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HEP (

Cover image - Earlier this year, RI Defeats Hep C and renowned graphic artist and RISD grad Shepard Fairey named two winners of its poster design competition: Hayward H. Gatch, IV, whose image is on this month's cover of RIMJ. and Brandon Bruzzi.



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R I Med J (2013). 2014 May 1;97(5):31-4.

The Rhode Island Consortium for Autism Research and Treatment (RI-CART): A New Statewide Autism Collaborative.

Gerber A, Morrow E, Sheinkopf S, Anders T.

Erratum in: R I Med J (2013). 2014 July 12; 97(7):6.

Corrected to: Gerber A, Morrow EM, Sheinkopf SJ, Anders T.

ABSTRACT: Autism is a neurodevelopmental disorder characterized by core deficits in social interaction, language and repetitive behaviors. The need for services is rising sharply as the number of children identified with autism increases. The Rhode Island Consortium for Autism Research and Treatment (RI-CART) was founded in 2009 with the goal of increasing communication among autism researchers throughout the state and improving treatment for children with autism. RI-CART members have several exciting projects in progress, with its larger aim being the creation of a statewide research registry. A statewide registry would benefit research in Rhode Island and allow for larger collaborations nationally. [Full text available at http://rimed.org/ rimedicaljournal-2014-05.asp, free with no login].

KEYWORDS: RI-CART, Rhode Island, autism, autism spectrum disorder, registry PMID: 24791265 [PubMed - in process]

# Disorders Without Explanation

JOSEPH H. FRIEDMAN, MD joseph\_friedman@brown.edu

RECENTLY SAW A 40year-old woman with a movement disorder that began in her teens, reportedly diagnosed at a major medical center at age 20. Since that time she's done very well, living a normal life, married, with children, seemingly comfortable. I was surprised by her history. Her



problem, presumably an autosomal recessive disorder, was progressive, yet hers had not progressed. Her movements were very intermittent, sometimes not present for hours, yet they did occasionally interfere with her life. They never occurred when exercising, so she can jog without problem. Her movements were quite odd and it became quite apparent to me that they were psychogenic. She was not seeing me for treatment, but only to "check in," and have a doctor available should her problem worsen.

This reminded me of a couple of other cases. A 75-year-old woman who I'd followed for a few years for a very significant tremor told me that she had another neurological problem that she'd never mentioned. If she stood in one place for several seconds she would lose her balance, always falling backwards, and that she could abort this by either shaking her arms or rubbing the top of her scalp. She allowed me to film this, and I have it on file. It was a phenomenon without a physiological explanation. Yet it was not a "problem," in that it caused her no distress. She mentioned it to me casually, wanting to share a peculiar observation, like someone showing that they can bend themselves backwards enough to touch the floor with their hands. It didn't distress her in the least. The third case along

this line is a 50-year-old man who I diagnosed with Parkinson's disease 20 years ago or more, who hasn't changed during that entire time and has not required medication. He reports easy fatigue, which limits his life to a small extent, but has not interfered significantly with his family life, raising his children, pursuing his professional career or enjoying leisure activities. He is, at least to my eye, completely well compensated. Yet, I came to the conclusion a few years ago that this had to be psychogenic. I thought about proving this with the newly developed DaT scan, a SPECT scan that provides an estimate for the number of dopamine-secreting neurons in the brain. It is a fairly reliable method of confirming the presence or absence of a dopamine cell deficiency. Since we don't see physical signs of PD until people have lost between 50% and 80% of the dopaminergic cells in the midbrain, there is generally a marked difference between normal and abnormal. But in this case I refrained.

Just as in the previous two cases I did not mention suspicions of a non-physiological explanation.

I also have followed a man for the last 25 years for severe parkinsonism while on prochlorperazine. He refused to taper or stop the drug, which commonly causes parkinsonism. Over the next few years it became increasingly clear that his parkinsonism, while possibly partly due to the drug, was mostly a

If a disorder is psychogenic, it presumably has a psychic explanation. In most cases the explanation is apparently so disturbing that the person cannot deal with it consciously, transforming the emotional distress into a physical sign.

psychogenic problem. I was unable to check him for stiffness, a cardinal feature of Parkinson's disease (PD), or for slowness, another cardinal feature, because he had too much pain to move any part of his body even a millimeter. I then learned that he had severe, intractable asthma, but never had visited an emergency room, and never had pulmonary function tests because his tremors were too severe. He had never been hospitalized for this and never had wheezing detected. On top of this were seizures, occurring many times each day. I sent a videotape of him many years ago to my mentor, who thought the tremors psychogenic, but I never discussed this with the patient. I have always felt, and continue to believe, that there is no reasonable chance that he might embrace the idea that all of his disabling medical conditions were the result of emotional distress. I never thought that with appropriate therapy he might become a functional person. He was wedded to his diagnoses, which were as important to him as life itself. I would have intervened if I had seen him near the onset.

I see a lot of people with psychogenic problems. All doctors do. But most of these are for highly subjective symptoms: chest pain, abdominal bloating, dizziness, fatigue, weakness. In neurology we see non-epileptic seizures (pseudo-seizures), blindness, deafness, mutism, paralysis, tremors and a wide variety of movement disorders. Many of the neurological disorders can be demonstrated to be of "non-physiological origin," either with objective testing such as video monitoring with concurrent EEG, for non-epileptic seizures, or with a variety of examination procedures. One can never "prove" that pain or discomfort or dizziness isn't organic while we often can demonstrate that a patient isn't truly paralyzed. This makes us more confident about the non-physiological origins of neurological symptoms.

Acute "functional" (non-physiological) neurological disorders usually resolve without treatment. The ones that persist six months often don't resolve, ever, even with treatment. The above cases demonstrate that some people with psychogenic movement disorders do quite well over decades. If a disorder is psychogenic, it presumably has a psychic explanation. In most cases the explanation is apparently so disturbing that the person cannot deal with it consciously, transforming the emotional distress into a physical sign. Perhaps in these cases, where people can live full lives around an isolated disorder, they have successfully cordoned off the distressing problem without having to deal with it? Perhaps some psychic traumas are best NOT dealt with other than for having a few twitches now and then? I certainly believe that for these three cases, it is highly likely that, even if the patient would embrace my diagnosis, an unlikely event, the treatment

might well be worse than the disease.

I published an essay a few years ago in a neurology journal calling on my colleagues to "call a spade a spade," and tell their patients the truth when they think the problem is psychogenic and not hide behind, "I'm not sure," "I can't explain this," "maybe you should see someone else," when, in fact, they are sure. My co-author asked me how I could have written that column and then this one. The answer lies in why the patients saw me. In none of these cases was a diagnosis or a treatment sought. I was being seen for "follow-up," for reassurance, for comfort. **\*** 

# Author

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

## Disclosures

Dr. Friedman's conflicts of interest can be obtained by request.

# Guidelines for Letters to the Editor

Letters to the Editor are considered for publication (subject to editing and peer review) provided they do not contain material that has been submitted or published elsewhere.

The *Rhode Island Medical Journal* prefers to publish letters that objectively comment on or critically assess previously published articles, offer scholarly opinion or commentary on journal content, or include important announcements or other information relevant to the Journal's readers.

Letters in reference to a Journal article must not exceed

175 words (excluding references), and must be received within four weeks after publication of the article. Letters not related to a Journal article must not exceed 400 words (excluding references).

A letter can have no more than five references and one figure or table. A letter can be signed by no more than three authors. The principal author will be asked to include a full address, telephone number, fax number, and e-mail address. Financial associations or other possible conflicts of interest must be disclosed.

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# The Remote Origins of a Street Drug

STANLEY M. ARONSON, MD smamd@cox.net

THE ANCIENT GREEK and Latin languages have generously provided the art of medicine with a dazzling array of prefixes, suffixes, privatives, intensives, phonemes and roots to satisfy the profession's etymological needs as its physicians confront newly encountered pathologic variants and altered clinical disease-states. And so, over

the many centuries, physicians have assembled novel technical words to fit their needs for new nomenclature, thinking these new words would stay confined to the rarefied precincts of medicine. It was a naïve thought.

For example, medicine needed a word to define the abnormal stretching, dilating or expanding of a tubular structure (such as a vein or an artery). And so some anonymous soul took the Greek prefix, *ekto-*, meaning outside or external, and the root, *stasis*, meaning the proper place, to form a new root: *ektasia*; and when merged with more appendages such as a prefix, *tel-*, meaning distant or furthest away, the new word telangiectasia was born (defining an abnormal collection of dilated, peripheral blood vessels).

And so, from its primary origins as the Greek word, *ekstasis*, meaning a displacement, came a secondary Latin word, *ecstasis*, now meaning 'a removal from its proper place'; and then, in English, a greater variety of tertiary meanings: 'beside oneself', 'out of tune with the world', and 'in the grip of deep passion.' By this century, the word came to define such entities



trances, extreme rage, exalted sexual feelings – and during the past few years, an illicit street drug.

as religious epiphanies,

In seeking mood-altering pharmaceuticals, chemists have recently synthesized an organic chemical called 3,4-methylenedioxy-N-methylamphetamine said to lessen anxieties and enhance a sense of intimacy/safe-

ty. An illicit street market promptly emerged. The street name of this crystalline substance was MDMA, Molly – or Ecstasy. And by 2005, recreational abuse of this drug led to about 5,000 admissions to the emergency rooms of this nation; and the annual number of such overdosages requiring emergency room intervention has now exceeded 11,000. One user of the drug, ecstasy, exclaimed, "It was like kissing God."

A Greek word with a narrow, sectarian meaning – *ecstasies* – had been taken into the domain of religion, then into the precincts of human passion and medical terminology; and by the current century, the word, ecstasy, has been kidnapped by the manufacturers, purveyors and users of a dangerous empathogenic drug.

Moral barriers may sometimes hinder the free passage of a word from one language to another, from one nation to another – and even from one profession to another; but sooner or later the transition is accomplished, but only if the immigrant word fulfills a need. If there is an urgent need for a new word, the borders of a nation's language become quite porous.

# Arcane to atomic

Consider now the reverse process: the transformation of an arcane word, known solely to those interested in Hibernian literature to the realm of subatomic particle physics.

In 1964, the physicist, Murray Gell-Mann, concluded that the proton was composed of other, and as yet unnamed, subatomic particles with fractional electric charge values. And in seeking a singular name for such a particle, he remembered a small poem in James Joyce's (1882–1941) seminal book, *Finnegan's Wake*.

Three quarks for Muster Mark! Sure he has not got much of a bark And sure any he has it's all beside the mark ...

And so, by 1963, Gell-Mann redeemed the neologism, quark, from an obscure work of literary genius and added it to the daily vocabulary of subatomic physics.

Two words – ecstasy and quark – not quite dormant but certainly selective in their employment, have found new homes: one in the volatile jargon of street drugs and the other in the cloistered nomenclature of elementary particle physics. Kipling once observed that "words are, of course, the most powerful drug used by mankind." \*

## Author

Stanley M. Aronson, MD, is Editor emeritus of the *Rhode Island Medical Journal* and dean emeritus of the Warren Alpert Medical School of Brown University.

### Disclosures

The author has no financial interests to disclose.



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# Treatment of intracerebral hemorrhage: where do we stand?

The recent well-written overview of the advances in stroke over the last decade by Dr. Silver<sup>1</sup> has highlighted the controversy over a few options for the treatment of intracerebral hemorrhage (ICH); a result of its complex nature and the variability of its clinical manifestation. Unfortunately, the ICH ADAPT protocol has recently suggested that lower cerebral perfusion and blood pressure do not affect the ICH-induced oedema growth,<sup>2</sup> while Starke et al.<sup>3</sup> underline that thrombolysisassisted clot evacuation might be more beneficial for certain ICH types (such as deep clots, specific superficial ICH types and those involving intraventricular hemorrhage). On the other side, a 9-point prediction score for hematoma expansion was just published<sup>4</sup> aiming toward an individualized treatment and improved trial design in the case of ICH patients; a development of paramount importance in light of the ongoing debate over the criteria leading to a beneficial choice of the nature of ICH treatment studied (amongst others) by the STICH II trial.<sup>5</sup> In view of the above, basic and clinical research should be more attentive to the ICH parametropoiesis, neuroimaging and neuromonitoring, while it should by no means abandon the quest for novel, combinatorial and effective conservative approaches.

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# Disclosures

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# **Reply to Authors**

Drs. Bimpis and Zarros highlight the challenges faced in the treatment of intracerebral haemorrhage, and suggest valuable means of achieving success. Approaches undergoing testing include early surgical evacuation in carefully selected individuals,1 microsurgical thrombolysis with evacuation,<sup>2,3</sup> blood pressure reduction,<sup>4,5</sup> and chelation.6 For most of these potential treatments, with the notable exception of microsurgical thrombolysis and evacuation, time to treatment will likely be the most important factor, as it is in acute ischemic stroke. Getting patients to active emergency medical services and rapid triage after activation will result in the largest overall benefit.

# Brian Silver, MD

[Ed.'s note: Dr. Silver is Associate Professor of Neurology at the Alpert Medical School of Brown University and Director of the Stroke Center at Rhode Island Hospital.]

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# We are read everywhere





**CUBA** – Kathleen Michell, Alllied Health Coordinator for Raritan Valley Community College (New Jersey), was unable to view the Rhode Island Medical Journal on the Prado (Paseo de Martí) in Havana, Cuba, one of the few and increasingly rare places on Earth where the RIMJ is not accessible.



AUSTIN, TEXAS - RIMS Executive Director Newell E. Warde, PhD, downloaded the June issue while visiting the LBJ Library and Museum in Austin, and was pleased to see that the animatronic President Johnson was also a fan of the RI Medical Journal.

Editor's Note: Please take RIMJ on your travels (easily downloadable to your mobile device at rimed.org), snap a photo and send to mkorr@rimed.org.

¥

ANDERSON,

ROBERT A.

CHICAGO, ILLINOIS - Robert Wah, MD, newly inaugurated President of the AMA, at the Annual AMA House of Delegates meeting.

# Hepatitis C Virus Infection: From Margin to Center in Rhode Island and Beyond

*Physicians, Research Scientists and Public Health Experts Collaborate to Combat Rhode Island's Hepatitis C Epidemic* 

LYNN E. TAYLOR, MD, FACP GUEST EDITOR

# KEYWORDS: Hepatitis C, Rhode Island

# BACKGROUND

July 28 is World Hepatitis Day – in honor of Nobel Laureate Baruch Samuel Blumberg, MD, who discovered the hepatitis B virus (HBV), demonstrated it could cause liver cancer, developed the HBV vaccine, and implemented HBV vaccination worldwide. Each year on Dr. Blumberg's birthday, the World Health Organization (WHO) and partners acknowledge World Hepatitis Day to increase awareness of all types of viral hepatitis; strengthen prevention, detection and treatment; and promote action to improving access to care and control of these epidemics.

This year marks the convergence of many steps taken to address the global and national problem of hepatitis C virus infection (HCV). The WHO unveiled its first-ever HCV treatment guidelines.1 The American Association for the Study of Liver Diseases/Infectious Diseases Society of America in partnership with the U.S. Centers for Disease Control and Prevention (CDC), developed HCV care recommendations.2 The U.S. Department of Health and Human Services updated its Viral Hepatitis Action Plan.3 Thus coinciding with World Hepatitis Day, this issue of the Rhode Island Medical Journal focuses on HCV, the biggest killer of Americans among the viral hepatidities.

More than 185 million people worldwide, 3% of the world's population, are living with HCV, of whom 350,000 die each year.<sup>1</sup> Three to 4 million people are newly infected annually. HCV is the most common chronic

blood-borne infection in the U.S. Yet most people with HCV are unaware of their infection. Most individuals are asymptomatic when they become infected. They remain symptom-free for decades, during which time diagnosis will not occur without screening and the virus may be unknowingly be transmitted to others - until they develop severe liver disease including cirrhosis and liver cancer, and develop symptoms. This causes the "silent epidemic" we face today. HCV burdens healthcare systems due to high costs of treatment of end-stage liver disease and liver cancer. In the U.S., HCV is the leading reason for liver transplantation. Nevertheless, this epidemic has not been addressed in a comprehensive way in most locales.

# **HCV HISTORY**

We have come a long way since 1957 when Alick Isaacs, a Scottish virologist, and his Swiss colleague Jean Lindenmann discovered interferon, a natural







antiviral agent. This protein "interfered" with infections and cancers – thus their name, "interfer-on." Cynics dubbed their cytokine, "misinterpreton." Eventually interferon became the mainstay of HCV therapy. More than 50 years later we still use interferon alfa against HCV, HBV and melanoma.

In the 1970s, Harvey Alter, MD, at the National Institutes of Health (NIH), demonstrated that hepatitis acquired via transfusion was not due to hepatitis A or B. In 1987, Daniel Bradley, PhD, at the CDC, in collaboration with Chiron Corporation scientists, identified the virus. In 1988, Alter confirmed its presence in non-A, non-B hepatitis specimens. In 1989, the discovery of HCV was published in journal *Science*.<sup>5,6</sup> By

1992 the blood test was perfected that essentially eliminated HCV from the blood supply.

The first patients treated with interferon were cured in 1984 and 1985 before it was known that HCV caused their disease. Jay Hoofnagle and his NIH colleagues used interferon to treat patients with non-A, non-B hepatitis and observed normalization of hepatic enzymes.<sup>7</sup> It was not until 1991 that the U.S. Food and Drug Administration (FDA) approved the first alpha interferon, administered by subcutaneous injection three times weekly, to treat HCV.

Cure rates were abysmal – less

than 10% for genotype 1, which accounts for 75% of U.S. infections. By 1998, ribavirin, a nucleoside analogue active against some RNA and DNA viruses, with unclear mechanism of action, was approved for use with interferon, to be taken twice daily in pill form. Pegylation, the attachment of large polyethylene glycol (PEG) molecule to interferon, prolonged the halflife, reduced clearance and extended therapeutic action. The FDA approved the first once-weekly pegylated interferon in 2001. At this time, one was still considered a charlatan if you stated that HCV was curable.

Although cure rates remained low with PEG-interferon plus ribavirin, cure was established to be beneficial. HCV viral eradication decreases liverrelated morbidity and mortality, as well as overall mortality. While there were many systems-, provider-, and patient-level barriers to treatment. interferon itself was central. Interferon is a "hard sell." Physicians must ask patients who feel well to take injections for up to a year. These may cause depression, suicidality, cytopenias, fatigue, flu-like symptoms, bacterial infection and permanent thyroid dysfunction and vision loss, to name a subset of potential adverse effects. Ribavirin causes a dose-dependent, reversible hemolytic anemia that has precipitated myocardial infarction, respiratory distress and death. Ribavirin is teratogenic for both women and men. Taking the time to evaluate and treat comorbidities to permit this therapy, manage co-existing disorders, shepherd patients safely through, manage side effects by titrating interferon and ribavirin doses and adding adjunct medications, is poorly reimbursed in our current medical system. Given the low efficacy, toxicity, poor tolerability, contraindications, dangers, extended duration of therapy and low reimbursement for providers, it is no wonder that a minority of patients have been treated and cured. Consequently, mortality from HCV in the U.S. has continued to increase and now exceeds that from HIV infection.8

# DIRECT-ACTING ANTIVIRAL AGENTS (DAAs)

Cure rates with immune-modulating therapy remained stagnant until the advent of direct-acting antiviral agents (DAAs) in 2011. A better understanding of HCV's life cycle resulted in development of DAA pills that stop the virus' ability to copy itself. DAAs directly interfere with HCV replication by targeting viral proteins that inhibit enzymes and steps in viral replication. Combining DAAs from various classes yields consistent, astonishingly high cure rates (100% in some studies), brief treatment durations (perhaps 4 weeks within a few years), and vastly improved tolerability and safety. This transformative breakthrough in antiviral therapeutics is unprecedented; it is as if we are experiencing three decades of gradual improvements in antiretroviral therapies for HIV condensed into a few years. Four DAAs are now available; already the first two are obsolete in the U.S., supplanted by safer, more effective DAAs with simpler dosing schedules.

As of December 2013, we entered the era of interferon-free and ribavirinfree therapies. We now have a simple genotype 1 option of 2 pills, once daily, for 12 weeks, leading to cure in over 90% of patients. By the end of 2014, the FDA is expected to approve the first combination pill - one pill integrating 2 DAAs, once daily - to cure HCV. We are approaching ideal regimens with high-cure rates in all genotypes and subpopulations (interferon treatment-experienced, patients with cirrhosis), with minimal to no side effects. Physicians and patients alike must stay on top of the rapidly changing standard of care.<sup>2</sup> Treatment paradigms will continue to shift as new agents become available.

# THE PROBLEM OF THE BABY BOOMERS

Screening with a blood test identifies people so they may be engaged in care and treatment, and evaluated for cirrhosis (Determining if a person has cirrhosis is always the first step in HCV

# COMMENTARY What price for a cure?

# LYNN E. TAYLOR, MD

DAAs are not expensive drugs to manufacture. The high pricing of the new pills will limit their impact. Already payers are devising schemes to ration these potentially life-saving medications. Some algorithms are aligned with principles of distributive justice,<sup>11</sup> such as prioritizing patients with advanced liver scarring. Other rules support long-held prejudices and misperceptions rather than evidence-based science, about certain people with HCV being more deserving than others, about some subpopulations being more able to adhere to DAAs than others. Removing interferon from the treatment armamentarium will not eradicate barriers for people who use drugs and alcohol, for people who are poor and underinsured. We need advocacy from diverse stakeholders and political action to dismantle the hurdles that have been built over decades. We need experts to step up and participate. Otherwise, non-specialists in payer organizations and business people in medical organizations who prioritize lucrative types of medical practice, will make decisions about which patients we can treat.

DAA price reform will require social and political action. Some are already able to negotiate much lower DAA prices - countries with universal healthcare systems, countries with high disease prevalence. Egypt negotiated a deal whereby sofosbuvir, a pan-genotypic (effective against genotypes 1-6) DAA that may be used without interferon, costs 1% of the U.S. price. These issues go way beyond those of HCV. The U.S. bears research and development costs and pharmaceutical company profits for drugs for many diseases, while middle- and lower-resourced countries and nations with universal health care pay less. The pressure for lower drug prices must remain in the context of our promise to treat more patients. By lowering DAA prices to facilitate treatment for everyone in need, drug manufacturers

care). Baby Boomers who never suspected they were infected are now discovering their liver disease in advanced form. One in 30 U.S. Baby Boomers, those born from 1945-1965, has HCV, comprising 75% of the U.S. epidemic. In 2013, the CDC revised its guidelines to recommend 1-time screening for everyone born from 1945 to 1965, in addition to risk-based screening. The U.S. Preventive Services Task Force supports this recommendation.

# **CHALLENGES AHEAD**

Excitement over the striking advances in therapeutics is tempered by concerns about challenges ahead. Without a parallel revolution in treatment delivery, HCV-related morbidity and mortality in the U.S will continue to rise.9 Will we be able to treat enough patients in time to avert the looming disaster of early illness, suffering and death, as Baby Boomers infected in the 1960s-1990s progress to cirrhosis? Will we be able to treat enough patients in time to avoid the enormous costs of the complications of cirrhosis? "...treatment of half or all of HCV persons with these new agents would reduce cirrhosis by 15.2% and 30.4%, respectively, after just 10 years."10 (See *Commentary: What Price for a Cure?*)

# CONTRIBUTORS

This issue of the Journal features articles on various aspects of the RI HCV epidemic. We address key domains including epidemiology, prevention, screening, treatment, public health policy and advocacy.

Tackling HCV begins with understanding the scope of the problem. In, "Estimating the True Prevalence of Hepatitis C in Rhode Island," authors ELIZABETH KINNARD, BA; OMAR GALÁRRAGA, PhD; BRANDON MAR-SHALL, PhD, and I model the first estimates of the disease burden in our state.

Public health leadership and initiatives provide foundation for combating RI's HCV epidemic. "Prevention and Control of Hepatitis C in Rhode Island," by NICOLE ALEXANDER-SCOTT, MD; ANGELA LEMIRE, H. ELSA LARSON, MA, MS; and UTPALA BANDY, MD, MPH, delineates the RI Department of Health's commitment to addressing HCV.

The DAA drug pipeline is robust, with many DAAs under investigation. The rapid development of multiple classes of DAAs demonstrates that HCV research field has benefited from the arduous path of HIV therapeutics.<sup>17</sup> Who better to discuss, "Therapeutic Revolution in Antiviral Medications for Hepatitis C Virus Infection," than **KAREN TASHIMA, MD**, RI's leader in studies of antiretroviral agents for HIV.

An anti-HCV vaccine remains elusive. Incident HCV occurs due to nosocomial transmission. HCV outbreaks have occurred due to lack of infection control in U.S. healthcare facilities, primarily at ambulatory surgery centers.18,19 HCV maintains infectivity for weeks after drying on inanimate surfaces at room temperature.20 Most incident HCV in the U.S. is due to use of injection equipment contaminated with HCV. Evidence-based preventive interventions exist via needle exchange programs (NEPs). The Congressional ban on federal funding for NEPs has thwarted expanded preventive efforts. Providence is one of only 166 U.S. cities with a NEP. In, "ENCORE: Rhode Island's Needle Exchange Program," **RAYNALD JOSEPH, AARON KOFMAN,** MD; SARAH LARNEY, PhD; and PAUL FITZGERALD, MSW, focus on the history and current status of this critical prevention program.

In accordance with CDC recommendations, RI could and should become the first state to implement statewide HCV screening of Baby Boomers among primary care physicians using electronic medical records (EMRs). **ROLAND MERCHANT, MD, MPH, ScD**; **JANETTE BAIRD, PhD; TAO LIU, PhD,** and I, in, "Hepatitis C Seroprevalence among The Miriam Hospital and Rhode Island Hospital Adult Emergency Department Patients," consider one approach to RI HCV screening to date.

# **COMMENTARY** continued

will receive less money per pill but will garner greater societal commitment to treat more individuals. When considering costs, we must consider the costs of not treating, costs of advanced liver disease, and costs of removing people at the prime of their lives from the workforce. As Harvard's Camilla Graham, MD, teaches us, we must use the metric of cost per cure when comparing DAA regimens.<sup>12</sup>

Eliminating HCV is technically feasible. Eliminating HCV can provide economic benefits, enhance capacity to address other health challenges, and ameliorate healthcare disparities.<sup>13,14</sup> Eliminating HCV is likely going to be cost-effective, but up-front resources will be needed.15,16 Barriers to eliminating HCV in the U.S. include lack of NIH funding earmarked for HCV research, sparse federal funding for HCV prevention and care, underinsured and disenfranchised populations disproportionately affected by HCV, and low reimbursement for HCV care. How will we build the infrastructure to get the new drugs to the people who need them? How will we utilize scientific breakthroughs to benefit those in need? Rational decision-making requires change at the governmental, health systems, pharmaceutical industry and payer levels. For example, the ban on Medicare negotiating drug prices means that Baby Boomers will overpay. The crisis over DAA costs should prompt deliberate, thoughtful discourse and plans about what to do about HCV in RI, and stimulate development of a business case for a cost-saving HCV model. 💠

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## Disclosures

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# 'C' is for Cure: A WaterFire Lighting for RI Defeats Hep C



## Saturday, July 26

# Full Lighting – Sunset 8:11 pm

Please join us for this special WaterFire on Saturday, July 26. We will raise awareness; build Community, Connection, Cooperation and Camaraderie around HCV; help diminish stigma; inspire those living with HCV to seek cure; and have a family-oriented, artistic, musical, creative, enchanting, free summer night out on the town. This Waterfire will include entertainers, food, music and HCV testing. WaterFire Providence is an independent, non-profit arts organization whose mission is to inspire its visitors by revitalizing the urban experience, fostering community engagement and creatively transforming the city. WaterFire centers around the installation of 80 bonfires floating on Providence's rivers, with 65,000 people attending each WaterFire event.

# Estimating the True Prevalence of Hepatitis C in Rhode Island

ELIZABETH N. KINNARD, BA; LYNN E. TAYLOR, MD; OMAR GALÁRRAGA, PhD; BRANDON DL MARSHALL, PhD

# ABSTRACT <sup>-</sup>

Although there is a large health, social, and economic burden of hepatitis C virus (HCV) infection in the United States, the number of persons infected with HCV in Rhode Island (RI) is unknown. To inform the expansion of HCV-related public health efforts in RI, and because surveillance data are lacking and national surveys, including the National Health and Nutrition Examination Survey (NHANES), likely underestimate true HCV prevalence, we reviewed published peer-reviewed and grey literature to more accurately estimate the prevalence of HCV in RI. The results of our review suggest that between 16,603 and 22,660 (1.7%-2.3%) persons in RI have ever been infected with HCV. Assuming a spontaneous clearance rate of 26%, we estimate that between 12,286 and 16,768 (1.2%-1.7%) have ever been or are currently chronically infected with HCV. Findings suggest the urgent need for improved HCV screening in RI, and that reducing morbidity and mortality from HCV will require a dramatic scale-up of testing, linkage to care, treatment and cure.

**KEYWORDS:** Hepatitis C, HCV, epidemiology, prevalence, Rhode Island

# INTRODUCTION

Hepatitis C virus (HCV) infection is the most common chronic blood-borne infection in the United States.<sup>1–5</sup> If left untreated, chronic HCV infection can lead to cirrhosis, hepatocellular carcinoma, liver failure, and death.<sup>1,2,6,7</sup> Because new HCV infections are typically asymptomatic, most go undiagnosed until chronic HCV causes morbidity such as liver-related complications.<sup>6</sup> These advanced stages of disease are when screening for chronic HCV typically occurs, and when the majority of cases are first made known to the healthcare system.<sup>3</sup> Most Americans remain unaware of their infection status and are not receiving appropriate care and treatment.<sup>8</sup>

Currently, deaths due to HCV in the U.S. are higher than those due to HIV.<sup>9</sup> Cirrhosis resulting from chronic HCV is the leading cause for liver transplant,<sup>10</sup> and the subsequent effect on healthcare utilization is high.<sup>3,11</sup> A significant number of HCV-infected persons are now reaching an age when liver complications may start to develop, and multiple studies have predicted a rise in future HCV-related morbidity and mortality rates.<sup>2,12-15</sup> HCV infection is disproportionally represented among marginalized populations, particularly those under-represented in health surveillance programs and underserved by the healthcare system.<sup>5</sup> Specifically, chronic HCV signifies a public-health challenge due to its higher prevalence among groups such as middle-aged African-American men, hospitalized patients, individuals with serious mental illness, prisoners, people who are homeless, people living with HIV, and people who inject drugs (PWID).<sup>5,7</sup>

In RI, the true number of prevalent chronic HCV cases is unknown. Preventing new cases of HCV, improving access to HCV testing, screening, and diagnosis, as well as identifying those chronically infected and linking them to curative treatment, are urgent matters of public health. HCV treatment leading to viral eradication - termed sustained virologic response (SVR), defined as undetectable HCV RNA 12 weeks post-treatment - reduces liver-related morbidity and mortality, as well as all-cause mortality.<sup>16,17</sup> By estimating the true prevalence of chronic HCV in RI, specifically focusing on groups under-represented by or excluded from nationally representative surveys including the National Health and Nutrition Examination Survey (NHANES), the objective of this paper is to inform intervention efforts to better manage and improve assessment and treatment for HCV in the state.

# **METHODS**

We adapted a method used in previous epidemiological studies to identify groups under-represented by or excluded from the NHANES (survey years 2007–2008).<sup>18,19</sup> The method focused on determining HCV infection prevalence in high-risk groups not captured by the NHANES. Specifically, these groups include persons who are: homeless, incarcerated, residing in nursing homes, on active military duty, on long-term hemodialysis, recipients of chronic blood transfusions before 1992 (i.e., hemophiliacs), veterans, healthcare workers, and persons who inject drugs. Of these groups, only PWID were found to be accurately represented in the NHANES, as the estimated prevalence of 57.5% appeared to be a reasonable estimation of the true HCV prevalence among PWID, falling within the range of the studies available in the literature, from 27% to 93%.<sup>18</sup>

We reviewed published, peer-reviewed studies as well as grey literature to estimate the HCV prevalence among these subpopulations in RI, as well as how many people are estimated to belong to each group in the state. Whenever possible, we used RI-specific point-estimates for the total numbers of individuals in each subpopulation to estimate how many people are currently HCV antibody-positive. Using a point-prevalence methodology, rather than period-prevalence, aided in avoiding double counting across groups. For example, someone who was counted as incarcerated in RI at a specific point in time would not also be counted as homeless; this prevents double counting across the two groups.

As a first step, we estimated the RI-specific population size for each group under-represented by or excluded from the NHANES.<sup>18,19</sup> When searching grey literature to determine the population sizes in RI, if only one source was available, we used that one estimate for all subsequent calculations. If more than one estimate was available, we computed an average to more accurately capture the number of individuals in that group. Specifically, the population size of homeless persons was estimated from reports published by Opening Doors RI and RI Coalition for the Homeless;<sup>20,21</sup> the incarcerated persons estimate was obtained from the RI Department of Corrections;<sup>22</sup> the veterans estimate was obtained from the United States Department of Veterans Affairs and the RI Department of Human Services (Division of Veterans Affairs);<sup>23,24</sup> the active military duty count was taken from the U.S. Census Bureau (National Security and Veterans Affairs);<sup>25</sup> the healthcare workers estimate was taken from the Kaiser Family Foundation and RI Department of Labor and Training;<sup>26,27</sup> the nursing home residents estimate was taken from the Kaiser Family Foundation and SkilledNursingFacilities.org;<sup>28,29</sup> the number on chronic hemodialysis was estimated from personal correspondence with Douglas Shemin, MD, (medical director of two dialysis clinics in RI);<sup>30</sup> and the number of hemophiliacs with transfusions before 1992 was calculated by taking RI's percentage of the total U.S. population (0.335%) and multiplying it by the estimated range of HCV cases for this group in the U.S. population.<sup>18</sup>

Second, after the population size for each group was estimated, we searched peer-reviewed and grey literature to obtain group-specific estimates for HCV prevalence. RI-specific HCV prevalence estimates were available for the following subpopulations: incarcerated persons, veterans, and individuals on chronic hemodialysis (see references in **Table 1**). For the remaining subpopulations, we used ranges provided in a recently published national review of HCV prevalence in these groups.<sup>18,19</sup>

Third, to calculate the number of HCV cases in each subpopulation of interest, we multiplied each population size by the range of group-specific HCV prevalence estimates (see **Table 1**). Once the range of HCV cases in RI was calculated, we added these totals to the NHANES estimate for RI (i.e., 1.3% HCV prevalence among individuals above age 5). With regards to veterans, the NHANES study appears to have underestimated the prevalence of HCV in this population.<sup>2,18</sup> To correct this, Chak et al. calculated a revised estimate of HCV prevalence in veterans based on previously published epidemiological studies, and subtracted the number of HCV cases attributed to veterans reported by the NHANES before adding the revised estimate to prevent double counting.<sup>18</sup> We adopted this approach, subtracting 1,835 veterans from the NHANES total estimate of 12,944 HCV cases in RI before adding in our own calculation for veterans.

Fourth, given the observed racial disparities in HCV prevalence in the United States,<sup>31</sup> we conducted indirect standardization by race to adjust the RI-specific NHANES estimate, as RI differs notably from the national population in terms of race and ethnicity.<sup>32</sup> As RI does not differ greatly from the national estimates in terms of age structure, we did not conduct age-standardization calculations.

Finally, to determine the number of people who have ever been or are currently chronically infected with HCV in the state, we assumed, consistent with basic HCV biology, that approximately 26% of persons ever exposed to HCV would spontaneously clear the virus within the first six months of infection.<sup>33</sup> To improve the precision of the estimated rate of spontaneous viral clearance, a systematic review was conducted of longitudinal studies. Factors associated with viral clearance were also examined. Inclusion criteria for studies were: longitudinal assessment from time of acute HCV; HCV RNA analysis as determinant of viral clearance; untreated for acute HCV. Information on study population, and factors that may influence viral clearance were extracted from each study. Viral clearance was defined among individuals with at least 6 months follow-up following acute HCV. The number of subjects with viral clearance was expressed as a proportion for each study and a weighted mean for proportion was calculated. A total of 31 studies were examined. Study populations included nine studies of post-transfusion hepatitis, 19 of acute clinical hepatitis, and three of seroincident cases. In total, data was available for 675 subjects and the mean study population was 22 (range 4-67). This means that these individuals remain HCV Ab-positive by blood tests, but no longer have chronic HCV infection, do not have HCV RNA in the blood, are not infectious to others, but can be re-infected. We applied this proportion to the total number of HCV-infected persons in RI (both before and after race standardization).

# RESULTS

# Prevalence Estimates in Rhode Island

The estimated range of HCV prevalence and population size for each group under-represented by or excluded from the NHANES is shown in **Table 1**. As shown in the table, we estimate that between 5,811 and 11,868 HCV cases in RI would be unaccounted for by the NHANES.

The total number of HCV cases in RI (estimated by the NHANES and from our review) is shown in **Table 2**. As shown

in the table, approximately 16,603 to 22,660 individuals are estimated to be HCV antibody-positive in RI, corresponding to an overall prevalence of 2.0% (range = 1.7%to 2.3%) in the state. Assuming a 26% spontaneous clearance rate, there are approximately 12,286 to 16,768 individuals who have ever been or are currently chronically infected in RI, corresponding to an overall prevalence of approximately 1.5% (range = 1.2% to 1.7%). Using the race-adjusted estimates for HCV cases (HCV antibody-positive), our calculations indicate that the NHANES estimate of 1.3% in the state likely underestimates the true population of HCVinfected persons by about 6,000 to 12,000 cases.

# DISCUSSION

Our prevalence estimate of approximately 2.0% of the RI population ever infected with HCV (HCV antibody-positive) highlights the underestimation of national surveys, including the NHANES, but is consistent with recently published national estimates that seek to account for under-represented populations.<sup>18,19</sup> In the state, surveillance systems also fail to capture many acute and chronic HCV cases. **Table 1.** Estimated total prevalence of hepatitis C in RI for populations under-represented by or excluded from the NHANES (RI population in 2012 above age 5 = 995,677)

Population	HCV Prevalence	Point-estimate of Population Size in RI	Estimated Range of HCV Cases in RI
Homeless	22.2%-52.5% <sup>35-40</sup> e	104820,21	233–550
Incarcerated	20.0%-25.0%41,42	3191 <sup>22</sup>	638–798
Veterans	5.40%-10.7% <sup>43-49</sup>	73420 <sup>23,24</sup>	3965–7856
Active Military Duty	0.48% <sup>50</sup> V	1490 <sup>25</sup>	7**
Healthcare Workers	0.90%-3.60% <sup>51-61</sup>	59894 <sup>26,27</sup>	539–2156
Nursing Home Residents	4.50% <sup>62</sup>	804028,29	362**
Chronic Hemodialysis	2.30%-7.90%30	104130	24–82
Hemophiliacs with Transfusions Before 1992	76.3%–100% <sup>63–6</sup>	*	43–57
		Total	5811–11868

\*We estimated the R.I. range of HCV cases for "hemophiliacs with transfusions before 1992" by taking R.I.'s percentage of the total U.S. population (.335%) and multiplying it by Chak's estimated range of HCV cases for this group in the U.S. population.

\*\*We did not report ranges of HCV cases in instances where only one reference was available for the HCV prevalence of the subpopulation.

### Table 2. Estimated total number of hepatitis C cases in Rhode Island

Unaccounted # of HCV Antibody Positive in RI from Table 1	5811–11868		
*Total # of HCV Positive in RI Estimated by NHANES	11109*		
Total # of HCV Positive in RI Estimated by NHANES, Race Adjusted	10792		
Total RI HCV Cases (HCV Antibody +)	16920–22977	Chronically Infected in RI	12521–17003
Total RI HCV Cases, Race Adjusted (HCV Antibody +)	16603–22660 (1.7%–2.3%)	Chronically Infected in RI, Race Adjusted	12286–16768 (1.2%–1.7%)

\*Original NHANES estimate minus HCV cases attributed to veterans (12944 total - 1835 veterans)

Missed diagnoses are extremely common; acute HCV is a silent infection due to the fact that most individuals are asymptomatic, or have symptoms that are mild and non-specific. Similarly, chronic HCV is clinically silent in most infected individuals until late stages.<sup>6</sup> When assuming a spontaneous 26% clearance rate,<sup>33</sup> we determined that approximately 1.5% of RIers above 5 years old have ever been or are currently chronically infected with HCV. If left untreated, many of these individuals could experience health problems including but not limited to cirrhosis, hepatocellular carcinoma, liver failure, and death.<sup>1,2,6,7</sup> At the same time, these individuals could infect others, perpetuating the HCV epidemic in the state.

This study is subject to a number of limitations. First, wherever possible, we used RI-specific subpopulation and HCV prevalence estimates to conduct the most accurate calculation of total persons infected in the state. However, we were unable to capture RI-specific estimates for the HCV prevalence for every subpopulation of interest, as well as point estimates for the total number of state residents belonging to each population. Therefore, calculations may be inaccurate when using national estimates and applying them to the RI population, as the inhabitants of the state may have different characteristics than the national average. Second, it is possible that we "double counted" individuals who may belong to more than one subpopulation excluded or under-represented by the NHANES. However, we made our best attempt at preventing double counting by using point-estimates for population sizes wherever possible. Third, we used the HCV prevalence estimate from the NHANES 2007-2008 dataset rather than the NHANES 2011-2012, which only very recently became available. However, the overall HCV prevalence reported in both surveys is very similar (i.e., 1.3%); thus, we expect the older NHANES data to provide a reasonably accurate estimate of current prevalence. We likely underestimated the number chronically infected by using a conservative estimate of 26% spontaneously resolving infection. For example, at RI's needle exchange program and amongst HIV-infected persons, spontaneous clearance rates are considerably lower at 16%. Finally, although HCV prevalence is elevated among some immigrant groups, neither the NHANES nor we were able to consider country of origin in our estimates. Thus, we may have underestimated prevalence among a number of immigrant groups residing in RI who may be disproportion-ately represented (e.g., Egyptians, Pakistanis, Taiwanese).<sup>34</sup>

In order to "test and treat this silent killer,"<sup>5</sup> the results of this work demonstrate that RI public health professionals and the medical community must scale up screening and respond to the medical needs of those who are infected with testing, counseling and curative treatment to avert preventable morbidity and mortality. Coordinated approaches to prevention and treatment of HCV in RI are imperative. HCV screening should be accompanied by education about prevention, transmission, natural history, and evolving therapies. The availability of new oral therapies for chronic HCV, with improved tolerability and efficacy, and the movement away from interferon-based regimens, are very promising. Given the high upfront investment costs of these therapies at the individual and population levels, research studies on the economic efficiency and potential cost savings in the long term are urgently needed.

In summary, our findings support the need for greatly expanded public health efforts for prevention, screening and diagnostic testing, liver wellness counseling, and treatment of HCV-infected individuals, as recommended by the CDC.<sup>8</sup> Further research is being conducted to determine the costeffectiveness of new direct-acting antiviral therapies, as well as implementing and evaluating cost-efficient models of linking individuals infected with HCV in RI to care.

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# Prevention and Control of Hepatitis C in Rhode Island

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# ABSTRACT

Concern about the morbidity and mortality of hepatitis C infection is increasing. Persons born from 1945 to 1965 are most significantly affected, with the majority unaware of their infection, and will otherwise go untreated. Up to three-fourths of hepatitis C-related deaths occur in this population of "baby boomers." Since 2007, mortality from hepatitis C has exceeded that from HIV, nationally and in Rhode Island. New treatment options for hepatitis C emphasize the potential for cure of hepatitis C that is distinct from HIV. Financial resources and integration of hepatitis C partners and services in Rhode Island will be instrumental in reducing hepatitis C infections and increasing the number of cases cured. We describe public health investments in the past, present, and future to implement strategies for effectively addressing hepatitis C in the state.

**KEYWORDS:** Hepatitis C, Curative therapy, Rhode Island, Social marketing campaign

# INTRODUCTION

Hepatitis C virus is a chronic blood-borne pathogen with a slow progression of illness that is often unrecognized until liver damage is severe. In the United States (US), approximately, 3.2 million people (~1% of the population) are chronically infected with hepatitis C and most (up to 75%) are unaware of their infection.1-3 The burden of hepatitis C in the US exceeds the burden of HIV, currently estimated to be 1.1 million people, with only 16% of those with HIV unaware.<sup>4-6</sup> Among all the people living with hepatitis C in the US, 75% are "baby boomers" or people born between 1945 and 1965, who make up only 27% of the population.<sup>7,8</sup> About 15,000 people die each year from hepatitis C, and "baby boomers" represent more than 70% of hepatitis C-related mortality.<sup>8,9</sup> Research indicates that hepatitis C mortality estimates are expected to triple over the next eight years.<sup>10-12</sup> Similarly, without increased detection and improved access to treatment for hepatitis C, costs associated with hepatitis C care may increase over the next 20 years from \$30 billion to \$85 billion per year.13 The impending tsunami of hepatitis C cases and costs requires increased recognition, funding, and public health intervention at the national and local level. A helpful model for addressing hepatitis C from a public health perspective is to replicate the stages of the HIV care continuum first described by Gardner et al<sup>14</sup> to quantify key components of hepatitis C care engagement and target resources accordingly.<sup>15,16</sup> Using data from two large national surveys, researchers estimated the following: 1) the number of people infected with hepatitis C in the United States (3.2 million), 2) the proportion of infected individuals that are diagnosed and aware of their hepatitis C infection (50%), 3) the proportion of persons infected with hepatitis C who were referred to care (32-38%), and d) the proportion of persons infected with hepatitis C who were successfully treated (5-6%).17 New FDA-approved hepatitis C therapies (Direct-Acting Antiviral Agents [DAAs]) are now available that can cure hepatitis C in over 70-80% of persons infected, with imminent cure rates of 90-100% with soon-to-be-approved DAAs.<sup>10,18</sup> These new regimens have the potential to significantly reduce morbidity and mortality, and prevent further transmission, but only if hepatitis C provider capacity is in place with integrated services to support case management and retention in care that will lead to cure. Findings from the hepatitis C continuum underscore the public health need for persons with hepatitis C to gain access to effective care, and to successfully treat and cure each person.

In Rhode Island (RI), the number of hepatitis C infections reported by the Rhode Island Department of Health (HEALTH) for 2007–2008 exceeded HIV cases by more than 7-to-1 (compared to an estimated national ratio of 5-to-1), indicating a higher rate of hepatitis C infection in RI than in the rest of the country. HEALTH estimates for the burden of hepatitis C disease in RI cite prevalence to be approximately 11,000 cases, with modeling studies estimated to be between 12,286 and 16,768 cases.<sup>19</sup>

# PUBLIC HEALTH INVESTMENTS ON THE PREVENTION AND CONTROL OF HEPATITIS C IN THE RECENT PAST

Before 2013, there was little federal or state funding specific to hepatitis C prevention and control efforts, which restricted statewide capacity to advance comprehensive surveillance and case management. Hepatitis prevention activities were successfully integrated with HIV-prevention activities, and have focused on the steady expansion of bundled hepatitis C and HIV testing throughout RI. Since 2001, HEALTH has supported funding for community-based integrated

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prevention services that have included education and counseling (integrated with HIV counseling, testing, and referral), community-based syringe exchange programs, and hepatitis A and B vaccination for persons who inject drugs and for men who have sex with men. By 2002, hepatitis A and B vaccination programs were expanded throughout the state, and new sites included a gay bath house, sexually transmitted disease clinic, a homeless shelter, and a substance abuse treatment facility. A subsequent increase in vaccination rates was noted by 2005; however, no similar targeted intervention (vaccine) currently exists for hepatitis C.

A Viral Hepatitis Advisory Group of over 60 community members was convened in 2008, with the objective of establishing a statewide coalition of partners to develop and implement a strategic plan. The Group published a, "*Comprehensive Strategic Plan for the Prevention and Control of Viral Hepatitis in Rhode Island*."<sup>20</sup> An overall goal from this

initiative was to "gain a better understanding of viral hepatitis prevention, control, and medical care resource needs for people living with the disease and the providers who serve them."

A subcommittee of this Advisory Group successfully developed and implemented a perinatal hepatitis prevention plan. Perinatal medical providers collaborated with the RI Immunization Program to identify women infected with hepatitis B or C early in their pregnancy in order to assure referral to care, appropriate management during pregnancy, and postpartum care for their newborns.

Another subcommittee worked on and published a, "RI Viral Hepatitis Resource and Services Directory" intended for use by a wide range of care providers in the community such as RI clinical providers, substance abuse counselors, and school nurse teachers. The Directory included contact information for hepatitis C resources such as treatment providers, support groups, syringe exchange programs, substance use treatment facilities, and included factsheets about viral hepatitis and HIV/ hepatitis C co-infection.

Provider and public education are a cornerstone of prevention. Since 2001, over 83 presentations have been provided throughout RI to engage and educate over 3,000 stakeholders in hepatitis C prevention and care including physicians, nurses, substance abuse treatment counselors, community outreach workers, and hepatitis C consumers.

# CURRENT PUBLIC HEALTH ACTIVITIES FOR HEPATITIS C IN RI

The Centers for Disease Control and Prevention (CDC) provided HEALTH with funding in 2013 to conduct a social marketing campaign to increase public awareness and promote hepatitis C testing

for all "baby boomers," in keeping with the latest screening guidelines.<sup>8</sup> The multimedia campaign launch coincided with National Hepatitis C Testing Day on May 19, 2013 and ran through October 2013. Messaging emphasized that an estimated 11,000 Rhode Islanders of all ages are infected with the hepatitis C, with many people unaware of their status. Campaign ads stated that "all Rhode Islanders born between 1945 and 1965 should be tested for hepatitis C at least once or more often if they have known risk factors. Also, "baby boomers" are five times more likely than others to be infected with hepatitis C, and often have no symptoms."

The social marketing campaign utilized iconic imagery with broad, universal appeal specific to the "baby-boomer" generation (e.g., man on the moon, cassette tape, disco ball). The "Born 1945-1965?" ad prompted self-identification for hepatitis C risk while others stated that " 'baby boomers' are 5 times more likely to be infected with hepatitis C." (**Figure 1**)

**Figure 1.** Examples of bus shelter ads targeting populations at risk for undiagnosed hepatitis C infection (1a) and newspaper print ads for Rhode Island-specific audiences (1b).





The campaign adopted existing CDC messaging for the targeted RI audiences, utilizing radio, print, and online ads, as well as exterior bus ads, bus shelters, and billboards. Billboard and bus shelter ads were placed near methadone clinics and drug treatment centers to geo-target high-risk populations who inject drugs. Spanish-language ads and culturally appropriate ads were also utilized. Online ads were placed on the AARP website, Google news, and topical websites. All ads drove audiences to the HEALTH webpage that lists free and low-cost hepatitis C testing sites, and provides more resources, including a CDC hepatitis risk-assessment questionnaire.

Web-based tools and other related guidance were shared with RI's physician community via the HEALTH website and in HEALTH Connections, the agency's monthly e-newsletter. Updated information, such as the list of insurers in RI that cover hepatitis C antibody testing, in order to most effectively test all patients born between 1945 and 1965 continues to be shared with providers as they become available.

In RI, four counseling, testing, and referral sites report hepatitis C testing statistics to HEALTH. Data from 2013 show that prior to the campaign launch (i.e., January–April), a total of 466 hepatitis C rapid tests were conducted, with 10 new cases of hepatitis C identified. By comparison, after the campaign launch (i.e., May–August), hepatitis C testing nearly doubled to 841 tests conducted, with 33 new cases of hepatitis C identified. As the campaign was expanded to Google ads targeting more "baby boomers," the apparent upswing of hepatitis C testing continued, with another 771 tests conducted and 41 additional new cases of hepatitis C identified between September and December of 2013.

When compared to web traffic during the previous year with no active campaign, Google analytics showed that traffic to the same hepatitis C webpage increased by 1,159% from May through August, with 856 unique visitors (UVs) in 2013 compared to 68 UVs in 2012. Similarly, from September to December of 2013, the webpage saw a 1,648% increase in UV traffic, with 909 UVs in 2013 compared to 52 in 2012 during the same four-month reporting period. Evidence for the effectiveness of the social marketing campaign was also supported by a decrease in webpage hits from more than 100 daily visits to nearly zero as soon as the hepatitis C radio ads ceased.

Additionally, HEALTH has fostered collaboration with hepatitis C partners to help promote similar prevention, treatment, and awareness campaigns. HEALTH has expressed support for the Rhode Island Innovation Fellowship initiative, RI Defeats Hep C (http://ridefeatshepc.com) which provides extensive resources to improve hepatitis C testing and treatment services, direct stakeholders to important links, and raise awareness for targeted communities. HEALTH also helped to promote the May 2014 RI Defeats Hep C conference to statewide providers, and participated in the conference as a co-facilitator and panelist for in-depth discussions on the diagnosis and management of patients with hepatitis C infection.

# FUTURE DIRECTIONS TO REDUCE HEPATITIS C

The advent of DAAs recently approved by the FDA is a game changer for strategic approaches to hepatitis C control through treatment to cure. While providers, patients, and HEALTH have recognized the significance of hepatitis C disease, the timing to increase engagement with insurers cannot be any more crucial than right now because of the cost burden of hepatitis C prevention and care.

The continuum of care analogy for hepatitis C is a helpful frame of reference because it highlights how critical it is for organizations, agencies, and advocates to jointly contribute to the public health efforts that range from education about hepatitis C care for providers, to maintaining adequate hepatitis C provider capacity, and access to curative hepatitis C therapy with integrated services for care. HEALTH must partner with stakeholders who are committed to addressing aspects of the hepatitis C continuum that will most effectively result in curing as many cases of hepatitis C as possible.

Goals for RI to tackle hepatitis C at the public health level can be taken not only from the foundation laid in the Comprehensive Strategic Plan for the Prevention and Control of Viral Hepatitis in Rhode Island<sup>20</sup> and from the recently published National Action Plan for the Prevention, Care, and Treatment of Viral Hepatitis – Updated 2014-2016,<sup>18</sup> but also from such literature as Mehta et al<sup>21</sup> who emphasizes strategies that address barriers along the continuum at the patient, provider, and structural levels – in order to effectively achieve the goal of hepatitis C viral clearance. A few of the key target objectives to highlight for RI to reduce hepatitis C infections include, but are not limited to:

1. Increasing education, counseling, and harm reduction activities that target individuals at risk for infection with hepatitis C

2. Expanding hepatitis C provider capacity and integrated services that increase potential to cure

3. Improving access to care and improving quality of care and treatment for persons infected with hepatitis C

4. Conducting surveillance to monitor all stages of the continuum of care and to provide meaningful population-based metrics to guide policy

HEALTH looks forward to working together with hepatitis C partners throughout the state to coordinate public health efforts and reach the goals that will reduce hepatitis C infections in RI.

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# Q & A with Karen Tashima, MD

New Direct-Acting Antiviral Agents Offer Therapeutic Revolution for Hepatitis C Virus Infection

MARY KORR RIMJ MANAGING EDITOR

PROVIDENCE – Hope is here for the estimated 5.2 million persons<sup>1</sup> in the United States with chronic hepatitis C virus (HCV) infections. Twenty-five years after the identification of the virus through cloning techniques, revolutionary direct-acting antiviral agents (DAAs) offer the promise of a cure for a significant number of those affected.

Dr. Karen Tashima, Site Director of HIV Clinical Studies and Clinical Research Site Leader of the AIDS Clinical Trials Unit at The Miriam Hospital, is also a principal investigator in studies of these new DAA medications. In addition, she is engaged in follow-up studies with those patients whose virus been eradicated to make sure it is cured for the long-term; there are also two trials underway at Miriam for HIV-HCV co-infected patients.

Recently Dr. Tashima discussed these revolutionary therapeutic agents and the economic challenges they present.

# Q. The mainstay of care to treat HCV infection has been interferon and ribavirin. Do the new direct-acting antivirals (DAAs) replace that?

A. There had been incremental advances in the treatment of HCV with interferon, such as giving injections in the pegylated form once a week, rather than injections three times a week. Then ribavirin came along and increased a patient's chance of cure. Cure rates were still pretty low, around 50 percent. But only 10-20 percent of patients with HCV infection could be cured if they also had HIV infection.

We've been waiting a long time for direct-acting agents. Interferon is poorly tolerated in many people, with side effects such as flu-like symptoms, often resulting in time loss from work. There are also contraindications in the use of interferon in patients with significant cardiac, pulmonary, and psychiatric diseases such as uncontrolled depression, or in poorly controlled diabetes.

Understanding how well these DAAs work, and if we still need to use pegylated interferon and ribavirin, is what we are investigating. Studies are underway testing different genotypes and different combinations of drugs. So, for example, in patients with genotypes 1-4, the FDA has approved the DAA Sovaldi (sofosbuvir) to be given with pegylated interferon and ribavirin for 12 weeks. For a sub-group of patients, the FDA approved sofosbuvir for genotype 1 and 4 patients even without interferon. For patients with genotypes (2 and 3), Sovaldi can be given with ribavirin alone for a high rate of cure.

# Q. Are different DAAs combined in treatment protocols?

A. These are really targeted designer medications. The first one to be FDA-approved was Sovaldi (sofosbuvir) made by



Dr. Karen Tashima, Professor of Medicine in the Division of Infectious Diseases at Brown, stands by a painting in her office, a memento of her years as ID Fellowship Director, 2005-2012, presented to her by the Infectious Disease Fellows last year.

Gilead Sciences. We have a study going on now with Gilead combining different oral agents. We are also working with Bristol-Myers Squibb (BMS) on a drug called daclatasvir and combining that with other drugs. And Abbott has a threedrug regimen that we think will be approved by the FDA within this year.

# Q. Can DAAs be used in people with hepatitis C-related liver cancer, advanced liver disease, or after liver transplant?

A. We're prioritizing the patients who have advanced liver disease, such as stage 3 or 4 fibrosis, and those who are most at risk for liver failure. Some of the DAAs, such as sofosbuvir, are safe in people with advanced liver disease, including decompensated cirrhosis, while awaiting liver transplant. If we cure the hepatitis C we might prevent liver cancer. The FDA approved sofosbuvir for use in patients with hepatitis C-induced liver cancer. If a patient needs a liver transplant, the DAAs are used to prevent hepatitis C from coming back in the newly transplanted liver.

# Q. What are the prospects for the development of an HCV vaccine?

A. Currently there is no effective vaccine but researchers are investigating possible approaches.

# Q. According to the Centers for Disease Control (CDC), more than 75% of adults infected with HCV are Baby Boomers, people born from 1945 through 1965. Why is the highest prevalence in this cohort?

A. Before hepatitis C was identified, the disease was called non-A, non-B hepatitis.

Non-A, non-B was transmitted through unsafe blood transfusions before widespread screening of the blood supply, through high-risk behaviors such as injection drug use; and there were transmissions in the healthcare settings back then, before widespread institution of universal precautions. With screening of the blood supply and safe infection control practices, we avoid HCV transmission in the healthcare setting.

# Q. What should practicing physicians know about HCV?

A. It's a reflex for doctors to check for hepatitis A, B, C when they see elevated liver enzyme levels. But people can be fully asymptomatic for 20-40 years, and may even have normal liver-related blood tests. The only hint might be the appearance of cirrhosis. Knowing which patients should be tested is important. (*See sidebar.*) The hepatitis C antibody test is the first you should do. If it comes back positive there is a specific RNA test for the virus to identify patients with chronic hepatitis C infection (as opposed to prior infection and clearance of the virus spontaneously or due to prior effective therapy).

# Q. There has been controversy about the cost of these DAAs – as much as \$1,000 a pill. A combination of these agents could double or triple the price. What are your thoughts on this?

A. There are a lot of companies working on hepatitis C treatment, and with more competition hopefully the prices will come down. It's very early on with the hepatitis C drugs and I think insurance companies will help pay for the cost. We are talking about three months of treatment and that's it. The downside of not treating HCV is expensive care for complications of liver failure, need for liver transplantation, or death.

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# WHO SHOULD BE TESTED?

## **Routine testing of asymptomatic persons:**

Persons who should be tested once for hepatitis C virus (HCV) infection without prior ascertainment of HCV risk factors include:

• People born during 1945 through 1965

# Persons who should be tested routinely for hepatitis C virus (HCV) infection based on their risk for infection include those who:

# Currently inject drugs

Ever injected drugs, including those who injected once many years ago Have certain medical conditions, including persons:

- who received clotting factor concentrates produced before 1987
- who were ever on long-term hemodialysis
- with persistently elevated alanine aminotransferase levels (ALT)
- infected with HIV

Were prior recipients of transfusions or organ transplants, including persons who:

- were notified that they received blood from a donor who later tested positive for HCV infection
- received a transfusion of blood, blood components or an organ transplant before July 1992

Persons who should be tested routinely for HCV-infection based on a recognized exposure:

- Healthcare, emergency medical, and public safety workers after needle sticks, sharps, or mucosal exposures to HCV-infected blood
- Persons who have received medical or dental interventions in health care settings where infection control practices are substandard
- Persons who have received blood in countries where serological testing of blood donations for HCV is not routinely performed
- Persons who have had tattoos, body piercing or scarification procedures done where infection control practices are substandard
- Children born to mothers infected with HCV
- Persons who have used intranasal drugs
- · Prisoners and previously incarcerated persons

(Source: CDC) http://www.cdc.gov/hepatitis/HCV/GuidelinesC.htm

# Hepatitis C Prevention and Needle Exchange Programs in Rhode Island: ENCORE

RAYNALD JOSEPH, AARON KOFMAN, MD; SARAH LARNEY, PhD; PAUL FITZGERALD, MSW

# ABSTRACT

As Rhode Island's only needle exchange program, EN-CORE (Education, Needle Exchange, Counseling, Outreach, and **RE**ferrals) serves a wide range of clients infected or at risk for infection with hepatitis C virus (HCV). Through its on-site and outreach platforms across Rhode Island, ENCORE is in a unique position to serve at-risk individuals who may not otherwise present for prevention, testing and care for HCV, as well as human immunodeficiency virus (HIV). In this article, we discuss the role of needle exchange programs in preventing HCV transmission, and provide an overview of the history and current operations of ENCORE.

**KEYWORDS:** Hepatitis C, needle exchange program, Rhode Island, drug injection

# INTRODUCTION

Needle exchange programs are a core component of harm reduction programs for people who inject drugs (PWID).<sup>1</sup> At a minimum, needle exchange programs (also known as needle and syringe programs) provide sterile needles and syringes to PWID; most also provide other injecting paraphernalia (e.g., alcohol swabs, sterile water and tourniquets) as well as health information and referrals. In this article, we describe the role of needle exchange programs in preventing hepatitis C virus (HCV) transmission, and provide an overview of the history and current operations of Rhode Island's only needle exchange program, ENCORE.

# NEEDLE EXCHANGE PROGRAMS AND HEPATITIS C PREVENTION

In middle- and high-income countries, injecting drug use is the primary route of HCV transmission.<sup>2</sup> HCV is easily transmitted through shared use of needles and other drug injecting equipment, with transmission requiring the transfer of only microscopic amounts of blood from an infected person to an uninfected person, and the virus maintaining infectivity in dried blood for as long as 6 weeks.<sup>3</sup> Globally, it is estimated that 10 million PWID, or 67% of the PWID population, are infected with HCV.<sup>4</sup> By way of contrast, an estimated 3 million PWID are infected with human immunodeficiency virus (HIV).<sup>5</sup>

There is very strong evidence that needle exchange programs reduce HIV transmission among PWID.6,7 Although the evidence for needle exchange programs is less conclusive in relation to HCV prevention,<sup>7,8</sup> needle exchange programs are an essential part of any comprehensive intervention strategy to prevent HCV transmission.<sup>1,2</sup> Other components of health care for PWID, recommended by the World Health Organization (WHO), include opioid substitution therapy (also known as methadone maintenance treatment; the medical prescription of opioids such as methadone and buprenorphine to people with opioid dependence, in order to reduce illicit opioid use and injection) and other drug treatment; hepatitis B vaccination, with incentives to initiate and complete the vaccination schedule; integration of medical services for hepatitis with treatment of opioid dependence; and peer-led interventions.2 These are in addition to the WHO-recommended comprehensive package of intervention for HIV prevention, treatment and care in PWID, including blood-borne virus testing and counseling; antiviral therapy, prevention and treatment of sexually transmitted infections, condom distribution to PWID and their sexual partners, targeted information and education, and prevention, diagnosis and treatment of tuberculosis.<sup>2</sup>

### THE ENCORE PROGRAM

ENCORE (Education, Needle Exchange, Counseling, Outreach, and **RE**ferrals) is Rhode Island's only needle exchange program. It aims to reduce risk and transmission of HCV, HIV and other drug-related harms among PWID through a range of harm reduction services (**Box 1**). Harm reduction

Box 1. Harm reduction services provided by ENCORE

$\underline{\mathbf{E}}$ ducation – on HIV, viral hepatitis and other blood-borne pathogens prevention
<b>Needle Exchange</b> – to reduce the risk of transmitting HIV, viral hepatitis and other blood-borne pathogens prevention
<b>Counseling</b> – on reducing risks, HIV and viral hepatitis testing, following through on medical care and substance abuse treatment options
$\underline{\mathbf{O}} utreach$ – into the community to help identify clients for the ENCORE program
$\underline{\mathbf{RE}}$ ferrals – to health care and social service agencies and drug treatment

services focus on preventing harms associated with drug use, rather than preventing drug use *per se*, in acknowledgement that there are people who are unwilling or unable to stop using drugs.<sup>9</sup>

ENCORE has been coordinated by AIDS Care Ocean State (ACOS) since 1998. ACOS is a 501(c)(3) nonprofit AIDS Service Organization and the largest provider of HIV support services in Rhode Island. ACOS has an extensive infrastructure to support HIV prevention and harm reduction services, and has an established reputation in the community of being able to service hard-to-reach, high-risk individuals.

Local development of a needle exchange program in Rhode Island has its roots in the epidemic of HIV transmission through PWID. As early as 1988 in New York City, community advocates such as Edith Springer pioneered harm reduction techniques and needle exchanges to prevent HIV and HCV transmission. In Rhode Island, methadone maintenance treatment programs were expanded into pilot needle exchange programs as acceptable interventions for PWID. Local political opposition to pilot needle exchange shifted when the Rhode Island Department of Health partnered with a community-based AIDS service organization, ACOS, with roots in the urban neighborhoods of Providence.

The ENCORE program has existed in Rhode Island since 1994 (Figure 1), and currently operates three fixed sites and mobile/street-based exchange units, where a van and a team of outreach workers go out into the community to actively seek out PWID in five cities: Providence, Woonsocket, Newport, Pawtucket and Central Falls. The main hub for EN-CORE is located at 557 Broad Street, Providence. ENCORE also has a home delivery system where clients can call in an order and have their supplies delivered directly to them. Services are provided anonymously and are open to anyone over the age of 18. Clients are recruited through referrals from substance treatment facilities, the street outreach component of the program, or through word of mouth. Harm reduction tools provided to clients include: new syringes, alcohol swabs, antibiotic ointment, ascorbic acid, band-aids, bio-hazard sharps containers, cookers, cotton, rubber tip covers, sterile water, and tourniquets. These items are given to clients to help reduce the spread of HIV and HCV. All staff undergo training sessions on agency policy, Harm Reduction 101, safety guidelines of collection and disposal or syringe, HIV and viral hepatitis basics and prevention, safer injection and overdose prevention, referral networks and cultural competency.

As of 2005, ENCORE became Rhode Island's first free testing site for anti-HCV antibodies, markers of exposure to HCV in the blood, in collaboration with Dr. Lynn E. Taylor of Miriam Hospital and Brown University. Used as an initial screening test to identify patients who have been exposed to HCV, the HCV antibody test requires a confirmatory test, if it is reactive/positive, for the HCV virus itself, HCV RNA. Some 15-25% of patients who are exposed to HCV develop the antibody but clear the virus spontaneously in the first six months of infection, and thus have a negative HCV RNA test. From August 2012 - January 2013, HCV antibody screenings at ACOS have a 13% positivity rate, 10 times higher than the 1.3% for the U.S. population overall. In 2013, Dr. Taylor's program Rhode Island Defeats Hep C began offering free confirmatory HCV RNA testing through ACOS, and referred those individuals with detectable HCV



RNA to HCV care in Rhode Island. Of the 13% of individuals with positive HCV antibody screens who underwent confirmatory RNA testing, 84% had detectable HCV RNA.

In addition to HCV testing, ENCORE also offers free, anonymous and confidential HIV and hepatitis B virus testing; distributes a variety of both male and female condoms as well as lubrication and hygiene packs (combs, deodorant, razors, shaving cream, soap, toothbrushes and toothpaste); and provides referrals to an array of social services. Since ENCORE's inception, the Rhode Island Department of Health has supported the program with State resources for the purchase of supplies and volunteer training.

# **CLIENT CHARACTERISTICS**

The ENCORE Program collects data on its clients through a pre-enrollment interview completed on first presentation to an ENCORE service. The interview also introduces the client to all of the services ENCORE offers. The interviews contain questions pertaining to client demographics, drug use, sharing of injection supplies, and HIV and HCV testing. ENCORE completes follow-up interviews with clients every three months.

Each client is assigned a unique identifier (their ENCORE Code) at the pre-enrollment interview for the purposes of tracking client activity. In 2012, a new coding system was introduced to match the Rhode Island Department of Health's Counseling Testing and Referral (CTR) codes. **Table 1** presents data from pre-enrollment interviews with ENCORE clients between 1994 and 2011, and 2012–2013. The majority of clients were male and Caucasian, with a substantial minority identifying as Hispanic. The majority of clients first injected drugs prior to 30 years of age, and heroin was the most common primary drug. One in five clients reported sharing needles to inject drugs.

On the basis of client self-reports, 44% of ENCORE clients in 2012-2013 were HCV-infected (**Table 1**). It is unclear if clients reporting HCV infection were reporting positive antibody test results, signifying exposure, or confirmed infection. By way of comparison, 10% of clients over the same time period reported that they were HIV-positive (which unlike HCV positive testing, always indicates active infection). Additionally, 7% of clients in 2012-2013 were unaware of their HCV status, and 6% of clients were unaware of their HCV status. Among clients between 1994 and 2011, low levels of blood borne virus testing were reported, with only 26% having received an HCV test in the past year, and 30% having received an HIV test in the past year.

# IMPLICATIONS FOR PUBLIC HEALTH IN RHODE ISLAND

There is potential for HCV transmission among PWID in Rhode Island, with nearly half of ENCORE clients reporting prior HCV exposure or infection, and a substantial minority

	%		
CHARACTERISTIC	1994-2011	2012-2013	
Sex			
Male	70	77	
Female	29	22	
Transgender	<1	1	
Unknown	2	0	
Race			
Caucasian	69	65	
African-American	4	6	
Native American	2	3	
Asian	<1	1	
Other	2	<1	
More than 1 Race	<1	0	
Unknown/blank	21	0	
Hispanic ethnicity	15	25	
Homeless	22	40	
Drug of choice			
Heroin	72	81	
Crack/cocaine	15	9	
Speedball <sup>1</sup>	4	5	
Other/unknown <sup>2</sup>	9	5	
First injected drugs aged <30 years	81	81	
Report needle sharing	22	20	
Of sharers, sharing with friends	34	55	
Of sharers, sharing with sexual partners	38	37	
Ever enrolled in drug treatment	50	75	
HCV test in the past year			
Yes	26	_	
No	10	_	
Unknown	63	_	
HCV status			
Self-reported HCV positive <sup>3</sup>	_	44	
Unaware of HCV status	_	7	
HIV test in the past year			
Yes	30	_	
No	7	_	
Unknown	63	_	
HIV status			
Self-reported HIV positive	_	10	
Unaware of HIV status	—	7	

Table 1. Characteristics of ENCORE clients, 1994-2011 (n=2,525) and

2012-2013 (n=596)

HCV: hepatitis C virus.

<sup>1</sup>Speedball refers to injection of cocaine and heroin or morphine in the same mixture. <sup>2</sup>Includes amphetamine and steroids.

<sup>3</sup>May refer to either HCV antibody positive, or confirmed HCV infection.

of clients sharing needles. Furthermore, a small proportion of clients are unaware of their infection status, suggesting that they have not been tested for HCV, or at the least have not been tested recently. Between 1994 and 2011, only one-quarter of clients reported HCV testing in the past year. There are considerable opportunities to increase HCV testing among this group, including through ENCORE. These include better follow-up of clients through ENCORE's home delivery system, and increasing awareness among PWID of the benefits of testing and the availability of highly effective treatments with fewer side effects than in the past. These actions will complement broader ACOS and Rhode Island Defeats Hepatitis C efforts.

Studies of needle exchange programs and HCV have demonstrated that a high level of coverage (i.e., contact with a high proportion of local PWID) is necessary to have an impact on HCV incidence and prevalence.7 Coverage of needle exchange programs in the United States is among the lowest in the world,<sup>10</sup> in part due to a ban on federal funding for such services. The extent to which ENCORE reaches the population of PWID in Rhode Island has not been formally estimated, but in 2008-2009, only 28% of a small sample of PWID seeking detoxification services in Rhode Island reported having accessed a needle exchange program in the last six months.11 ENCORE outreach and home delivery services have expanded since 2008, so it is possible that coverage has increased in recent years. There is a need for data estimating ENCORE's coverage of PWID in Rhode Island, as well as the potential impacts of increased needle exchange coverage on HCV incidence and prevalence in the state.

# CONCLUSION

ENCORE is a long-standing program providing harm reduction services, including needle exchange, to PWID in Rhode Island. As the only needle exchange program in the state, it serves as a vital resource for a highly vulnerable population that is at risk of HCV infection. Continued scale-up of ENCORE's reach and services will have a positive impact on the HCV epidemic in Rhode Island.

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# Disclosures

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# HCV among The Miriam Hospital and Rhode Island Hospital Adult ED Patients

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# ABSTRACT

The Emergency Department (ED) appears to be an ideal place to conduct hepatitis C virus (HCV) screening. We aimed to estimate the prevalence of prior HCV test positivity among adult (18-64 year-old) patients at The Miriam Hospital and Rhode Island Hospital EDs, as well as the undiagnosed HCV antibody seroprevalence among patients with any self-reported injection or non-injection drug use who agreed to undergo rapid HCV antibody testing. The prevalence of prior HCV test positivity among 8,500 adult ED patients was approximately 4.6%, and the previously undiagnosed HCV antibody seroprevalence among 621 drug-using adult ED patients was 1.6%. Among the ten ED patients with a positive rapid HCV antibody test not previously diagnosed, eight were born after 1965 and six never had injected drugs. If current HCV screening recommendations were followed exclusively in this setting, this practice would have missed half of those with a positive rapid HCV antibody test.

**KEYWORDS:** hepatitis C, mass screening, substance abuse, emergency medicine, seroepidemiologic studies

# INTRODUCTION

The United States (US) Centers for Disease Control and Prevention (CDC) and US Public Health Service Task Force (USPHSTF) currently recommend a one-time screening test for the hepatitis C virus (HCV) for those born between 1945 and 1965 ("baby boomers") and continuous risk-based screening for those at higher risk for infection, such as people who inject drugs.<sup>1-3</sup> However, HCV screening for other populations, particularly for those who use non-injection drugs, has been encouraged by others,<sup>4,5</sup> especially since most people who use drugs do not inject them. The need to understand the value of HCV antibody screening among those who use any type of drug is particularly relevant to Rhode Island. Our state has one of the highest reported prevalences of drug dependency (9-13%) and has one of the highest percentages of its citizens reporting illicit drug use.<sup>6</sup>

Because of the success of HIV-screening efforts in emergency departments (EDs),<sup>7-13</sup> the overlapping risk for HIV and HCV, high prevalence of drug use,<sup>14</sup> and access-to-care challenges faced by many ED patients,<sup>15</sup> the ED would appear to be an ideal location to conduct HCV screening and link patients to care. Further, if the prevalence of prior HCV test positivity is high among ED patients, interventions to increase linkage to care also could be a viable means to expand our capacity to cure and reduce the downstream damage of HCV, including end-stage liver disease and liver cancer. We aimed to estimate the prevalence of patient-reported prior HCV test positivity among a random sample of adult (18-64 years-old) patients at The Miriam Hospital and Rhode Island Hospital EDs, as well as the HCV antibody seroprevalence among patients with any self-reported drug use who agreed to undergo rapid HCV antibody testing.

# **METHODS**

# Study Design and Setting

This investigation involved a secondary analysis from two studies: Increasing Viral Testing in the ED (InVITED) and Brief Intervention for Drug Misuse in the ED (BIDMED). These two studies were conducted concurrently at The Miriam Hospital and Rhode Island Hospital EDs from July 2010-December 2012. The Lifespan Institutional Review Board approved the two studies.

# **Data Collection**

The InVITED and BIDMED studies included two components: (1) an assessment of the prevalence of patient-reported prior HCV test positivity (i.e., a positive HCV test of any kind – an HCV antibody test, which is a screening test that identifies prior exposure to HCV; or an HCV ribonucleic acid (RNA) polymerase chain reaction (PCR) test, which is a confirmatory test that identifies a current HCV infection and ongoing viral replication) among a random sample of adult ED patients, and (2) rapid HCV antibody screening among drug-using study participants who self-reported that they never had a positive HCV test.

Efforts to estimate the prevalence of patient-reported prior HCV test positivity differed slightly between the two studies. For the InVITED study, trained research assistants (RAs) first reviewed the ED electronic medical records (EMRs) of a random sample of ED patients awaiting medical care and noted if the nursing or medical staff had recorded that the patient previously had been diagnosed with HCV (regardless of status of the infection – chronic, cured with medications, or spontaneously resolved). For patients who had

no other apparent exclusion criteria for InVITED by the ED EMR review, the RAs would approach those who otherwise appeared to be study eligible and briefly ask them if they ever had a positive HCV test (of any kind). If they answered affirmatively or met any other study exclusion criteria, they were not evaluated further. Those who were potentially study eligible, whose EMR ED did not indicate a history of any positive HCV test, and who denied on initial query that they ever had a positive HCV test were asked a series of follow-up questions to determine study eligibility, including a more extensive assessment of their HCV testing history. For BIDMED, a random sample of patients underwent a similar EMR review, and those whose review indicated that they might be study eligible were interviewed in person. This group had the same extensive assessment of their HCV testing history as those for the InVITED study. However, HCV was not an exclusion criterion for BIDMED. If patients in either study informed the RAs during this extensive assessment that they had previously tested positive for HCV, these data were recorded.

As part of the eligibility assessments for both studies, patients self-administered the *Alcohol*, *Smoking and Substance Involvement Screening Test, Version 3* (ASSIST V.3.) using an audio computer-assisted self-interviewer (ACASI).<sup>16</sup> The ASSIST queried them about their lifetime and past three-month drug use or misuse. Using the ACASI system, patients also completed questionnaires about the specific drugs that they had used and their sexual and drug use/ misuse risk-taking behaviors within the past three months. For the InVITED study, patients were study eligible if they reported any drug use within the previous three months, were not known to be HIV-infected, or never had a positive HCV test. For BIDMED, patients were study eligible if their responses to the ASSIST indicated that they would qualify for a brief or more intensive intervention for their drug misuse. Patients were otherwise eligible for both studies if they were 18-64 years-old; English- or Spanish-speaking; not critically ill or injured; not prison inmates, under arrest, nor undergoing home confinement; not presenting for an acute psychiatric illness or an evaluation for substance misuse; not intoxicated; and did not have a physical disability or mental impairment that prevented them from providing consent for participating in the study.

All participants in the InVITED study were offered rapid HCV antibody screening. Participants who self-reported in the BIDMED study that they never had a positive HCV





Key: ED = Emergency Department; EMR = Electronic Medical Record; HCV = Hepatitis C Virus
test also were offered rapid HCV antibody testing. The RAs performed the rapid HCV antibody test using a fingerstick for blood (OraQuick® HCV rapid antibody test, OraSure Technologies, Inc., Bethlehem, PA). Test results were available within 20 minutes.

#### Data Analysis

To estimate patient-reported prior HCV test positivity among adult ED patients, for the InVITED study we tabulated the number of patients whose ED EMR indicated or who informed the RAs during the initial study-eligibility assessment that they previously had been informed that they had a positive HCV test. For the InVITED and the BID-MED studies, we also tabulated the number of patients who informed the RAs during the HCV testing history assessment that they ever had a positive HCV test. We compared patients who reported a positive HCV test to those who denied ever having a positive HCV test (i.e., prior negative test, never tested, or did not know if they had been tested) by their demographic characteristics using Wilcoxon rank-sum or Pearson's X<sup>2</sup> testing, as appropriate. An α=0.05 level of significance was used for these comparisons. We also calculated HCV antibody-testing uptake among study participants and the HCV antibody seroprevalence among those tested. We recorded the demographic characteristics, self-reported potential HCV risk factors, and self-reported drugs used of those with a positive test.

#### RESULTS

Figure 1 depicts the patient-reported prior HCV test positivity, HCV antibody-screening uptake, and HCV antibodyscreening results for the two studies. Of the 3,542 ED 18-64 year-old patients assessed for InVITED study eligibility (EMR review, brief query and/or in-person study-eligibility assessment), the prevalence of a self-reported history of any positive HCV test was 3.9%. Of the 4,958 assessed in-person for BIDMED study eligibility, this prevalence was 4.9%. When data from both studies was combined, the self-reported prevalence was approximately 4.6%. Of those who completed the ASSIST in both studies, 49.5% reported any drug use within the past three months. Among the 390 patients across both studies who reported ever having a positive HCV test, 50.3% were under 50-years-old (i.e., were not "baby boomers" – not born between 1945 and 1965). In comparing the demographic characteristics of the 390 patients across both studies who reported ever having a positive HCV test vs. the 8,110 who denied ever having a positive HCV test (Table 1), more of those with a history of a positive HCV test were male and white or white/non-Hispanic.

Among the 621 patients in both studies who agreed to be tested for HCV, 1.6% had a previously undiagnosed positive HCV antibody test. As shown in **Table 2**, among the ten participants from both studies with a previously undiagnosed positive HCV antibody test, only one was female, none were HIV-infected, eight were born after 1965, most identified the

	InV brief	ITED EMR &		InVITED in-person screen			BIDMED in-person screen		
	HCV (+)	HCV (–) or unknown status		HCV (+)	HCV (–) or unknown status		HCV (+)	HCV (–) or unknown status	
Demographic Characteristics	n=129	n=1426	p-value	n=19	n=1968	p-value	n=242	n=4716	p-value
	%	%	p <	%	%	p <	%	%	p <
Age (years)									
18-24	2.3	12.8	0.0	0.0	21.8	0.1	2.5	20.9	0.0
25-34	8.5	17.7		26.3	24.8		13.2	24.6	
35-49	34.9	33.0		36.8	30.0		36.0	31.7	
50-64	54.3	36.4		36.8	23.5		48.4	22.7	
Gender									
Male	66.7	54.5	0.0	68.4	42.7	0.0	57.4	43.4	0.0
Female	33.3	45.4		31.6	57.3	0.0	42.6	56.6	0.0
Ethnicity/Race									
White	69.0	60.8	0.4			0.8			0.0
Black	17.8	16.4							
White, non-Hispanic				73.7	64.0		69.0	59.8	
White, Hispanic				5.3	10.4		6.6	11.6	
Black/African-American, non-Hispanic				15.8	16.2		16.5	16.2	
Black/African-American, Hispanic				0.0	5.1		5.0	6.8	
Other	12.4	20.2		5.3	4.3		2.9	5.6	
Health insurance status									
Private	13.2	20.9	0.0	10.5	44.1	0.1	10.3	40.6	0.0
Governmental	55.8	31.1		52.6	32.2		57.4	34.3	
None	11.6	22.0		36.8	23.5		32.2	24.9	
Don't know/Refuse to answer	19.4	26.0		0.0	0.2		0.0	0.2	

 Table 1. Comparison of demographic characteristics by history of any positive HCV test

EMR=Electronic Medical Record; HCV=Hepatitis C Virus; HCV (+)=history of any positive HCV test; HCV (-)=no history of any positive HCV test

		Usual source of medical care	Prior HCV testing	Time elapsed since last HCV test	Injection drug use	Lifetime drug use	Past 3 months drug use
Mal	e						
Subject	Age						
A	25	ED	Don't know	N/A	Never	Marijuana, cocaine or crack, methamphetamines, inhalants, illicit opioid, amphetamines	Marijuana, cocaine or crack, methamphetamines, inhalants
В*	25	ED	No	N/A	P3M Marijuana, cocaine or crack, methamphetamines, hallucinogens, illicit opioid, benzodiazepines, methadone or buprenorphine, prescription opioid analgesics		Marijuana, cocaine or crack, Methamphetamines, hallucinogens, illicit opioids, benzodiazepines, methadone or buprenorphine, prescription opioid analgesics
С	29	PC	Yes	Don't know	Never	Marijuana, cocaine or crack, hallucinogens, illicit opioids, amphetamines, benzodiazepines, prescription opioid analgesics	Illicit opioids, benzodiazepines
D	32	СНС	Yes	< 2 years but > 1 year	Never	Marijuana, illicit opioids, benzodiazepines, methadone or buprenorphine	Marijuana
E*	32	ED	Yes	$\leq$ 5 years but > 2 years	years P3M Marijuana, cocaine or crack, hallucinogens, illicit opioids, benzodiazepines, methadone or buprenorphine, prescription opioid analgesics		Cocaine or crack, illicit opioids, prescription opioid analgesics
F	34	ED	Yes	< 5 years but > 2 year	Never	Marijuana	Marijuana
G	35	ED	No	N/A	Never	Marijuana, cocaine or crack, hallucinogens	Marijuana, cocaine or crack
H*	41	ED	Yes	< 6 months	Ever	Marijuana, cocaine or crack, illicit opioids	Marijuana
*	49	PC	Yes	< 6 months	Ever	Marijuana, cocaine or crack, illicit opioids, benzodiazepines	Marijuana
Fema	ıle						
Subject	Age						
J*	52	PC	No	N/A	Never	Marijuana, cocaine or crack, illicit opioids, methadone	Marijuana

#### Table 2. Confirmed new HCV antibody positive study participants

\*Met Centers for Disease Control & Prevention recommendations for HCV screening by age cohort (born 1945-1965) or IDU

CHC=Community Health Clinic; ED=Emergency Department; HCV=Hepatitis C Virus; IDU=Injection Drug Use; P3M=Past 3 Months; N/A =Not Applicable; PC=Primary Care; IDU=Injection Drug Use

ED as their usual source of medical care, most had previously been tested for HCV, six had never injected drugs, and marijuana was the drug most often reported used within the past three months. Of these ten participants, five did not meet current CDC HCV screening criteria: were not born between 1945 and 1965 (not "baby boomers") and never injected drugs.

#### DISCUSSION

Extrapolating from the data from this study and the annual patient volumes among 18-64 year-olds at The Miriam Hospital and Rhode Island Hospital EDs, approximately 5,346 non-critically ill or injured, non-acutely psychiatrically ill 18-64 year-olds per year could be estimated ever to have had a positive HCV test (116,225 patients/year x 4.6% prevalence). Although not directly comparable, this prevalence is much greater than the 1.3% estimated prevalence of HCV antibody positivity reported for the US general population (all ages) using data from the 2001-2010 National Health and Nutrition Examination survey (NHANES).17 Further, if HCV antibody screening were instituted among a similar group of 18-64 year-olds at these EDs who might report any type of drug use within the prior three months (49.5%), we can anticipate that 920 people (116,225 patients/year x 49.5% drug use prevalence x 1.6% HCV seropositivity) over a one-year period would have a positive HCV antibody test. These results indicate that a substantial number of patients are known to have been or could have a positive HCV test at these EDs. This finding suggests the need to consider screening and assure linkage to care for those with HCV from the ED who are not already in care. Many of these patients do not have regular sources of medical care, which leaves the ED as the place where they would be tested for HCV. The study results also indicate that despite the current focus on "baby boomers" and people who inject drugs, half of those newly diagnosed with HCV had never injected drugs and were not "baby boomers."

This investigation had a number of limitations. The study cannot estimate the HCV antibody seroprevalence among patients not evaluated for study eligibility (e.g., critically ill or injured patients, intoxicated patients, patients with an acute psychiatric problem) and cannot assess the extent of HCV positivity among those patients evaluated at other EDs in Rhode Island. It also is likely that the patient-reported history of prior HCV test positivity among ED patients was underestimated, since patients whose ED EMR indicated that they were otherwise not study eligible were not interviewed. The study also could not determine the status of these patients' current HCV care, which would impact estimates on need for linkage to care. Nevertheless, the results provide a minimum estimate of the extent of prior HCV test positivity and HCV antibody test seroprevalence among these patients. Also, we do not know the risk-taking behaviors (e.g., injection-drug use) among those who were not interviewed. In addition, if our study exclusively had focused instead on all "baby boomers," the estimates of undiagnosed HCV antibody seroprevalence might have been different.

In conclusion, a substantial number of The Miriam Hospital and Rhode Island Hospital adult ED patients are impacted by HCV. Approximately 1.6% of drug-using patients have HCV and are unaware of their status. Further, it appears that if current HCV screening recommendations were followed exclusively, this practice might miss a substantial number of those impacted by HCV. We are hopeful that these findings might lead to an expansion of HCV screening in Rhode Island EDs and linkage to care efforts and perhaps revision of current HCV screening recommendations.

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## An Intensive Medical Education Elective for Senior Medical Students

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#### ABSTRACT

Peer teaching by medical students is increasingly considered an effective and efficient instructional modality with value for both teachers and learners. In 2012, twelve senior medical students participated in an inaugural, four-week Medical Education Elective at The Alpert Medical School of Brown University. The first week emphasized education theory and skills. During the remaining three weeks, participants served as a core group of instructors in a Clinical Skills Clerkship (CSC), a threeweek required course transitioning rising third-year students to clinical clerkships. Senior near-peer instructors (NPIs) gained substantive experience in developing curriculum, facilitating small group sessions, teaching clinical skills, mentoring, providing feedback, and grading an Objective Structured Clinical Examination (OSCE). Based on direct observation by faculty and written anonymous evaluations by learners (n=98), NPIs demonstrated a high degree of teaching competence. This innovative, by-invitation-only, annual elective is the most substantive medical education experience for medical students described in the literature.

**KEYWORDS:** Education, medical, undergraduate, curriculum, peer mentoring

#### INTRODUCTION

Peer teaching by medical students is a feasible and acceptable modality in medical education and spans content areas from the basic sciences to clinical skills.<sup>1</sup> The literature cites peer teaching as effective and efficient, especially where teachers are scarce, with added value for both student-teachers who gain early exposure to the teaching mission of physicians as well as student-learners who benefit from role modeling by peers.<sup>2</sup> Peer (students at the same level of learning) and near-peer (more senior students and resident physicians) teachers also impart the so-called "hidden curriculum" of the medical profession, playing a decisive role in medical students' professionalism and identity formation.<sup>3</sup>

Formal teaching courses to prepare near-peer instructors (NPIs) for their roles continue to be in the minority and to vary widely in terms of format, duration, and scope.<sup>1</sup> The most common formats are didactic and small-group learning

sessions addressing various aspects of teaching, including facilitating small groups and feedback. While some offer teaching opportunities to students – leading cases, participating in simulated teaching exercises, teaching physical exam skills, and supervising junior students – it is unclear how substantive these teaching experiences are and to what degree students actively participate in curriculum development and implementation.

Although all physicians routinely teach in their role as clinicians, not all Accreditation Council for Graduate Medical Education (ACGME)-accredited residencies offer formal training in teaching. In the United States, residents receive an average of 11.5 hours of teaching training during residency.<sup>4</sup> Given this relatively limited amount of formal training combined with the inherent time pressures faced by resident-teachers that have only increased with work-hour restrictions, strategically incorporating formal medical education experiences into medical school curricula seems logical to ensure that future resident physicians are better prepared to teach both their patients and their student-learners.

The Medical Education Elective at the Alpert Medical School is a new four-week course developed to give interested senior medical students a comprehensive experience in medical education with the goal of preparing future physicians for significant teaching roles. This course, the most extensive of its kind in the literature, allows fourth-year medical students to serve as core NPIs in a classroom-based Clinical Skills Clerkship (CSC), a required three-week transition course for rising third-year medical students. Here, we describe the development and implementation of this immersive medical education experience.

#### **METHODS**

The development of the Medical Education Elective was a collaborative effort among faculty members in the Office of Medical Education (PG, RD, and JT) and a medical student who served as the first lead senior student (NP). Students at our institution have the opportunity to pursue a particular area of interest over the course of medical school in a Scholarly Concentration Program; this senior student studied medical education and co-designed the first Medical Education Elective as his final project. The faculty selected a cohort of 12 senior students from a graduating class of 78 to participate

	Day 1		Day 2		Day 3		Day 4		Day 5
Time (hrs)	Event (Facilitator)	Time (hrs)	Event (Facilitator)	Time (hrs)	Event (Facilitator)	Time (hrs)	Event (Facilitator)	Time (hrs)	Event (Facilitator)
0.5	Introduction to elective (Course Leaders / LSS*)	1.5	Didactic Session: Teaching and Learning Styles (LSS)	1.5	Didactic Session: Small Group Facil- itation (Faculty)	1.5	Preparation for pro- fessional develop- ment workshops (Lead Workshop Facilitators)		
2.5	Discussion of each lesson plan in the syllabus (Course Leaders)	1.5	Didactic Session: Presentation Techniques and Objectives (LSS)	1.5	<b>Didactic Session:</b> Teaching Ethics (Faculty)	1.5	Introduction to evaluation/assess- ment/ remediation of OSCE (Course Leaders)	4.5	Preparation for Virtual Family Curriculum small group facilitation (LSS / Group)
1.5	Preparation for oral presentations by specialty (LSS / Group)	1.5	Preparation for professional devel- opment workshops (Lead Workshop Facilitators)	1.5	Work with clerkship coordinators to organize clinical clerkship site visit (Group)	1.5	Refinement of OSCE evaluation checklist (Course Leaders / Group)		

Table 1. A week of preparation for senior medical student near-peer instructors (MS4s, NPIs, n=12) to teach in a required, three-week Clinical Skills Clerkship (CSC) for rising third-year students (MS3s).

\*LSS: Lead Senior Student

OSCE: Objective Structured Clinical Examination

in this for-credit elective based on previous interest in teaching and leadership experiences during medical school.

During the first week of the inaugural Medical Education Elective, the 12 NPIs learned about medical education theory and practical teaching methods from various faculty members and the lead senior student / NPI (**Table 1**). Specific topics included learning styles, oral presentation strategies, and techniques for facilitating small groups. NPIs also participated in curriculum design activities such as creating video-recorded specialty-specific oral presentations for junior students to access electronically. They reviewed and refined paper-based small group cases from the Virtual Family Curriculum<sup>5</sup> to formulate discussion questions, standardize learning goals, and identify supplemental teaching materials.

During the subsequent three weeks of the Medical Education Elective, NPIs served as the core instructors in the required three-week CSC taken by 98 rising third-year students in the spring of 2012. The NPIs had active teaching roles in the three major curricular components of the CSC: a Virtual Family Curriculum, clinical skills training, and professional development (**Table 2**).

Each NPI led his or her own group of eight or nine junior students through the Virtual Family Curriculum, a series of six, specialty-specific cases designed to introduce junior students to important clinical skills.<sup>5</sup> Their primary teaching responsibilities included leading discussions and instructing junior students in a variety of clinical skills such as writing specialty-specific progress notes, writing admission orders, and interpreting chest x-rays (CXRs) and electrocardiograms (EKGs). NPIs were responsible for providing feedback on written assignments, giving verbal feedback at the course midpoint, and assessing the students' small-group performance at the end of the course.

NPIs also served as instructors in the clinical skills component of the CSC designed to give junior students practice with common procedures and protocols. Each NPI was assigned and taught two stations: one core skill (suturing, CXR interpretation, EKG interpretation, or evidenced-based medicine) and one non-core skill (injections, venipuncture, IV insertions, arterial blood gas, intubation, lumbar puncture, or running a mock trauma). NPIs provided real-time instruction and feedback to junior students in groups of six. They also conducted a clinical skills review session to help junior students prepare for the final exam.

Finally, NPIs participated in the professionalism components of the CSC which were intended to maximize junior students' experiences as learners and health-care team members in a series of new clinical learning environments. This curriculum gave senior students multiple experiences in advising and mentoring, including facilitating discussions about the practical aspects of junior students' first scheduled specialty-specific clerkships, conducting individual mentoring sessions with a series of junior students, facilitating discussion sessions about success during clinical clerkships, and leading a key component of an inter-professional workshop attended by local nursing and pharmacy students.

At the end of the CSC, NPIs were responsible for both implementing and grading a six-station, summative objective structured clinical examination (OSCE) under the close supervision of faculty course leaders. As preparation, they reviewed and modified a faculty-member constructed version of the examination (PG). On the day of the exam, they

Activity	Description	Instructional Approach	Time (hrs)	Level of Responsibility				
Virtual Family Curriculum				` 				
Small group facilitation	Prepare for and lead virtual family curriculum cases	Small group discussion	18	Lead facilitators				
Small group member evaluation	Provide written feedback on assignments, provide mid-point feedback, complete formal student evaluations	Varied	20	Primary evaluators				
Clinical Skills Training								
Procedural training	Teach procedures (i.e. lumbar punctures, phlebot- omy, injections, suturing, IV insertion, mock codes, interpreting x-rays and EKGs, using evidence-based medicine)	Hands-on procedural training	16	Co-instructors with MD, PharmD, and nursing faculty				
Interprofessional team training workshop	Lead groups of medical, nursing, and pharmacy students in an interprofessional team training exercise	Small group discussion and activity	4	Lead facilitators				
Specialty-specific oral presentations	Draft, demonstrate, and discuss specialty-specific oral presentations	Small group discussion	2	Lead presenters				
OSCE skills practice	Provide additional instruction in clinical skills	Small group practice	3	Lead instructors				
Professional Development								
Clerkship-specific orien- tation	Lead Q&A about the nuts and bolts of students' first clerkships	Small group luncheon discussion session	1	Discussion leaders				
Careers in Medicine specialty introduction	Discuss career decision-making processes for chosen specialties on the day that specialty is highlighted	Large group didactic session	6	Co-presenters with facul- ty members				
Professional development workshops	Facilitate three workshops addressing profession- alism, success on the wards, and using evidence based medicine	Small group discussion	3	Panelists, co-facilitators with faculty				
Extracurricular research panel discussion	Participate in panel about research opportunities during clinical years; lead small group discussions	Large group panel, small group discussion	3	Panelists, small group co-facilitators				
Mentoring	Meet with eight students for short mentoring sessions	Individual sessions	3	Near peer mentor				
Final OSCE	Final OSCE							
OSCE preparation	Prepare OSCE evaluation criteria	Curriculum preparation		Leaders				
OSCE assessments	Perform real-time assessment of student perfor- mance and grade written work (i.e. admission orders)	Direct evaluation, group grading session	8	Lead evaluators				
OSCE remediation	Teach remediation sessions as needed	Direct evaluation	2	Lead evaluators				

Table 2. Senior medical student MS4 NPI teachin	g responsibilities during the required, t	three-week Clinical Skills Clerkship (CSC).
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evaluated junior students' performances in the core clinical skills stations that they had each taught during the course and graded the written components of the assessment including a history and physical, admission orders, and CXR and EKG interpretations. Finally, they conducted student remediations as needed.

During the CSC, each NPI was directly observed leading a small-group session by an experienced medical educator who then provided written feedback. Third-year students provided informal verbal feedback to their own NPI small group leader mid-course and formally evaluated their respective NPI at the end of the course with an anonymous, electronic, written evaluation. Junior students used a 5-point Likert scale (1=poor, 5=excellent) to rate various aspects of NPIs' teaching competence, including promoting a collaborative learning environment and effectiveness in the following teaching skills: facilitating small group discussions; giving feedback on write-ups; teaching oral presentations; and providing feedback. Junior students also used a four-point scale (1=remained the same, 4=improved exceptionally) to rate their own self-assessed degree of improvement in four clinical skills that were primarily taught by the senior students including writing a clerkship-specific history and physical, writing admission orders, managing insulin orders, and managing intravenous fluids.

Finally, the NPI teaching evaluations contained open-ended questions for junior students regarding their own senior small group leader as well as the cohort. Qualitative data were reviewed and coded by two authors to identify comments that pertained to the specific quantitative questions and identify any additional themes.

To evaluate the impact of the elective, the 12 NPIs

**Table 3.** Rising third-year medical students' (MS3s) teaching evaluations of their senior fourth-year medical student (MS4s) near-peer instructors (n=98/98, 100%).

	MS3 evaluations of MS4s (%)*					
Teaching Competence	Poor/ Fair	Average/ Good	Very Good/ Excellent	Sample Comments		
Effectiveness in facilitating small group discussions	0	8	92	<ul> <li>"He achieved a good balance of prodding us to think through things on our own, while also providing his own input/answers to continue fostering a meaningful discussion."</li> <li>"[He] was a fantastic small group leader in terms of facilitation of discussion and keeping our group on task."</li> </ul>		
Promotes a collabora- tive learning environ- ment	0	3	97	<ul> <li>"I'm particularly proud of her for tactfully suggesting to me that I should talk a little less in small group to allow the reticent members to speak up[she] did a phenomenal job of balancing students with different levels of confidence"</li> <li>"I really enjoyed the small group structure. It was a comfortable environment that really helped me feel supported and excited to learn throughout this clerkship."</li> </ul>		
Effectiveness in giving feedback on write-ups	0	7	93	<ul> <li>"He was extremely quick to provide feedback on the SOAP notes, and his comments were to the point and helpful."</li> <li>"It was clear that [she] put a lot of time and energy intoproviding feedback for our notes. Her feedback was excellent - specific and not overwhelming."</li> </ul>		
Effectiveness in teach- ing oral presentation	0	16	68	• "[The senior students] were especially good at teachingoral presentations because they remember what it was like to not know how to do those things."		
Effectiveness in provid- ing midpoint feedback	0	3	93	"He provided very thorough feedbackI also appreciated that he used the 'compliment sandwich' technique in his feedback."		
Overall teaching com- petence	0	7	93	<ul> <li>"It was cool to see the fourth years in actionnow I have a great idea of the type of student I will be striving to be over the next two years."</li> <li>"It was clear that he was truly passionate about teaching and helping out us younger students."</li> <li>"Very approachable, supportive, professional, patient, affirming, friendly, down-to-earth"</li> </ul>		

\* (1= poor, 2= fair, 3= average, 4= good, 5= very good, 6 = excellent)

participated in a three-hour debriefing session at the end of the course and provided anonymous, written feedback to the lead senior student. We also compared Internal Medicine Clerkship OSCE performances across two classes of junior students.

A university Institutional Review Board representative determined that this required curriculum development and implementation process did not require a formal review.

#### RESULTS

Twelve NPIs participated in the inaugural Medical Education Elective. Their specialty choices included family medicine (n=4), internal medicine (n=3), obstetrics and gynecology (n=2), pediatrics (n=1), and triple board including pediatrics, psychiatry, and child and adolescent psychiatry (n=1).

During the CSC, an experienced faculty member from the Office of Medical Education (RD) individually observed seniors teaching their own small groups and provided written feedback. The comments were generally positive and frequently pertained to teaching techniques and effectiveness in conveying information to the junior students. Specific, constructive comments were provided to each NPI. At the end of the CSC, the NPIs' teaching performance was assessed by all 98 junior students who participated in the CSC (**Table 3**). Over 90% of junior medical students evaluated their senior medical students as being "very good" or "excellent" in 5 of 6 areas of teaching competence. No junior student rated any senior student as "poor" or "fair" in any area. Junior students also provided qualitative feedback about their respective small group teachers, and many of their comments pertained specifically to the areas of teaching competence also assessed by quantitative measures.

To further assess the degree of teaching competence achieved by senior students, junior students self-assessed the degree to which they improved in four clinical areas taught by NPIs. The strongest area of improvement was in writing admitting orders. All junior students reported improvement, more than half indicated that they "improved significantly," and almost a quarter felt they "improved exceptionally."

Junior students' qualitative comments also identified qualities in the senior students that junior students valued in their learning experiences. A large number of students commented on positive characteristics they observed in their senior students including approachability, degree of preparedness, enthusiasm, clarity of presentation, helpfulness of feedback, presentation style, managing the group dynamic, and knowledge.

As determined by the debriefing session and feedback to the lead senior student, NPIs all agreed that their participation in the Medical Education Elective positively affected their preparedness to teach, especially in the areas of medical knowledge, interviewing, oral presentations, interacting with patients, professionalism, and providing constructive feedback.

The clinical performance of junior students improved as measured by comparing performance on comparable thirdyear Internal Medicine Clerkship OSCE stations (specifically, CXR and EKG) for students in the graduating class of 2013, who did not take the CSC, and those in the graduating class of 2014, who took the first CSC.<sup>6</sup>

#### CONCLUSIONS

In this intensive Medical Education Elective, junior students perceived the NPIs to be competent teachers and their clinical skills improved, both subjectively and objectively. While there are reports in the literature of medical student NPIs effectively leading problem-based learning sessions,<sup>1</sup> this elective experience required a considerably broader skill set. Students were responsible for managing small-group dynamics, leading discussions, teaching multiple practical clinical skills, incorporating basic science knowledge into case-based problems across multiple sub-specialties, and providing both written and oral feedback, skills not typically required of medical students. As in other studies of courses intended to teach medical students how to teach, these senior students / NPIs reported that this elective aided in their preparation for teaching as residents.

Future short-term directions will include a refinement of the selection process for participation in the Medical Education Elective, further development of the course based on evaluations of both the Clinical Skills Clerkship and the elective itself, and the design of a formal e-syllabus.

Longer-term, we are developing methods to more formally evaluate the impact of the elective on NPIs' efficacy as teachers and ultimate career decisions. Given that these original senior students were invited to participate in the elective based on their demonstrated interest in medical education, we hypothesize that they may be more likely to pursue a career that includes formal opportunities for teaching. Evaluating the effectiveness of this course on students' actual teaching skills as residents will be challenging as they are currently practicing at different institutions in a variety of clinical specialties. Even so, we do plan to follow the 12 original students as well as participants in the course from subsequent years over time to determine whether they are more likely to receive teaching awards and to pursue careers in academic medicine than their medical school classmates.

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## Severe Cerebral Vasospasm after Traumatic Brain Injury

COREY R. FEHNEL, MD, MPH; LINDA C. WENDELL, MD; N. STEVENSON POTTER, MD, PhD; PETRA KLINGE, MD, PhD; BRADFORD B. THOMPSON, MD

#### ABSTRACT

Severe traumatic brain injury is associated with both acute and delayed neurological injury. Cerebral vasospasm is commonly associated with delayed neurological decline in aneurysmal subarachnoid hemorrhage patients. However, the role played by vasospasm in traumatic brain injury is less clear. Vasospasm occurs earlier, for a shorter duration, and often without significant neurological consequence among traumatic brain injury patients. Detection and management strategies for vasospasm in aneurysmal subarachnoid hemorrhage are not easily transferrable to traumatic brain injury patients. We present a patient with a severe traumatic brain injury who had dramatic improvement following emergent decompressive hemicraniectomy. Two weeks after initial presentation he suffered a precipitous decline despite intensive surveillance. This case illustrates the distinct challenges of diagnosing cerebral vasospasm in the setting of severe traumatic brain injury.

**KEYWORDS:** Traumatic Brain Injury, Trauma, Vasospasm, Stroke

#### **CASE REPORT**

A 55-year-old man presented to this hospital following a mechanical fall. The patient was intubated in the field for airway protection. Glasgow Coma Scale (GCS) on arrival was 3T ("T" indicates endotracheal intubation). Head computed tomography (CT) revealed a right hemispheric subdural hemorrhage with 2cm midline shift and bifrontal contusions (**Figure A**). CT angiogram of neck and head was normal. Figure. Non-contrasted CT of the Head. MRI, and MR Angiography of the Head.



Non-contrasted CT head reveals right SDH (arrow), 2cm right to left midline shift (arrow).



CT head from hospital day 4 with right craniectomy, improved midline shift, and right ACA distribution hypodensity.



Diffusion-weighted MRI with acute infarctions of left middle cerebral and bilateral posterior cerebral arteries.



MR angiogram with severe diffuse vasospasm of bilateral middle cerebral, anterior cerebral, vertebral, and basilar arteries (arrows).

Emergent decompressive hemicraniectomy and hematoma evacuation were performed. The patient's GCS improved to 15 over the next two days with mild left-sided hemiparesis. Given persistent left-leg weakness, head CT was obtained on hospital day 4 revealing infarction in the right anterior cerebral artery (ACA) distribution (Figure B). The infarction was considered secondary to ACA compression from severe subfalcine herniation at presentation. Cardiac telemetry and transthoracic echocardiography did not reveal substrate for emboli. Transcranial Doppler Ultrasound (TCD) on hospital day 5 revealed normal velocities in all territories. On hospital day 14 the patient stopped following commands and was noted to have a new left skew deviation. Magnetic Resonance (MR) Imaging revealed multifocal bihemispheric and caudal brainstem infarctions (Figure C). MR angiography revealed severe diffuse cerebral vasospasm, not present on admission CT angiogram (Figure D). The patient expired following extubation at home with his family.

#### DISCUSSION

Traumatic brain injury (TBI) is the most common etiology for subarachnoid hemorrhage (SAH). Delayed vasospasm in TBI is thought to relate to hemoglobin degradation and subsequent inflammatory cascade. Putative mechanisms for vasospasm in aneurysmal SAH are similar. However, 30% of aneurysmal SAH patients develop clinical vasospasm versus less than 3% of TBI patients in some series.<sup>1, 2</sup> The true incidence of clinical vasospasm is likely higher, but relatively low rates of detection among TBI patients complicate prevention efforts.3 Sensitivity and specificity of TCD for detecting vasospasm in TBI has not been established.4 Radiographic markers are costly, carry risks, and may not correlate with clinical symptoms. Randomized trials of nimodipine in traumatic brain injury have not shown the same benefits realized in aneurysmal subarachnoid hemorrhage patients.<sup>5</sup> Hyperdynamic therapies utilized for vasospasm in aneurysmal subarachnoid hemorrhage carry greater risk of hemorrhage in the brain-injured patient. When symptomatic vasospasm is detected in the TBI patient, emergent endovascular spasmolysis with site-directed infusion of vasodilators or angioplasty are the current mainstays of treatment.<sup>6</sup> Despite post-operative clinical improvement in our patient, and normal TCD velocities on hospital day 5, sudden and devastating neurological decline occurred. Larger prospective studies to improve early detection of TBI-associated vasospasm are warranted.

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# Non-emergent Hospital Emergency Department Use and Neighborhood Poverty in Rhode Island, 2008–2012

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The hospital emergency department (ED) becomes the ultimate destination for vulnerable populations without primary care.1 Researchers from the New York University (NYU) Center for Health and Public Service Research and the United Hospital Fund of New York jointly developed a profiling algorithm for ED use, which is well known as the NYU ED classification algorithm. Based on the patient's age, symptoms, complaint, vital signs, medical history, and International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) diagnosis codes, the NYU algorithm identifies nine categories of patients: non-emergent, emergent/primary care treatable, emergent/ED care needed, but preventable/avoidable; emergent/ED care needed, not preventable/avoidable; injury, mental health related, alcohol related, drug related (excluding alcohol), not in a special category, and not classified.<sup>2,3</sup> If immediate medical care would not be required within 12 hours, an ED visit was classified as non-emergent.4

The NYU algorithm provided us with an opportunity to study the quality of ED care to improve health care efficiency. Non-emergent ED visits unnecessarily crowd ED use and compromise the efficacy and quality of ED services.<sup>4</sup> Previous findings have shown that people at low-income level and who are without a regular source of primary care are more likely to visit the ED compared to those with higher incomes.<sup>2,4-6</sup> Our objective was to determine who uses hospital ED for non-emergent visits, which is an indicator of primary care-sensitive ED services. By using the NYU ED classification algorithm, Rhode Island ED database and American Community Survey (ACS) data, we describe characteristics of patients in Rhode Island who use ED for non-emergent visits and examine whether ED non-emergent use is associated with neighborhood poverty, how those patients are distributed geographically, and how the distribution is correlated with neighborhood poverty status.

#### **METHODS**

We analyzed data from the 2008–2012 Rhode Island ED database and 2008–2012 ACS.

#### Data source

Rhode Island's ED data include demographic information, patient residence at the time of admission coded at the census tract level, ICD-9-CM codes, insurance type, and hospital charges. We included only 11 acute care hospitals' ED visits with a specified ICD-9-CM diagnosis code. In the dataset one patient may have multiple visits. The population was non-emergent ED use at the visit level, which was constructed by using the NYU ED classification algorithm. Age-adjusted percentages of non-emergent ED visits were calculated to allow comparability across census tracts. Using 5 age groups (i.e., 00–14, 15–24, 25–44, 45–64, and ≥65), non-emergent ED visit percentages were age-adjusted to the 2010 U.S. population.

The ACS is conducted by the U.S. Census Bureau and consists of a nationally representative sample of housing units, both occupied and vacant, and institutionalized and noninstitutionalized populations of the United States.<sup>7</sup> The ACS is used to provide annual estimates at the national, state and local level on the demographics and socio-economic characteristics of the United States population.<sup>7</sup> In this study, census tract was used as a proxy of neighborhood. Census tracts include 2,500 to 8,000 residents.<sup>8</sup> The authors used ACS data at the census tract levels to characterize neighborhood poverty level.

#### Data analyses

We used descriptive statistics to summarize the characteristics of patients with non-emergent ED visits. We analyzed the correlation of non-emergent ED visits with the neighborhood poverty status at the census tract level by constructing scatter-plots. The Pearson correlation coefficient was calculated to examine the strength of the relationship. If values are between 0.00-0.29, it indicates a weak relationship; if 0.30-0.69, moderate; and if 0.70-1.00, strong. The coefficient of determination (the squared correlation coefficient) is another way for evaluating the strength of a relationship. This is the proportion of variance in non-emergent ED use percentages that can be accounted for by knowing census tract poverty levels or vice versa.<sup>9</sup> We conducted all analyses with the SAS 9.2 statistical package (SAS Institute, Inc, Cary, North Carolina).

Aggregating features into classes allows us to spot patterns in the data more easily. We created a four-level poverty census tract variable that has consistently detected socioeconomic gradients in health across a wide range of health outcomes in the total population: 0 to <5% residents in poverty; 5% to < 10% of residents in poverty; 10 to < 20% of residents in poverty; and 20% or more of residents in poverty.<sup>10</sup> We use the Quantile Classification method to create the value ranges of non-emergent ED use. The number of values is the same in each class. We used ArcGIS 10.2 (Environmental Systems Research Institute, Inc, Redlands, California) to map poverty percentage and non-emergent ED visit percentage by census tracts of Rhode Island.

#### RESULTS

A total of 402,013 (20.3%) of 1,985,240 ED visits were for non-emergent use. Other ED visits included 18.5%, emergent/primary care treatable; 4.8%, emergent/ED care needed, but preventable/avoidable; 10.4%, emergent/ED care needed, not preventable/avoidable; 26.5%, injury; 4.4%, mental health related; 2.9%, alcohol related; 0.3%, drug related (excluding alcohol); and 11.8%, not in a special category, and not classified.

Individuals 20-39 years of age were the most frequent non-emergent ED users. The majority of non-emergent ED users were females. Hispanic and non-Hispanic black patients were more likely to use the ED for non-emergent diagnoses than other ED use. The residents of the four core cities including Central Falls, Pawtucket, Providence and Woonsocket have a higher percentage of ED visits for non-emergent use compared to other ED visits. Overall, almost half of the non-emergent ED users were charged less than \$1,000. Non-emergent ED visitors had higher self-pay and Medicaid insurance than other ED users. (**Table 1**)

Non-emergent ED users had a higher percentages from all top 10 diagnosis groups than did other ED visits. The total percentage for the top 10 diagnosis groups for non-emergent (51.7% of total non-emergent ED use) exceeded that for other ED visits (26% of total other ED visits). Other symptoms referable to back, the leading diagnosis of non-emergent for Table 1. Characteristics of ED Visits in Rhode Island, 2008-2012

	Non-eme visi	rgent ED its	Other ED visits		
Characteristic	n	%	n	%	
Total (N=1,985,240)	402,013	20.3	1,559,554	79.7	
Age group (years)					
0-19	92,454	23.1	377,967	24.2	
20-39	160,333	39.9	516,925	33.1	
40 and over	149,226	37.1	664,664	42.6	
Sex					
Male	149,061	37.1	729,908	46.8	
Female	252,949	62.9	829,627	53.2	
Race/Ethnicity					
White, non-Hispanic	265,561	66.9	1,127,589	73.0	
Black, non-Hispanic	46,512	11.7	148,168	9.6	
Hispanic	71,150	17.9	216,736	14.0	
Other	13,731	3.5	51,343	3.3	
City of residence					
Core city	178,467	44.9	606,449	39.3	
Non-core city	199,952	50.3	852,732	55.2	
Out of state	19,467	4.9	85,817	5.6	
Total charges (\$)					
<\$1,000	199,502	49.6	600,036	38.5	
>=\$1,000	202,511	50.4	959,519	61.5	
Insurance					
Self pay	71,374	18.2	264,744	17.4	
Medicaid	129,167	33.0	398,170	26.2	
Medicare	59,736	15.2	269,856	17.8	
Private	125,618	32.1	537,908	35.4	
Other	5,945	1.5	47,704	3.1	

ED: Emergency Department

#### Table 2. Ten Leading Diagnosis Groups of Emergency Department Visits in Rhode Island, 2008-2014

	Non-emergent Emergent Department visits (4	Other Emergent Department visits (2-9) (1,559,554)				
#	Diagnosis Group	n	%	Diagnosis Group	n	%
1	724.8 - Other symptoms referable to back	36,779	9.1	789.0 - Abdominal pain	102,586	6.6
2	784.0 - Headache	33,471	8.3	466.0 - Acute bronchitis	55,776	3.6
3	648.93 - Other current conditions classifiable elsewhere of mother, antepartum condition or complication	29,233	7.3	303.90 - Other and unspecified alcohol dependence, unspecified	39,510	2.5
4	462 - Acute pharyngitis	21,933	5.5	682 - Other cellulitis and abscess	34,795	2.2
5	787.0 - Nausea and vomiting	19,662	4.9	847.0 - Sprain of neck	33,807	2.2
6	691.8 - Other atopic dermatitis and related conditions	15,572	3.9	920 - Contusion of face, scalp, and neck except eye(s)	30,353	1.9
7	525.9 - Unspecified disorder of the teeth and support- ing structures	14,970	3.7	845.00 - Sprain of ankle, unspecified site	27,601	1.8
8	599.0 - Urinary tract infection, site not specified	13,597	3.4	493 - Asthma	27,004	1.7
9	719.46 - Pain in joint, lower leg	11,398	2.8	786.50 - Chest pain, unspecified	26,827	1.7
10	780.4 - Dizziness and giddiness	11,287	2.8	873.20 - Open wound of nose, unspecified site, without mention of complication	26,162	1.7
	Total from the top 10 diagnosis groups	207,902	51.7	Total from the top 10 diagnosis groups	404,421	26.0

ED visits, accounted for 9.1% of non-emergent ED service. Headache (8.3%), other current conditions classifiable elsewhere of mother, antepartum condition or complication (7.3%), acute pharyngitis (5.5%), and nausea and vomiting (4.9%), dominated the list of major diagnosis in non-emergent group. (**Table 2**)

The Pearson correlation coefficient between non-emergent ED use and census tract-level poverty was 0.5711, which indicated a moderate positive linear relationship. The coefficient of determination (the squared correlation coefficient) was 0.3262. Thus, 32.62% of high-poverty census tracts had high ED visit percentages for non-emergent use or vice versa. (Figure 1)

Each census tract code is shaded based on the percentage of neighborhood poverty. Neighborhood poverty status varies by census tract, from less than 0.8% in the lowest category to 63.6% in the highest category. The darkest color represents the census tract codes with 20% or more of residents in poverty. Each census tract code has a circle based on the percentage of total ED visits for non-emergent use (first through fourth quantile). Non-emergent ED visits varies by census tract, from less than 0.1% in the lowest quantile of census tracts up to 51.2% in the highest quantile. The biggest circle represents the census tract codes with non-emergent ED visit percentages in the highest quantile. The highest percentages of poverty status and non-emergent ED use are in the census tract codes of four core cities, Central Falls, Pawtucket, Providence, and Woonsocket. The figure shows that census tract codes with a highpoverty percentage tend to have a higher percentage of non-emergent ED visits. (Figure 2)

#### DISCUSSION

Rhode Island data reveal that 1 of every 5 ED visits (20.3%) in 2008-2012 was non-emergent. ED use for non-emergent conditions was higher for Hispanics and non-Hispanic blacks than other ED visits. Non-emergent ED users were especially common among self-pay patients or Medicaid beneficiaries. Non-emergent ED visit percentages were moderately correlated with neighborhood poverty level. ED use for non-emergent care by census tracts displays substantial variations across Rhode Island neighborhoods. The highest percentages of ED visits for non-emergent conditions were in four core-city census tract codes.

These findings are consistent with other research on the ED Algorithm.<sup>5</sup> Socio-demographic characteristics were predictors of non-emergent ED service use.<sup>4</sup> ED visits for non-emergent were found to be strongly correlated with poverty and un-insurance.<sup>5</sup> **Figure 1.** The correlation between poverty level and non-emergent Emergency Department visit percentage, data from the 2008–2012 American Community Survey and the 2008–2012 Rhode Island Emergency Department Data.



**Figure 2.** Poverty level and age-adjusted non-emergent Emergency Department visit percentage by census tracts, data from the 2008-2012 American Community Survey and the 2008-2012 Rhode Island Emergency Department database.



Low-income status and no insurance or underinsurance holders usually delay seeking treatment until their medical condition has worsened.<sup>3</sup> The Begley et al study displayed that people living below poverty are less likely to have a regular source of care, more likely to report fair or poor health, and more likely to have ED visits than people not living below the federal poverty level.<sup>5</sup> Previous studies show that most patients know their condition is not an emergency and an ED is the convenience service.<sup>1</sup> Low-income Rhode Island residents may depend on ED care even more since physician reimbursement rates for Medicaid patients are being cut.<sup>2</sup>

The findings revealed notable geographic differences by census tracts of residence. Areas of the four core-cities with particularly high ED use for non-emergency conditions may lack primary care resources. The maps generated by the Office of Primary Care and Rural Health at the Rhode Island Department of Health showed that the low-income population group and four core-cities had been designated by the Federal government as having a shortage of primary care health professionals, which are consistent with our results.<sup>11</sup> Some neighborhoods of the high-use ED for non-emergent have a high density of immigrants, which may be indicate a lack of a connection to the primary care delivery system. High percentages of ED use for non-emergent conditions may demonstrate that patients have no access to the primary care, are dissatisfied with the primary care provider, or lack knowledge of symptoms and disease self-management. The findings provide support for providing urgent care center alternatives to the ED, and access to high quality primary care, particularly in the Hispanic and non-Hispanic black community. Billings et al<sup>2</sup> also raised a number of ways to reduce reliance on ED and improve primary care: 1) Increasing night time and weekend hours for health care providers; 2) Extending health care providers' telephone consultation capacity; 3) Identifying patients with high use of the ED for primary care, and establishing links to primary care for patients who lack them; and 4) Educating patients about how to manage chronic conditions.

There are at least four limitations to this study. 1) Approximately 14.5% of census tracts were missing or incorrect in the 2008-2012 Rhode Island ED Data. 2) It would have been very helpful to have the length of ED stay hours. But Lifespan including Rhode Island Hospital, Miriam Hospital, and Newport Hospital, which provide 44.8% of total ED services in Rhode Island, did not provide the time of patient's registration in the ED. 3) The authors chose to use defined interval classification developed by Harvard University to create the ranges of poverty level. However, we did not have the criterion for the classification of non-emergent ED use percentage, so we chose to use the Quantile Classification method to create the value ranges of non-emergent ED use percentage depicted on the GIS maps. 4) We only utilized the 11 acute care hospitals' Emergency Department data in Rhode Island, and we did not have "walk-in" ED use data. The Rhode Island health information exchanges (HIE), also called CurrentCare, collect administrative, clinical, laboratory data, and medication data, and track the full spectrum of healthcare utilization, regardless where of care is sought. In the future when the CurrentCare data are available, we can also include "walk-in" ED visits, which are a part of a big picture.

Despite the limitations, there is some strength to this study as well. 1) Rhode Island state law requires hospitals to submit ED visit records, so this was a statewide study on ED visits that includes all acute care hospitals in Rhode Island. 2) Neighborhood-level poverty was assessed by the population-based survey, not by patients themselves. 3) We found that the ED Algorithm is a useful tool for bringing attention to poverty status at the neighborhood level. The Affordable Care Act may change low-income families' insurance problems and can affect their ED visits for non-emergent conditions. In the near future, it is hoped the Rhode Island Primary Care Trust will fund "Neighborhood Health Stations" across the state, which will provide primary care, dental care, and mental health care service to 75 neighborhoods of approximately 10,000 individuals each. Hospital administrators and neighborhood planners may use the findings to determine the need for and location of "neighborhood health station" in a Rhode Island healthcare system.

#### SUMMARY

In summary, we need to find specific personal, economic, or systematic barriers to the primary care system in future studies. The high percentage ED service use for non-emergent in Rhode Island indicates it is necessary to improve the access to primary care services or delivery of the primary care services; for instance, to change inconvenient hours, to reduce long waits for appointments, to eliminate treatment inequality, etc. The community planners can reduce the ED use for non-emergent conditions by eliminating health professional shortage areas in Rhode Island, increasing nurse advice lines, and promoting chronic condition management programs.

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#### Disclosure

The authors have no financial interests to disclose.

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

	REPORTING PERIOD				
	JANUARY 2014	12 MONTHS END	12 MONTHS ENDING WITH JANUARY 2014		
VITAL EVENTS	Number	Number	Rates		
Live Births	894	11,449	10.9*		
Deaths	856	9,829	9.3*		
Infant Deaths	3	73	6.4#		
Neonatal Deaths	3	52	4.5#		
Marriages	221	6,567	6.2*		
Divorces	269	3,236	3.1*		
Induced Terminations	325	3,269	285.5#		
Spontaneous Fetal Deaths	60	685	59.8#		
Under 20 weeks gestation	45	553	56.3#		
20+ weeks gestation	8	80	7.0#		

\* Rates per 1,000 estimated poulation

# Rates per 1,000 live births

	REPORTING PERIOD	)				
Underlying Cause of Death Category	JULY 2013	12	12 MONTHS ENDING WITH JULY 2013			
Underlying Cause of Death Category	Number (a)	Number (a)	Rates (b)	YPLL (c)		
Diseases of the Heart	173	2,412	229.0	3,234.5		
Malignant Neoplasms	233	2,267	215.2	5,922.5		
Cerebrovascular Disease	37	431	40.9	657.0		
Injuries (Accident/Suicide/Homicide)	76	647	61.4	9,279.5		
COPD	32	500	47.5	487.5		

(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 1,051,511 (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.



#### The Herbert Rakatansky Prize awarded to Elizabeth Janopaul-Naylor, MD'14

This prize is awarded to a graduating medical student who has contributed to the health and well-being of her or his fellow students and/or in other ways exemplified commitment and leadership in the areas of medical professionalism, medical ethics and humanitarian service.

Dr. Herbert Rakatansky,'56, founded the Physician Health Program of the Rhode Island Medical Society in 1979 and has chaired the Program ever since. The program has helped hundreds of Rhode Island physicians, dentists, podiatrists and Physician Assistants consistently maintain the highest standards of professional performance. Dr. Rakatansky is also faculty advisor to the Medical Student Health Council. Dr. Rakatansky was president of the Rhode Island Medical Society in 1985–86. He was a member of the Council on Ethical and Judicial Affairs of the American Medical Association for seven years, from 1994 to 2001 and served as vice chair and chair of the Council for four years. He has served on the clinical faculty of Brown since 1967 and became clinical emeritus professor of medicine in 2008. The prize was established by the Rhode Island Medical Society in 2012 in celebration of its bicentennial.  $\clubsuit$ 



Leadership from the Rhode Island Medical Society attended the grand opening of the first Center for Physician Assistant Studies in Rhode Island on May 29, established by Johnson & Wales University. From left are Steven R. DeToy, director of government and public affairs, and RIMS Executive Director Newell E. Warde, PhD.

# The Amos Throop Prize awarded to Jordan Sack, MD'14

This prize is awarded to a graduating Alpert Medical School student who has demonstrated engagement in the issues and processes of public policy relating to health and health care, and in the role of medical societies as advocates for patients and for enlightened public policy.



Dr. Amos Throop (1736-1814) was a founder and the first president of the Rhode Island Medical Society (1812-1814). He served in the Revolutionary War as both a soldier and a doctor. A Federalist, Dr. Throop was elected by the people of Providence to four terms in the Rhode Island General Assembly. The founding of the Rhode Island Medical Society in 1812 and the founding of Brown University's first medical school in 1811 were contemporaneous events inspired by similar purposes and involving some of the same individuals. Medical societies promote education, medical ethics and professionalism; they advocate in the public arena for the needs, values and interests of patients and the medical profession. The prize was established by the Rhode Island Medical Society in 2012 in celebration of its bicentennial.

Jordan is excited to be starting his residency in Internal Medicine at Yale-New Haven Hospital in June.

He received his undergraduate education from Brown University, where he earned a Bachelor of Science in Biology with a focus on Immunology as well as a second concentration in History with a focus on Empires. He graduated magna cum laude, Sigma Xi, and Phi Beta Kappa. He received several awards including the Class of 2010 Senior Prize in Biology and the Frederick Barnes Prize.  $\Rightarrow$ 



# Working for You: RIMS advocacy activities

#### June 2, Monday

Meet with *Providence Journal* reporter regarding opioid addiction articles Council Meeting

#### June 3, Tuesday

RIMS Physician Health Committee (Herbert Rakatansky, MD, Chair) Health Services Council

Legislative hearings, State House

#### June 4, Wednesday

Meeting with Secretary of EOHHS and CEO of Greater Providence YMCA regarding strategic health initiatives for Medicaid population

Legislative hearings, State House

Nick Denise fundraiser

#### June 5, Thursday

Dr. Jones and staff meet with BCBSRI CEO and senior executives

BMLD policy committee regarding emeritus license fees

Legislative hearings, State House

#### June 6, Friday – June 11, Wednesday

AMA Annual Meeting; Drs. Jones, Adrain, Hollmann, and staff

#### June 9, Monday

Joint open meeting of AMA Litigation Center and Scope of Practice Partnership: in Chicago, Newell Warde presiding

#### June 11, Wednesday

BMLD monthly meeting

Conference call with lawyers representing medical records-processing clients

Meeting with Senate president on legislation; Steven Blazar, MD and RIMS staff

Legislative hearings, State House

#### June 12, Thursday

Tobacco free Rhode Island legislative conference call

DOH tanning regulations public hearing

Legislative hearings, State House

#### June 13, Friday

Meeting with Governor to discuss opioid regulations; Dr. Jones and staff

Board of Medical Licensure and Discipline Meeting

#### June 16, Monday

RIMS ad hoc committee on Governance; Peter Karczmar, MD, Chair; Drs. Hollmann, Siedlecki, Ejnes, Collins and Settipane

Health Source RI Executive Board

Legislative hearings, State House

#### June 17, Tuesday

Legislative hearings, State House

#### June 18, Wednesday

Primary Care Physicians Advisory Committee

Legislative hearings, State House

#### June 18-21, Wednesday-Saturday

Physicians Foundation Leadership Academy, Duke University; Peter Karczmar, MD, and Newell Warde, PhD, attending

#### June 19, Thursday

Lt. Governor meeting on state innovation model grant application

Meeting with Governor's staff regarding legislation

Residents Orientation, Lifespan: Dr. Herbert Rakatansky and Kathi Boyd presenting; Diane R. Siedlecki, MD, and staff at RIMS membership table

Health Care Reform Executive Committee meeting

Legislative hearings, State House

#### June 20, Friday

Coalition of Mental Health Professionals of RI (COMHPRI) Legislative hearings, State House

June 21, Saturday

Legislature adjourns, 4:06 am

#### June 23, Monday

Sheldon Whitehouse health care leaders meeting

#### June 24, Tuesday

Meeting on controlled substances regulations, RIMS and other concerned parties

Meeting to discuss global signature lawsuit with attorneys

Frank Ferri's Lt. Governor announcement

#### June 25-26, Wednesday–Thursday

State medical society/PhRMA meeting, Washington, DC; RIMS staff



# Why You Should Join the Rhode Island Medical Society

The Rhode Island Medical Society delivers valuable member benefits that help physicians, residents, medical students, physican-assistants, and retired practitioners every single day. As a member, you can take an active role in shaping a better health care future.

RIMS offers discounts for group membership, spouses, military, and those beginning their practices. Medical students can join for free.





#### **APPLY FOR MEMBERSHIP ONLINE**

#### **RIMS MEMBERSHIP BENEFITS INCLUDE:**

#### **Career management resources**

Insurance, medical banking, document shredding, and independent practice association Powerful advocacy at every level

Advantages include representation, advocacy, leadership opportunities, and referrals

**Complimentary subscriptions** 

Publications include *Rhode Island Medical Journal*, *Rhode Island Medical News*, annual *Directory of Members*; RIMS members have library privileges at Brown University

#### Member Portal on www.rimed.org

Password access to pay dues, access contact information for colleagues and RIMS leadership, RSVP to RIMS events, and share your thoughts with colleagues and RIMS

#### **SPECIAL NOTICE: 2014 AMA DUES PAYMENTS**

The American Medical Association (AMA) will direct bill its Rhode Island members for their 2014 dues. Beginning August 2013, AMA members will receive a separate dues statement from the AMA instead of paying AMA membership dues through the Rhode Island Medical Society (RIMS) membership invoice. This is simply an operational change so that both RIMS and AMA can concentrate on their respective member satisfaction. There remains no requirement for RIMS members to join the AMA.

Please let us know if you have questions concerning this change by emailing Megan Turcotte or phoning 401-331-3207.

#### Bradley Hospital Study Finds Difference in Bipolar Disorder in Children, Adults

#### Meta-analysis suggests children may benefit from targeted treatments specific to pediatric brain activity

PROVIDENCE – A new study from Bradley Hospital has found that bipolar children have greater activation in the right amygdala – a brain region very important for emotional reaction – than bipolar adults when viewing emotional faces. The study, now published online in *JAMA Psychiatry*, suggests that bipolar children might benefit from treatments that target emotional face identification, such as computer based "brain games" or group and individual therapy.

This study is the first ever meta-analysis to directly compare brain changes in bipolar children to bipolar adults, using data from 100 functional MRI (fMRI) brain imaging studies with a pool of thousands of participants. **EZRA WEGBREIT**, **PHD**, a postdoctoral research fellow at Bradley Hospital, led the study along with senior author **DANIEL DICKSTEIN**, **MD**, director of the PediMIND Program at Bradley Hospital.

"Bipolar disorder is among the most debilitating psychiatric illnesses affecting adults worldwide, with an estimated prevalence of one to four percent of the adult population, but more than 40 percent of adults report their bipolar disorder started in childhood rather than adulthood," said Wegbreit. "Despite this, very few studies have examined whether brain or behavioral changes exist that are specific to children with bipolar disorder versus adults with bipolar disorder."

Analysis of emotional face recognition fMRI studies showed significantly greater amygdala activity among bipolar youths than bipolar adults. The team also analyzed studies using emotional stimuli, which again showed significantly greater levels of brain activation in bipolar children, this time in the inferior frontal gyrus and precuneus areas of the brain. In contrast, analyses of fMRI studies using non-emotional cognitive tasks showed a significant lack of brain activation in the anterior cingulate cortex of bipolar children.

"Despite our best current treatments, bipolar disorder exacts a considerable toll on youths, including problems with friends, parents and at school, and high rates of psychiatric hospitalization and suicide attempts," said Dr. Dickstein. "More research into targeted treatments is needed now that we know children's brains are impacted in specific, identifiable ways by bipolar disorder."

Dr. Dickstein added that Bradley Hospital's PediMIND Program is currently conducting several research projects on pediatric bipolar disorder, including potential brainbased treatment. "Understanding more about the brains of children and adults with mental illness is very important because, ultimately, all mental illnesses are reflected in changes in brain activity," said Dickstein. "Locating the underlying brain change in bipolar youths could lead us to new, brain-based ways to improve how we diagnose and treat this disorder." �

#### Engaging Patients Proven to Lower Readmissions, Helping Hospitals Avoid Penalties

PROVIDENCE – When patients are discharged from the hospital without fully understanding what to do next, they can land back in the emergency department or hospital within days or weeks. Not only can this be stressful and contribute to poor outcomes, but it also adds to the rising health care costs that affect all Rhode Island residents. Researchers at Healthcentric Advisors found that an intervention to engage patients in their care successfully lowered utilization and costs for a full six months after hospital discharge.

From 2009 through 2011, Healthcentric Advisors worked with six Rhode Island hospitals to implement Dr. Eric Coleman's Care Transitions Intervention (CTI), a patient-centered coaching model. By pairing hospitalized patients with a health coach for the critical 30-day period following hospital discharge, the intervention helped patients to better manage their care. The coach's role included helping patients make and keep doctors' appointments, use a personal health record to track information and questions, and know when to ask their doctor for help.

Compared to those who were eligible but didn't participate, the group that received the CTI intervention:

- Had significantly lower health care utilization in the six months after discharge
- Incurred lower mean total health care costs (\$14,729 vs. \$18,779)
- Avoided \$3,752 in healthcare costs per patient

"As a doctor, I know how difficult hospital discharge can be for patients and families, especially if something goes wrong," said **DR. REBEKAH GARDNER**, Senior Medical Scientist at Healthcentric Advisors and lead author of the paper. "When patients and families don't have the right information or skills to navigate the health care system, they are confused and anxious. Poor discharges can result in people returning to the hospital when they could have staved at home."

This study demonstrates that evidence-based interventions, such as the CTI, can have a lasting and powerful impact on the health care system by simply providing patients with the tools necessary to better understand and manage their needs.  $\diamond$ 



# STAY ON THE ROAD TO 10 STEPS TO HELP YOU TRANSITION

The ICD-10 transition will affect every part of your practice, from software upgrades, to patient registration and referrals, to clinical documentation and billing.

CMS can help you prepare. Visit the CMS website at <u>www.cms.gov/ICD10</u> and find out how to:

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- Test Your Systems and Processes—Test within your practice and with your vendors and payers

# Now is the time to get ready. www.cms.gov/ICD10







#### Bills Aimed At Stemming Overdose Deaths Become Law

STATE HOUSE – Two bills supported by the Senate Health and Human Services Committee to address the recent increase in drug overdose deaths in the region have been signed into law, and a third was passed by the Assembly and awaits the governor's action.

One of the bills signed into law addresses health insurance coverage for people with opioid substance use disorder and chronic addiction, which would:

- Strengthen parity in coverage of mental health and substance use disorders, in clear language aligned with federal regulation, and require that both methadone treatment services and medications to treat opioid overdoses be included as covered health benefits.
- Provide patients with substance use disorders with information they need about critical services, when they need it most – when they are being discharged from a hospital. The legislation outlines a process that hospitals can use to make sure that patients with substance use disorders leave with real-time information in hand about community-based facilities and providers that have openings for them. As they leave, patients would also have a follow-up appointment scheduled for them with licensed professionals who understand substance use disorders.
- Extend the safety net to other health care settings that patients with substance use disorders also consult – places like urgent care settings, freestanding clinics and emergency room diversion facilities. This legislation ensures that these settings also receive information about community and health care resources that can be consulted to support patients with substance use disorders.

#### Providence Center, Care New England Seek Formal Affiliation

PROVIDENCE – Following a year of strategic and programmatic partnerships focused on enhancing the delivery of behavioral health care in the region, The Providence Center (TPC) and Care New England (CNE) announced they have begun negotiating the terms of a formal affiliation.

The formal agreement seeks to solidify the integration of behavioral health services across community-based and hospital-based systems in order to provide comprehensive treatment and support across the full continuum of care to patients with mental illness and substance use disorders. The larger focus on public health, a key element to Care New England's vision for the future of health care, includes a broader view that incorporates primary care, acute and specialty care, post-acute care and wellness.

TPC and CNE announced a strategic affiliation agreement in March 2013. The final affiliation agreement will require approval from the Rhode Island Department of Behavioral Healthcare, Developmental Disabilities and Hospitals (BHHDH).

#### Miriam Hospital Receives 8th Consecutive Award for Quality Care

PROVIDENCE – The Miriam Hospital has received the Get With The Guidelines-Stroke Gold-Plus Quality Achievement Award for using American Heart Association/American Stroke Association quality improvement measures when treating stroke patients. The distinction, which recognizes evidence-based clinical guidelines, acknowledges The Miriam's commitment to quality, excellent care. The hospital treats more than 600 stroke patients each year and has received the Gold or Gold Plus designation for stroke care every year since 2008.

"Receiving this acknowledgment from the Heart Association/American Stroke Association over the last eight years validates the proven, comprehensive model of care we use when treating our stroke patients," said **THOMAS F. TRACY, JR, MD**, chief medical officer and senior vice president of medical affairs at The Miriam Hospital. "Our exemplary team of physicians, nurses, and staff in The Miriam Stroke Center and emergency department work together as one to consistently administer the highest level of quality care."

"We are pleased to recognize The Miriam for their commitment and dedication to stroke care," said **DEEPAK L. BHATT, MD, MPH**, national chairman of the Get With The Guidelines steering committee and executive director of Interventional Cardiovascular Programs at Brigham and Women's Hospital and professor of medicine at Harvard Medical School. "Studies have shown that hospitals that consistently follow Get With The Guidelines quality improvement measures can reduce patients' length of stays and 30-day readmission rates and reduce disparity gaps in care."

The Get With The Guidelines-Stroke quality program embodies adoption of the latest, research-based treatment guidelines intended to speed recovery and reduce death and disability among stroke patients. In receiving the award, The Miriam met specific quality achievement measures for the rapid diagnosis and treatment of stroke patients. These measures include achieving and sustaining 85 percent or higher adherence to specific evidence-based guidelines over 24 consecutive months and aggressively using medications and riskreduction therapies aimed at reducing death and disability and improving stroke patients' lives. �

#### Lifespan, Blue Cross & Blue Shield of RI Sign Cost-sharing Agreement

PROVIDENCE – Lifespan and Blue Cross & Blue Shield of Rhode Island (BCBSRI) have announced a collaboration that will affect the way health care is delivered to over 35,000 patients and includes more than 110 primary care providers.

The three-year agreement will affect 35,000 commercially insured and Medicare patients. It will involve more than 110 physicians; 40 percent of the physicians are affiliated with patient-centered medical homes and 35 percent are Lifespan physicians.

This initiative is the first step in moving away from the traditional feefor-service model. Throughout the partnership, BCBSRI and Lifespan will jointly invest in programs that support care transformation by coordinating all aspects of a patient's care – from office visits to hospitalizations. In addition, the new payment model will reward physicians for meeting quality performance and outcome goals.

"This collaboration with Lifespan will provide a physician-led, patient-centered, team-based approach for our members. Our goal is for patients to receive the care they need and to realize better health outcomes at a lower cost," said **PETER ANDRUSZKIEWICZ**, president and CEO for BCBSRI.

According to **TIMOTHY J. BABINEAU**, **MD**, Lifespan's president and CEO, this agreement supports Lifespan's ongoing evolution from a system of hospitals into a fully integrated health care delivery system. "Our focus continues to be on enhancing the patient experience and finding the best and most appropriate ways to deliver health with care," said Dr. Babineau. "This agreement allows us to take another step in this direction all while building on our relationship with the provider community and recognizing and rewarding quality care for our patients."

KAREN ROSENE-MONTELLA, MD, Lifespan's senior vice president of women's services and clinical integration, noted that this agreement emphasizes Lifespan's commitment to primary care. "As the state's largest health system, we recognize the importance primary care plays in delivering the best possible care for patients and the best outcomes. By better coordinating patient care among all their providers, whether in an physician's office or hospital setting, and measuring the quality of that care, patients can expect a more streamlined and seamless experience," she explained. "This agreement is about having the primary care provider be central to the patient's care, guiding them through the health care system for a better patient experience.".

#### Women & Infants among Best Children's Hospitals in Neonatology in U.S. News Media Group's Rankings

PROVIDENCE – Women & Infants Hospital has been named a 2014–2015 Best Children's Hospital in Neonatology by U.S. News Media Group.

"The care that we provide not only to full-term newborns, but also to the tiniest, frailest infants, is extraordinary, and we are so proud to have that level of care acknowledged," said MARK R. MARCANTANO, president and chief operating officer of Women & Infants Hospital.

"The single-family room NICU has expanded the field of neonatology from 'survival' to 'quality of life, and we have seen that first-hand in the five years since opening our single-family room unit," said JAMES F. PADBURY, MD, pediatrician-in-chief at Women & Infants and the Oh-Zopfi Professor of Pediatrics for Perinatal Research at The Warren Alpert Medical School of Brown

University. "Women & Infants' NICU is a developmentally sensitive unit that enhances infant growth and development by allowing us to adjust the noise, light, temperature and medical interventions in each room based on each patient's



need. Controlling the environment decreases dependence on respiratory support, decreases the incidence of complications, improves weight gain, shortens the hospital stay, and improves the infant's developmental outcome."

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#### CharterCARE Health Partners, Prospect Medical Holdings Launch Partnership

PROVIDENCE – CharterCARE Health Partners, corporate parent of Roger Williams Medical Center and Our Lady of Fatima Hospital, and Prospect Medical Holdings, Inc., announced a new joint venture which took effect June 20.

Prospect CharterCARE, LLC, the new joint venture company, which will do business as CharterCARE Health Partners, is jointly owned by Prospect and CharterCARE. The company will operate Roger Williams Medical Center, Fatima Hospital, St. Joseph Health Center and Elmhurst Extended Care and will develop, through acquisitions and partnerships, a coordinated regional health network that will include physician practices, urgent care centers, nursing homes and ancillary health providers such as diagnostic labs.

Prospect, which will have a majority interest in the new company, will provide an immediate infusion of capital which will be used to retire the two hospitals' long-term debt and invest in the facilities and equipment, as well as support development of the new network.

Prospect and CharterCARE equally share seats on the new company's eight-member governing board. **EDWIN SANTOS**, current chairman of CharterCARE, will serve as the new board's chair. **THOMAS REARDON**, President of Prospect East Holdings, Inc., said, "Prospect will focus on collaboration among hospitals, physicians, medical groups urgent care centers, nursing homes, and other providers, in cooperation with health plans. Our goal is to provide Rhode Islanders with the health care they need at the right time, in the right place, compassionately and efficiently."

#### **Rhode Island Hospital Receives National Cancer Award**

PROVIDENCE – The Comprehensive Cancer Center (CCC) at Rhode Island Hospital has received the 2013 Outstanding Achievement Award from the American College of Surgeons' (ACS) Commission on Cancer (CoC). Rhode Island Hospital is one of only 74 U.S. health care facilities with accredited cancer programs to receive this national honor for surveys performed in 2013. The award acknowledges cancer programs that achieve excellence in providing quality care to cancer patients.

The Leonard and Adele R. Decof Family Comprehensive Cancer Center at The Miriam Hospital received this award in 2012.

"Each day the staff at the Comprehensive Cancer Center at Rhode Island Hospital demonstrates its unwavering commitment to our patients," said JAMES BUTERA, MD, medical director of the Comprehensive Cancer Center. "That commitment ranges from providing patients with the highest quality medical care to the most innovative clinical trials, from effective educational tools to compassionate support programs. This award recognizes that commitment and rewards our team for all of its hard work."

The Comprehensive Cancer Center at Rhode Island Hospital was evaluated in 2013 on 34 program standards categorized within one of five cancer program activity areas: cancer committee leadership, cancer data management, cancer conferences, clinical services and quality improvement. The program was further evaluated on seven commendation standards. To be eligible, all award recipients must have received commendation ratings in all seven commendation standards, in addition to receiving a compliance rating for each of the 34 other standards.  $\diamond$ 

# URI Awarded Nearly \$19M to Expand Biomedical Research

#### New phase to focus on cancer, neuroscience and molecular toxicology

KINGSTON – A University of Rhode Island-based initiative that has successfully expanded biomedical research capacity at nearly all of Rhode Island's universities and colleges has been awarded another \$18.8 million in federal funding to expand the program over the next five years.

The Rhode Island IDeA Network of Biomedical Research Excellence (RI-INBRE), which has been funded by the National Institutes of Health since 2001 with \$42 million in grants to URI as the lead institution, was initially established to expand the statewide research capacity in biomedical sciences. With this next phase of funding, the interrelated research areas of cancer, neuroscience and molecular toxicology will now be the focus of the program.

The University of Rhode Island partners with Brown University, Rhode Island College, Providence College, Bryant University, Roger Williams University and Salve Regina University in the RI-INBRE program. The Community College of Rhode Island is an affiliate of the network, and its students participate in research opportunities at URI.

**ZAHIR SHAIKH**, professor of pharmacology and toxicology in URI's College of Pharmacy, has been the principal investigator and program director of the project since its inception in 2001.

Shaikh, and Program Coordinator David Rowley, URI professor of biomedical sciences at the College of Pharmacy, said the grant renewal allows the network to expand. "We are now putting the focus on disease states, like cancer, Alzheimer's, Parkinson's and other neurological diseases," he said.

Shaikh said the grant application pre-dates last November's establishment of the George & Anne Ryan Institute for Neuroscience at URI through a \$15 million gift from Tom and Cathy Ryan, but the Ryan Institute, combined with URI's Interdisciplinary Neuroscience Program and the focus of the grant renewal for the biomedical network, means Rhode Island can accelerate its already strong momentum in neurological research.

"Neuroscience and cancer are not just priorities for us at URI," Rowley said. "They are research priorities for Rhode Island and the nation. This will continue to be a capacity building grant, and it will catalyze the growth and competitiveness of investigators."

# Coastal leaders describe challenges of designing the primary care practice of the future

Goal is to be patient-focused, data-driven and service-centered

BY MARY KORR RIMJ EDITOR

PROVIDENCE – G. ALAN KUROSE, MD, MBA, president and CEO of Coastal Medical, recently described the growth and transformation of the designated Accountable Care Organization (ACO) over recent years to the Executive Masters in Healthcare Leadership program at the Brown School of Public Health.

Dr. Kurose, who began his career in a small internal medicine practice, gave a snapshot of Coastal: It is physician-owned and governed, with 88 doctors, 25 NPs/PAs in 19 clinical offices and has an active patient roster of 120,000.

The primary-care driven organization has operated on a Patient Centered Medical Home (PCMH) model since 2009, and is recognized as a National Committee for Quality Assurance (NCQA) Level 3 PCMH. "When we say call us first we really mean it. The front desk person is not a hockey goalie," Dr. Kurose said in describing Coastal's drive to be patient-centered.

Patient access has increased with Coastal365 adult clinics for urgent primary care visits, which are open weeknights until 9 p.m., and during the day on weekends and holidays.

"But if you are going to provide access 365 days a year, it is going to cost money," Dr. Kurose said. "Physicians are working on Sundays and holidays, it takes 20 more nurse care providers and six fulltime pharmacists. The care gets better and better, and we are learning what the costs are."

He continued, "You are actually trying to change the behavior of physicians and patients. This notion of managing population health, of making the health of a population your goal, is not something that we were trained to do. This was not the perspective we came to this work with. You've got to keep measuring and changing performance. And you need the business model to support this. To save you need to spend."

Meryl Moss, Coastal COO, said this required a "massive redesign to create the new primary care practice of the future." After seeking input from the entire Coastal cadre of employees, the shift away from autonomous offices began.



Coastal COO Meryl Moss describes aspects of employee engagement to attendees, who included diverse professionals from the medical community.



Dr. G. Alan Kurose spoke on designing the primary care practice of the future to the Executive Masters in Healthcare Leadership program at the Brown School of Public Health.

Some activities, such as prior authorizations, documentation and prescription ordering have been centralized.

"Every office has a leadership team redesigning something about their practices. We are experimenting with about 18 pilot programs at present," she said.

#### Quality measures/shared savings

Dr. Kurose said Coastal reports on 72 quality measures across five shared-savings contracts, so it takes a lot of infrastructure and technology to support this. The organization has sought out incentive programs to defray some costs. In 2012, Coastal participated in a Medical Shared Savings Plan (MSSP) pilot program with the Centers for Medicare and Medicaid Services (CMS). CMS provided Coastal with \$2.4 million over two years to fund the group's investment in staff and information technology to track and benchmark outcomes for 10,000 Medicare patients.

An MSSP is based on total cost of care. CMS determines "benchmark" costs with a weighted average of the prior three years, adjusted for population risk scores and national cost trends. If the cost savings are greater than a minimum savings ratio, the cost saving share is up to 50%. A quality score determines how much you earn.

Coastal was one of 29 of the 114 ACOs in the pilot program that generated savings; it reduced the total cost of care for the 10,000 patients in its Medicare ACO by 5.5% from July 2012 to June 2013.

The CMS Benchmark was \$87 million. "We generated savings of \$4.6 million, with the largest cost reductions in inpatient hospital and skilled nursing facilities (SNF)," Dr. Kurose said. "We received \$2.3 million from CMS but it was actually used to deliver this care."

He attributed the drivers of cost savings to:

- Hospitalizations down 21%
- ER visits down 7%
- ER visits leading to admissions down 21%
- Readmissions down 18%
- SNF costs down 42%

#### Technology/Data

Data analytics is an important tool used in achieving cost savings and better health outcomes for patients, Dr. Kurose said. "More and more, physicians and our medical providers are focusing on identifying and reaching out to their patients through, among other tools, data analysis, "because otherwise we night not hear from them. They are at home living their lives but we know their diabetes or hypertension is not being managed as well as it could be." One of the most recent innovations is "claims-based analytics," he said. Coastal gets raw claims files from its third-party payer partners and runs it through a software management system and Coastal's electronic medical records system to generate a 'gaps-incare' report; for example: Has the patient had a mammogram? A physician can look at what the patient reported and if it was paid for.

Physicians can also drill down into patient panels to view pharmacy records, or global inpatient, outpatient costs the patient has accrued over the year anywhere.

It also has the capacity of predictive modeling. For example, a physician can

try and determine all the patients with the greatest risk of hospital admission within 30 days. This Johns Hopkins' modeling software is built into the eClinicalWorks electronic health records Coastal uses.

Dr. Kurose said Coastal's experience is not readily translatable to the three-physician office he practiced in at the beginning of his career as a primary care internist.

"This group process, data collection, statistical analysis and contracting, those things are not immediately accessible to small practices. They would have to find some way to aggregate to conduct this business." �



# Recognition

#### Kent Graduates Fourth Class of Resident Physicians

Incoming interns welcomed; new GI fellowship program announced

WARWICK – Kent Hospital has graduated its fourth class of residents who have completed the Emergency Medicine, Family Medicine and Internal Medicine Graduate Medical Education (GME) programs.

The graduation ceremony took place Thursday, June 19, and also recognized Kent Hospital's honorary award recipients. Fifty percent of this year's graduating class will stay at Kent and Care New England.

A new fellowship program in gastroenterology was also announced, with two fellows enrolled: Autumn Paige Hines, DO, originally from Jonesville, VA, class of 2014 graduate from Kent Hospital's internal medicine residency program and Zachary Garner, DO, originally from Medina, OH, graduate from the internal medicine residency program at Largo Medical Center in Largo, FL.

The fellowship is a three-year program affiliated with University Gastroenterology in East Greenwich, under the direction of Angela Fishman, DO, program director, and Eric Berthiaume, MD, associate program director.

Fellows complete the majority of rotations at Kent Hospital, which include a minimum of 18 months clinical activity. Additionally, fellows undergo traditional inpatient and outpatient consultation experience, supplemented by conferences and lecture sessions, as well as intensive endoscopic training.

#### 2014 Graduating Class

The graduates, who comprised the fourth graduating class, included: McKaila Allcorn, DO, Emergency Medicine; Katie Chapman, DO, Emergency Medicine; Nicole Coleman, DO, Emergency Medicine; Rebecca Ondrus, DO, Emergency Medicine; Jessica Pelkey-Blum, DO, Emergency Medicine; Nichole S. Supple, DO, MS, Emergency Medicine; Elizabeth Jasolosky, DO, Family Medicine; Megan Johnson, DO, Family Medicine; Erika Line-Nitu, DO, Family Medicine; Autumn Paige Hines, DO, Internal Medicine; Christopher Palmer, DO, Internal Medicine; and Christopher Peters, DO, Internal Medicine.

#### Interns

Kent Hospital is also welcoming 14 incoming interns to the GME Program.

**Emergency Medicine:** Andrew Bergeson, DO, Bountiful, UT, ATSU-SOMA School of Medicine; T. Shaine Forsythe, DO, Smithfield, VA, The Edward Via College of Osteopathic Medicine; Christopher Peters, DO, Willmar, MN, Des Moines University School of Medicine; Gianna Petrone, DO; Cranston, RI, University of New England College of Osteopathic Medicine; Garrett Pluym, DO, Kieler, WI, Des Moines University College of Osteopathic Medicine; Pamela Schwendy, DO, Towson, MD, Touro University College of Osteopathic Medicine, CA; and Kaitlyn Smith, DO, Pittsburgh, PA, The Edward Via College of Osteopathic Medicine.

**Family Medicine:** John Chece, DO, Lincoln, RI, Touro University College of Osteopathic Medicine, NV; Sarah Johnstone, DO, Haslett, MI, The Edward Via College of Osteopathic Medicine; Binu Oien, DO, North Reading, MA, University of New England College of Osteopathic Medicine; and Jamie Weissberger, DO, West Palm Beach, FL, Lake Erie College of Osteopathic Medicine, Bradenton.

**Internal Medicine:** Rachel Biancuzzo, DO, Barrington, RI, University of New England College of Osteopathic Medicine; Regina Sutskever, DO, Brooklyn, NY, Touro University College of Osteopathic Medicine, NY; and John Sullivan, DO, Waterford, CT, Lake Erie College of Osteopathic Medicine. **\*** 



Class of 2014 with Kent Hospital leadership.

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## Recognition

#### Residents, Fellows Graduate from Memorial

PAWTUCKET – Graduation day exercises were held on Friday, June 20, for residents and fellows completing their training at Memorial Hospital of Rhode Island. Edward Schottland, president and COO, performed the dual role of congratulating the graduates and greeting the new residents and fellows coming to the hospital in their wake.

In the Internal Medicine Division, the following physicians graduated and moved on in their careers: Kawther Alguadan, MD - Nephrology Fellowship, University of Florida College of Medicine - Shands Hospital, Gainesville, FL; Asha Bansari, MD - Hospitalist, University of Florida College of Medicine - Shands Hospital, Gainesville, FL; Amrita Desai, MD - Hematology/Oncology Fellowship, University of Miami Miller School of Medicine-Jackson Memorial Hospital, Miami, FL; Amrita John, MD - Infectious Disease Fellowship, Case Western University Hospital-Case Medical Center, Cleveland, OH; Abdallah Kharnaf, MD - Pulmonary/ Critical Care Fellowship, Tufts University School of Medicine-New England Medical Center, Boston, MA; Abdullah Quddus, MD - Chief Medical Resident, Memorial Hospital of Rhode Island/Alpert Medical School of Brown University; Eman Shaban, MD - Nephrology Fellowship, Alpert Medical School of Brown University-Rhode Island Hospital, Providence, RI; Purva Sharma, MD - Transfusion Medicine Fellowship, Geisel School of Medicine at Dartmouth-Dartmouth-Hitchcock Medical Center, Lebanon, New Hampshire; Ali Shueib, MD - Hospitalist, Miriam

Hospital, Providence, RI; and Michele Yamamoto – Infectious Disease Fellowship, University of Massachusetts Medical School-UMass Memorial Health Care, Worcester, MA.

Graduates received their plaques from Eleanor Summerhill, MD, residency program director; Dino Messina, MD, PhD, associate program director; Joseph Diaz, MD, physician-in-chief, Department of Medicine and Sabrina Witherby, MD, and Sajid Saraf, MD, both assistant program directors.

The graduates made way for a new class of Internal Medicine residents, who began a three-year program that includes education and patient interaction under the supervision of experienced doctors. They are Ahmad Abdin, MD, Mohammed



Pictured standing left to right, graduating Family Medicine residents: Alla Goldburt, MD, Rebecca Bak, MD, Tina Charest, MD, Marla Hansel, MD, Lauren Hedde, DO, Kristen Newsom, MD, Heidi Knoll, MD, Cristi Desocio, MD, Renee Robinson, MD, and Nicole Siegert, MD. Kneeling, left to right, Richard Gumpert, MD, Christopher Klaus, MD, and Jim Hedde, DO.



Pictured left to right, graduating Internal Medicine residents: Abdallah Kharnaf, MD, Kawther Alquadan, MD, Asha Bansari, MD, Abdullah Quddus, MD, Amrita John, MD, Michele Yamamoto, MD, Purva Sharma, MD, Ali Shueib, MD, Eman Shaban, MD, Amrita Desai, MD, and Carolina Fonseca Valencia, MD.

Aboelsoud, MD, Farhan Ashraf, MD, Mohamad Barbour, MD, Diana Silva Cantillo, MD, Jaleh Fallah, MD, Fatima Hamid, MD, Saira Imran, MD, Akiko Minami, MD, and Somwail Rasla, MD.

In the Family Medicine Department, Melissa Nothnagle, MD, residency program director; Fadya El Rayess, MD, associate program director; Tina Duarte, MD, and Anna Filip, MD, both assistant program directors and Jeffrey Borkan, MD, PhD, past chairman, Graduate Medical Education, and physician-in-chief, Department of Family Medicine, announced the graduates and welcomed new residents.

Family Medicine graduates included: Marla Hansel, MD, who will continue her training at Brown Family Medicine in



#### Whah Wonder an interpretive portrait in wool of Jimi Hendrix

In the words of the designer Ned Baker:

I am a lifelong student and admirer of 60's-70's music particularly the explosive evolution of the electric guitar and the iconic imagery of the albums and posters from that era.

This rug is a tribute to this period of social unrest and the breaking of barriers AND new ground. The contrast of bold design against a plainer, more organic background shows how the music and sentiments of the time contrasted with what was heretofore considered "normal."

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Open Monday-Friday 10-5:30, Saturday 10-5 a two-year Global Health Fellowship; Alla Goldburt, MD, is joining the Primary Care Center of Plainville Family Medicine and Obstetrics practice; Richard Gumpert, MD, will be working at a health center in Somerville, MA, where he will practice primary care and teach medical students and residents; Renee Robinson, MD, will be a hospitalist at Charlton Memorial Hospital in Fall River, MA; Tina Charest, MD, will be joining Dartmouth Family Practice in Dartmouth, MA; Cristi DeSocio, MD, will be joining Pepperell Family Practice in Pepperell, MA; Lauren Hedde, DO, will be opening a private practice in Wickford, RI; Christopher Klaus, MD, will be moving to South County to work for Thundermist Community Health Center in Wakefield, RI; Kristen Newsom, MD, will be practicing outpatient family medicine at Reliant Medical Group in Holden, MA; Rebecca Bak, MD will be working with Indian Health Service at Zuni Indian Hospital in Zuni, New Mexico; James Hedde, DO, is joining a Family Medicine Practice in Massachusetts; Nicole Siegert, MD, is joining the Brown Family Medicine faculty as a Clinical Team Leader in the Family Care Center; and Heidi Knoll, MD, plans to finish residency in September and is seeking a job in outpatient primary care closer to family in Asheville, North Carolina.

New family medicine residents, who will see patients in the Family Care Center under the supervision of staff physicians, are: Reina Blackwood, MD, Shokoufeh Dianat, DO, Karl Dietrich, MD, Emily Erickson, MD, Joseph Fields-Johnson, DO, Estee Fleischman, MD, Jessica Heney, MD, Claire Horth, MD, Jason Kahn, DO, Malasa Kahn, DO, Kate LaMancuso, MD, Morgan Motia, MD, Claire Thomson, MD, and Mary Walsh, MD.

Michael Skonieczny, DPM, and Brad Boyer, DPM, both graduated from the Podiatric Medicine and Surgical Residency Program. Dr. Skonieczny will practice at Advance Podiatry Associates, a private practice in Scarsdale, NY, and Dr. Boyer will join a private practice in York, PA.  $\blacklozenge$ 

# Recognition

#### Memorial Hospital of Rhode Island Honors Cancer Survivors

PAWTUCKET - Memorial Hospital honored more than 100 cancer survivors and their families during their Cancer Survivors Social on June 22 at the hospital.

The theme of the day's events was "Savor the Sweet Life." Individuals including doctors, community leaders, volunteers and cancer survivors, inspired everyone with caring words and thoughts of courage, strength and hope.  $\diamond$ 



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Above, pictured left to right accepting the City of Pawtucket's Proclamation in honor of National Cancer Survivors Day, President and COO of Memorial Hospital, Edward Schottland, Richard Goldstein, city clerk from the City of Pawtucket and Anthony Thomas, DO, chief of hematology/ oncology, The Cancer Center at Memorial Hospital.

Memorial Hospital staff members surround two of the cancer survivors, who shared inspiring thoughts during the hospital's Cancer Survivors Social event. Pictured left to right front row, Gilda Medeiros, clinical social worker; Abraham Bleh and Ashley Sampson, both cancer survivors; Pamela Boocock, secretary and Donna Marks, clinical dietitian. Back row, left to right, Debbie Owens, RN, Anthony Thomas, DO, chief of hematology/oncology; Odete Antonio, booking secretary, Adam Olszewski, MD, Donna Huntley, RN, Sabrina Witherby, MD, and Iole Ribbizzi-Akhtar, MD.

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# Recognition

#### Kent Hospital Volunteer Honored for Volunteerism

FOXBOROUGH, MASS. — The Kraft family and New England Patriots Charitable Foundation's Myra Kraft Community MVP Awards place a spotlight on those who give their time to help others and exemplify leadership, dedication and a commitment to improving their communities through volunteerism.

On June 9, 26 volunteers were recognized for their contributions at a luncheon and awards ceremony at Gillette Stadium. Each Community MVP received grants for their respective nonprofit organizations. Fifteen New England based organizations were presented with \$5,000 grants in honor of their volunteers' work. Ten others received grants of \$10,000 and one grand prize winner was presented \$25,000. During the luncheon, the Kraft family through the New England Patriots Charitable Foundation awarded \$200,000 in grants to 26 New England nonprofits.

**Roderick Pascual** of Warwick was one of fifteen \$5,000 third place winners.

"I am honored that the Foundation would so generously award a person like me for simply paying it forward," said Pascual. "Throughout my life, I have witnessed many wonderful people that volunteer for the sake of making another person's life better. I decided many years ago that my greatest achievement would be to become one of those people and I am fortunate that Kent Hospital has made that possible for me."

For the past 14 years, Roderick has been volunteering in the health information services department. He has logged more than 11,000 hours at Kent Hospital and comes in each day with an optimistic "can-do" attitude and commitment that resonates with the patients, staff and other volunteers.



Patriots Chairman and CEO Robert Kraft, Patriots linebacker Jerod Mayo, Patriots and Pro Football Hall of Famer Andre Tippett and Patriots alumni and three-time Super Bowl Champion Joe Andruzzi congratulated the Myra Kraft Community MVP Award \$5,000 winner Roderick Pascual from Kent County Memorial Hospital for his outstanding volunteerism.

## Appointments

#### Lifespan Names Crista Durand President of Newport Hospital

Durand's appointment is effective August 1

PROVIDENCE – **CRISTA DURAND** has been named president of Newport Hospital, selected by Lifespan and hospital leadership following a national search.

She is currently the vice president of strategic planning, marketing and business development at L+M, a 280-bed acute care hospital, in New London, CT.

In this position, which she has held since 2009, she has led both the strategic and master facility planning efforts. She also led the development and startup of several new



Crista Durand

centers of excellence and played a key role in recruiting new physicians. In addition, she was integral in the analysis and execution of L+M's acquisition of Westerly Hospital.

Prior to joining L+M, Durand was the chief financial officer (CFO) and senior vice president at Day Kimball Hospital in Putnam, Connecticut.

She holds a bachelor's degree in financial management from Salve Regina University and received a master's degree in business administration from Nichols College in Dudley, Massachusetts.

"Crista's leadership skills and proven track record of developing and growing new lines of business in a challenging health care environment made her an obvious choice to be the new president of Newport Hospital. Even more important is her passionate commitment to community hospitals and her strong belief that community hospitals can thrive within a broader system framework," said Timothy J. Babineau, MD, president and chief executive officer of Lifespan.  $\diamondsuit$ 

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# Appointments

#### **CNE Names Leadership for Key System Posts**

PROVIDENCE – Dennis D. Keefe, president and CEO of Care New England, announced a series of senior appointments effective July 1. They include:

**SANDRA COLETTA** – **Care New England Chief Operating Officer:** Coletta, who had served in the system's COO role on a part-time basis since 2012 in addition to maintaining her role as President and CEO of Kent Hospital, will move into this role on a full-time basis. Maximizing opportunities for integration and improved operational efficiency, she will oversee the operations of the system and all of the hospitals. She joined Care New England in 2008 when she assumed the role of president and CEO of Kent Hospital. She previously served at Lifespan where, among other responsibilities in her tenure there, she led system integration efforts and functioned as the chief operating officer at The Miriam Hospital. Coletta earned her MBA in Management from Bryant College and her BS in Accounting from Providence College. She began her career as a CPA. She is a resident of Johnston.

PATRICIA RECUPERO, JD, MD - Care New England Senior Vice President for Education and Training: In this new capacity, Dr. Recupero will represent and advance the interests of Care New England's teaching mission. With this appointment, she will transition to part-time status and move on from her position as President and CEO of Butler Hospital. Dr. Recupero began her career in 1989 as Associate Training Director for the Brown University Training Program in Psychiatry and later served as Residency Training Director at St. Elizabeth's Medical Center in Boston, a Tufts-affiliated program. A member of the Butler Hospital staff since 1989, she was named president and chief executive officer in 1999. Board certified in Forensic Psychiatry and Addiction Psychiatry, she is also a Clinical Professor of Psychiatry at The Warren Alpert Medical School of Brown University. A resident of Providence, she earned her law degree from Boston College and her medical degree at Brown University.

MICHAEL J. DACEY, MD, MS, FACP – Kent Hospital President and COO: Most recently serving as Care New England's Chief Clinical Integration Officer, Dr. Dacey will assume the leadership of Kent Hospital as its President and COO. A resident of Warwick, he joined Kent Hospital in 2000. He is board certified by the American Board of Internal Medicine in critical care medicine and is also certified by the American Board of Medical Examiners. He received his medical degree from George Washington University School of Medicine and Health Sciences and his undergraduate degree from Providence College. He completed an internal medicine residency at Walter Reed Army Medical Center in Washington, DC, as well as a critical care medicine fellowship at the University of Pittsburgh Medical Center. Dr. Dacey also holds a Master's of Science in Health Care Management Degree from the Harvard School of Public Health.

**EDWARD SCHOTTLAND, FACHE** – Memorial Hospital of Rhode Island President and COO: Named acting president last September, Schottland is being named President and COO of Memorial. Hailing from Barrington, Ed previously served in a host of capacities, including serving as principal of Schottland Advisory Services, LLC, where he provided management and general consulting services to the health care industry, a partner at Carl Marks Advisory Group, and leadership positions at Saint Joseph Health Services, Lifespan, The Miriam Hospital and Tufts New England Medical Center as well as other hospitals nationwide. He earned a BA in Mathematics from Queens College, City University of New York and a MPS in Hospital and Health Services Administration from Cornell University, Sloan Institute of Hospital Administration, Graduate School of Business and Public Administration.

LAWRENCE H. PRICE, MD - Butler Hospital Acting President and COO: Appointed senior vice president and chief medical officer at Butler in November 2013, Dr. Price will assume the Acting President and COO role and the leadership of the Care New England Brain and Behavioral Health Council. Dr. Price joined Butler in 1996 as Clinical Director and Director of Research, at which time he was appointed Professor of Psychiatry and Human Behavior at Alpert Medical School of Brown University. Prior to that he was Associate Professor of Psychiatry at Yale University, where he served for 14 years. He has published over 400 scientific papers, and was identified by the Institute for Scientific Information as one of the top ten authors of highimpact papers in psychiatry from 1990 to 1999. He is a Distinguished Fellow of the American Psychiatric Association and a Fellow of the American College of Neuropsychopharmacology. He earned a BS in psychology and medical degree at the University of Michigan, followed by an internship in internal medicine at Norwalk Hospital and residency and fellowship in psychiatry at Yale. He is a resident of Barrington. 💠

# Appointments

#### Dr. Frishman Appointed to Residency Review Committee for Obstetrics And Gynecology

PROVIDENCE – **GARY N. FRISHMAN, MD**, has been appointed to the Residency Review Committee for Obstetrics and Gynecology of the Accreditation Council for Graduate Medical Education (ACGME).

Dr. Frishman is the associate director of the Division of Reproductive Endocrinology and Infertility and Residency Program Director at Women & Infants Hospital of Rhode Island and The Warren Alpert Medical School of Brown University, where he is also a professor of obstetrics and gynecology.

The Residency Review Committee is responsible for setting accreditation standards, providing peer evaluation of programs or institutions to assess compliance with published educational standards, and conferring

accreditation status for programs and institutions that meet those standards. The committee members are nominated by the American Medical Association (AMA), the American Board of Obstetrics and Gynecology (ABOG) and the American College of Obstetrics and Gynecology (ACOG).

Dr. Frishman received his undergraduate degree from the University of Pennsylvania and attended medical school at Columbia University in New York City. He completed a residency



Gary N. Frishman, MD

in obstetrics and gynecology at Pennsylvania Hospital in Philadelphia and a fellowship in reproductive endocrinology and infertility at the University of Connecticut. Dr. Frishman is actively involved in surgical societies and has served on the board of the AAGL, the American Society of Reproductive Medicine, and the Fellowship in Minimally Invasive Gynecologic Surgery. He has served as president of both the Society of Reproductive Surgeons and the Council on Gynecologic Excellence. He is the deputy editor of the Journal of Minimally Invasive Gynecology. He previously served as the American representative on the International Editorial Board for the UK journal: The Obstetrician and Gynae-

*cologist* and currently serves as an oral board examiner for the American Board of Obstetrics and Gynecology. He has created and runs a LISTSERV on topics in minimally invasive surgery for AAGL which has more than 6,400 members.

Locally, Dr. Frishman has been on the boards of Big Sisters of Rhode Island and Day One, serving as vice presidents for both of those organizations.  $\diamondsuit$ 

# Rhode Island Medical Journal Submissions

The Rhode Island Medical Journal is a peer-reviewed, electronic, monthly publication, owned and published by the Rhode Island Medical Society for more than a century and a half. It is indexed in PubMed within 48 hours of publication. The authors or articles must be Rhode Island-based. Editors welcome submissions in the following categories:

#### CONTRIBUTIONS

Contributions report on an issue of interest to clinicians in Rhode Island. Topics include original research, treatment options, literature reviews, collaborative studies and case reports.

Maximum length: 2000 words and 20 references.

PDFs or JPEGs (300 dpis) of photographs, charts and figures may accompany the case, and must be submitted in a separate document from the text. Color images preferred.

#### CREATIVE CLINICIAN

Clinicians are invited to describe cases that defy textbook analysis. Maximum length: 1200 words. Maximum number of references: 6.

PDFs or JPEGs (300 ppi) of photographs, charts and figures may accompany the case, and must be submitted in a separate document from the text.

#### **POINT OF VIEW**

The writer shares a perspective on any issue facing clinicians (eg, ethics, health care policy, patient issues, or personal perspectives). Maximum length: 600 words.

#### ADVANCES IN PHARMACOLOGY

Authors discuss new treatments. Maximum length: 1000 words.

#### ADVANCES IN LABORATORY MEDICINE

Authors discuss a new laboratory technique. Maximum length: 1000 words.

#### IMAGES IN MEDICINE

Authors submit an interesting image or series of images (up to 4), with an explanation of no more than 500 words, not including legends for the images..

#### **Contact information**

Editor-in-chief Joseph H. Friedman joseph\_friedman@brown.edu

Managing editor Mary Korr mkorr@rimed.org
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## A Manual of Some Handy Words of Medicine

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STANLEY M. ARONSON, MD

When our ancestral physicians in the mediterranean region needed words to define and describe the activities of the human hand and the diseases arising from manual labor, they had such phonemic Greek roots as chiro- meaning hand and the origin of words such as chirurgeon (shortened now to surgeon), chiropractic and chiromancy; the Latin, manus, also meaning hand and its derived words such as manicure, manual and manubrium; and the Greek, carpus, meaning wrist and the source of words such as metacarpal and carpoptosis.

But man's ingenuity relentlessly seeks new manmade products and even new occupations unknown to their Roman or Hellenic ancestors. And physicians, encountering these heretofore unknown ailments are then required by tradition to find new, identifying names for them.

Excessive use of a typewriter, for example, led to a syndrome consisting of wrist-cramps, tingling or burning sensations in the hand, weakness and lancinating pains in the affected limb. The ipsilateral median nerve as it passes through the carpal tunnel is increasingly compressed by traumatized tendons in the tunnel, leading to Carpal Tunnel Syndrome, or various forms of Writer's Cramps.

The Iraqi security police (Muhkabarat) of the Saddam Hussein era, were widely known for their aggressive interrogation procedures, one leading to the removal of the prisoner's fingernails, termed later, by American troops as an Iraqi Manicure.

In a brief note published in the New England Journal of Medicine, in 1988, H.R. Jones, MD, described an instance of labor-related motor dysfunction of the hand caused by occupational pressure on the ulnar nerve in its palmar passage. The patient, a young male, had worked in a fast-food pizza parlor. One of his functions was to divide large, freshly prepared pizzas into pie-shaped segments. To accomplish this, he used a roller-blade cutter, the handle of which was pressed firmly against the palm resulting, after time, in Pizza-Cutter's Palsy. This occupational disorder bore the name, Repetitive Strain Injury, in England and was part of an assemblage of similar work-related afflictions such as Telegrapher's Cramp and Sprout-Picker's Thumb.

Physicians, preparing themselves for diseases of the future, should seek out such television-related ailments as Remote-Control Monitor's Palsy, Couch Potato Decubiti (CPD) and Fourth Quarter Dementia, sometimes Brewery-Enhanced.

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## 100 Years Ago: The Arnold Laboratory at Brown Breaks Ground *Dr. Oliver H. Arnold funded lab, the precursor to today's medical school*

MARY KORR RIMJ MANAGING EDITOR

PROVIDENCE – James Walter Wilson (1896–1969) was a freshman at Brown University in 1914 when the Arnold Biological Laboratory began construction, with funds donated by **DR. OLIVER H. ARNOLD**, class of 1865.



Vintage photo of The Arnold Laboratory on Waterman Street, a Colonial Revival style edifice designed by the architectural firm of Clarke & Howe.

Wilson would later rise to the position of chairman of the Dept. of Biology, which he held from 1945–1960. In the December 1960 issue of the *Brown Alumni Monthly*, Professor Wilson wrote that Dr. Arnold was a member of the Visiting Committee of the biology department, and related the following anecdote:

The late President Faunce liked to tell how an unannounced visitor arrived at his office one day and had a little trouble getting past his secretary. He had come to tell Prexy that he wanted to give Brown money for a lab. The donation was about \$85,000...

In a later Brown annual report, President Faunce described Dr. Oliver this way:

The story of Dr. Arnold's life, so simple, frugal and obscure, but cherishing a great vision, is fascinating indeed. His rise from poverty to affluence, his devotion to his patients, largely in the rural regions around Providence, his scientific enthusiasm, which led him to drop all practice and spend the years 1883–85 in Vienna, Berlin, London and Glasgow (while Mrs. Arnold was studying Semitic languages with famous German professors), his shy-broaching of his purpose to build the laboratory, his pride and pleasure in working out the details of his gift, all these are the elements in a deeply interesting career, so quiet that our Faculty did not know of his Existence... A biographical sketch of Dr. Arnold in the 1891 *History of Providence County, RI*, by Richard M. Bayles states that Dr. Arnold received his medical degree from Harvard in 1867, whereupon he "began the practice of medicine at Pawtucket, with Doctor Charles F. Manchester, with whom he remained about four years, having also been a student of Doctor A. H. Okie, of Providence. He continued the practice of his profession from that time to 1883 alone.

"In the summer of 1883 he went to Europe, and remained there two years, traveling, and studying in the hospitals of London, Glasgow, Paris and Vienna, most of the time in the last mentioned place. On his return in 1885 he located in Providence, where he still continues. He was married in 1868, to Emma Josephine Ayer, of Providence. He has had a large and successful practice as a physician."

Dr. Arnold died in 1911. The terms of Dr. Arnold's will left \$60,000 for the laboratory, \$10,000 for a biological fellowship, \$10,000 for an archaeological fellowship, dedicated to the memory of his wife, in the Women's College, and \$5,000 for three Women's College scholarships. \*



1912. The Arnold Laboratory at Brown University on Waterman Street was built in 1915 for \$80,000. It provided offices for five professors and later, in 1938, the auditorium on the first floor became a biological sciences library, and three laboratories were installed. Eventually it housed the administrative offices of the medical school.