hospital's score determined by an online survey of over 85,000 medical experts and public data from post-hospitalization patient surveys. Factors such as general satisfaction, hygiene, patient/doctor ratio, and the use of Patient Reported Outcome Measures (PROMs) were also considered in the evaluation process.

"Being named among the world's best hospitals is a testament to the exceptional care and dedication of our staff," said **DEAN ROYE, MD**, interim president at Rhode Island Hospital. "We are proud to be recognized for our commitment to providing high-quality healthcare to our patients." ❖



## Obituaries



**DAVID KORN, MD**, beloved husband of Carol Scheman, died on March 10, 2024, shortly after his 91st birthday. A brilliant scientist and academic leader, he devoted his life to academic medicine, health policy and biomedical research.

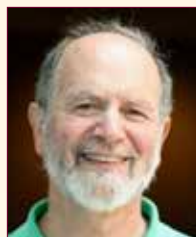
A son of the late Solomon and Claire (Leibman) Korn, he was born in Providence, where he attended Classical High School. After graduating from Harvard College and Medical School, he became a clinical and research pathologist at the NIH. In 1968, he joined the Stanford University Department of Pathology as professor and chair and, over the next 17 years, built one of the top-ranked departments in the country. He was appointed Dean of Stanford Medical School in 1984 and served in that position and as vice president of Stanford until 1995.

Among his many leadership positions in science and medicine, he was a member of the National Academy of Medicine, an AAAS Fellow, a founder of the California Transplant Donor Network and a Presidential appointee as chair of the National Cancer Advisory Board. His subsequent career included chief scientific officer of the Association of American Medical Colleges and Vice Provost for Research at Harvard. His continued commitment to ensuring the integrity of research added to his deep and wide scholarly contributions.

He and his ex-wife, Phoebe Richter Korn, had three sons: Michael and his children, Shira Tova, Shmuel, Zipporah Esther, Ashleigh and Carlyne, and 21 grandchildren; Stephen and his children, Justin and Elyse, and their mother, Jana; and Daniel, his wife, Barbara, and children, Rachel and Andrew. He has been an adoptive father and stepfather to the daughters of his loving and beloved wife, Carol, whom he married in 1997: Rebecca Fiduccia, her partner, Anthony, and son, Rocco; and Joanna Fiduccia, her husband, Josh, and son, Solomon. He was a delighted and delightful grandfather, who especially loved playing, walking and talking with his adored grandchildren.

He was occasionally cantankerous, always principled, deeply concerned about the future of the country and its democracy, dedicated to gender and racial equity and scientific excellence, and a devoted mentor. He leaves an indelible mark on the world and a hole in many hearts.

Contributions in his honor may be made to the Providence Classical High School Alumni Association, the Boston Symphony Orchestra, the Boston Museum of Fine Arts or Temple Emanu-El, in Providence. ❖



**RICHARD PLOTZ, MD, MPH**, 75, of Providence, died of cancer on March 2, 2024. Dr. Plotz worked as a cytopathologist, holding degrees from Harvard College (undergraduate 1971), the University of Pittsburgh (MD, 1977), and Boston University (MPH).

He was active in the Tolkien fan community of the 1960s, organizing the Tolkien Society of America. He met his wife Judy (née Anker) when she traveled to Brooklyn from Albany to attend a Tolkien Society meeting; they were married in March 1971. He corresponded with Tolkien, and visited him at his home in Oxford.

His interests in puzzles, history, geography, and language converged in his magnum opus: family trees of both his and Judy's families, spanning a dozen generations, which he researched and compiled over more than half a century.

In addition to his wife, Dr. Plotz is survived by his daughter Martha Ingols (husband Kyle, child Aloe); his son Mike Sage (wife Vrie); his brothers Tom (wife Cathy Klion) and Bob (wife Sue). A private funeral has been held.

Those who feel moved to do so may make a donation in Dick's memory at one or more of the following organizations:

JewishGen (<https://www.jewishgen.org/jewishgenerosity/Honors/>)

The Nature Conservancy (<https://preserve.nature.org/page/80429/donate/1>)

American Cancer Society (<https://donate.cancer.org/?campaign=honormemorialbutton>) ❖



**BARBARA SCHEPPS WONG, MD**, 81, died on March 14, 2024 after a long, courageous battle with Alzheimer's disease. She earned her undergraduate degree from the University of Pennsylvania. She funded her education by working in various research labs on campus. It was an integral part of her education.

Then it was onto Hahnemann Medical College, where she earned her MD in 1964. She supported herself by working at the Hahnemann Hospital E.R. These years demonstrated her strong work ethic which continued for the rest of her life. Residency training followed at the New England Deaconess Hospital and the Boston City Hospital. In 1964, she moved to Columbus Ohio and found employment at Ohio State University Hospital Radiology Department. There she

encountered her first brush with gender pay discrimination. She pushed her case and won pay parity for the few female doctors employed there at the time.

She then settled in Rhode Island and was hired by Ray Medical Group (subsequently renamed Rhode Island Medical Imaging or "R.I.M.I."). She lived the remainder of her life in Pawtucket and Providence. At a time when there were few women leaders in medicine, Dr. Wong was elected President of R.I.M.I. and served in that role for over 15 years. During that time the group experienced spectacular growth and increasing academic prominence.

She was the guiding force in the founding of the Anne C. Pappas Center for Breast Imaging 28 years ago at R.I. Hospital. She led the way in caring for women with breast disease in R.I. and Southern New England. She left scores of grateful patients who considered her integral to the early diagnosis of their breast cancer and their subsequent successful therapy.

She served as president of the R.I. Hospital Medical Staff Association, a member of the R.I. Hospital Board of Directors and president of the Rhode Island Medical Society. In 2004, she received the prestigious Milton W. Hamolsky outstanding physician award. She was a Clinical Professor of Diagnostic Imaging at the Alpert Medical School.

She is survived by her husband of 56 years, Dr. Richard Wong, daughter Dr. Deborah R. Wong (Dr. Todd Rothenhaus) and her cherished grandchildren Chris and James of Belmont, MA.

In her memory, consider supporting The Anne C. Pappas Breast Center c/o The R.I. Hospital Foundation, P.O. Box H. Providence, R.I. 02901, Alzheimer's Disease Foundation, Rhode Island Food Bank or the charity of your choice.

Arrangements were in the care of Sugarman-Sinai Memorial Chapel, Providence. For condolences, [www.sugarman-sinai.com](http://www.sugarman-sinai.com)