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SPECIAL SECTION

TELEHEALTH: ITS EVOLUTION AND EXPANSION

GUEST EDITOR: DANIEL HALPREN-RUDER, MD, PhD

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On the cover and below: Direct-to-Patient telehealth modules support a wide variety of use cases, from urgent care to behavioral health, chronic care management, and follow-up care.
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IN THE NEWS

PEOPLE/PLACES

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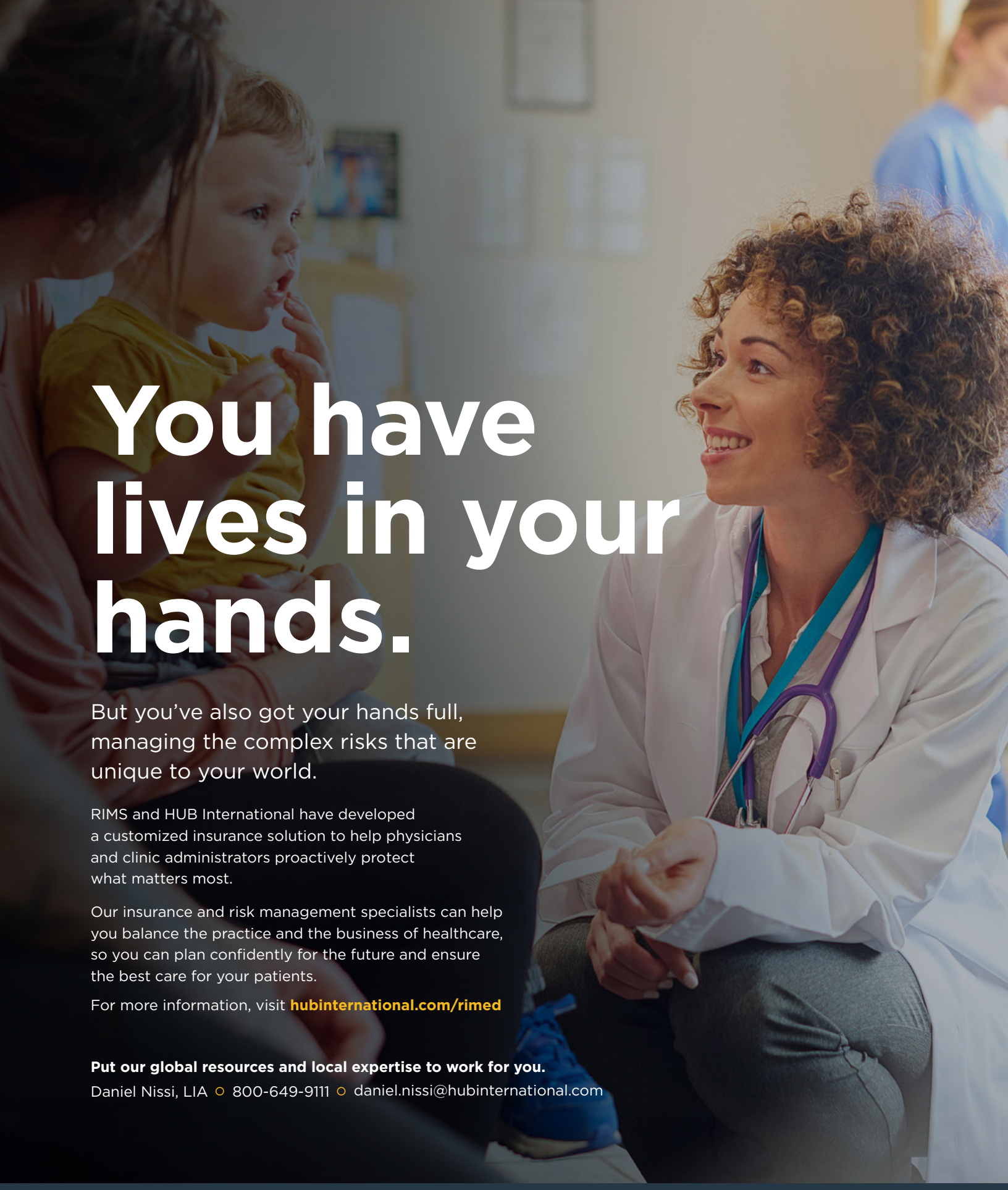

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LUSAKA, ZAMBIA

Joseph H. Friedman, MD, checks the November 2019 issue of the *Rhode Island Medical Journal* in front of the University Teaching Hospital in Lusaka, Zambia, where he spent several weeks volunteering as an attending neurologist on the wards of the largest hospital in the country, with approximately 1,600 beds and which serves as its primary teaching institution. While there, Dr. Friedman gave small-group lectures, met with medical students and supervised residents of its inaugural neurology program, which is graduating its first class this year.

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The Evolution and Expansion of Telehealth and E-Health

The February special focus section of the *Rhode Island Medical Journal* (RIMJ) examines the myriad aspects of the evolution and expansion of telehealth. Guest Editor **DANIEL HALPREN-RUDER, MD, PhD**, compiled the contributions below, which present the opportunities and challenges telehealth presents for patients, providers, insurers, information technology specialists, and healthcare organizations.

In the introductory article by Dr. Halpren-Ruder, "**E-Health and Healthcare Quality Management: Disruptive Opportunities**," E-health is defined as a term encompassing telehealth, telemedicine, digital health and remote patient monitoring. E-health is expanding logarithmically, quickly moving past the Direct-to-Consumer (DTC) Internet-demand service to embrace patient education, hundreds of apps, dozens of consult formats, patient controlled monitoring and institutional data streams. The article explores what E-health-empowered advances in quality management will mean to the clinician, the patient and society. It is proposed that the cost-lowering, clinical efficiency, patient engagement, provider and patient convenience and data-crunching capabilities of E-health, can push healthcare to new levels of value by optimizing quality while decreasing cost.

JAMES V. McDONALD, MD, MPH, in his article, "**Telehealth & E-Health in Rhode Island 2020 and Beyond**," discusses the regulations and professional standards approved by the Rhode Island Board of Medical Licensure and Discipline. He reviews the State requirements that a physician providing E-health services must be licensed in the state where the patient receives care; the provider must have a Rhode Island business address, and DEA registration. He also reinforces that the same standards of care, as if the patient were being evaluated in a traditional office setting, must be met.

AUGUSTINE MANOCCHIA, MD, in his contribution, "**Telehealth: Enhancing Care through Technology**," offers the insurer's perspective of Blue Cross & Blue Shield of Rhode Island (BCBSRI), which began covering telehealth in 2014, before coverage became mandated by the state in 2018. He shares how BCBSRI implemented its telehealth services through a partnership with American Well®, one of the leading providers of DTC telehealth services, and how patients can connect to these services, such as downloading mobile apps like Drs. Online. The article also gives an overview of the telehealth landscape in the U.S., a rapidly growing segment of the healthcare industry, expected to reach about $36 billion this year.

EMILY COOPER, MPH, et al, in their contribution, "**Use of Health Information Technology by Rhode Island Physicians and Advanced Practice Providers, 2019**," reports on the Rhode Island Dept. of Health (RIDOH) HIT survey, administered to all licensed independent practitioners in the state. Descriptive analyses examine HIT adoption and the clinician experience working with HIT. They conclude that as of 2019, the majority of Rhode Island physicians have adopted HIT, but challenges persist in integrating existing technology into practice.

DAREN R. ANDERSON, MD, in his contribution, "**Electronic Consults: Lessons From a Neighboring Stat**e," offers an overview of the electronic consultation (eConsult) telehealth tool implemented by a large federally qualified health center (FQHC) in Connecticut, which obtained a grant to develop an electronic platform that allowed primary care providers (PCPs) and specialists to exchange clinical information about specific cases using a secure electronic platform. The platform is now used nationwide. He describes pilot programs in Connecticut and Rhode Island for dermatology and cardiology referrals, with Figures, which summarize the consultations between subspecialists and the PCP.

JIANI YU, PhD, in her article, "**Emerging Opportunities for Telemedicine Research in Rhode Island**," delves into the nuances of telemedicine coverage, and provides a summary of the Rhode Island Telemedicine Coverage Act of 2016, which went into effect in 2018. She also offers an overview of provider restrictions, and examines data of telemedicine usage in the state and the opportunities it could provide to increase access to healthcare services to the underserved population, especially in the mental health area.

DENISE ANTHONY, PhD, and **CELESTE CAMPOS-CASTILLO, PhD**, in their article, "**Why Most of Your Patients Aren't Using an Online Portal, and What You Can Do About It**," relate that despite significant federal investments to encourage portal adoption, most patients are probably not using them. They identify usage demographics; for example, some studies have found that older patients are less likely than

younger patients to use a portal. Other studies show that racial and ethnic minorities, patients with lower income or less education, as well as those with public insurance, use portals less often than privately insured, higher income, more educated, and white patients. The article also examines the reasons why patients may not be using portals, such as privacy concerns or access to technology. The article argues for changes required of technology designers and policymakers, in order for portals to be used effectively to improve healthcare among diverse and underserved populations.

VANESSA A. DIAZ, MD, MSCR, and **MARTY S. PLAYER, MD, MSCR**, in their contribution, "**Direct-to-Patient Telehealth: Opportunities and Challenges**," conclude that the use of Direct-to-Patient (DTP) telemedicine will expand, and suggest it will be used most effectively in the care of chronic conditions and for preventive care provision. They also conclude that DTP use will require continued improvement in reimbursements for the care provided; and that challenges also include overcoming patient and provider barriers in the implementation and use of new technology.

E-Health and Healthcare Quality Management: Disruptive Opportunities

DANIEL HALPREN-RUDER, MD, PhD

INTRODUCTION

E-health will disrupt healthcare delivery. This disruption will benefit all of healthcare's stakeholders, from providers to patients, and from insurers to enterprises. E-health is a unifying term encompassing telehealth, telemedicine, digital health and remote patient monitoring. E-health is not new medicine; it is new delivery. Furthermore, all elements of the Triple or the Quadruple Aim[1] are addressed by the opportunities present within E-health. Here we move beyond the early iterations of E-health, with its "doc on a screen." We explore what E-health-empowered advances in quality management will mean to the clinician, the patient and society.

Early on in my E-health journey, a friend said, "If all we do with E-health is use e-tools to do what we have always done, we will have wasted a great opportunity." That is to say, if we only replace an office visit with a virtual visit, we will just have scratched the surface. The cost-lowering, clinical efficiency, patient engagement, provider and patient convenience and data-crunching capabilities of E-health can push healthcare to new levels of value (quality AND cost). Over the past 30 years, technology has outstripped imagination. Frequently heard: "It cannot get any faster, more competent, or cheaper than this," but it always does. The healthcare challenge is to push problem solving into areas where technology will likely advance and consider what clinicians will need to do to be "just in time." This parallel track planning is what we need to do to diminish the 17-year gap between innovation and common practice.[3] We cannot say, "Hey, look at this new technology – let's figure how we can use it." We need to be ready when technologies are in development to predict the application and be able to step up with clinical data, quickly close the loop and advocate for implementation.

Technology is evolving to answer the following three questions**:**

1. Can Augmented Intelligence (AI) and Natural Language Processing (NLP) process a patient encounter (voicing both the clinician and the patient) and produce a structured, parsed visit note in real time? Can we take the visit note and use AI to hold it to expected metrics, indicators and outcomes?
2. Can telehealth create a patient learning environment to capitalize on the innovation most likely to have the greatest impact on value: the engaged patient?
3. Finally, is there a new diagnostic tool (adding to history, physical exam, lab / imaging and genetics) present in remote patient-monitored data?

THE TOOLS OF HEALTHCARE QUALITY MANAGEMENT (HCQM)

Visit notes machine-generated in real time and scanned for quality metrics

The tools of healthcare quality management (HCQM) are applied in every aspect of healthcare from the provider-patient encounter to entire institutions. The heartbeat of these tools is an assessment of the process by which healthcare is provided. At the level of the provider-patient encounter, the tool is chart review. Generally, chart review involves a healthcare professional reviewing a single chart and abstracting data. This is an extremely time-intensive endeavor, so chart review is generally conducted on a small percentage of cases thought to be representative of sought-after quality management data. Data analytics are now run on electronic medical records (EMRs) which depend on specific, named data fields such as in HL7. This has forced the input to be discrete. A free-ranging, dictated history is not "mineable" with this technology and is discouraged. The clinician is forced to acquiesce to the structured, barren landscape of field input or frustrate the data analysts with dictations. E-health can fix this dichotomy.

First, we should consider the enormity of the chart review problem. The Medical Record Review Guidelines of the California Department of Health Services, Medi-Cal Managed Care Division, asks that 10 records of each provider be abstracted on an annual basis.[4] If the average provider sees 3,000 visits annually, this is a chart review rate of 0.33%. During 2017, there were 880 million hospital outpatient visits in the U.S.[5] If 5% were evaluated, the cost would be $293 million (8 minutes per review at a personnel cost of $50/hr). On the hospital side, there were 36.5 million admissions to U.S. hospitals in 2017.[6] If there were an average of 10 healthcare provider visits per hospitalized patient, a 5% review would cost $122 million. Even if the one-time investment in developing automated, real-time chart preparation and review were $250 million (less than the cost of one-year review of 5% of out- and in-patient charts), the resultant tools would decrease risk and steer a more efficient

course to patient-formulated outcomes. It is likely that far less than 0.5% of encounters are being evaluated. This represents a major failure of HCQM although, given the tools and resources, it is probably the best we can do until technical tools are created with IT and clinical input.

NATURAL LANGUAGE PROCESSING (NLP)

This is what will likely evolve: A provider-patient encounter is recorded and is digitized by Natural Language Processing (NLP). The provider will likely have to cue the system as to the problem list item under consideration. Subjective input, currently available only as interpreted by the clinician, will be in the patient's voice, parsed for efficiency. Objective data will be inserted into its appropriate HL7 slot and shared with the patient. The exam will be dictated by the clinician. Assessment and plan will be a conversation between patient and provider, processed and parsed. A patient-voiced summary will be included with documented teach-back. Many clinicians already do some of this, although universal structure is lacking, and the resulting note lacks original patient input. By some estimates, as much as 50% of a clinician's time is relegated to information processing. Preparation of the clinical record may be responsible for 30% of that. Saving 5 minutes 20 times a day for 200 days yields a staggering 333 hours saved annually. This time is added back to the visit, allowing much more time for the critical provider role of teaching and understanding the patient's goals. It also eliminates the keyboard between the patient and provider. A structured record, digitally produced, becomes available for quality management processing 100% of the time. And in real time.[7] The note so prepared can be reviewed as the capstone of the visit, corrected or appended as the team decides.

In the value-based world, it is likely that Current Procedural Technology (CPT) evaluation and management coding will be put aside. The structure of the CPT code which yields purposeless repetitive entries will have to give way to accounting for case-specific metrics and Patient Centered Outcomes (PCOs). Also, in an environment where most healthcare providers will be employed by large practices or institutions, there will need to be tools to track provider efficiency and results. To ensure their organizations are meeting their quality targets and subsequent reimbursement, administrators will need to be able to process visit records for metrics and PCOs.

ROLE OF INFORMATION TECHNOLOGY

Accomplishing this level of chart preparation and review requires that thousands of digitized encounters be made available to the Information Technology (IT) professionals.[2] Identifying process metrics and individualized outcomes requires a kind of successive approximations using learning algorithms to become increasingly accurate. Each approximation is evaluated by a clinician; its success or failure discussed with IT and the process recycles. The E-health asset that can make this happen is the video-conferenced encounter both as Direct To Consumer (DTC) and scheduled patient-provider encounters. This is a bountiful resource, unique to telemedicine and the reason this advance will be an E-health development. Getting it right will require an investment of significant clinician time, most likely as a part of a research grant. This research will start with a single clinical entity (such as DMII) and grow to involve a significant percentage of problem-list entries. If we care about efficiency (value) and engagement, this is the investment that the clinical community should see as the answer to endless hours spent documenting and not enough time with the patient.

UNIVERSAL CHART REVIEWS

The Institute of Medicine defines health care quality as "the degree to which healthcare services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge."[8] I propose that (1) data for individuals generates data for populations, (2) even for the same diagnosis, patient-centered, insurer, and societal outcomes will vary, and (3) the extent of the application of "current professional knowledge" will also vary from case to case (based on patient preference, the patient's underlying physiology and societal resources). Each case is unique. It follows that the goal must be universal chart review wherein every encounter is measured for (1) that encounter's progress to one or more outcomes and (2) situationally sculpted best-practice care. Universal chart review for progress to outcomes that are centered on the patient are technologically in sight. The provider community has already spent significant time in defining metrics, indicators and outcomes.[8] This work will need to be sculpted to operate within the parameters needed by the IT community. This work will likely be done by clinicians working within a grant. Getting it right is, after all, a process of successive approximations. There are commercial applications similar to the HCQM tools needed to accomplish this.[9] Forming provider / corporate partnerships will accelerate the progress as corporations recognize the extent to which HCQM improvements will positively affect their bottom line.

THE ENGAGED PATIENT

Physicians have been experimenting with coached patient autonomy (aka: guided self-determination,[10] self-management,[11] and shared decision-making[12]) for some time. Conceptually, a patient and their support group are educated on aspects of their condition that are consistent with independent management. E-health is a natural partner in developing a program of patient education focused on structured and documented acquisition of knowledge leading to guided patient autonomy. Expecting patients to understand and participate in their healthcare will engage and empower patients.[13] Patients who are individually responsible for their actions in an environment of coached autonomy are

engaged patients. An all-encompassing presentation of many aspects of engagement is presented by Catalyst.[14]

Coached patient autonomy is not for everybody. The clinician must consider a number of variables prior to going down this path. Historically, the culture of healthcare delivery has been parental. This must morph into relationships that are empathic, reciprocally communicative and share decision-making. Many clinicians have brought elements of these characteristics into their practice. The availability of telehealth (the educational activity of E-health) will help in advancing and strengthening reciprocal communications and shared decision-making. The clinician should titrate the introduction of these elements into their practice at rates that coincide with patient competency. Providers will find that the titration is not against a preconceived end-point but rather that the end-point expands as the process progresses.

Telehealth is the exact vehicle to help patients learn, assess their learning and come to the provider-patient encounter with an opinion. Two E-health direct-to-consumer products[15,16] lead the patient up a clinical decision-making tree to a tentative diagnosis or brief differential. These products may be white-labeled so that their patient-facing appearance is that of the practice or institution. The provider sees the patient only after they have developed a set of possible diagnoses, either as a store and forward report, as an immediate virtual visit encounter or as a scheduled face-to-face visit. First, this has the potential to streamline an encounter, saving time for both the provider and the patient. Second, these are great learning tools as they fix critical elements of a diagnosis in the patient's mind.

Currently providers are challenged by the Internet, generally unhappy with "Dr. Google"[17-19] (searching "Dr. Google" yields 5.9 billion hits). It is more productive to leverage the patient's energy and curiosity.[20] The patient who has researched a complaint is engaged. Some complain that it often takes more energy to walk the patient back from an Internet diagnosis than their presenting "de novo." If practices meet the challenge prospectively, giving their patients URLs of quality websites or providing a practice-based library to help patients learn as they surf, their patients will increasingly present with well thought-out differentials, saving significant time for the provider. Clearly, these learning modules must be aware of the patient's underlying competencies. In the ideal world (and this needs no more technology that we currently have) the patient will be expected to present with a plan. This value-producing visit structure will go a long way to optimizing patient engagement.

DIGITAL HEALTH

There are now seemingly endless arrays of mobile phone (mHealth) applications (apps) that engage the patient in tasks of self-evaluation, often associated with the capability of transmitting data to a healthcare provider's office for integration into the practice's EMR. This aspect of E-health is digital health. The commercial consolidating venture AppScript[21] serves to aggregate digital health and encourages healthcare professionals to evaluate and electronically prescribe the most useful/directed evidence-based digital health apps, devices and content to patients. As of September 2019, AppScript has reviewed and scored 688 apps. The vast majority of these apps are single-purpose (7 categories such as patient experience, lifestyle and stress, medicine minders and others) with only the category of Disease Management Devices (there are 188 entries in this category) subcategorized with entities such as diabetes, hypertension, ADHD, Alzheimer's, and others (13 total). On the non-commercial side, the American Medical Association, the Healthcare Information and Management Systems Society, the American Heart Association and the DHX group[22] have formed Xcertia, dedicated to "improving the quality, safety, and effectiveness of mobile health apps."[23] In many ways like a pharmaceutical, and in their ability to empower the patient, the healthcare provider's competency in navigating mHealth and digital health will become a highly patient-engaging clinical competency.

THE FIFTH DIAGNOSTIC HIDING IN MONITORING DATA

Anybody who has been to a hospital is accustomed to the sight of a monitor with its pattern flying by on a screen. Processing that data goes back to 1982 when Bruce Del Mar and Jeff Holter inaugurated what is still the Holter Monitor.[24] It might be considered that their instrument, with its ability to spot dangerous arrhythmias, was the initiation of E-health almost forty years ago. Remote patient monitoring with an element of processing is at the more complex extreme of the digital health spectrum. A particularly useful application is that of seizure monitoring. With published research dating back to 2010, Rosalind Picard's team at MIT developed a now commercially available wrist band device using galvanic skin data to predict a seizure with enough advance warning for the patient to stop what they are doing and prepare.[25] Over the past 10 years there have been a proliferation of non-invasive (e.g.: digital health devices such as FitBit, Apple Watch), minimally invasive (glucometers fitted with an insulin-delivery pump) and invasive monitoring devices (pulmonary pressure monitoring to detect nascent decompensation of CHF).[26]

The CHF warning system noted above alerts providers through a prediction algorithm[26] looking for divergence from the norm. The question is whether a stream of multiple, simultaneously monitored parameters might have predictive competency for many diagnoses. A patient is monitored with a multi-channel non-invasive patch (for example,[27] measuring general activity, postural classifications, vital signs and sleep metrics). The patch is polled by the patient's mobile device at set intervals with the data going to a remote processing center. The processing center would develop a profile of the patient under a variety of situations such as eating, walking, sleeping and so on. The scenario is that of a nursing home patient visited by his 16-year-old grandson who has just returned from the West Coast. The grandson

coughs a few times while in the room. Later that evening the nursing home is contacted by the data processing center and is informed that patient has a divergence of his pattern consistent with early flu. According to the patient, he feels a "slight chill" but is not concerned. The patient is moved to an isolated, reverse airflow filtered room, an IV is started, and he is given an antiflu agent and acetaminophen. He has a sick few days, but early intervention works for him and the other residents that he may have otherwise exposed. In the absence of this intervention, he may have infected other residents producing several ED visits, hospitalizations, ICU intervention, and perhaps deaths.

The work to be done involves monitoring a large number of patients and carefully looking at the records generated. With a statistically significant sampling, a number of patient records will, in retrospect, indicate nascent flu. The records are examined for common divergences from baseline. Algorithms developed are then tested for their diagnostic competency. This is the work of predictive analytics where monitoring has shown value.[28,29]

CONCLUSION

E-health in all its facets (telehealth, telemedicine, digital health, and remote patient monitoring) invites monumental advances in healthcare delivery, surveillance, insight and quality management. In order to efficiently incorporate the expected advances, the healthcare community must work closely with information technology professionals. Neither side can work effectively waiting for the other to set the table. We have painted several examples of advances that can be reasonably expected to materialize over the next few years. Innovation management teaches that advances not synched with culture will face a difficult, time consuming path to acceptance. Think the EMR that, after 40 years, has still not meshed with the reluctant medical culture that eats innovation for breakfast.[30] It is incumbent upon all healthcare providers to understand what we can expect and share their enthusiasm and vision with each other, with every other healthcare worker and with their patients. This is the behavior most likely to change the culture of healthcare and usher in advances, with less patient-provider stress and with long successful strides right out of the gate.

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Telehealth & E-Health in Rhode Island 2020 and Beyond

JAMES V. McDONALD, MD, MPH

Mr. Watson – come here – I want to see you.[1]
— Alexander Graham Bell

Who among us could have imagined in 1876 where telecommunications would have brought us today? The famous first telephone call, as near as I can tell, had no health implications to Mr. Watson or to the famed inventor Alexander Graham Bell, yet it did set the stage for a rather powerful technology infrastructure.

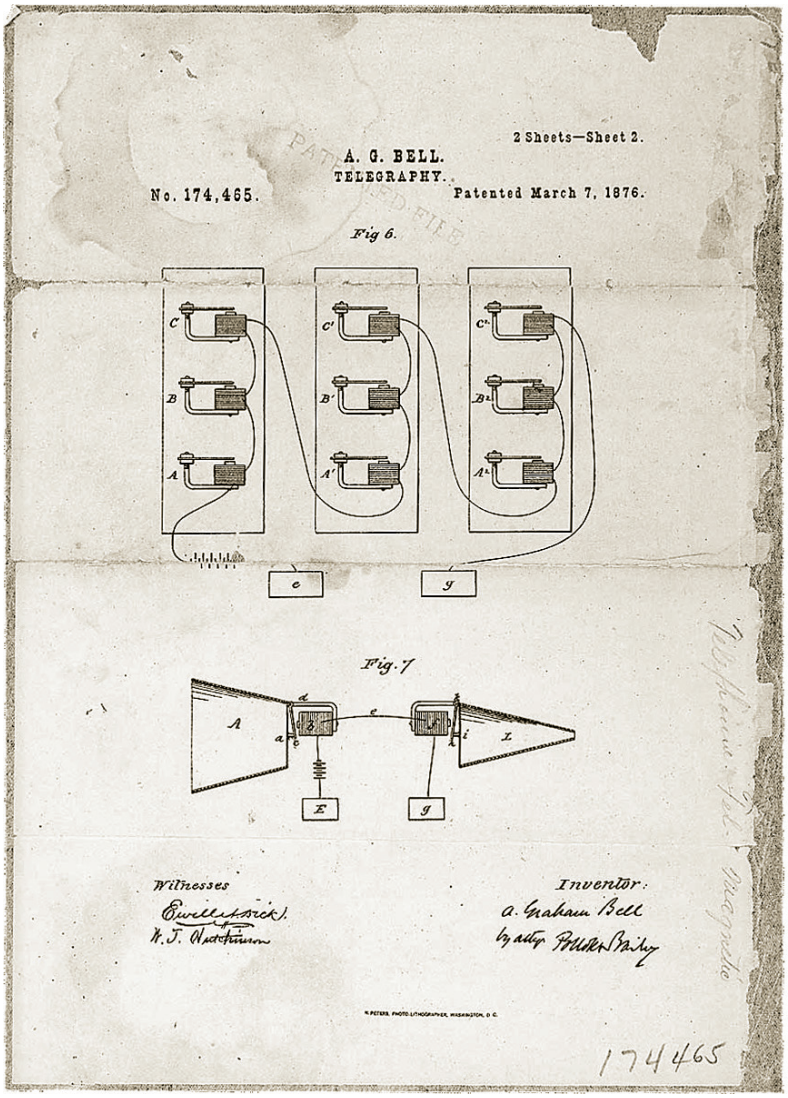
Although no one is suggesting we are ready for Dr. McCoy, from Star Trek, to utilize his tricorder to cure any ailment, we have come a long way in leveraging technology to advance healthcare. Using the Internet to power our electronic health records, to transfer digital images across the world for interpretation, and to perform robotic surgery from the corners of the globe are a few examples of how we practice medicine in 2020.

In Rhode Island, we have 5,288 actively licensed physicians, and of those, 24% (1,254) have license addresses outside Rhode Island.[2] Although not all of those physicians are practicing telemedicine, it is common place for radiologists, anatomic pathologists, and a growing number of other specialties to have licenses in many states so they can conduct telemedicine legally.

Alexander Graham Bell at the opening of the long-distance line from New York to Chicago in 1892. [PRINTS AND PHOTOGRAPHS DIVISION, LIBRARY OF CONGRESS]

There are some applicable professional standards that have been approved by the Board of Medical Licensure and Discipline that are relevant to current practice.[3] A general principle is a physician needs to be licensed in the state where the patient received care. Therefore, if the patient is in Rhode Island and the physician is in California, the physician needs a Rhode Island physician's license. It is also important that special requirements exist when prescribing a controlled substance. Physicians must have a business address in Rhode Island in order to obtain a Rhode Island Controlled Substance Registration and DEA registration.[4] It is illegal to prescribe controlled substances between states without an appropriate DEA registration.

Telemedicine also requires that the same standard of care, as if the patient were evaluated in a traditional office setting, must be met. Although conducting a physical exam remotely can be challenging, advances in technology are making this easier. It is important to note that "*Treatment, including issuing a prescription, based solely on an online questionnaire without an appropriate evaluation does not constitute an acceptable standard of care and is considered unprofessional conduct.*"[5] This requirement highlights the



Alexander Graham Bell's Telephone Patent Drawing, March 7, 1876.
[NATIONAL ARCHIVES]

importance of preserving the integrity of the profession and practicing medicine to the applicable standard.

Physicians are reminded about the appropriate privacy requirements to be evaluated prior to engaging in telemedicine or Internet medicine. It is important to use secure messaging, to appropriately document in an approved electronic medical record, and to maintain requirements relevant to HIPAA.[6]

As our profession moves more and more toward virtual healthcare, it is vital we, as professionals, remain virtuous and adhere to the high standards of our profession, while recognizing that E-health is much more than the future, it is the present.

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Telehealth: Enhancing Care through Technology

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ABSTRACT

The use of telehealth – the delivery of healthcare services through the use of two-way electronic audiovisual technology – has grown significantly in the U.S. in recent years. Telehealth offers patients and providers significant benefits as a lower cost, easier way to access quality care, but the medical community is still working to perfect the balance between technology and in-person care. This article covers the current national telehealth landscape, consumer perceptions of telehealth, as well as the steps Blue Cross & Blue Shield of Rhode Island (BCBSRI) has taken to cover telehealth services for its members and implement a user-friendly mobile app to facilitate this type of care, as well as how it fits into their primary-care strategy. It discusses some existing applications for telehealth, as well as some ideal-state, practical ideas about the future of telehealth's use.

KEYWORDS: telehealth, telemedicine, healthcare access, healthcare costs

INTRODUCTION

Like just about everything else, medicine and healthcare are rapidly changing in this age of technology. One obvious example of this is telehealth (also called telemedicine), which is the delivery of healthcare services – including diagnosis, consultation, treatment, education, care management, and patient self-management – using real-time, two-way electronic audiovisual communication technology, typically video conferencing. Telehealth offers patients a convenient option for care when they need it, saving time and cost. The key is finding the balance between telehealth and traditional in-person care, and educating consumers about when to use it.

TELEHEALTH LANDSCAPE IN THE U.S.

Telehealth is a rapidly growing segment of the U.S. healthcare industry, due in large part to its convenience as well as the increased access to care it offers for many people who normally might not seek care. The U.S. telehealth market is expected to reach about $36 billion by 2020,[1] and increase to $64 billion by 2025.[2]

A unique partnership

Reinforcing the growth of telehealth in the U.S. is the recent announcement of a partnership between American Well ® and Cleveland Clinic creating a unique initiative providing broad access to comprehensive and high-acuity care services via telehealth. The two organizations will form a Cleveland-based joint venture company called The Clinic™, which will offer virtual care from Cleveland Clinic's highly specialized experts through American Well's well-established digital health technology platform. This partnership will lead the healthcare industry toward integrated, digital care delivery models that complement and are connected to traditional care settings.

Rising healthcare costs are driving the industry to shift to more cost-effective alternatives for quality care. The Centers for Medicare and Medicaid Services (CMS) forecasts that national health spending will grow at an average rate of 5.5% per year through 2027, outpacing gross domestic product (GDP) growth by nearly 20% over the same time period.[3] CMS also estimates that healthcare costs, which represented 17.9% of GDP in 2017, will constitute 19.4% by 2027.[4]

This trend has an obvious impact on employers, many of which have begun offering telehealth as a less costly alternative to traditional healthcare. In fact, 91% of employers are expected to offer telehealth by 2020.[5] However, while a vast majority of mid-size to large employers offer this benefit, less than 2% of employees have used it.[6] So the obvious question – and the biggest challenge – is why?

A recent J.D. Power study[7] offered many consumer findings around the use and perceptions of telehealth:

- 9.6% of consumers have used telehealth in lieu of a doctor's office, urgent care, or emergency room visit in the last 12 months.
- Usage is highest among patients in the West (11.1%) and lowest in the Northeast (5.7%).
- Younger adults (aged 18–24) have used telehealth more than any other age group (13.1%), while seniors (aged 65+) have used it the least (5.3%). However, 10.5% of adults aged 55–64 have used telehealth.
- 74.3% of consumers say their health system or health insurer does not offer telehealth (39.7%) or they are

unaware of it (34.6%). This is concerning in rural areas (72%) and suburban areas (70.3%), where telehealth is targeted to help increase access.

- 17.2% of consumers are aware that their health system or health insurer offers telehealth as an alternative to a doctor's office, hospital, emergency room, or urgent care clinic visit.
- 13.3% of consumers think telehealth is more expensive than a doctor's office visit.
- 48.7% believe the quality of care is lower than that of a doctor's office visit, with 6.2% perceiving quality to be higher. The remainder (45.1%) believe the quality of care is the same.

BCBSRI'S TELEHEALTH STORY: PART OF A LARGER STRATEGY

Blue Cross & Blue Shield of Rhode Island (BCBSRI) began covering telehealth in 2014, long before it became mandated by the state of Rhode Island for health insurers to cover telehealth as of January 1, 2018. As a health insurer, BCBSRI decided to cover telehealth as a means of added convenience for our members to help them meet their need for healthcare access. In fact, many of our larger customers demanded this service for their employees.

A significant and critical piece of our long-term strategic focus (along with cost leadership and comprehensive health and well-being) is to ensure that we're giving our customers the tools they need to make easier decisions about their health.

We've partnered with American Well®, one of the leading providers of telehealth services, to allow members to connect with board-certified doctors 24 hours a day using their smartphones, tablets, or computers. We've branded the service Drs. Online, and created a mobile app of the same name where members can access these services.

BCBSRI chose American Well to administer our telehealth services because of their reputation for security and safety. They monitor their participating physicians thoroughly and frequently, and provide protocols for every imaginable scenario that could arise, from a technological and protected health information (PHI) perspective. From a member/user perspective, we found it to be a seamless experience with few technological issues. Users can also see physicians' education and practice experience, as well as ratings from other users, for their own peace of mind.

Telehealth is intended to provide general healthcare services for a wide range of common, non-emergency health conditions, including allergies, respiratory infections, skin rashes, sinus problems, migraines, and many others. What it is not intended for is to replace true emergency care or to treat life-threatening conditions, such as seizures, chest pain, stroke, difficulty breathing, etc. Users are always advised to call 911 or go to the ER for any emergency or life-threatening conditions.

To date, we've had over 4,000 members register for Drs. Online, with more than 800 completed visits. The Drs. Online app has a 5-star rating on both Google Play and the Apple App Store.* Of our members who have taken the exit survey after using the service, 96% of them rate the service either 4 or 5 stars. The most common diagnoses among those 800 visits are upper respiratory infections, influenza, skin rashes, and urinary tract infections. We also recently began offering covered behavioral health services using Drs. Online, including therapy and psychiatry. This is part of our ongoing effort to increase access to these critical and much needed services – when getting care quickly is of the utmost importance – while helping to reduce some of the stigma often associated with them.

Telehealth is a covered service within BCBSRI's fully insured plans, and is a buy-up/add-on for self-insured plans. Member benefits, including cost-sharing, vary depending on specific plans.

NOT A REPLACEMENT FOR THE PCP

An important point that we emphasize with our members is that telehealth should not replace the personal relationship that we encourage our members to have with their primary care provider (PCP). We stress the importance of regular wellness visits, regular screenings and tests, and having an open, ongoing relationship with their PCP (preferably as part of a PCMH) as an optimal way to stay as healthy as possible. The PCP/PCMH is the "quarterback" of a member's care, and should be the point person for coordinating all of a patient's healthcare needs, whenever feasible.

Currently, there are no local physicians contracted with BCBSRI to provide telehealth services on Drs. Online to our members, but we're using board-certified providers who have a contract with American Well and are licensed to practice in Rhode Island. For 2020 and beyond, we're working on a comprehensive plan to begin onboarding local providers to Drs. Online, in a way that positively reinforces our primary care philosophy.

THE IDEAL STATE FOR TELEHEALTH

Telehealth is not a new concept; it's been around for a number of years. In general, our sense it that there has been both a fear and fascination about it among the physician community. The fear is that it could interfere with the physician/patient relationship; but at the same time there's a fascination and curiosity about it in this technological age. What is it? How does it work? How will it enhance my practice? Are there any technological and workflow barriers that I'd have to think about, like scheduling telehealth visits along with in-person visits, handling billing, and compensation?

*App Store is a service mark of Apple Inc. Google Play is a trademark of Google Inc.

The technology and infrastructure are in such a place that any physician who wants to do it can do it, and fairly simply. Any local physician can provide these services to their patients as long as they meet the requirements of our telehealth coverage policy, and any provider can bill for a telehealth visit according to our payment policy.

There is a great deal of opportunity for telehealth in general – ideally there are many thoughtful, practical applications for it to be used as a way to increase convenience and decrease overall cost of care, not as a way to simply generate income. Telehealth could and should also be used to help avoid or decrease costly emergency room care. Based on BCBSRI claims data, about 40% of ER visits are classified as low-acuity non-emergent (LANE) care visits according to diagnosis and evaluation and management (E/M) codes. That 40% figure equates to roughly $90 million annually in preventable ER visits for symptoms like back pain, flu symptoms, and sinus pain. Many of those visits could have been handled using telehealth, and those patients certainly could have been seen in their PCP's office for a much lower cost and in much less time.

There are also obvious linkages and opportunities for telehealth to bridge primary and specialty care, while again aiming to reduce waste, save time, and provide appropriate care at the right time, in the right setting. In a perfect world, the PCP does their best to diagnose and treat a condition or illness, but before referring a patient to a specialist, would use telehealth as a way to consult with that specialist, ideally while sitting with the patient. That consultation could be used to either expedite a follow-up visit with the specialist or to rule out the necessity for seeing them, depending on the situation.

CONCLUSION

These ideas are just scratching the surface of the types of practical applications that telehealth can provide. Working closely with physician and provider partners, insurers will be able to expand the reach of telehealth to help create healthcare that is convenient, more affordable, and creates the best experience for patients, which should always be the end goal.

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Use of Health Information Technology by Rhode Island Physicians and Advanced Practice Providers, 2019

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ABSTRACT

BACKGROUND: The Rhode Island Department of Health (RIDOH) has administered the Health Information Technology (HIT) Survey since 2009 to report clinician-level process measures relating to HIT adoption and use.

METHODS: RIDOH administers the Rhode Island HIT Survey to all licensed independent practitioners. Descriptive analyses examined HIT adoption and the clinician experience working with HIT.

RESULTS: Most physician and Advanced Practice Provider (APP) respondents report using an EHR (92.5% and 94.3%) and e-prescribing medications (84.1% and 81.6%). Less than half of physicians (40.9% or n=565) and APPs (35.4% or n=195) who prescribe controlled substances currently submit controlled substance prescriptions electronically. A higher percentage of physicians, compared to APPs, reported experiencing HIT-related stress (80.9% and 66.6%). The overall prevalence of physicians reporting symptoms of burnout was 29.7% (n=539) but varied between specialties.

DISCUSSION: As of 2019, the majority of Rhode Island physicians have adopted EHRs and e-prescribing. Adoption plateaued after 2012, and challenges persist in integrating existing technology into practice.

KEYWORDS: health information technology, e-prescribing, ,controlled substances burnout

INTRODUCTION

Most hospitals and physicians in the United States have adopted electronic health records (EHRs),[1] and recent focus has shifted from adoption and basic use to optimizing use, integrating systems with other forms of health information technology (HIT), and understanding the impact of these technologies on both patients and physicians.

While EHRs have been associated with improved documentation quality and administrative efficiency,[2] there have also been drawbacks. EHRs have been reported to reduce the quality of clinician-patient interactions and to increase the regulatory and administrative burden on clinicians.[3-5] Specifically, many Rhode Island physicians report that, while they agree that EHRs may improve the care their patients receive, EHRs impact their job satisfaction and increase their take-home workload.[6]

Recognizing the importance of HIT for both physicians and patients, the Rhode Island Department of Health (RIDOH) has administered the HIT Survey since 2009. The Rhode Island HIT Survey data provide a unique opportunity to examine longitudinal trends in EHR adoption as well as to report on emerging topics related to HIT.

METHODS

RIDOH's Healthcare Quality Reporting Program administers the Rhode Island HIT Survey to all licensed independent practitioners. This public reporting program is legislatively mandated, and HIT Survey data are used to report clinician-level process measures relating to HIT adoption and use. The survey was distributed to physicians annually from 2009 to 2015, and biennially since 2015. In 2013, RIDOH expanded the survey to advanced practice providers (APPs), including advanced practice registered nurses and physician assistants. The 2019 survey was administered to 4,266 physicians and 1,977 APPs.

To develop the 2019 survey, we collaborated with RI healthcare state agencies and other stakeholders to refine the survey tool for the 2019 survey. We piloted new questions with a small group of clinicians to obtain feedback about whether the questions were easily understood and relevant to clinical practice and then modified the questions based on their feedback.

We administer the survey electronically. We send a hard copy notification to all clinicians with a link to the electronic survey and an email notification to those with email addresses on file. Clinicians receive up to two email reminders. The 2019 survey was open between April 22, 2019 and May 10, 2019.

The HIT Survey data are used to calculate four summary measures of HIT implementation and use: (1) Licensed Independent Practitioners (**LIPs) with EHRs**, defined as the percent of LIPs with access to EHR components, including functions such as visit notes, lab orders or prescriptions[7]; (2) **LIPs who are e-prescribing**, defined as the percent of LIPs transmitting prescriptions electronically to a pharmacy[7] (this measure included only those clinicians who

reported that they prescribe medications, and hospital-based physicians were asked to only consider prescriptions sent to community-based pharmacies, versus those sent to the hospital pharmacy); (3) **LIPs who are e-prescribing controlled substances**, defined as the percent of LIPs transmitting controlled substance prescriptions electronically to the pharmacy (this measure considered only those clinicians who reported that they prescribe controlled substances and hospital-based physicians were again asked to only consider prescriptions sent to community-based pharmacies); and (4) **LIPs who are experiencing HIT-related stress**, defined as the percent of respondents reporting stress in at least one of the three HIT-related stress questions, which included whether the EHR adds to the frustration of one's day, sufficiency of time for documentation, and how they describe the amount of time spent on the EHR at home. The three HIT-related stress measures were adopted from the Mini z, which is a validated instrument that measures job satisfaction, stress, burnout, and work control, among other domains, and which was developed from the Physician Work Life Study.[8-12]

In addition to the four summary measures, the HIT Survey captured information about clinician burnout. Burnout was measured on a 5-point scale using a validated single-item measure from the Mini z.[8-12] This measure is based on clinicians' self-assessment of their experience, rather than a clinical diagnosis. Respondents were asked to select one of the following: (1) "I enjoy my work. I have no symptoms of burnout;" (2) "I am under stress, and don't always have as much energy as I did, but I don't feel burned out;" (3) "I am definitely burning out and have one or more symptoms of burnout, e.g., emotional exhaustion;" (4) "The symptoms of burnout I am experiencing won't go away. I think about work frustrations a lot;" and (5) "I feel completely burned out. I am at the point where I may need to seek help." Respondents were considered to have "one or more symptoms of burnout" (≥3 on the 5-point scale) or "no symptoms of burnout" (≤2 on the 5-point scale).

RESULTS

The physician response rate was 43% (n=1,835), and the APP response rate was 32% (n=633). Most physician and APP respondents report using an EHR (92.5% and 94.3%, respectively). Among the physician respondents, 66% (n=1,216) were office-based and 34% (n=619) were hospital-based. There has been an upward trend in EHR use among physicians and APPs since the survey was first administered in 2009, but uptake has leveled off in recent years (**Figures 1 and 2**). Among physicians who use EHRs, about a quarter (26.6%, n=448) use two different systems or vendors and 15.9% use three or more systems or vendors (n=267). Epic Systems, the most frequently used EHR vendor in Rhode Island, is used by the majority of hospital-based physicians

Figure 1. Prevalence of electronic health records (EHRs) and e-prescribing among physician respondents, 2009–2019

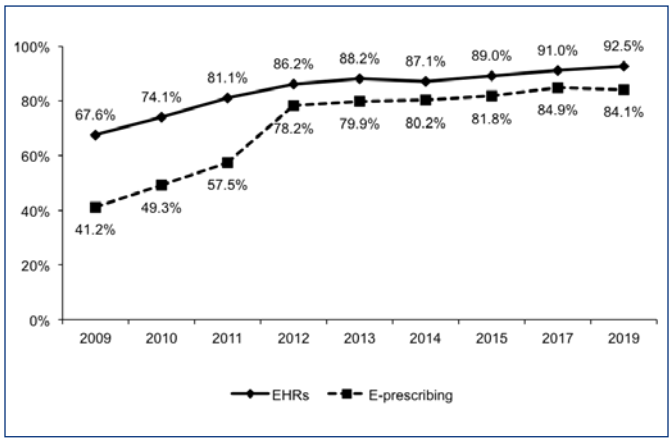
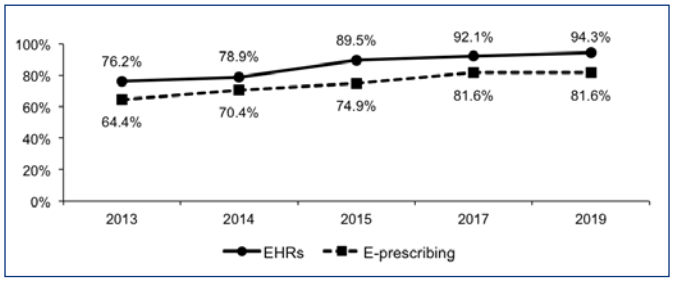


Figure 2. Prevalence of electronic health records (EHRs) and e-prescribing among advanced practice provider respondents, 2013–2019



(57.6%, n=344) and a quarter of office-based physicians (26.0%, n=289).

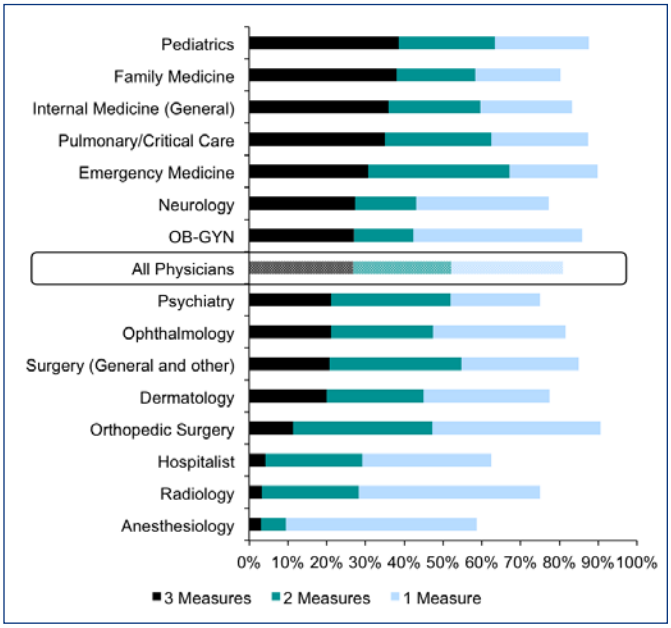
Similar to EHR use, the prevalence of e-prescribing increased among respondents over the past 10 years – from 41% in 2009 to 84% in 2019 – but uptake has leveled off since 2012 (**Figures 1 and 2**). The majority of office-based physicians who prescribe medications use e-prescribing (87.5% or n=1,023), with 59.2% (n=692) reporting that they "always" transmit prescriptions electronically to the pharmacy. Among office-based physicians who prescribe medications, one in ten reports that their system is unable to transmit prescriptions electronically (9.4% or n=110). Among hospital-based physicians who prescribe medications, just over three quarters (76.6% or n=321) use e-prescribing, with 28.4% (n=119) reporting they "always" transmit prescriptions electronically to a community pharmacy.

Less than half of physicians (40.9% or n=565) and APPs (35.4% or n=195) who prescribe controlled substances currently submit controlled substance prescriptions electronically. Among physicians who e-prescribe medications and prescribe controlled substances, over a third have systems that do not have the functionality to send controlled substance prescriptions electronically (37.2% of office-based and 34.7% of hospital-based physicians). About half of physicians (50.4%, n=912) were unaware of a 2017 Rhode Island

law that requires e-prescribing of all controlled substances by January 2020.

We asked physicians about their experience with HIT-related stress and burnout. A higher percentage of physicians, compared to APPs, reported experiencing HIT-related stress (80.9% and 66.6%, respectively). Nearly three-quarters of physicians (70.5% or n=1,164) "agreed" or "strongly agreed" that the EHR adds to their daily frustration. When asked about the amount of time spent on the EHR at home, 43.5% (n=718) of physicians reported that the time they spent on the EHR at home was "moderately high" or "excessive." A similar proportion of physicians (46.0% or n=760) reported their sufficiency of time for documentation as "poor" or "marginal." There is a high prevalence of HIT-related stress across the 15 most common specialties (**Figure 3**). In seven specialties, more than a quarter of physicians reported experiencing all three measures of HIT-related stress. The overall prevalence of physicians reporting symptoms of burnout was 29.7% (n=539), but varied between specialties. The highest prevalence of burnout was noted among emergency medicine physicians, with 46.1% (n=41) reporting symptoms of burnout. Orthopedic surgeons reported the lowest prevalence of burnout – 18.6% (n=11).

Figure 3. Percent of physician respondents with electronic health records (EHRs) who reported experiencing one or more measures of health information technology-related stress, by specialty, among the 15 most common specialties



DISCUSSION

Over the past ten years, Rhode Island's HIT Survey has assessed changes in the proportion of clinicians using EHRs and e-prescribing. We observed that EHR use and e-prescribing rose steadily after the passage of the Health Information Technology for Economic and Clinical Health (HITECH) Act of 2009, before plateauing around 2012. While most Rhode Island clinicians have adopted EHRs, e-prescribing has hovered at around 80% among physicians who prescribe medications. The prevalence of consistent e-prescribing controlled substances is even lower, with less than half of clinicians sending these prescriptions electronically.

Rhode Island passed a law in 2017 requiring the e-prescribing of all controlled substances starting on January 2, 2020.[13] E-prescribing controlled substances has the potential to improve the safety of pain management by reducing prescription forgery, eliminating illegible handwriting, facilitating the identification of multiple prescribers before dispensing medication, and streamlining the prescription process.[14,15] A recent study found that a New York mandate to e-prescribe controlled substances was associated with a significant decrease in the number of opioid prescriptions at a tertiary-care hospital.[16] While this type of mandate has many potential positive impacts, many Rhode Island physicians are unprepared for the quickly approaching deadline. The majority of physicians who prescribe controlled substances in Rhode Island are not doing so electronically, with many citing limited system functionality as the reason. Additionally, half of physician respondents were unaware of the law altogether. Prescribers who feel that implementing the e-prescribing mandate would cause undue economic hardship may apply for a time-limited waiver. Going forward, Rhode Island should continue to publicize the new e-prescribing mandate and should consider steps to assist physician practices that are not prepared or facing undue economic hardship to incorporate this change into their workflow.

While it is important to harness HIT resources to address emerging health needs, we should also consider the role mandates for expanded HIT use play in physician stress levels. As observed in this study, the majority of Rhode Island physicians are experiencing at least one source of HIT-related stress. A previous study using the results of the 2017 HIT survey found that the presence of any one of the three HIT-related stress measures was associated with twice the odds of burnout among physicians.[17] Previous research on physician burnout found that various workplace factors were related to experiencing burnout, including loss of autonomy at work, decreased control over their work environment, and the time required for administrative tasks.[18] While previous HIT mandates have been successful in prompting the adoption and use of EHRs, it is important to consider how additional requirements will impact clinician workflows and HIT-associated stress.

There are various limitations to this data. First, all clinician data are self-reported. Second, recent survey years have had a lower response rate than previous survey years. Survey response rates between 2013 and 2015 were above 60%, whereas 2017 and 2019 rates hovered at 43%. We suspect this dip in response rate is tied to the transition to biennial survey administration in 2015. Third, the fact that RIDOH distributes the survey may influence how clinicians respond to more personal questions about HIT-related stress and burnout. Finally, distributing the survey electronically may bias the sample by not including clinicians without computer access.

These findings show that while Rhode Island has come a long way in HIT adoption, there are continued challenges in integrating existing technology into clinician workflows. Future surveys will help us to understand how HIT use is changing to meet emerging health demands and the impact it has on the clinician experience.

The results shared above represent a fraction of the findings from the 2019 HIT survey. The full report can be accessed at: https://health.ri.gov/publications/annualreports/HealthInformationTechnologyPhysicanSurveySummary.pdf

The HIT Survey data is also publicly available as a de-identified research data file. Please contact Emily Cooper, MPH at: ecooper@healthcentricadvisors.org for more information.

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Electronic Consults: Lessons From a Neighboring State

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BACKGROUND

The delivery of healthcare has become increasingly complex. Primary care providers (PCPs) now collaborate with hundreds of different health professionals to coordinate and provide care to their patients.[1] Referrals from primary care to specialists have more than doubled.[2] Busy schedules and fewer opportunities for informal, "curbside" consultations mean that the face-to-face referral is often the only mechanism for a PCP to obtain guidance, advice, or input from a specialist. While technology has revolutionized communication in other industries, healthcare has been slow to adopt new tools and techniques. In the case of specialty referrals, whether the PCP is seeking input about next steps in managing a chronic condition, help identifying and treating a rash, or collaboration in managing a complex case, the face-to-face visit remains the only routinely available option. Many of these referrals still rely on fax or even paper mail to convey medical information between the collaborating providers. These antiquated communication tools combined with the increase in volume of referrals have led to poor coordination of care, patient inconvenience, long wait times, and increased cost.

Limited access to specialty care is a particular challenge for medically underserved patients such as those with state-funded Medicaid insurance, the uninsured, and those living in rural communities. Many specialists either do not accept Medicaid patients or limit access to these programs. Patients with Medicaid that do receive appointments often experience long wait times.[3,4] As a result of these barriers, medically underserved patients are less likely to be seen by specialists than patients with other insurance.[4] Delayed or deferred care due to poor access is a significant contributor to health inequality.[5]

eCONSULT OVERVIEW

The electronic consultation (eConsult) is an important new telehealth tool that provides a solution to improve communication and reduce access barriers to specialty care. eConsults allow PCPs and specialists to exchange clinical information about specific cases using a secure electronic platform. The concept was pioneered at San Francisco General Hospital, initially, as an electronic referral process that allowed specialists to triage and prioritize incoming referral requests.[6] Early experience with the system demonstrated that, in addition to improving the triage of patients into specialty care, a substantial number of consults could be fully addressed "electronically" and did not require a face-to-face visit at all.[7,8] A similar process was implemented in Los Angeles County, which has now completed over one million eConsults and reduced the overall need for face-to-face consults by 25%.[9] The use of eConsults has now spread widely in California and other states, particularly those with advanced payment models and shared-risk arrangements that support implementation of interventions providing value and cost savings.

CONNECTICUT EXPERIENCE

In Connecticut, as with many other Northeast states, fee for service remains the predominant reimbursement model. Innovations such as eConsults have been slower to take hold. However, as in other states, providing adequate access to specialty care for Medicaid patients is a significant challenge. Community Health Center, Inc. (CHCI) is Connecticut's largest Federally Qualified Health Center (FQHC), caring for over 150,000 patients in more than 200 locations across the state. Despite the presence of many large academic specialty care practices in close proximity to CHCI's locations, its patients often faced wait times of three to six months or longer for access to certain specialties, and many had to travel from locations across the state to UCONN Health in Farmington, the only state-funded medical center in Connecticut. In 2013, CHCI obtained grant funding to pilot an eConsult system to help address health inequality in specialty access. Funding allowed researchers at the Weitzman Institute, CHCI's research and education center, to partner with UCONN Health to test eConsults for cardiology referrals.[3] Primary care providers were randomized to receive access to an eConsult platform that allowed them to share relevant clinical information and a consult question with UCONN cardiologists. Use of the system was not mandatory, but was encouraged by use of a supportive workflow and frequent feedback to PCPs. Providers in the control group continued to refer to cardiology in the traditional manner by requesting face-to-face visits. The cardiology

eConsult reviewers provided advice and guidance about the case, including whether they felt a face-to-face visit was needed. Responses were returned to the PCP in two business days or less. After one year, results demonstrated a substantial improvement in access. More than half of the consults requested by PCPs in the intervention arm, 120 out of 229 (52%), were sent as eConsults and 83 (69%) did not require a face-to-face visit. The large number of consults that could be addressed via eConsults within two days led to a significant increase in overall access to cardiology due to the reduction in patients needing a face-to-face visit. In addition, patients in the intervention arm of the study had significantly fewer emergency room visits than patients cared for by providers in the control group, possibly due to the more rapid receipt of review and treatment for those patients receiving an eConsult.

A secondary economic analysis of Medicaid claims for patients in this same study demonstrated that those in the intervention group had a mean total cost of care that was $466 lower than those in the control using an intention to treat analysis that included costs of patients sent for face-to-face visits in the intervention group.[10] The higher total cost of care for patients referred for a face-to-face with cardiology accrued largely over a three-month period following the consult request, and there was a statistically significant increase in costs attributed to cardiology tests and procedures that was not seen in patients in the eConsult arm of the study.

Based largely on these findings, Connecticut's Department of Social Services (DSS), which manages the state's Medicaid program, received approval to implement a State Plan Amendment (SPA) that allowed limited reimbursement for eConsults for participating FQHCs. CHCI then expanded its eConsult program to include several other high-volume specialties including dermatology, gastroenterology, endocrinology, and orthopedics. A detailed analysis of Medicaid claims data for patients referred to these four additional specialties demonstrated that eConsults were associated with lower cost of care to Medicaid.[11] In total, patients receiving an eConsult had specialty-related costs that were $82 per member per month lower than patients who received a face-to-face appointment, yielding an estimated savings of over $600,000 for the state's Medicaid plan in one year.

On July 1, 2017, Connecticut became the first state in the U.S. to add eConsults as a covered benefit for its Medicaid program by including eConsult CPT codes in its fee schedule. Since that time, CHCI has continued to expand its eConsult program and now offers its patients access to eConsults for 30 different adult and pediatric specialties. Specialist from a wide and growing range of practices across the state now participate as eConsult reviewers. Since inception, CHCI has completed nearly 9,000 eConsults of which 80% prevented the need for a face-to-face visit. The program has benefitted providers, patients, and healthcare payers.

NATIONAL GROWTH

In 2015, CHCI created a non-profit subsidiary and began offering access to its eConsult platform to health centers in neighboring states and later, around the country. Reimbursement for the cost of the eConsult has come from a range of grant sources, commercial insurance, and Medicaid managed care plans, and increasingly, practices and health systems with value-based payment models and shared risk arrangements. As of August 2019, there were over 600 primary care providers from 146 practices in 14 states using CHCI's eConsult platform. The eConsult process minimizes changes in workflow and avoids imposing additional burdens on PCPs or their staff. Referral staff benefit in particular from the reduced need for face-to-face visits that need to be scheduled, coordinated, and tracked. A typical practice can expect an overall reduction of approximately 20-25% in the number of face-to-face referrals for its most common specialty referrals.

SPECIALISTS REVIEWERS

A wide range of specialists from Connecticut and other states now participate in the program. State regulations about telehealth are changing rapidly. Some states allow eConsults to be exchanged between clinicians in different states while others require an in-state licensure. CHCI has recruited, trained, and credentialed eConsult reviewers in 35 different medical and surgical specialties locally and regionally, while others practice across state lines. Volume of consults vary, and are adjusted to meet each specialist's needs. Specialists are reimbursed on a per consult basis. An average eConsult takes approximately ten minutes to complete. Templates can be designed to streamline responses. Specialists are expected to provide a clear, concise response first noting whether a face-to-face visit is warranted, and then outlining recommendations for further testing and treatment.

RHODE ISLAND eCONSULT PILOT

In September of 2016 Thundermist Health Center in Rhode Island began using CHCI's eConsult platform, focusing first on dermatology referrals, and later adding cardiology. While reimbursement from payers in the state is still not available, the health center chose to pay for the service on a limited basis due to the significant issues of access for its patients. Since inception, Thundermist providers have completed 351 eConsults in dermatology and cardiology. Seventy-eight percent of the consults prevented the need for a face-to-face visit. Consults cover a wide range of topics. For dermatology, the most common consult question is for assistance diagnosing an unidentified rash. The majority of these cases are found to be various forms of dermatitis. **Figure 1** shows an example of a dermatology eConsult (without photos) from

Figure 1. Dermatology eConsult Request

eConsult Request
Specialty: Dermatology
Specialist Reviewer:
Diagnosis: RASH AND OTHER NONSPECIFIC SKIN ERUPTION
ICD Code: R21
Procedure(s): interprofessional telephone/Internet assessment (99446)

To: Dermatologist
Rash on hands (L > R). See photos attached.

To: PCP
Good morning,

The clinical photos and history are definitely suggestive of dyshidrotic eczema (especially the right hand rash), but the lack of response to steroid and secondary consideration of tinea manum (or 2-foot, 1 hand) complicate the therapeutic picture. When patients present with an acral pustular eruption or palmar hand rash, it is always necessary to examine the feet as well, as this can provide a lot of help in diagnosis.

Biopsy of these rashes is usually not necessary if we can exclude/treat fungus, as the differences between dyshidrotic eczema and palmoplantar pustulosis/psoriasis are often nondiagnostic on H&E. I have the following recommendations:

1) Scraping of the left hand scale for KOH prep and fungal culture (I use a 15 blade to gently scratch away the scale onto a glass slide, then sandwich the material between another slide, tape together, and put in a sterile urine specimen cup to send to the lab). I would do this +/- a 2-week course of oral terbinafine. If the foot exam is suggestive of tinea pedis or significant onychomycosis, I would definitely do at least two weeks of oral terbinafine.

2) Once the scraping is done and specimen sent, I agree with a trial of class I topical steroid ointment, under occlusion at night if tolerated. Cost and access differ but usually either augmented betamethasone 0.05% ointment or clobetasol proprionate 0.05% ointment is affordable/covered through insurance or GoodRx.

3) If topical steroid is not effective, then we need to consider oral therapies and/or adjusting his medicines (Beta blockers can trigger/exacerbate psoriasiform eruptions). This is the point I might consider biopsy, prior to initiating oral therapy.

Thank you for the consult.

This eConsult was closed as: Patients Needs Addressed
Message submitted to provider for review.

Thundermist. For cardiology, some of the most common eConsults related to questions about abnormal EKG findings, atypical chest pain, and palpitations. **Figure 2** shows the dialogue from a cardiology eConsult.

The concept of eConsults arose out of the frustrations of front-line primary care providers struggling with limited access to specialty care for their patients. Now, with solid evidence demonstrating its clinical efficacy and a strong financial return on investment, this simple technology is reimagining the way primary care providers communicate

Figure 2. Cardiology eConsult Request

eConsult Request
Specialty: Cardiology
Specialist Reviewer:
Diagnosis: ATRIAL SEPTAL DEFECT
ICD Code: Q21.1
Procedure(s): interprofessional telephone/Internet assessment (99446)

To: Cardiologist
XX y/o with hx of interatrial septal aneurysm with PFO vs ASD seen on stress echo. Currently no cardiac sxs. Please advise on any further f/u/monitoring. Please refer to eCardiology consult.

To: PCP

XX year old with incidentally noted atrial septal aneurysm and patent foramen ovale versus small atrial septal defect on an otherwise normal stress echocardiogram. The patient is without associated symptoms. There is a statistically increased risk of embolic neurologic events from both the atrial septal aneurysm and often associated defect. Nonetheless, specific medical therapy is not indicated for primary prevention. Should a suspicious event such as a TIA occur, then consider treatment with aspirin and/or warfarin.

There is no indication to close this small, apparently hemodynamically insignificant shunt with surgery nor with a percutaneous septal occluding device.

This eConsult was closed as: Patients Needs Addressed
Message submitted to provider for review.

and coordinate care with specialists in Connecticut, Rhode Island and across the country. As advanced payment models with shared risk arrangements take hold in the state, programs like eConsults will be increasingly important and sought after by payers as well as individual practices and accountable care organizations looking to control cost and improve access. In the coming years eConsults will become a routine element of the referral process, allowing PCPs and specialists to confer about cases in advance of, or in place of, a face-to-face visit, yielding tangible benefits for consumers, providers, and payers.

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Emerging Opportunities for Telemedicine Research in Rhode Island

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KEYWORDS: all-payer claims database, telemedicine, access to care

In the past few years, Rhode Island has made substantial strides towards advancing the coverage of telemedicine services.[1] Despite the state's more supportive policy environment, considerable caveats to coverage and barriers to telemedicine provision and use remain. For instance, the RI Medicaid program reimburses providers for certain telemedicine services, including live video telepsychiatry services, but does not reimburse providers for asynchronous telemedicine nor remote patient monitoring.[1-3] On the private payer side, RI joined the ranks of other states with private payer laws, with the passing of the Rhode Island Telemedicine Coverage Act in 2016.[4] This policy, implemented in 2018, represents a significant step towards supporting the growth of telemedicine services by requiring commercial insurers to provide the same coverage for telemedicine services as they do for in-person services.[4] However, certain aspects of the law have yet to be clarified.[4-6]

For instance, the Telemedicine Coverage Act does not offer specific guidelines about whether health plans may enable limits on coverage for certain telemedicine services.[6] Additionally, the law does not explicitly state that telemedicine services need to be paid at parity with in-person services.[6] Among other states with telemedicine coverage laws, some states, including Minnesota, mandate that Medicaid and private payers must reimburse telemedicine services at the same rates as in-person services.[7,8] This measure to ensure payment parity between telemedicine and in-person services may directly affect whether providers are willing to supply telemedicine visits as well as invest in resources related to telemedicine provision.[9,10]

In addition to these limits to the Telemedicine Coverage Act, there are restrictions for whether RI providers may practice medicine across borders. Currently, RI providers cannot deliver telemedicine services across state borders.[11] If patients are traveling or have moved out of state for instance, then they cannot continue seeing their existing provider via telemedicine. The Interstate Medical Licensure Compact (IMLC) is an agreement between 24 states and one territory that allows licensed physicians to practice medicine across state lines within states that are participants.[12] While several other New England states are part of the IMLC, it is unclear whether RI will join the compact.[11] In 2017, RI lawmakers established a legislative commission to advise on whether RI should be a part of the IMLC.[13] Previously, RI was a member of the Nurse Licensure Compact (NLC), allowing licensed registered nurses to see patients in other states.[11,14] However, as of 2018, RI is not a part of the NLC, and nurses in the state can no longer practice telemedicine across state borders.[11,14]

Whether these policies surrounding telemedicine in RI have impacted its use across different patient populations is unclear. In Minnesota, the Minnesota All-Payer Claims Database (MN APCD) has been used to examine the population-level patterns of telemedicine use across coverage populations.[15] Over the period 2010 to 2015, the volume of telemedicine visits increased sharply, from 11,113 to 86,238 visits, and 26 users per 10,000 enrollees to 113 users per 10,000 enrollees.[15] Nevertheless, only a small minority of the population used any telemedicine, and the majority of this growth is attributed to the increase of direct-to-consumer visits among the commercially insured population in metropolitan areas.[15] Within nonmetropolitan areas, most telemedicine visits were real-time services for mental health care, suggesting that in nonmetropolitan areas, telemedicine may have improved access for specialty care.[15]

Using the newly available HealthFacts RI Database, Rhode Island's All-Payer Claims Database, researchers may begin to track telemedicine use in the state.[16] HealthFacts RI, as a collaboration between the Rhode Island Department of Health, the Office of the Health Insurance Commissioner, the Health Benefits Exchange, and the Executive Office of Health and Human Services, collects de-identified healthcare claims from public and private payers.[16] While RI contains a relatively larger proportion of individuals living in urban areas compared to MN, telemedicine still has the capacity to improve access to care in the state.[17] According to the U.S. Census Bureau, the poverty rate in RI is 11.6%, and 9.3% of the population lives in rural region.[16,18] Additionally, the RI Department of Health reported in 2016 that transportation remains one of the biggest barriers to receiving care for rural residents.[18,19] Local RI organizations determined that 22 percent of individuals had forgone care due to transportation barriers, and for low-income individuals, transportation fares are prohibitively expensive.[19]

Similar to the analyses on the patterns of telemedicine use across privately and publicly insured patient populations completed in Minnesota, there are important questions about how different patient coverage populations use telemedicine in RI that may be explored using the HealthFacts RI. In 2017, the Medicaid program in RI served 32% of the under 65 population, and as of 2011, around 57% of all individuals are covered by private insurance.[20,21] Understanding the underlying trends in telemedicine use across these coverage populations may provide insight into whether the Telemedicine Coverage Act and other policies surrounding telemedicine in RI expanded access to care, particularly in underserved areas. Currently, the evidence in the literature about whether state telemedicine coverage policies drive the provision of telemedicine services is mixed. While several studies in the past few years have found that states with parity legislation have more telemedicine visits, others have found no associations between telemedicine use overall and statewide telemedicine policies.[9,10,22-24] In Minnesota, the Minnesota Telemedicine Act (MTA) mandated reimbursement parity for all healthcare services provided via telemedicine for Medicaid enrollees in 2016, and for commercial beneficiaries in 2017.[25] The MN APCD is being leveraged to compare the volume and breadth of telemedicine utilization across multiple payers before and after the expansion of the telemedicine parity policy.

In addition to understanding how policy changes have impacted telemedicine use in RI, there is a need for researchers to examine how telemedicine can be integrated with in-person care. For instance, the rise of the RI Accountable Entity (AE) Program in the previous few years, forming new Medicaid Accountable Care Organizations (ACO) in the state, introduces opportunities to study telemedicine within the context of a value-based care setting.[26] These ACOs, which are accountable for the quality, utilization and total cost of care for its attributed population, may use telemedicine to maintain continuity of care for high need and high cost populations.[26] Future work should examine if ACOs are increasing their use of telemedicine, and whether integrated telemedicine visits can promote the goals of AEs, including care coordination, addressing the social determinants of health, and reducing medical spending.

Telemedicine also has the potential to address the shortage of mental health providers and complement in-person mental health services, particularly for conditions such as substance use disorders (SUDs). In RI, substance use results in an age-adjusted rate of 26.9 deaths per 100,000 persons, compared to a national average rate of 14.6 deaths per 100,000 persons.[27] There may be a role, therefore, for telemedicine visits for SUD treatment, or tele-SUD, to bridge gaps in care within the state. In a recently published paper using commercial claims data, Huskamp and colleagues found that tele-SUD visits are still very low, but are currently being used to complement in-person SUD care, and have experienced rapid growth in the past decade, increasing from 0.62 visits per 1,000 people diagnosed with SUD in 2010 to 3.05 visits per 1,000 people in 2017.[28] The researchers concluded that the overall low use of tele-SUD visits may be too low given its capacity to improve patient outcomes, and more studies are needed to study the use of tele-SUD in various patient populations in order to guide future legislation surrounding tele-SUD.[28]

To date, the evidence on the use of telemedicine visits across patient populations, its impact on follow-up outcomes, and overall access to care is still limited. There are new opportunities in RI however, to examine the patterns of telemedicine use, and to achieve a better understanding of how telemedicine can support the provision of appropriate, timely, and high-quality care. Leveraging new sources of data in the state and evaluating recent advances in policies such as the RI Telemedicine Coverage Act, will be crucial for informing future legislation that aims to improve the delivery of health care services in the state.

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Why Most of Your Patients Aren't Using an Online Portal, and What You Can Do About It

DENISE ANTHONY, PhD; CELESTE CAMPOS-CASTILLO, PhD

ABSTRACT

Online portals that provide patients with secure access to their medical records and provider communication can improve health care. Yet new technologies can also exacerbate existing health disparities. We analyzed information about 2,325 insured respondents to the nationally representative 2017 Health Information National Trends Survey to examine characteristics of portal nonusers and reasons for nonuse. Sixty-three percent reported not using a portal during the prior year. In multivariable analysis, we found that nonusers were more likely to be male, be on Medicaid, lack a regular provider, and have less than a college education, compared to users. Similar disparities existed in who reported being offered access to a portal, with nonwhites also less likely to report being offered access. Reasons for nonuse included privacy concerns and the desire to speak directly to providers, both of which indicate the important role of the doctor-patient relationship.

KEYWORDS: disparities, health information technologies, portals, privacy

Patient portals, the online tools that offer patients access to their medical records, test results, and online scheduling and secure messaging with their providers, have the potential to improve healthcare delivery. Previous research shows that patients become more engaged in their own health and healthcare when using a portal,[1,2] and better adhere to appointments and treatment.[3,4] Portals can also be good for providers because they can reduce workload and rescheduling time when they enable patient online scheduling.[5,6]

Yet despite significant federal investments to encourage portal adoption,[7] most of your patients are probably not using them.[8] Worse still, there is evidence of disparities in portal use. For example, some studies have found that older patients are less likely than younger patients to use a portal.[9] Other studies show that racial and ethnic minorities, patients with lower income or less education, as well as those with public insurance, all use portals less often than privately insured, higher income, more educated, and white patients.[10,11] Disparities in access to a portal risk widening existing health and healthcare disparities.

Patients may not be using portals for a variety of reasons. Some reasons for non-use are technological, like lack of access to the Internet.[12] Other patients are concerned about privacy,[13] while still others are worried that using a portal might diminish their relationship with their doctor.[14]

Another important barrier to portal use is lack of time for doctors to discuss them with patients.[15] Lack of encouragement from physicians, as well as subtle differences in provider communication that indicate lack of support, can reduce patient interest in using portals and increase disparities.[16]

Given the evidence about real benefits of portal use, and also concerns about disparities, we set out to find out who isn't using patient portals, and why not. Using data from the nationally representative 2017 Health Information National Trends Survey, we found that 63 percent of adults who were insured and made a healthcare visit during the 12 months prior to the survey said they had not used a portal during the preceding year.[17] Even more problematic, we found that nearly half of insured patients say they were not offered a portal by their provider. Nearly all of the portal users (95%) recalled being offered access, but most of those not using a portal said they were not offered access to one (59%). However, being offered access does not guarantee patients will use it; about 2 in 5 of those who were offered access did not use a portal.

Despite the overall low level of portal use, we still found evidence of disparities, by education, insurance type, and to some extent by race and ethnicity. Specifically, men, members of racial or ethnic minority groups, Medicaid recipients, and patients without a regular source of care, were all less likely than their counterparts to be offered access to a portal.

In addition to asking about portal use, the survey asked respondents who said they were not using a portal about 5 possible reasons they were not using one. Patients with Medicaid or Medicare insurance were more likely than those with private insurance to say they were not using a portal because they preferred to speak directly with their doctor. These patients may be worried about misunderstanding information online or they might be concerned that using a portal could interfere with their relationship with their doctor. The survey did not probe further about why patients gave one of the five reasons so more research is needed to understand the underlying concerns. Doctors should

reassure patients that the portal won't change anything about their relationship or their care.

Other patients said concerns about privacy and security of online portals were the reason they weren't using one. Patients who were 40 or older, and some racial and ethnic minority groups, were more likely to say privacy and security concerns were the reason they weren't using a portal. We know from other research that privacy concerns can affect patients' relationships with physicians, including limiting what they share with their doctors and their level of trust,[13,18] so these concerns are important beyond portals.

Finally, and in contrast to some previous research, there were no group differences in reporting that technological barriers were a reason for not using a portal, indicating that disparities in portal use are not because of difference in access to basic technology infrastructure. Instead, the "digital divide" between advantaged and disadvantaged groups today is likely related more to differences in knowledge, skills and comfort in using technology.[19,20]

To ensure that new tools like patient portals benefit all patients and do not exacerbate disparities, it is crucial that doctors and other healthcare providers talk about them with patients. Patients need to be offered a portal with helpful information about how to access it. But even more important, providers must be open to discussing patient concerns about privacy, and about how the portal will and will not change the vital relationship between doctor and patient.

Such interventions require recognition that providers' communication with patients takes time – an extremely scarce resource in clinical practice today. So payers must also recognize and appropriately value the time providers need to spend with patients.

In addition, federal incentives to support the uptake of new technologies like patient portals should be targeted toward supporting disadvantaged patients, instead of the current incentives, which simply require getting any 80% of the patients in your practice to use a portal. The current design of incentives can end up benefiting higher resourced patients more than others.

Finally, for patients to want to use portals, the portal tools must be secure, usable and indeed useful. That means technology designers must have patient needs at the center of their design, and policymakers must set standards for systems to be secure and usable at the same time. With such changes, portals could actually deliver on their promise to improve health care and even help to diminish existing health disparities.

Through ongoing and careful monitoring of who is and who is not using new technologies, and interventions to address why not, we can ensure that technological innovations like portals deliver care improvements while not exacerbating health disparities.

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Direct-to-Patient Telehealth: Opportunities and Challenges

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ABSTRACT

Provision of healthcare services through telehealth continues to increase. This rise is driven by the several factors, such as improved access, decreased cost, patient convenience and positive patient satisfaction. Direct-to-patient (DTP) care delivery is the most popular form of telehealth. However, barriers exist to its widespread use in practice, such as lack of reimbursement, concern that the convenience of these services may raise utilization to the point that spending increases without increasing quality of care, concern about quality of care provided and low uptake by underrepresented or at risk populations. DTP offers opportunities to improve population health and provide value-based care within integrated health systems, but requires thoughtful implementation strategies that address patient and provider barriers to its use.

KEYWORDS: telehealth, direct-to-consumer, direct-to-patient, e-visits, quality

Telehealth encompasses the provision of health services through a variety of information and communication technologies, which can be synchronous (e.g. video visits) or asynchronous (e.g. store and forward of images, remote patient monitoring). Most practices have some experience with the use of phone triage to answer patient concerns, which can also be considered a form of telehealth, although it is not generally denoted as such. Although very convenient for patients and not requiring any new technology infrastructure for practices, it is often not the preferred form of patient contact as it requires trained staff and is often not reimbursed. Current evidence from systematic reviews of telephone triage are not definitive regarding the quality of care provided, outcomes and costs.[1]

The use of telehealth continues to expand, with an estimated 61% of US healthcare institutions and 40–50% of US hospitals using telemedicine in 2016, and projections that in 2020 all large employers will provide coverage for these services.[2,3] Multiple factors influence the increase in telehealth use, such as the potential to decrease costs and increase access to care. Consumer demand is another important driver of use. Multiple studies demonstrate patients using telehealth in general are very satisfied, and are willing to use the services again.[4,5,6]

Although reimbursement has been a barrier to widespread adoption of telehealth, recent changes in Centers for Medicare & Medicaid Services (CMS) payment policies that allow for reimbursements for telehealth services such as Brief Communication Technology-based Service, e.g. Virtual Check-ins (HCPCS code G2012) and Remote Evaluation of Pre-Recorded Patient Information (HCPCS code G2010) potentially herald upcoming changes that will improve reimbursement.[7] Updated codes for remote patient monitoring also have the potential to increase its use for monitoring of chronic conditions (CPT code 99453, 99454, 99457). This could further accelerate the growth of telehealth service delivery.

DIRECT-TO-PATIENT CARE DELIVERY (DTP)

One frequently used modality of telehealth is direct-to-patient care delivery (DTP), also described as direct-to-consumer, which provides care by connecting patients to providers directly. This is currently the most popular form of telehealth, with large growth occurring, and with most of the services being provided by private sector companies instead of health systems or private practices. For instance, Teladoc, a private sector company that provides these services, performed more than 1.46 million visits in 2017, showing an increase of 53% in visits over one year.[8] Similarly, American Well reports over 1.5 million downloads of their service app; MeMD reports 4.5 million users since its founding in 2010, and Doctor on Demand is predicted to reach two million video visits by summer of 2019.[9,10,11] Direct-to-patient care can happen synchronously, through chat or video technologies, or asynchronously, where patients may answer a questionnaire or send in images for the clinician to review at a later time. This asynchronous method is commonly described as e-visits, whose use has expanded due to their convenience and potential cost-saving benefits to patients and health systems.[12,3] However, concerns remain regarding how to provide this type of care while retaining appropriate quality care, care coordination and with avoidance of unnecessary costs. For instance, a study by Usher et al suggests that direct-to-patient telehealth services increases spending by making access to care more convenient, leading to more utilization. It is unclear if this extra utilization improved quality of care for the patients.[14]

QUALITY MEASURES

When quality of care has been evaluated using claims data, direct-to-patient care providers were less likely to order diagnostic testing for strep throat and more likely to prescribe antibiotics for bronchitis than providers seeing patients in physician offices.[15] However, comparisons of antibiotic prescribing for acute sinusitis between DTP telemedicine visits and emergency department and urgent care visits showed similar adherence to choosing wisely antibiotic stewardship guidelines.[16] Similarly, Shi et al also found rates of antibiotic use, broad-spectrum antibiotic use and guideline-concordant antibiotic management between DTP telemedicine visits, primary care visits and urgent care visits were comparable.[17]

Further studies evaluating the impact, costs and quality of care of DTP telemedicine care are still needed. One common approach to evaluation involves assessing the need for follow-up visits after care is provided via an e-visit. Some studies demonstrate follow-ups ranging from 10% to 34%, with some differences probably due to heterogeneity in the populations being served and length of follow-up time assessed.[18, 19, 20] In our recent study published in Health Affairs evaluating follow-up within 2 weeks after an e-visit for the same complaint, 4.4% of 1,465 e-visits completed resulted in follow-up through an in-person visit. Of those patients who were seen in person, 81.5% did not have a change in their diagnosis.[4]

This study also looked at what type of concerns and patient demographics were associated with not being able to complete the e-visit, leading to an in-person visit being recommended by the telemedicine provider. Of 1,565 total e-visits requested, 6.4% were not completed. Men and older adults, as well as patients with diarrhea or skin problems, were more likely to have e-visits not completed. Finally, a survey after the e-visit inquired where patients would have gotten care if the e-visit was not available. Of 665 respondents, only 9% stated they would not have received care, with 49% stating they would go to a physician's office and 42% stating they would have gone to an urgent care center, ED, or retail health clinic. Although self-report of intention is subject to bias, this suggests that costs were avoided through the use of these visits. These results were found in the context of providing e-visit virtual acute care within a coordinated system of care, where e-visit, ambulatory and inpatient care providers all utilize the same electronic medical record system when providing care, allowing for seamless information exchange. It is unclear whether similar results occur when care is provided with unrelated platforms and electronic medical records, where the patient would be required to input their medical history for review. It is also unclear how often care provided through DTP telemedicine platforms is shared with the patient's primary care provider to enable care coordination.

The use of DTP telemedicine care within value-based care also warrants further evaluation. When provided without appropriate care coordination, it may be helpful if it decreases costs through avoidance of in-person visits, especially to higher cost areas such as the emergency department or an urgent care center. The increased access available through telemedicine might also facilitate care earlier during the course of an acute problem or chronic disease exacerbation, thereby avoiding more costly care due to disease progression. However, if it replaces preventive or primary care visits where preventive measures are discussed and provided (e.g. influenza and pneumonia vaccinations, cervical cancer screening, or screening for sexually transmitted infections), it could be disruptive in a way that decreases the quality of care provided. This concern is described in a study looking at use of commercial DTP telemedicine for pediatric acute visits, which found those using these services were less likely to have had preventive care visits.[21] Similarly, chronic care exacerbations might be best addressed by a provider who has a continuity relationship with the patient, in order to ensure appropriate changes are made to their medication regimen to try to avoid future exacerbations. Encouraging continuity of care when providing telemedicine services is in line with survey results from 4,345 respondents, where more than half (56%) felt it was important to have an established relationship with a provider they're having a telemedicine visit with.[23] Understanding the risks and benefits to patients and their care coordination and continuity of care might better allow for the development of telemedicine programs that enhance care more broadly without significantly decreasing continuity of care.

POPULATION HEALTH

The use of telemedicine holds great potential to improve health promotion due to its ability to reach populations that may not currently be accessing services on a regular basis (e.g. younger adults, those living in rural areas, or adults without chronic conditions). Thus, to improve population health, methods to best encourage needed preventive services when a patient's main interaction is through DTP telemedicine care should be identified and implemented.

It is also important to note that studies looking at patient demographics regarding the use of information technology and telemedicine suggest underrepresented groups are not being reached, which could expand health disparities that already exist. For instance, Anthony et al found racial disparities in patients being offered access to online patient portals, with Non-Hispanic blacks having higher odds of not being offered access when compared to non-Hispanic whites (OR: 1.73). Non-users of the portal were more likely to be on Medicaid, lack a regular provider, and have less than a college education.[23] In general, the populations using DTP telemedicine services appear to be younger adults.[4] Methods to improve uptake of services by underserved population should also be a priority as telemedicine services continue to expand.

CONCLUSION

In conclusion, DTP telemedicine provides opportunities to improve access and convenience for patients, and has the potential to provide interactions with populations that are not currently accessing health care regularly. It can be successfully implemented in ways that limit costs and improve care. However, its use will require continued improvement in reimbursements for the care provided, as well as overcoming patient and provider barriers to the uptake of new technology and modes of care. We believe its use will continue to expand, and would like to see it used more effectively in the care of chronic conditions and for preventive care provision. These use cases for DTP telemedicine might be the ones best suited to improve quality of care and decrease costs, and warrant further study to identify best practices.

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A Case of Vaping-Associated Lung Injury in Rhode Island

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ABSTRACT

The Centers for Disease Control and Prevention (CDC) is currently investigating a nationwide outbreak of e-cigarette, or vaping, associated lung injury (EVALI). The objective of this case report is to review a suspected case of EVALI in Rhode Island and discuss how to identify and manage this condition.

KEYWORDS: e-cigarettes, lung injury, EVALI (e-cigarette associated lung injury), vaping, respiratory failure

INTRODUCTION

The Centers for Disease Control and Prevention (CDC), the Food and Drug Administration (FDA), and state and local health departments are currently investigating a nationwide outbreak of e-cigarette, or vaping, associated lung injury (EVALI).[1] This widespread outbreak has been observed in all 50 states, the District of Columbia, and the US Virgin Islands and Puerto Rico. As of December 27, 2019, a total of 2,561 cases and 55 deaths from e-cigarette, or vaping, product use-associated lung injury (EVALI) have been reported to the US Centers for Disease Control.[2] In this article we report a suspected case of EVALI in Rhode Island and discuss how to identify and manage this condition.

CASE PRESENTATION

An 18-year-old male with past medical history of major depressive disorder and cannabis use disorder on maintenance therapy with risperidone and fluoxetine presented to the Emergency Department with two weeks of progressive shortness of breath. At baseline he was very active, regularly running and partaking in parkour; however, he had spent the majority of the preceding two weeks in bed due to breathlessness. One month prior to his presentation he had been hospitalized with acute psychosis attributed to cannabis use. He was discharged to a partial hospital program for intensive daytime treatment of his acute psychiatric concerns; however, he only attended two sessions prior to quitting the program. Three days before admission he was seen in the emergency department for severe nausea and vomiting and discharged home on omeprazole. On the day of admission, his brother called EMS after noting him to be breathing very rapidly in his sleep.

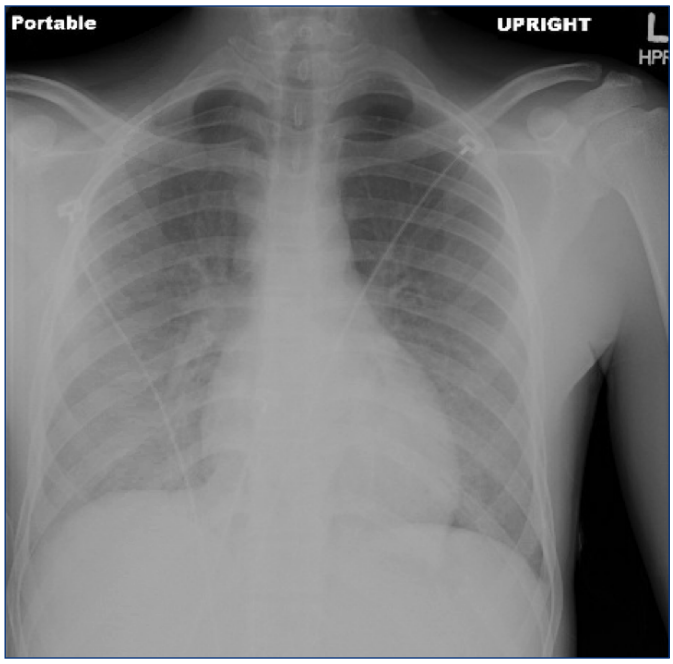

Figure 1. A portable AP Chest Radiograph on admission showing moderate bilateral pulmonary infiltrates.

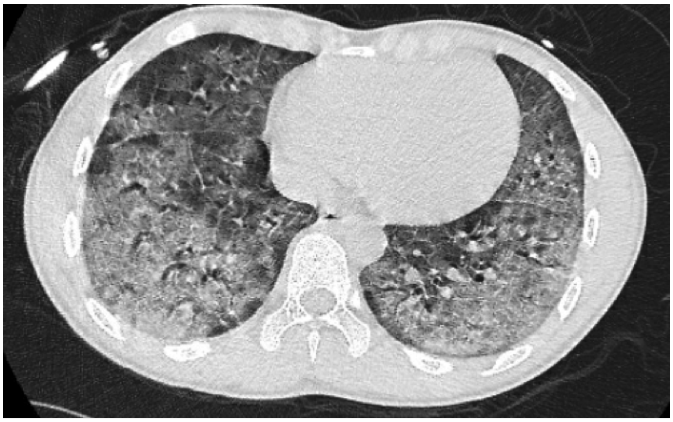

Figure 2. High Resolution Chest CT showing diffuse bilateral ground glass opacities predominantly involving the mid and lower lung zones.

At presentation, the patient was noted to be a thin young man in clear respiratory distress with increased accessory

muscle use. He had nasal flaring and was only able to speak in short sentences. His initial vital signs were temperature 100.1 F, BP 126/74, HR 104, RR 28, and O2 saturation 85% on room air. On interview, he stated that he vaped tetrahydrocannabinol (THC) products obtained on the street all day long. He used a vape pen and went through approximately 4 cartridges per day. He was unsure where his contacts obtained the oil cartridges, or what else they contained apart from THC. He was not using any commercially branded or flavored products available for retail purchase. He did not vape nicotine products, only THC. He noted that he had recently dropped out of school and was working as a clerk in a pharmacy. He grew up in East Africa before moving to the United States at age 8. Significant laboratory values on presentation included leukocyte count of 13,700 per mL, hemoglobin of 10.8 g/dL (baseline 11-13 g/dL), mean corpuscular volume of 79.5 fL (baseline 72-80 fL), ESR of 130 mm/hr and CRP of 382 mg/L.

The admission chest X-ray showed moderate diffuse interstitial prominence and a high-resolution chest CT showed diffuse bilateral ground glass opacities predominantly involving the mid and lower lung zones (**Figures 1 and 2**).

HOSPITAL COURSE

The patient was admitted to a medical step-down unit on 2L/min supplemental oxygen via nasal cannula. Treatment for presumed community acquired pneumonia was initiated with Ceftriaxone and Azithromycin. Molecular PCR performed on a nasopharyngeal swab was negative for influenza A/B, respiratory syncytial virus A/B, adenovirus, rhinovirus/enterovirus, parainfluenza 1–4, and coronaviruses. A pulmonary consultation was obtained. The differential for the patient's acute respiratory failure included infection (community acquired bacterial pneumonia, undetected viral process, Aspergillus, Pneumocystis Jirovecii), inflammatory disorders of the lung (pneumonitis, ARDS, non-specific interstitial pneumonia, EVALI or other inhalant lung injury, pulmonary hemorrhage, autoimmune disorder) and medication effect (risperidone is rarely associated with eosinophilic pneumonia,[3] and fluoxetine is rarely associated with an ARDS-like syndrome).[4] Further diagnostic testing was sent, including HIV assay, urine legionella antigen, blood smear, sputum and blood gram stain and cultures, and a toxicology screen.

On hospital day 1, the patient developed a fever to 103.7 F and increasing supplemental oxygen requirement to 100% FiO2 at 25L/min via high-flow nasal cannula, with respiratory rate 45 breaths per minute. He was transferred to the ICU, intubated, and placed on mechanical ventilation for worsening hypoxic respiratory failure. Bronchoscopic examination to the subsegmental level bilaterally revealed normal appearing airways without mucus or hemorrhage. Three serial bronchoalveolar lavages performed in the right upper lobe yielded diagnostic samples showing clear, non-bloody fluid, ruling out diffuse alveolar hemorrhage. Samples were sent for bacterial culture, basic microbiology, and cytopathology. The patient was successfully extubated several hours after the bronchoscopy. His supplemental oxygen requirement decreased to 40% FiO2 at 8L/min via high flow nasal cannula by hospital day 2.

Results of diagnostic testing as detailed above were unrevealing, with negative HIV assay, urine legionella antigen, blood smear, sputum and blood gram stain and cultures. Toxicology screen was positive for cannabinoids. BAL studies showed no evidence of infectious organisms or malignancy and were negative for eosinophils, herpes simplex virus, cytomegalovirus, acid-fast bacilli, and galactomannan. Cytology showed reactive bronchial cells, pulmonary macrophages, and acute inflammation. Because bronchoscopy results were suspicious for a non-infectious process,[5] empiric IV steroids were initiated in addition to continuation of empiric antibiotics.

On hospital days 2–5 the patient was maintained on supplemental oxygen, empiric antibiotics, and IV steroids. He became afebrile by hospital day 3 and his oxygen requirement slowly weaned to room air. He was discharged home on day 5 with a short oral steroid taper. The autoimmune panel returned after his discharge and showed a very mildly positive ANA and anti-RNP titer not thought to be clinically significant. He was also diagnosed with sickle cell trait (Hb AS) by hemoglobin electrophoresis during his hospital stay. While HbAS has been reported to rarely cause acute chest syndrome,[6] we do not believe that this was the cause of his acute illness.

The patient was discharged home with outpatient follow-up and counseling for abstinence of THC vaping. He was able to follow up with his behavioral health provider and reported that he had been unable to stop vaping. He did not follow up with pulmonary. He revealed insight into the negative effects vaping was having on his health, finances, depression, and stress and continues to work with his PCP to quit.

OUTBREAK DISCUSSION

Electronic cigarettes, introduced to the US market in 2007, have often been marketed as a safe alternative to smoking and for smoking cessation[7] without clear evidence to support these claims. Starting in the fall of 2019, a national outbreak of a life-threatening respiratory condition termed e-cigarette, or vaping, associated lung injury (EVALI) has been widely reported. Information about this outbreak has been moving rapidly and the CDC is working closely with state health departments to investigate possible cases and provide public outreach. As of December 27, 2019, a total of 2,561 cases and 55 deaths from e-cigarette, or vaping, product use-associated lung injury (EVALI) have been reported in the United States, Puerto Rico, and the US Virgin Islands. Seventy-eight

percent of the patients were less than 35-years-old; however, ages ranged from 13–77 years old. Data does suggest that the outbreak might have peaked in mid-September; however, new cases continue to be reported.[2]

The case was reported to the RI Department of Health and treated as a probable case of EVALI. As of January 16, 2020, Rhode Island has six probable/confirmed cases of EVALI reported to the CDC. All six cases were discharged home after the hospitalization for EVALI and one of the six cases subsequently passed away. The extent to which EVALI contributed to the cause of death is unclear and remains a continued area of focus for the CDC. Please see the most recent RIDOH Provider Advisory [https://mailchi.mp/health/january2020_evali_cdc_guidance_updates] for additional information and details.[8]

There may be more than one underlying cause of EVALI. E-cigarettes and their contents are very heterogeneous (more than 460 legal brands of e-cigarettes and more than 7000 flavors have been described),[9] with many more counterfeit and THC-containing products available. Overall, more than 150 different THC-containing products have been reported by the CDC in EVALI patients. This has led to broad regional differences regarding use across the country; therefore, it is not likely that one product brand can be implicated. Lung biopsies from patients with EVALI have shown a variety of histopathologic findings including acute fibrinous pneumonitis, diffuse alveolar damage, organizing pneumonia, interstitial edema and intra-alveolar fibrin accumulation.[10] Most recently, Vitamin E has been identified in the BAL samples of many cases of EVALI and has been suggested as a cause,[11] but there are many different substances that are being investigated, and there may be more than one cause. Of note, commercially available, legal THC-containing products seem not to contain vitamin E.[12]

CONCLUSIONS

In patients with new pulmonary infiltrates, shortness of breath, gastrointestinal and/or constitutional symptoms, EVALI needs to be considered. Health care providers should ask about the use of e-cigarette or vaping products, and should do so in a confidential and non-judgmental manner, especially with adolescents and young adults.[13] It is also important to note that patients who use e-cigarettes may not identify with that term and may deny e-cigarette use. Instead, they may endorse using e-hookahs, "mods", vapes or vape pens, tank systems, electronic nicotine delivery systems (ENDS), or a brand name product, such as JUUL. In this case report, detailed information about the source and type of THC-containing product was not readily available; every effort should be made to characterize the exact product via a detailed social history.

In most cases, health care providers should evaluate for causes of community-acquired pneumonia and consider treatment according to established guidelines. Additional microbiology testing, including influenza testing and viral panels should also be conducted, especially during influenza season. Published reports of hospitalized patients with EVALI have commonly reported elevated ESR, CRP and total leukocytes, but no eosinophilia.[14] Many have reported rapid improvement with the use of corticosteroids,[15] so their use should be strongly considered. It might be advisable to hold corticosteroids while evaluating patients for infectious etiologies that might worsen with corticosteroid treatment. Some patients in the above studies improved without the addition of corticosteroids, with just supportive care and withdrawal of the vaping products.

Of course, advising patients to discontinue use of e-cigarette, or vaping, products is essential. Inhaled marijuana formulations are clearly associated with more acute illness than edible formulations,[16] so there may be a role for edible formulations to help reduce overall use. Patients with ongoing use causing impairment or distress might have a cannabis use disorder and may benefit from consultation with addiction medicine services.

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A Statewide Cross-Sectional Survey of School Nurses' Knowledge and their Role in the Management of Concussed Students

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ABSTRACT

The school nurse plays a vital role in reintegrating the concussed student into the academic environment. The objective of our survey study was to understand the self-reported level of knowledge of school nurses regarding the diagnosis and management of patients presenting with symptoms of concussion, what responsibilities they have to the concussed student, and to identify the educational resources used. We had a 91.7% response rate and found that most school nurses did not learn about concussions in nursing school; 85% used the CDC HEADS UP website as their educational resource, and the majority reported their knowledge level as fair and wanted more information. Furthermore, 81% took care of at least one concussed student during the past 3 months, 78% had managed the return-to- learn protocol, and 40% managed the return-to-play protocol. Areas for improvement are highlighted and preferred methods to educate were surveyed.

INTRODUCTION

According to the CDC, the rate of the diagnosis of concussion in school-aged children is rising, and the majority of these injuries are sustained off the playing field.[1] Despite this increase, it is believed that the actual incidence of concussion is still underestimated.[1,2]

While an athletic trainer can manage injuries sustained by students during school-sanctioned events, most students in the United States do not have access to this resource.[3] Fortunately, all students, regardless of school setting have one consistent health care provider – the registered professional school nurse (heretofore referred to as school nurse). For this reason, the school nurse plays a pivotal role in identifying potentially concussed students, making appropriate referrals, and managing academic and athletic reentry.[4-6]

In an effort to better support the concussed student, Rhode Island passed the School and Youth Programs Concussion Act (16-91-3) in 2014, requiring the education of school nurses regarding the signs and symptoms as well as management of concussed students. The goals of our cross-sectional study were to try to gain an understanding of the impact of the mandate on the school nurses. We aimed to determine the self-reported level of concussion knowledge, resources used to learn about concussions, preferred method of learning, volume of students managed, and required tasks when caring for concussed students. In doing so, we aimed to identify gaps that required intervention to help support the nurse in their growing role in managing the concussed student.

Surveys have been used previously to catalyze broad changes in the field of concussion management. Using a survey, Washington State was able to identify system issues surrounding the care of the concussed student, including a lack of standardized school policies regarding academic accommodations, which informed the creation of a statewide return-to-learn guidelines and training programs.[7] While some Rhode Island schools and interscholastic athletic leagues may provide their own guidelines, there is currently no statewide approach to the reintegration of a concussed student.

METHODS

Participants and Procedure

During the annual mandatory statewide Rhode Island Certified School Nurse Teacher Association meeting, the authors presented a lecture on the identification and management of the concussed student, as well as standardizing the reintegration of students into the academic environment. Before the lecture, using PollEverywhere™, school nurses were consented into the study and then answered a series of questions. The nurses were able to respond to the questions using their cell phones or iPads and data was captured in real time. Participants were only able to respond once to the questions, with a few questions allowing for more than one answer. To address the technological acumen of the audience, there were a few participants (<5) who were not able to use their cell phones to text their responses, and these participants were instructed to write their answers and submit these to the PI. Participants were explicitly told to only participate in one platform. Finally, the survey was converted to a survey using SurveyMonkey and sent via email to the listserv of school nurses to obtain responses from those nurses who were unable to attend the mandatory conference. It was reiterated that the nurses were only to participate in one platform.

Instrument
The survey contained questions assessing concussion management knowledge and clinical practice in managing concussed students. Additionally, we asked respondents about their preferred learning platform for receiving continued medical education. Personal identifiers were not obtained. The survey can be made available upon request from the first author (NR).

Human Subjects Approval
This study was approved by the Institutional Review Board at Rhode Island Hospital.

Data Analysis
The survey data was transferred to Excel (Microsoft Corporation, Version 14.6.7) for analysis. Descriptive data is reported as frequency with relative percentages.

RESULTS
The Rhode Island Certified School Nurse Teacher Association is the accrediting association for school nurses in the state and has 205 members, including members in both rural and urban areas and spanning the educational spectrum from elementary school through high school.

Characteristics of the Participants
We received responses from 188 school nurses of the 205 school nurses in the state (91.7%). All of the nurses who attended the conference responded. 180 of these responses were submitted during the meeting while 8 responses were submitted afterwards. The majority of respondents were based in elementary school (n = 89, 47.3%), followed by high school (n = 55, 29.3%), and middle school (n = 44, 23.4%).

Concussion Knowledge
As illustrated in **Table 1**, the majority of the nurses (69.1%) reported that they did not learn how to diagnose or manage a concussion in nursing school, and acquired their knowledge with supplemental training. The most common resource used for this further training was the CDC HEADS UP website (85.1%). However, despite supplementing their knowledge with external resources, 69% of the participants still self-rated their diagnosis and management skills to be 'Fair' (n = 130, 69.2%) and wanted more educational resources.

Table 1. Concussion knowledge and training of sample

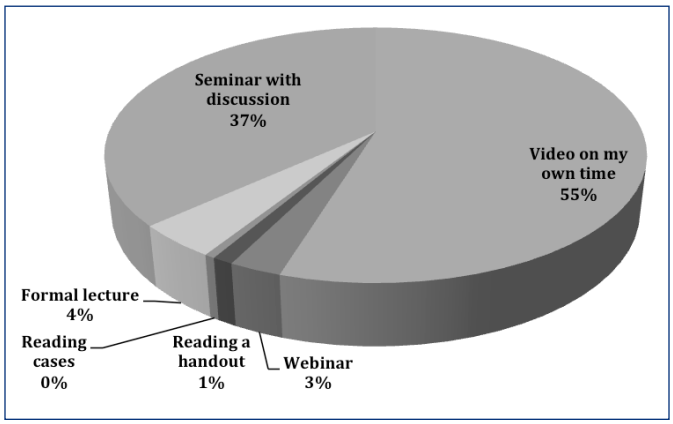
Learn in nursing school n (%)	Further training n (%)	Rate knowledge n (%)	*Knowledge resources n (%)
Yes: 58 (30.9)	Yes: 170 (90.4)	Poor: 25 (13.3)	CDC website: 160 (85.1)
		Fair: 130 (69.2)	NFHS website: 0
		Good: 30 (16)	Other: 40 (21.3)
		Great: 3 (1.6)	

*Could select > 1 response

Clinical Practice
Most nurses reported that they had provided clinical care for a concussed student in the past three-months (81%) and with 48.9% of these providing care for between 1–4 students in that time period. The majority of nurses (78%) provided oversight of the return-to-learn process for concussed students, and 40% also reported overseeing the return-to-play recommendations. The majority of nurses (75%) reported that they were tasked with the administrative task of collecting and filing the physician issued return-to- learn and clearance forms from the concussed student. Currently, the ability to estimate the true incidence of concussion remains a challenge, as there is no statewide database for concussed students.

Learning Platform
The type of learning platform preferred by the school nurses was also queried (**Figure 1**). They overwhelmingly stated that video learning or seminars with case based discussion (92%) was their preferred learning format.

Figure 1. Reported Preferred Learning Platform



DISCUSSION
Sport-related concussion has been the subject of great attention in recent years; however, more than half of traumatic brain injuries in those ≤14 years old occur off the sports field.[1] While some high school athletes have the luxury of an athletic trainer to help orchestrate the day-to-day reintegration of cognitive and physical activities of the student while in school, the majority of students do not have access to an athletic trainer. The student's outpatient health care provider, when available, can make the diagnosis, and offer counseling to the student and the guardian; however, much of the onus of the daily management of the concussed student in the school environment rests with the school nurse.[5,6]

As is delineated in the Position Statement by the National Association of School Nurses, the school nurse is the healthcare provider in the academic setting, and plays an important role in facilitating the integration of the concussed student back into the academic environment.[8-13] A concussion affects executive function,[14] which includes working memory and cognitive flexibility and is required for successful planning and fluid intelligence. The negative effects of a concussion on executive function are especially pronounced in younger patients. As outlined by the CDC's return-to-learn guidelines, students are encouraged to return to the classroom in a graded fashion after a short period of cognitive rest and in accordance with the guidelines set by the Consensus statement on Concussion in Sport.[15-17] During reintegration, students report to the school nurse often on a predetermined timetable (hourly, daily, weekly) to assess and manage exacerbation of symptoms. The school nurse works with the administration, guidance counselors, teachers, and all other members of the academic team to orchestrate real-time accommodations to balance a progression of cognitive exertion with symptoms. Additionally, the school nurse can offer feedback to the outpatient health care provider with the goal of having the student re-enter the academic environment to the pre-concussion level of activity efficiently and successfully.[8]

In addition to the roles outlined above, our survey found that nurses were also tasked with taking on roles for which they felt they were not adequately trained. We found that nurses at all levels are being tasked with supervising the return-to-play (RTP) protocol, a task normally done by an athletic trainer. Certified athletic trainers (ATCs) receive many hours of didactic and sideline education in the diagnosis and management of the concussed athlete. In schools with ATCs, these professionals often guide the student through the return-to-play protocol.[12,13,18] Given that school nurses do not have the educational background to execute the return-to-play protocol as ATCs, it is reasonable that when available, the school nurses relies on the ATC for this. Furthermore, it was even found that school nurses who worked with an athletic trainer were more familiar with academic accommodations than those nurses who did not.[19] As ATCs are not available to every concussed student, this highlights an area of educational intervention, especially for those nurses without access to an ATC. [20]

The CDC HEADS UP website was the resource most utilized by school nurses to educate themselves about concussion; however, the majority still rated their knowledge only as fair. As educational programs are being created for the school nurses, they vocalized a preference for educational videos that could be viewed on their own time and participating in a case-based seminar with the opportunity for discussion. Currently, there is no formal return-to-learn protocol in the state of Rhode Island. Future educational resources that target school nurses should reflect this.

LIMITATIONS

There are several potential limitations with this survey study. The participating nurses across this state may not represent the nation's school nurses. While other studies around the country suggest the same knowledge deficit among school nurses, further studies will be needed to examine whether these self-reported deficiencies is a nationwide problem. As it stands however, it seems that a national educational program targeting school nurses would be well received. We achieved a very high rate of response (91% of school nurses) but in an effort to obtain as many respondents as possible, we offered multiple modalities to respond. Given these parameters, it is possible that participants could have responded using more than one modality even though they were instructed not to, contributing to bias. Furthermore, we note that while most of the nurses did answer the surveys, we did not achieve a 100% response rate, which may contribute to bias. The experimental design and environment we chose to distribute the survey could have introduced a change in behavior simply as a result of being asked. There was no way to eliminate or measure this but our research protocol was designed to be unobtrusive. Given the novel platform to conduct the survey, the audience seemed enthusiastic to participate.

CONCLUSION

The role of a school nurse continues to evolve as they are now asked to oversee the concussed student's return to both the classroom and the playing field. The increasing awareness of concussion and the concomitant increase in students being diagnosed with a concussion requires that school nurses, who play an instrumental role in the reintegration of the concussed student back into school and athletics, be offered continuing education as new research is available. This study highlights a lapse within the school healthcare system, and efforts should be and can be reasonably made to remedy this in order to improve the care of concussed students.

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Mapping the Opioid Epidemic in Rhode Island: Where Are We Missing Resources?

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ABSTRACT

Opioid overdose deaths have been rising steadily over the past decade in Rhode Island (RI), and although deaths have decreased slightly over the past year, there were 314 deaths in 2018 and there have been 208 deaths in the first 9 months of 2019.[1] The objective of this spatial study is to identify the RI regions with the greatest need for opioid emergency response and rehabilitation resources. Using geographic information systems (GIS), we identify areas in RI with high overdose rates and that are far from emergency departments, and areas with high rates of treatment admissions that are far away from Centers of Excellence (COEs) which provide effective medication-assisted treatment (MAT). Ultimately, we identified Burrillville, Coventry, Bristol, and Portsmouth as towns needing more emergency resources and Western Hopkinton, Western Richmond, and Western Scituate as areas needing more high-quality rehabilitation resources. These findings should inform future decisions when considering new locations for COEs or emergency resources to respond to the Rhode Island opioid epidemic.

KEYWORDS: opioid, overdose, MAT, GIS

INTRODUCTION

Even with a recent modest decrease in overdoses, opioids remain the leading cause of death in RI.[2] Policy makers and healthcare workers are working hard to combat the epidemic by increasing the availability and quality of resources for people with opioid addictions. People with opioid use disorders can seek chronic addiction treatment at behavioral health organizations (BHOs) and acute treatment at emergency departments (EDs). Some BHOs provide MAT, a treatment regimen with FDA medications approved for use in opioid disorders, including methadone, buprenorphine products and naltrexone. MAT has been proven to increase retention in treatment, improve social functioning, and decrease risk of fatal overdose by 50% among patients.[3] Even though MAT has proven to be effective, fewer than 1 million of the 2.5 million people in the US with opioid use disorders receive MAT.[4] Appropriately, providing access to MAT is a key objective of RI Governor Gina Raimondo's plan to tackle the RI opioid epidemic.[5] For acute treatment, opioid overdoses are treated by the administration of naloxone, a drug that binds to opioid receptors in the brain.[6] Naloxone can be administered by emergency medical technicians or by anyone who purchases it at a pharmacy, but patients who have received naloxone during an overdose should be subsequently evaluated in an emergency department. To address the opioid epidemic, it is important to consider both the accessibility of treatment for addiction and accessibility of emergency response for overdose. The aim of this spatial study is to determine areas which may need more rehabilitation or emergency resources for resource allocation planning: areas which have high BHO usage and high distance from COEs providing MAT, and areas which have high distance from EDs with high overdose rates.

METHODS

Opioid Emergency Response Needed Resources

Needed opioid emergency response was assessed by: 1) mapping overdose rates per 100,000 RI population, and 2) mapping emergency treatment resources. Overdose rates by town from 2014–2017 were taken from Rhode Island Department of Health (RIDOH) data published online.[7] Population estimates for zip codes in RI from 2012–2016 were taken from the National Historical GIS Database.[8] Addresses of emergency departments were provided by Rhode Island Geographic Information System (RIGIS) and verified by Google Earth.[9,10] Because anyone treated for an overdose should be evaluated in an emergency department, we defined access to treatment for overdoses as access to an emergency department, not access to naloxone. Behavioral Healthcare Link (BH Link) is a new facility in East Providence offering care to people with substance or behavioral healthcare emergencies and was created in partnership with the RI Department of Behavioral Healthcare, Developmental Disabilities and Hospitals (BHDDH). Since BH Link is open 24/7 and has the capacity for clinical assessment, emergency medication prescription, and crisis management, we included it in the emergency resources for people with opioid use disorders.[11] Between BH Link and various EDs, we identified 13 emergency treatment facilities in RI. Distance to the nearest ED in miles is shown in **Figure 1**, and overdose rates by town are shown in **Figure 2**.

Figure 1. Distance to the nearest ED in miles

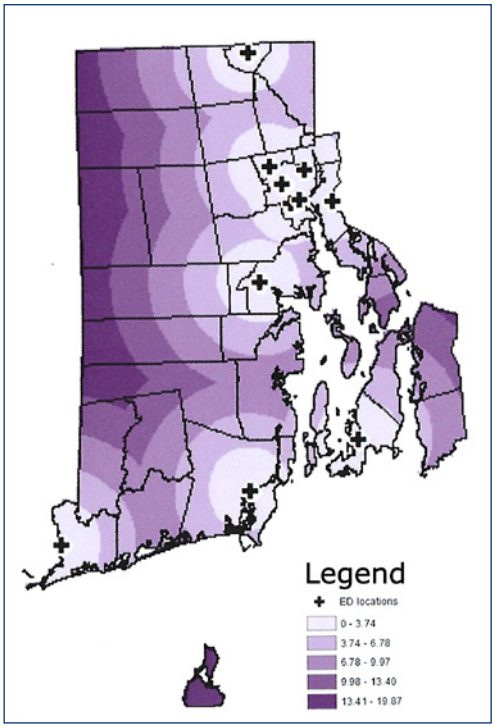


Figure 2. Overdose rates by town

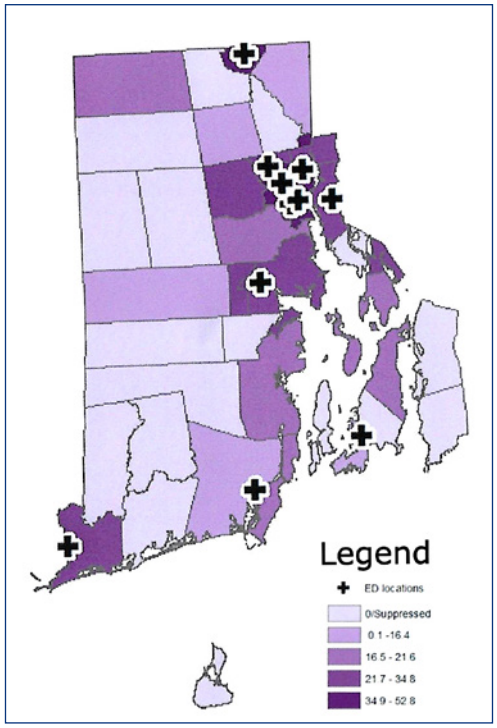
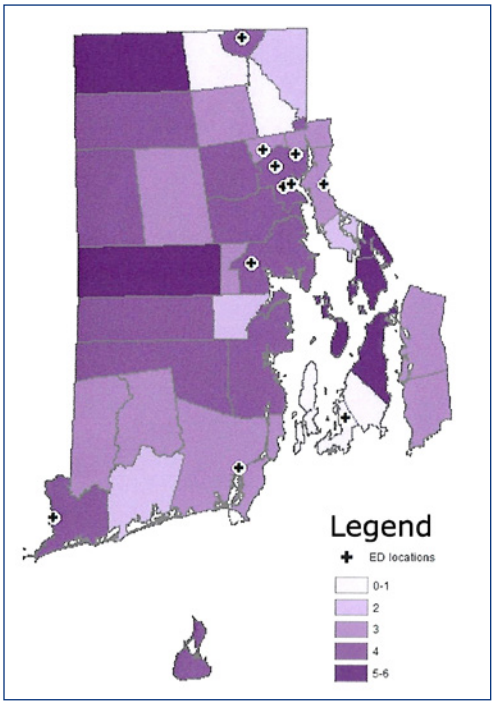


Figure 3. Risk score by town based on distance to the nearest ED and overdose rate



To address emergency resources, we calculated the maximum distance to an emergency department from each town by using an ArcMap "zonal statistics" tool and divided these maximum distances into quintiles. We numbered these quintiles to create a distance "score" for each town for 0–4, with 4 being the highest distance category. We then assigned each town a score of 0–4 based on quintiles of overdose rates, with 4 being the highest category of overdose rate. To obtain an overall risk score, we summed the distance scores and the overdose scores for each town, so that towns with the highest risk score had the largest distances from emergency departments and highest overdose rate to create a map which approximated need for additional emergency resources by town. Risk score by town based on distance to the nearest ED and overdose rate is shown in **Figure 3**.

Needed Opioid Treatment Resources

Needed opioid treatment resources were assessed by: 1) mapping opioid use disorder treatment rates per 100,000 RI population, and 2) mapping COE treatment resources. Data for BHO usage for opioid use disorder was obtained from BHO data in files provided by the Rhode Island Department of Behavioral Healthcare, Developmental Disabilities, and Healthcare (BHDDH).[12] BHO usage was calculated as unique individuals served for opioid use disorder by zip code during 2012–2016 fiscal years. Rates in each zip code were calculated based on population estimates for RI in 2012–2016.[8] When evaluating access to high quality care, we chose to use only rehabilitation centers designated to be Centers of Excellence (COEs) by the BHDDH. For a BHO to be certified as a COE by the BHDDH, it must offer MAT, individualized care for patients with a range of treatment options, low wait times, and comprehensive patient and family education programs as well as support resources for patients who are referred into the community.[2] Currently, there are 14 COEs offering MAT in RI, and this project aims to identify areas where more COEs may be needed. Addresses of COEs were provided by BHDDH in a word file.[12] Distance to the nearest COEs in miles is shown in **Figure 4**, and rates of BHO usage per zip code are demonstrated in **Figure 5**.

To address rehabilitation resources, we followed a similar procedure as for emergency resources. We calculated the maximum distance to the nearest COE from within each zip code using the "zonal statistics" tool and divided this into quintiles to give each zip code a distance score from 0–4 with 4 being the highest distance. Finally, we assigned each zip code a BHO usage rate of 0–4 based off quintile rates of BHO usage, with 4 being the highest rate category. We added the distance scores and the BHO usage scores to create an overall "risk score" where zip codes with high-risk scores have high distances to COEs and high BHO-usage rates to create a map which identifies zip codes that would be ideal for new COE locations. Risk scores per zip code based on BHO usage and distance to COEs are shown in **Figure 6**.

All data analyses were performed in Microsoft Excel version 5.3, Google Earth, ArcMap version 10.6.1, and Stata version 14.[10,13,14]

Figure 4. Distance to the nearest COEs in miles

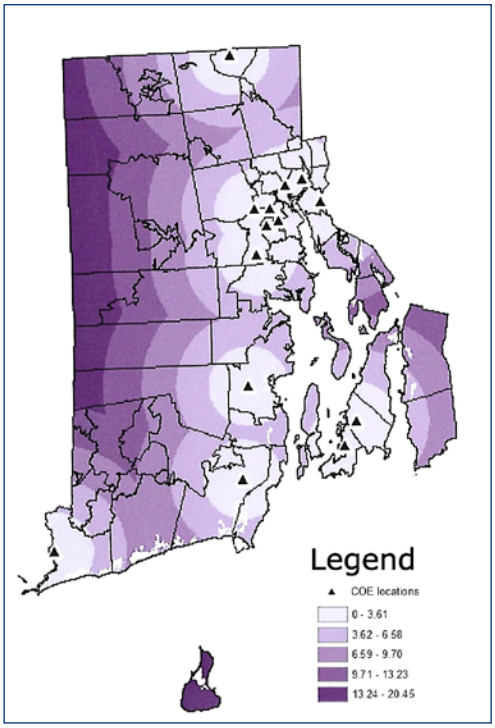


Figure 5. Rates of BHO usage per zip code

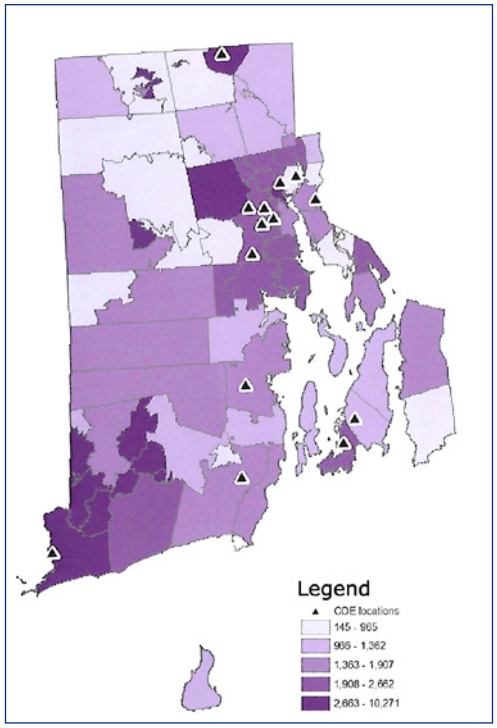
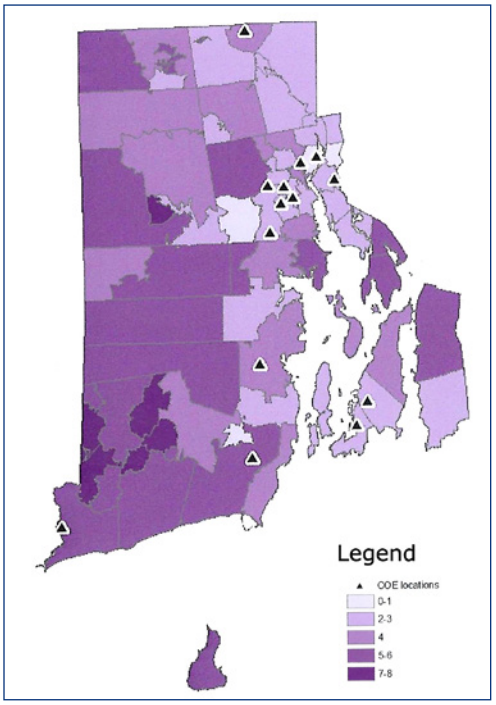


Figure 6. Risk scores per zip code based on BHO usage and distance to COEs



RESULTS

After analyzing overdose data from 2014–2017, the towns with the highest risk scores based on distance to emergency departments and overdose rates are Burrillville, Coventry, Bristol, and Portsmouth. When analyzing BHO usage rates for individuals served by BHOs in 2012–2016, the areas with the highest risk scores based on BHO usage rates and distance to COEs are Western Hopkinton, Western Richmond, and Western Scituate. Specifically, these are zip codes 02804, 02808, 02894, 02898 and 02815.

DISCUSSION

There has been an influx of funding and resources allocated in the RI state budget to combat the opioid epidemic: Gov. Raimondo's Overdose Prevention and Intervention Action Plan includes $4 million in funding to expand access to MAT, and her 2017 executive order aims to improve the rescue and treatment action recommendations by the Overdose Prevention and Intervention Task Force.[5] Although motivation and funding to fight the epidemic is clear at the state level, besides publishing overdose rates by town there has been minimal spatial analysis of the crisis to show where resources would be best implemented. Identifying areas which have the greatest need for resources can help guide the allocation of funds dedicated to the opioid crisis. For example, in Providence there are currently 12 "safe stations," which are fire departments specially designated as resources to connect people with opioid use disorders to care.[15] If these safe stations are used as intended and function as effective emergency resources for people using opioids, more fire stations could be designated as safe stations in areas lacking emergency resources such as Burrillville, Coventry, Bristol, and Portsmouth. However, more evaluation of the efficacy of safe stations is needed before their potential expansion. Additionally, in areas like Western Hopkinton, Western Richmond, and Western Scituate where BHO usage rates and distance to COEs are high, it would be beneficial to begin the process of upgrading BHOs in those areas to COEs.

There are several reasons why spatial analysis is important in fighting the opioid epidemic in RI. First, RI is geographically diverse and contains rural, suburban and urban areas. Rural and urban communities can have vastly different health-risk profiles for residents and accessibility of healthcare resources, so when offering solutions for health crises in RI it is important to keep these differences in mind. On average, people with opioid use disorders residing in rural areas need to travel farther to emergency resources, have lower incomes, and are less likely to be insured when compared to people who use opioid disorders in urban areas.[16]

Secondly, distance to both emergency and rehabilitation resources affects outcomes in patients with opioid use disorders. With opioid overdose, brain damage due to hypoxia can occur after just five minutes, so administration of naloxone in this time period is critical.[17] Even though naloxone can be administered outside of an emergency department, naloxone has a short half-life of 60–90 minutes and is metabolized faster than almost all opioids, so re-overdose is possible

after the administration of naloxone.[18] Due to the possibility of re-overdose and possible complications from initial overdoses, being seen at an emergency department immediately after an overdose is essential and high distances to emergency departments can increase the risk of death from an overdose.

Studies show retention in treatment is an essential determinant in recovery from substance abuse, and additionally show correlation between the distance a patient needs to travel to a rehabilitation center and retention. Patients who travel less than 1 mile to their rehabilitation center are 50% more likely to complete treatment when compared to patients who need to travel more than one mile, and patients needing to travel more than 4 miles have significantly shorter length-of-stay in treatment when compared to patients who travel less than 1 mile.[19]

This study is by no means exhaustive, and further research is needed. As discussed in the limitations, using addresses where people overdosed or addresses where people who use BHOs live would provide a more accurate measure of the proximity of resources because distances could be measured as minutes spent driving or proximity to a bus route. However, using addresses of patients would require special permission as to not violate HIPAA. Additionally, it is unclear why certain areas have high overdose rates and relatively low BHO usage rates or vice versa. This could potentially be due to low socio-economic status or high numbers of uninsured residents causing poor access to rehabilitation care in certain areas, despite high opioid usage rates. However, more research is warranted. With better understanding of the reasons behind these differences, future research could combine rehabilitation center usage and overdose rates in a way that estimates overall opioid usage in different areas in RI which would be useful for planning prevention efforts. Finally, this analysis did not consider the availability of naloxone by town or neighborhood as an emergency resource. If future research demonstrated an association between higher availability of naloxone and lower overdose rates, spatial analysis could identify areas which would benefit from additional naloxone availability.

DISCUSSION OF LIMITATIONS

It is important to note that when calculating distance to the nearest facility, we used the maximum distance in each town or zip code from an emergency department or COE. Thus, this point is not equivalent to the population center of the zip code or town. Additionally, when calculating the distance to emergency departments and COEs, the distance tool used in ArcMap calculates the distance directly from one point to another and does not consider road and traffic patterns. These two factors decreased the sensitivity of measurement in this assessment of access to these resources based on distance. Additionally, due to the sensitivity of patient records, patient overdose data is limited to the town level, while patient BHO usage data is limited to the zip-code level. Spatial analyses of need would be much more specific if we had overdose and patient data by address. Finally, because BHO usage data from BHDDH were used, informal treatment, treatment facility data that were not BHDDH-licensed, and hospital-based treatment was not included.

CONCLUSION

By using GIS, we have been able to identify 4 towns which may need more emergency resources and 3 towns which may need more rehabilitation resources. Spatial analysis can contribute to our knowledge about opioid abuse, and GIS should be included in the tools used to analyze and fight the opioid epidemic in RI.

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Disclaimer

The views expressed in this paper are those of the authors and do not necessarily reflect the views of the Brown University School of Public Health or Johnson & Wales University.

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E-cigarette Use and Rhode Island High School Students: What Providers Need to Know about the Characteristics of Initiation of E-cigarettes and Related Risk Behaviors

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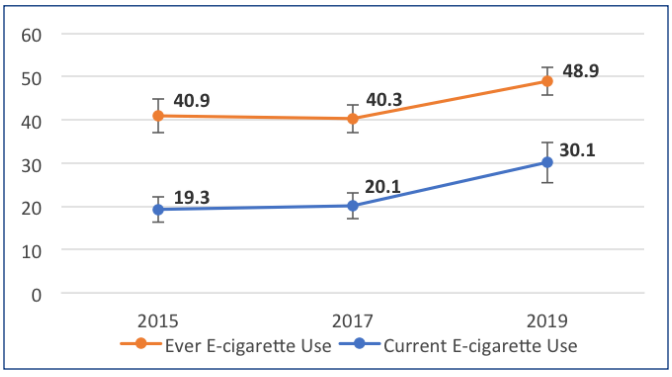
INTRODUCTION

Skyrocketing e-cigarette use gained national attention when the U.S. Surgeon General issued warnings about this youth epidemic in 2018. More recently, 2019 saw the emergence of a new clinical condition attributed to vaping nicotine- and/or tetrahydrocannabinol (THC)-containing products called E-cigarette or Vaping product use Associated Lung Injury (EVALI). The long-term health effects of e-cigarette use on youth and adults are generally unknown, but some immediate harms have been documented. Nicotine exposure during adolescence can harm the developing brain until approximately the age of 25, impacting learning, memory, and attention.[1] Other health risks include injuries resulting from battery explosions and accidental childhood nicotine poisonings. The prevalence of e-cigarette use in youth also increases the likelihood of exposure to secondhand smoke/aerosol for other students. Prior e-cigarette use has been associated with high school teens being more than four times likely to ever smoke combustible cigarettes,[2] making youth e-cigarette users more susceptible to known negative health outcomes associated with traditional tobacco cigarette use (e.g., cancer, heart, and lung diseases). Through longitudinal data, current e-cigarette use has been linked to 1.29 increased odds of acquiring respiratory disease,[3] emphysema, chronic bronchitis, and Chronic Obstructive Pulmonary Disease.[4]

Since 2015, the percent of Rhode Island high school students that both initiate and currently use e-cigarettes has significantly increased (**Figure 1**). In 2019 alone, nearly one-in-two Rhode Island high school students (49%) responded *yes* to "Have you ever used an electronic vapor product?" and 30% indicated *one or more days* when asked "During the past 30 days, on how many days did you use an electronic vapor product?"[5] When compared to the most recent adult e-cigarette use, these youth rates are alarming. In 2018, 22% of Rhode Island adults responded *yes* to "Have you ever used an e-cigarette or other electronic vaping product, even just one time, in your entire life?" and 6% indicated *every day or some days* when asked "Do you now use e-cigarettes or other electronic vaping products every day, some days, or not at all?"[6] Understanding potential drivers of youth e-cigarette use, as well as the disparities that exist between youth who have never tried and youth that have ever tried an e-cigarette may have clinical and intervention design value when combatting youth use. These analyses compare initiation characteristics and risk behaviors that are more prevalent among Rhode Island youth who "ever tried" and "never tried" e-cigarettes.

Figure 1. Rhode Island High School Students' E-cigarette Use



METHODS

Data presented in the following analyses are from the 2017 and 2019 Rhode Island High School Youth Risk Behavior Survey (YRBS). Data are aggregate for purposes of these analyses to produce reportable strata sample size in addition to increasing precision and reliability of estimates. The YRBS survey is administered biennially to monitor prevalence and trends of health risk behaviors among youth (i.e., middle and high school students). The Rhode Island YRBS survey is not census-based; the sample is scientifically and efficiently drawn and is proportional to students in grades 9 through 12, attending public schools. Weighted data, using a two-stage cluster sample design,[7] were achieved by yielding adequate response rates (> 60%) and are representative of the Rhode Island public high school population. In total, 2,221 students from 19 public high schools in 2017 (representative of 41,114 students statewide) and 1,613 students from 21 public high schools in 2019 (representative of 44,052 students) completed the YRBS. For these analyses, ever using e-cigarettes within one's lifetime was measured with the question "Have you ever used an electronic vapor product?"

The overall burden of e-cigarette use was analyzed and then descriptive analyses comparing the prevalence of those who have ever used e-cigarettes by demographics was

conducted. For demographic characteristics, significance was determined by a p-value <.05 using a Chi-Square Test. Bivariate analyses were calculated to examine associations between ever and never using e-cigarettes in one's lifetime and the prevalence of mental health and academic achievement characteristics as well as likelihood to engage in various risk behaviors (e.g., substance use, unsafe transportation-related behaviors, risky sexual practices) among e-cigarette users compared to non-users. All analyses were performed using SAS Version 9.4 and differences between groups were considered statistically significant when 95% confidence intervals (CIs) did not overlap.

RESULTS

Overall, a combined rate of 44.8% of Rhode Island high school students reported having ever used e-cigarettes, using the aggregate data for 2017 and 2019. Statistical significance between all demographic characteristics (**Table 1**) was found with the exception being sex. Non-Hispanic Black high school students significantly try e-cigarettes less than White students and students of other ethnic and racial minorities. E-cigarette initiation increases with age/grade level and is highest in the 11th and 12th grades. Students who identify as gay, lesbian, and bisexual and students who identify

Table 1. Prevalence of Lifetime E-cigarette Use among RI High School Students by Selected Demographics, 2017–2019

Demographics	Ever Used E-cigarettes	
	Percent	95% CI
Sex		
Male	43.6	40.3–47.0
Female	45.7	41.9–49.5
Race/Ethnicity*		
Non–Hispanic White	47.4	44.7–50.1
Non–Hispanic Black	37.9	28.6–47.3
Hispanic	41.1	36.8–45.3
Non–Hispanic Other	46.3	40.8–51.8
Grade*		
9th	37.1	33.1–41.2
10th	39.9	34.8–45.1
11th	50.7	44.0–57.4
12th	53.0	40.5–53.6
Sexual Orientation*		
Gay/Lesbian/Bisexual	54.2	45.9–62.5
Heterosexual	44.6	42.0–47.1
Learning Disability*		
Yes	56.0	48.2–63.9
No	42.6	40.3–44.9

*Significant difference p<.05 in chi square test

Table 2. Distribution of E-cigarette Use among RI High School Students, by Mental Health and Academic Achievement Characteristics, 2017–2019

	Never Used E-Cigarette		Ever Used E-Cigarette	
	%	95% CI	%	95% CI
Mental/Behavioral Health Status*				
Mental health not good ≥ 1/30 days	59.0	53.2–64.9	**68.5**	**66.1–70.9**
Bullied electronically or at school	16.3	13.0–19.6	**26.5**	**22.5–30.5**
Seriously considered attempting suicide	10.1	8.7–12.6	**18.9**	**15.8–22.1**
Felt sad or hopeless ≥14 days in past year	22.3	19.6–25.1	**40.8**	**36.2–45.5**
Perception of Own Grades*				
Mostly As and/or Bs	79.7	74.3–85.1	**69.7**	**65.6–73.7**
Mostly Cs, Ds, or Fs	20.3	14.9–25.7	**30.3**	**26.3–34.4**

*Bolded percentages and 95% CIs are statistically significant when compared to never e-cigarette users.

Table 3. Prevalence of Other Youth Risk Behaviors among Rhode Island High School Students Who Have Ever Used E-cigarette, 2017–2019

	Never Used E-Cigarette		Ever Used E-Cigarette	
	%	95% CI	%	95% CI
Substance Use*				
Ever used marijuana	12.5	9.4–15.6	**67.7**	**63.0–72.3**
Currently used marijuanaϒ	5.9	4.2–7.7	**44.4**	**40.3–48.6**
Ever misused prescription pain meds^	4.3	2.9–5.7	**15.4**	**12.0–18.8**
Ever used drugs (cocaine, heroin, 3 ,4-methylene-dioxymethamphetamine)	1.2	0.5–2.0	**8.5**	**6.8–10.3**
Ever smoked cigarettes	5.4	4.1–6.8	**33.8**	**30.0–37.6**
Currently drank alcoholϒ	7.8	5.7–9.9	**41.2**	**34.8–47.6**
Motor Vehicle Safety*				
Rode in a car where the driver had been drinkingϒ	8.8	7.0–10.5	**19.1**	**16.0–22.2**
Texted/checked email while drivingϒ	18.0	12.9–23.1	**49.4**	**42.2–56.7**
Never or rarely wore a seatbelt	4.0	2.4–5.6	**7.9**	**5.8–10.0**
Sexual Practice				
Didn't use a condom during last sexual encounter	37.4	31.0–43.8	46.4	39.6–53.2

ϒ At least once in the 30 days prior to survey administration.

^ Taken prescribed pain medications differently than how a doctor told them to use it.

*Bolded percentages and 95% CIs are statistically significant when compared to never e-cigarette users.

having a learning disability are also more likely to ever use e-cigarettes than their respective peers who identify differently.

Poor mental health status is more prevalent in those who try e-cigarettes compared to those who do not (**Table 2**). Self-reporting of poor mental health, being bullied, considering suicide, and feeling sad/hopeless are all more prevalent in those who try e-cigarettes. Nearly 70% of those who have ever used e-cigarettes had at least one day in the last 30 where their mental health was not good, and 19% have seriously considered committing suicide in the past year. Those who ever use e-cigarettes were significantly more likely to report a perception of getting C/D/F grades in terms of academic achievement.

Prevalence of all risk behaviors (**Table 3**), except not using a condom in the last sexual encounter, are significantly higher in students that ever use e-cigarettes. There are notably larger differences present in substance use and motor vehicle safety risk behaviors. Nearly 68% of ever e-cigarette users have ever tried marijuana, compared to only 13% of never e-cigarette users.

DISCUSSION

The current analyses suggest significant differences exist among students who have ever used e-cigarettes based on demographics, mental health and academic achievement characteristics, and engagement in other risk behaviors. Those who have ever tried e-cigarettes were more likely to report engaging in other risk behaviors, such as substance use and unsafe transportation-related behavior. Additional analyses were conducted to compare risk factors and behaviors among current (past 30 day) e-cigarette use with those who have ever tried e-cigarettes. However, there were no differences between these two groups with the exception of a newfound lack of statistical significance between the sexual orientation and perception of own grades variables. As such, the current-use group was excluded from this paper. Use of marijuana, ever in one's lifetime or currently, was much more prevalent within those who ever used e-cigarettes. While e-cigarette and marijuana use associations are an area of further study, 8.9% of all high and middle school students had ever used marijuana in an e-cigarette in 2016, according to the National Youth Tobacco Survey. The data presented that compare marijuana use between both e-cigarette groups offer support for the idea that e-cigarettes may be a vehicle for and a risk behavior of youth using marijuana.[8]

Regarding youth initiation nationally, flavors are cited to appeal to youth with approximately 31% of both middle and high school students reporting that flavor availability was a reason they used e-cigarettes.[9] In 2017–2018, nearly 68% of high school students nationwide reporting current use of e-cigarettes said they used flavors.[10] Research also supports that fruit/candy flavors perpetuate the misperception that such products are less harmful than tobacco-flavored e-cigarettes.[11] In light of recent data, the State of Rhode Island promulgated emergency regulations in October that prohibit flavored e-cigarette products – including menthol – to curb youth use. In November 2019, Massachusetts passed legislation that prohibited the sale of flavored tobacco products. Federal T-21 legislation raising the minimum legal age for tobacco and nicotine sales to 21 years of age and older was signed into law on December 20, 2019. On January 2, 2020, the FDA finalized an enforcement policy on "unauthorized flavored cartridge-based e-cigarettes that appeal to children, including fruit and mint." Rhode Island, through the Governor's Vaping Advisory Committee, is developing policy recommendations for consideration locally. A summary of policy options developed by the Association of State and Territorial Health Officials can be found at https://www.astho.org/Programs/Prvention/Tobacco/E-Cigarettes/E-Cigarette-Policy-Options-for-States. On January 16, 2020, a budget article was released in Rhode Island by Governor Raimondo that included policies associated with curbing youth e-cigarette use.

As of January 16, 2020, Rhode Island has reported six cases of EVALI to the CDC, inclusive of two cases age 18 years and under. This investigation remains concerning as youth disproportionately use e-cigarettes compared to the 6% of adults who reported current use in 2018. Nationally, as of January 7, 2020, 76% of hospitalized EVALI patients were under 35 years old, with an age range starting at 13 years old. Further, 57% of hospitalized EVALI patients reported using nicotine-containing products with 13% citing exclusive use of nicotine. While vitamin E acetate in THC cartridges has been strongly linked to the EVALI outbreak, CDC has noted there may be other chemicals of concern related to EVALI and recommends that individuals consider refraining from all e-cigarette or vaping product use.[12]

Understanding the risk factors and risk behaviors of youth e-cigarette use in Rhode Island carries important clinical and public health significance. These data can inform clinical screening guidance and practices to detect and address e-cigarette use, poor mental health, and potentially injurious health behaviors early. The need for increased Screening, Brief Intervention, and Referral to Treatment (SBIRT) for youth across community and clinical settings is also highlighted. Resources for providers to help youth quit as they begin to experience withdrawal from prohibition on flavored e-cigarettes are available. The Rhode Island Nicotine Helpline (1-800-QUIT-NOW) provides a simple, no-cost point-of-access to telephonic cessation services in Spanish and English for tobacco/nicotine users 13 years of age and older. This service provides screening, assessments of readiness to quit, counseling/advice, nicotine replacement therapy (NRT) for those 18 years of age and older, support materials, and local community-based cessation services information. The Truth Campaign's "This is Quitting" free mobile program helps young people quit vaping. By texting DITCHJUUL to

88709, individuals will receive messages from other young people who have attempted to or quit e-cigarettes along with evidence-based tips and strategies to help. Both are valuable assets for clinicians. While no NRT guidelines currently exist in the U.S. for youth vaping cessation, the American Academy of Pediatrics is developing materials and recommends using existing tobacco guidelines and clinical judgment on a patient-by-patient basis.

Study Limitations

These analyses have several limitations. All data from the YRBS are self-reported by students and subject to recall bias. Underrepresentation of data due to stigma with engaging in illegal activity is possible. YRBS data on marijuana use is inclusive of all types of products (e.g., edible, combustible, e-liquid, and others) and is not vaping-specific. Use of prevalence estimates in these analyses do not represent causality and further analysis is needed to estimate measures of association between the data presented.

CONCLUSION

In 2019 alone, nearly one-in-two Rhode Island high school students (49%) have ever used e-cigarettes. Poor mental/behavioral health status, hopelessness, and suicide contemplation are more prevalent in students who ever use e-cigarettes. A major difference between students who ever and never use e-cigarettes is that 68% of students who ever used e-cigarettes reported marijuana use. Substance use and motor vehicle safety risk behaviors also have a higher prevalence among those who try e-cigarettes. Understanding the risk factors and risk behaviors of youth e-cigarette use carries important clinical and public health significance to improve upon existing resources for cessation, including the Rhode Island Nicotine Helpline and This is Quitting mobile application.

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Acknowledgment

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COMPILED BY ROSEANN GIORGIANNI, DEPUTY STATE REGISTRAR

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

VITAL EVENTS	REPORTING PERIOD		
	JULY 2019	12 MONTHS ENDING WITH JULY 2019	
	Number	Number	Rates
Live Births	970	11,206	10.6*
Deaths	842	10,517	9.9*
Infant Deaths	5	61	5.4#
Neonatal Deaths	4	48	4.3#
Marriages	672	6,594	6.2*
Divorces	275	2,959	2.8*

* Rates per 1,000 estimated population

Rates per 1,000 live births

Underlying Cause of Death Category	REPORTING PERIOD			
	JANUARY 2019	12 MONTHS ENDING WITH JANUARY 2019		
	Number (a)	Number (a)	Rates (b)	YPLL (c)
Diseases of the Heart	244	2,462	232.9	2,672.5
Malignant Neoplasms	202	2,266	214.3	4,857.5
Cerebrovascular Disease	42	460	43.5	397.0
Injuries (Accident/Suicide/Homicide)	85	839	79.4	10,889.0
COPD	57	481	45.5	387.5.

(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 1,056,298 (www.census.gov)

(c) Years of Potential Life Lost (YPLL).

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

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

VITAL EVENTS	REPORTING PERIOD		
	AUGUST 2019	12 MONTHS ENDING WITH AUGUST 2019	
	Number	Number	Rates
Live Births	978	11,134	10.5*
Deaths	865	10,5652	10.0*
Infant Deaths	8	64	5.7#
Neonatal Deaths	6	49	4.4#
Marriages	893	6,627	6.3*
Divorces	237	2,927	2.8*

* Rates per 1,000 estimated population

Rates per 1,000 live births

Underlying Cause of Death Category	REPORTING PERIOD			
	JANUARY 2019	12 MONTHS ENDING WITH JANUARY 2019		
	Number (a)	Number (a)	Rates (b)	YPLL (c)
Diseases of the Heart	206	2,482	234.3	2,752.5
Malignant Neoplasms	155	2,253	212.7	4,685.5
Cerebrovascular Disease	39	453	42.8	429.5
Injuries (Accident/Suicide/Homicide)	62	847	80.0	10,969.0
COPD	43	480	45.3	417.5.

(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 1,056,298 (www.census.gov)

(c) Years of Potential Life Lost (YPLL).

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

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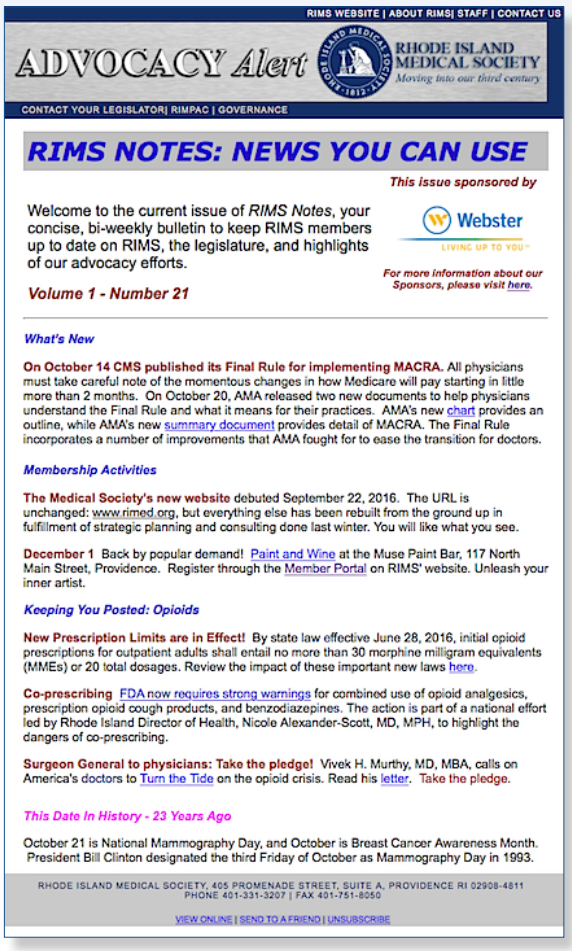

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RIMS NOTES: NEWS YOU CAN USE

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Welcome to the current issue of *RIMS Notes*, your concise, bi-weekly bulletin to keep RIMS members up to date on RIMS, the legislature, and highlights of our advocacy efforts.

For more information about our Sponsors, please visit here.

Volume 1 - Number 21

What's New

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

Membership Activities

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

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

Keeping You Posted: Opioids

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

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

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

This Date In History - 23 Years Ago

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

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Contact Sarah if you've missed an issue, sstevens@rimed.org.

Working for You: RIMS advocacy activities

January 3, Friday

RIMS Notes production

January 6, Monday

COBRE on Opioids at Lifespan. Presentation by João Castel-Branco Goulão, MD, General Director of the Service for Intervention on Addictive Behaviors and Dependencies, Portuguese Ministry of Health

Meeting with Office of the Health Insurance Commissioner (OHIC) Health Insurance Advisory Council: Peter A. Hollmann, MD

RIMS Board of Directors: Christine Brousseau, MD, MPH, President. Guests: João Castel-Branco Goulão, MD; Josiah Rich, MD; Neil Steinberg, President & CEO of the RI Foundation.

January 7, Tuesday

RIMS Physician Health Committee: Herbert Rakatansky, MD, Chair

Meeting with Care Transformation Collaborative (CTC-RI) regarding prior authorization: Peter A. Hollmann, MD, and staff

Meeting with Governor's staff regarding State Fiscal Year 2021 budget

Public hearing: proposed Electronic Nicotine Delivery Systems (ENDS) regulations

January 8, Wednesday

Board of Medical Licensure and Discipline, RIDOH

Governor's Overdose Intervention and Prevention Task Force Harm Reduction

January 8–11, Wednesday–Saturday

AMA Advocacy Resource Center State Advocacy Summit, Bonita Springs, FL: Michael E. Migliori, MD, RIMS Public Laws Chair; RIMS staff; RI Senate Health and Human Services Committee Chair, Senator Joshua Miller

January 14, Tuesday

Physician Health Program Governance Committee, Jerry Fingerut, MD, Chair

Governor's Overdose Task Force Harm Reduction Working Group, at RIMS

Telephone consultation with Accreditation Council for CME: Patrick J. Sweeney, MD, PhD, MPH, Chair of RIMS' CME Committee

Heather Smith, MD, AMA Council on Legislation; RI State Senator **Joshua Miller**, Chair, Committee on Health and Human Services; and **Michael Migliori, MD**, Chair, RIMS Public Laws Committee and RIMS past president, attended the AMA Advocacy Resource Center's State Legislative Summit January 8–11 in Bonita Springs, Florida. Senator Miller participated on a panel on the future of healthcare.

January 15, Wednesday

Primary Care Physician Advisory Committee, RIDOH

January 16, Thursday

Meeting with Office of the Health Insurance Commissioner (OHIC)

January 17, Friday

Meeting with RI Chapter, American College of Emergency Physicians (RI ACEP) regarding legislation and political action committee

RIMS Notes production

January 21, Tuesday

Improving End of Life Care Coalition

Meeting with Office of the Health Insurance Commissioner (OHIC) Health Insurance Advisory Council

January 22, Wednesday

Certification and Licensing Partnership, Department of Health

Special House Commission to study Step Therapy Protocols

Meeting with Neurological Society regarding Step Therapy

Charter School Committee: Bradley J. Collins, MD, Past President

January 23, Thursday

Meeting with Optometry, Nursing, PAs, Podiatry, Dentistry, and Department of Health regarding "Fining Legislation"

Meeting with new Director of Johnson & Wales University's PA Program, Ellen D. Mandel, DMH, MPA, MS, PA-C

January 27, Monday

Mental Health Parity Coalition

January 29, Wednesday

Department of Health Transitions of Care Stakeholder Group Meeting: Mark Braun, MD, RI Medical Society

Workers Compensation Advisory Council

January 30, Thursday

Medical Group Managers Association of Mass/RI (MGMA) Winter Meeting with insurers and OHIC Commissioner Dr. Marie Ganim

Fundraiser for Nicholas A. Mattiello, Speaker of the House: Christine Brousseau, MD, President; Peter A. Hollmann, MD, Board Chair

January 31, Friday

Community Health Workers Association of RI: a half-day summit for healthcare and social services stakeholders held at Rhode Island College: RIMS staff

RIMS Notes production

RIMS CORPORATE AFFILIATES

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

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

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

RHODE ISLAND PHYSICIANS CORPORATION PRIMARY CARE

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RIPCPC is an independent practice association (IPA) of primary care physicians located throughout the state of Rhode Island. The IPA, originally formed in 1994, represent 150 physicians from Family Practice, Internal Medicine and Pediatrics. RIPCPC also has an affiliation with over 200 specialty-care member physicians. Our PCP's act as primary care providers for over 340,000 patients throughout the state of Rhode Island. The IPA was formed to provide a venue for the smaller independent practices to work together with the ultimate goal of improving quality of care for our patients.

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Study led by Rhode Island Hospital researcher shows that several portable devices can detect deadly fentanyl in street drugs

PROVIDENCE – Research led by a Rhode Island Hospital opioid expert has demonstrated the potential to utilize portable field devices to test street drugs for the presence of fentanyl – a technique that could aid public health advocates and public safety agencies in their effort to curb a nationwide epidemic of fatal overdoses from the potent synthetic narcotic.

TRACI GREEN, PHD, MSc, co-director of the hospital's Center of Biomedical Research Excellence (COBRE) on Opioids and Overdose, is the lead author of a paper just published in the International Journal of Drug Policy. The research was funded by a grant from the Bloomberg American Health Initiative at Johns Hopkins Bloomberg School of Public Health.

The study, led by Green and **SUSAN G. SHERMAN, PhD**, a professor in the Bloomberg School's Department of Health, Behavior and Society, is a response to an opioid epidemic that is responsible for thousands of deaths each year. Fentanyl was confirmed in 64 percent of opioid deaths in Rhode Island and 85 percent of opioid deaths in Massachusetts in 2017.

Green and colleagues partnered with the Providence and Baltimore police departments and the Rhode Island Department of Health to acquire and blind test over 200 samples of police-confiscated street drugs using three separate portable devices designed for field testing: an infrared spectrometer, a Raman spectrometer, and fentanyl testing strips.

They determined that fentanyl test strips were best at detecting fentanyl and at very low levels in street drugs. But the fentanyl test strips don't differentiate among the many types of fentanyl or detect other harmful contaminants or drugs. For this reason, the authors discuss, a two-pronged drug checking approach is best: the infrared spectrometer, which provides detailed chemical profile information (valuable for public health surveillance purposes) and fentanyl test strips, which are cheap and cheap and simple to use and highly sensitive to fentanyl.

"This study showed us that there are valid and easy-to-use devices that can provide critical insights that are meaningful to both people who use drugs and public health decision makers," says Green, the study's lead author.

In addition to her role at Rhode Island Hospital, Green is an adjunct associate professor of emergency medicine and epidemiology at Brown University and recently was appointed director of Brandeis University's Opioid Policy Research Collaborative in the Heller School for Social Policy and Management.

Green is co-director of the Center of Biomedical Research Excellence (COBRE) on Opioids and Overdose.

The research team included **ERIC STRUTH** of Rhode Island Hospital, **MICHELLE McKENZIE** of the Center for Prisoner Health and Human Rights at The Miriam Hospital, **JU NYEONG PARK** of the Johns Hopkins Bloomberg School of Public Health, **WILLIAM CLARKE** of the Johns Hopkins School of Medicine, and independent researcher **MICHAEL GILBERT** of Portland, Oregon. ❖

American Lung Association releases 'State of Tobacco Control' Report

RI gets mixed grades

PROVIDENCE – Tobacco use remains the nation's leading cause of preventable death and disease, taking an estimated 480,000 lives every year. This year's "State of Tobacco Control" report from the American Lung Association released on January 29th calls for proven tobacco control policies in light of the fact that the country's youth vaping epidemic worsened in 2019.

This year's 18th annual report finds that in 2019 Rhode Island had limited progress on its efforts to reduce and prevent tobacco use, including e-cigarettes. The American Lung Association called on Rhode Island officials in the report to take action by increasing funding for tobacco prevention and cessation programs, building on Governor Raimondo's executive action prohibiting flavored e-cigarettes, and ensuring enforcement of the new national tobacco age of sale in order to support public health and save lives in 2020.

Nationwide, it stated that the youth vaping epidemic continued its alarming rise to 27.5% or more than one in four high school students. This is a 135% increase in high school e-cigarette use in just the past two years, and close to three million more kids started vaping in that time period, setting them up for a lifetime of addiction.

"In Rhode Island, our high school tobacco use rate remains at 25.9%. Sadly, with the youth vaping epidemic still rising, we may have lost an opportunity to make the current generation of kids the first tobacco-free generation. Tobacco use is a serious addiction and Rhode Island needs to implement the proven measures to prevent and reduce tobacco use outlined in 'State of Tobacco Control'," said American Lung Association's Director of Advocacy in Rhode Island, Jennifer Wall.

The 18th annual "State of Tobacco Control" report grades states and the federal government on policies proven to prevent and reduce tobacco use, and finds that elected officials should do more to save lives and ensure all Rhode Island residents benefit from reductions in tobacco use and exposure to secondhand smoke.

Rhode Island Grades

(See Figures 1-4)

- Strength of Smoke-free Workplace Laws: Grade A
- Level of State Tobacco Taxes: Grade B
- Coverage and Access to Services to Quit Tobacco: Grade C
- Funding for State Tobacco Prevention Programs: Grade F

Some positive signs nationwide

The report also notes Governor Raimondo' direction to the state department to explore comprehensive policy solutions to address youth tobacco use rates. In addition, a vaping advisory committee was established to weigh in on permanent regulations.

It also noted that Tobacco Free Rhode Island (TFRI), a grant funded through the Rhode Island Department of Health and administered through the American Lung Association in Rhode Island, made gains with more than 12,000 students, parents, educators, medical and public health professionals, educated about the harms of e-cigarette use, marketing strategies, and current tobacco trends. Furthermore, through a strong partnership and funding from CVS Health, TFRI also created and implemented a smoke-free schools model policy, inclusive of e-cigarettes, that detailed enforcement best practices.

The report also lauded Massachusetts for permanently prohibiting the sale of all flavored tobacco products, including menthol cigarettes in November 2019, becoming the first such state to do so, and reported that the FDA will be

Figure 1.

Smokefree Air: A
OVERVIEW OF STATE SMOKING RESTRICTIONS
Government Worksites: **Prohibited**
Private Worksites: **Prohibited**
Schools: **Prohibited**
Child Care Facilities: **Prohibited**
Restaurants: **Prohibited**
Bars: **Prohibited (allowed in smoking bars)**
Casinos/Gaming Establishments: **Restricted**
Retail Stores: **Prohibited**
Recreational/Cultural Facilities: **Prohibited**
E-Cigarettes Included: **Yes**
Penalties: **Yes**
Enforcement: **Yes**
Preemption/Local Opt-Out: **No**
Citation: R.I. GEN. LAWS §§ 23-20.10-1 et seq. (2015).

Figure 2.

Tobacco Taxes: B
CIGARETTE TAX:
Tax Rate per pack of 20: **$4.25**
OTHER TOBACCO PRODUCT TAXES:
Tax on little cigars: **Equalized: Yes; Weight-Based: No**
Tax on large cigars: **Equalized: No; Weight-Based: No**
Tax on smokeless tobacco: **Equalized: No; Weight-Based: Yes**
Tax on pipe/RYO tobacco: **Equalized: No; Weight-Based: No**
Tax on e-cigarettes: **Equalized: N/A; Weight-Based: N/A**
For more information on tobacco taxes, go to: www.lung.org/slati

Figure 3.

Access to Cessation Services: C
OVERVIEW OF STATE CESSATION COVERAGE:
STATE MEDICAID PROGRAM:
Medications: **All 7 medications are covered**
Counseling: **All 3 types of counseling are covered**
Barriers to Coverage: **Some barriers exist to access care**
Medicaid Expansion: **Yes**
STATE EMPLOYEE HEALTH PLAN(S):
Medications: **All 7 medications are covered**
Counseling: **Some counseling is covered**
Barriers to Coverage: **Some barriers exist to access care**
STATE QUITLINE:
Investment per Smoker: **$0.97; the median investment per smoker is $2.14**
OTHER CESSATION PROVISIONS:
Private Insurance Mandate: **Yes**
Tobacco Surcharge: **Prohibits tobacco surcharges**
Citation: See Rhode Island Tobacco Cessation Coverage page for specific sources.

required to take several important actions to protect the public health from tobacco products in 2020. These include finalizing graphic warning labels on all cigarette packs by March 15, and requiring all e-cigarette, and most cigar, hookah, pipe and other manufacturers of deemed products to submit applications to FDA by May 12, 2020 to remain on the market in the U.S.

For more information, or to view the report, visit lung.org. ❖

Figure 4.

Tobacco Prevention and Control Program Funding: F
FY2020 State Funding for Tobacco Control Programs: **$394,955**
FY2020 Federal Funding for State Tobacco Control Programs: **$1,651,504***
FY2020 Total Funding for State Tobacco Control Programs: **$2,046,459**
CDC Best Practices State Spending Recommendation: **$12,800,000**
Percentage of CDC Recommended Level: **16.0%**
State Tobacco-Related Revenue: **$196,900,000**
* Includes tobacco prevention and cessation funding provided to states from the Centers for Disease Control and Prevention and U.S. Food and Drug Administration.

Health in Rhode Island: A Long Term Vision

Health industry leaders and advocates have collaborated for over a year to establish a long-term health plan for Rhode Island

PROVIDENCE (RHODE ISLAND FOUNDATION) – Convened and led by the Rhode Island Foundation, the Long Term Health Planning Committee, a group of local health and health care industry experts, have collaborated over the last year to set a 10-year plan for improving health in Rhode Island. In full endorsement of the plan's recommendations, the Rhode Island Foundation has committed $1 million, above and beyond its yearly grant-making in health, to the implementation of the plan, called Health in Rhode Island: A Long Term Vision

The Long Term Health Planning Committee includes representatives from all corners of the health sector in the state. At the Foundation's request, and co-chaired by Jane Hayward, president and CEO of the Rhode Island Health Center Association and Neil D. Steinberg, president and CEO of the Rhode Island Foundation, the group came together in late 2018 with the intent to create a long-term approach for improving the health of Rhode Islanders. They sought to identify the most pressing needs and commit to state-level coordination and institutional decision-making that will address those needs over the long-term. In doing so, the group developed – and each member has endorsed – a vision, set of goals, guiding principles, priorities and associated strategies. The committee also identified an evaluation framework and a set of nearly 40 indicators, in partnership with Health-centric Advisors, that will be tracked to measure progress. The committee identified the following goals and priorities:

Goals

1. Eliminate disparities in health and contributing socio-economic factors.
2. Provide access to high-quality affordable health care.
3. Focus resources to maximize health and reduce waste.

Priorities

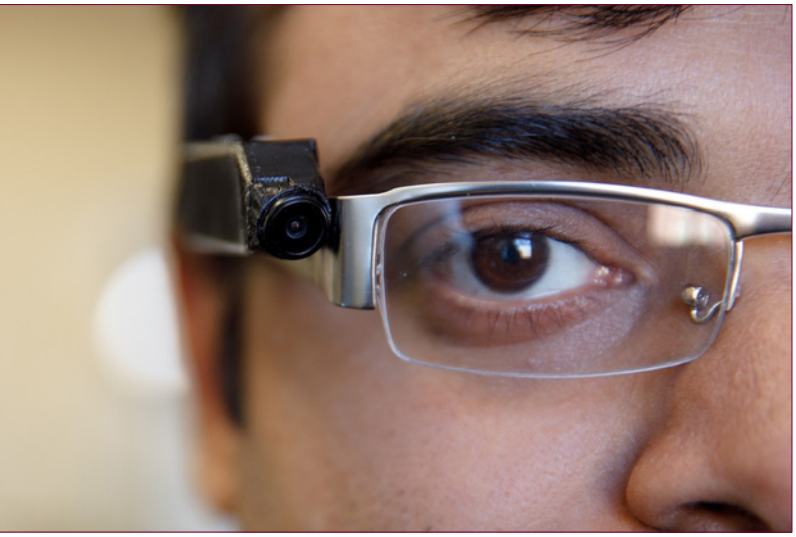
- Providing the most appropriate care for people in the most appropriate setting.
- Focusing upstream on root causes and investing in affordable housing, food security and transportation to address underlying inequities and influencers of health disparities.
- Improving behavioral health outcomes by focusing on access to care, coordination of care and prevention.
- Reducing wasteful spending in order to redirect resources to social determinants and improve affordability.
- Ensuring sustainability, accountability and oversight of the group's vision and maintaining progress in key areas where Rhode Island performs well.

The Foundation aims to allocate the $1 million investment in support of initiatives aligned with the priorities and strategies identified in the report. The Foundation will also work with the committee to help sustain the effort and to report to the public on progress, at least annually. ❖

Click here for full report

Miriam to collaborate in clinical trial to investigate wearable device for weight loss

Weight Control & Diabetes Research Center partners with U. of Alabama in $2.5M NIH study



Tonmoy Ghosh, a doctoral student at the University of Alabama, models a high-tech ingestion monitor inside a campus laboratory
[PHOTO: THE UNIVERSITY OF ALABAMA]

PROVIDENCE – Can a wearable device that monitors what you eat help you lose weight? Researchers at The Miriam Hospital, in collaboration with several universities around the country, will seek to answer that question in a clinical trial funded with a $2.5 million grant from the National Institute of Health.

GRAHAM THOMAS, PhD, a behavioral scientist with The Miriam's Weight Control and Diabetes Research, is the co-principal investigator on the project. He will be using a device developed in collaboration with researchers at the University of Alabama to test the technology with adults who are overweight or obese.

"The hope is that this technology will give people a new, less burdensome way to monitor and take control of their eating," said Dr. Thomas.

The device, clipped to prescription or nonprescription eyeglasses, includes a tiny, high-definition camera to photograph food as well as sensors that monitor chewing. The sensors accurately detect food intake and trigger the camera to record what was eaten and to measure when, how much and how fast the wearer eats.

DR. EDWARD SAZONOV, a professor of electrical and computer engineering at the University of Alabama and co-principal investigator, designed the patent-pending device, which he calls the Automatic Ingestion Monitor, or AIM.

"Changing eating behavior enough to achieve and maintain long-term weight loss is elusive. We're seeking to determine if a device that adapts to your individual eating habits can change that," Dr. Sazonov said.

Dr. Thomas said that Dr. Sazonov was looking to test his device and reached out to him about a collaboration because of his expertise in the science of health behaviors.

"My work has focused on the use of technology to understand and promote healthy behaviors, particularly those related to obesity," Dr. Thomas said. "So this is right up my alley."

The grant to the University of Alabama, via the NIH's National Institute of Diabetes and Digestive and Kidney Diseases, enables the researchers to test the device in a clinical trial over four years. An initial round of funding was awarded this fall.

About half of the patients that will be enrolled in the study will be recruited in Rhode Island by Dr. Thomas, an associate professor in the Weight Control and Diabetes Research Center at The Miriam Hospital and Brown University.

During the clinical trial, the device's built-in computer will communicate with the wearer's smartphone and, when necessary, trigger the phone to send carefully designed messages suggesting modifications to the wearer's eating behaviors.

Work by other researchers has shown that tracking what you eat by hand is one of the most powerful strategies for weight control, but it can be burdensome, tedious and error prone. Electronic fitness trackers have proven popular, so for those open to a high-tech wearable method to help in modifying their behaviors, the device could prove effective.

"The key to this particular technology is to learn individual eating behaviors and then attempt to provide personalized feedback to modify those behaviors," Dr. Sazonov said.

Measuring food intake, which previous studies show the technology can do accurately, is important. But it's only part of the story.

"The way you eat is as important as what you eat. We are also looking at the rates of ingestion. We want to slow down and be more mindful about our eating," Dr. Sazonov said. "Every person is different in when they eat, what they eat, how much they eat and how long they eat. We use machine learning to create a model of these individual eating patterns. After we learn the individual eating patterns, we see how it can be manipulated by suggesting small changes to reduce the total amount of energy consumed."

Additional researchers on the project include two nutritionists, **DRS. MEGAN McCRORY**, of Boston University, and **JANINE HIGGINS,** of University of Colorado; and the University of Alabama's **CHRIS CRAWFORD** and **JASON PARTON.** ❖

Brown/industry partnership to accelerate research on flu vaccines for the elderly

PROVIDENCE [BROWN UNIVERSITY] – With support from a three-year $2.1 million agreement with Insight Therapeutics, a private company that focuses on the health care of older adults, a team of Brown University public health researchers will look to identify the most effective flu vaccines for elderly nursing home residents.

STEFAN GRAVENSTEIN, principal investigator of the research at Brown, a professor of medicine at the Warren Alpert Medical School and of health services, policy and practice at the School of Public Health.

Gravenstein said the study will compare two licensed, safe and effective vaccines – an egg-free recombinant flu vaccine and a traditional flu vaccine where seasonal influenza viruses are mass-produced in chicken eggs and then inactivated – in up to 1,000 nursing homes each in this and the next flu season. He said the team will test the hypothesis that the recombinant vaccine will be more effective at protecting residents with these specific proteins than the larger variety of proteins in vaccines produced in chicken eggs.

The agreement is a part of a partnership between Brown and Insight Therapeutics – a Virginia-based company that specializes in clinical research involving older adults as well as professional medical education and health communications – and Sanofi Pasteur, a French pharmaceutical company that produces vaccines against infectious diseases such as influenza, tetanus and rabies.

The sponsored research partnership comes as Brown continues to expand its relationships with corporate and industry partners through its Office of Industry Engagement and Commercial Venturing.

Brown's other initiatives to create new collaborations include the newly launched riHub accelerator based in Providence and the Brown Biomedical Innovations to Impact fund, which supports the development of biomedical technologies into commercial products.

The new research will build on a foundation of previous work in which Gravenstein and Insight Therapeutics co-founders Ed Davidson and Lisa Han have compared the effectiveness of different flu vaccines, such as high-dose vs. standard-dose vaccines, in nursing homes. Gravenstein said that the partnership between Brown, Insight Therapeutics and Sanofi has strong potential for several reasons.

The team will use Medicare claims data and a dataset that measures quality of care at nursing homes on a quarterly basis to track the long-term outcomes after offering one of the two vaccines to their residents. Those outcomes will include, for example, residents being hospitalized for respiratory illnesses, or for any reason, for at least two years following vaccination.

Gravenstein said the study design will allow the team to efficiently study tens of thousands of elderly individuals in nursing homes – a clinically relevant context. Getting answers about the comparative effectiveness of different flu vaccines can inform public health decision-making, he said.

Sanofi Pasteur is providing funding to Insight for the seasonal supply of the study flu vaccines for residents and staff in all participating nursing homes. Gravenstein said Sanofi will have no role in the study design or the analysis of the data – the company will play a role similar to that of the federal government in federally funded research.

The Brown research team also includes **VINCE MOR**, **ISSA DAHABREH**, **PEDRO GOZALO**, **NINA JOYCE**, **KEVIN McCONEGHY**, **PATIENCE MOYO**, **ORESTIS PANAGIOTOU**, **THERESA SHIREMAN** and **ANDREW ZULLO**, primarily in the Center for Gerontology and Health Care Research; and **DAVID CANADAY** and **ELIE SAADE**, both at Case Western Reserve University. ❖

University Surgical Associates changes name to Brown Surgical Associates

PROVIDENCE – University Surgical Associates, the largest multidisciplinary surgical group in Rhode Island, changed its name to Brown Surgical Associates, effective January 1, 2020.

"Brown Surgical Associates and University Surgical Associates are one in the same. The name change reflects our commitment to strengthening our affiliation and partnership with Brown University's Warren Alpert Medical School," said **DR. WILLIAM CIOFFI**, President of Brown Surgical Associates. "This name change also aligns with our goal of bringing world class surgical care to all of RI and Southern New England."

A photo from University Surgical Associates' grand opening ceremony in East Greenwich, one of multiple locations currently in operation.

As one of the six foundations that comprise Brown Physicians, Inc., Dr. Cioffi stated, "the decision supports the overarching mission to integrate care across the state to improve the quality of care for patients." All locations, services, and personnel will remain the same, according to Dr. Cioffi. ❖

Statewide autism study finds later diagnoses for girls, high rates of co-occurring disorders

A study analyzing the first 1,000 patients from the Rhode Island Consortium for Autism Research and Treatment found that girls receive autism diagnoses an average of 1.5 years later than boys, and people with autism often have co-occurring medical and psychiatric conditions.

PROVIDENCE [BROWN UNIVERSITY] – A new study analyzing the first 1,000 participants in the Rhode Island Consortium for Autism Research and Treatment (RI-CART) identifies key trends in the presentation and diagnosis of autism spectrum disorder. The study was published in Autism Research on Jan. 20th.

The first finding was that girls with autism receive a diagnosis, on average, nearly 1.5 years later than boys. This is likely because parents and clinicians tend to notice language delays as the first sign of autism, and girls in the study exhibited more advanced language abilities compared to boys, said study authors **STEPHEN SHEINKOPF** and **DR. ERIC MORROW**.

Autism is far more common in boys. The RI-CART study found more than four times as many boys as girls with autism; however, given the large size of the sample, the study was well-powered to evaluate girls with autism. The finding that girls with autism are diagnosed later is clinically important, said Morrow, an associate professor of molecular biology, neuroscience and psychiatry at Brown University.

"The major treatment that has some efficacy in autism is early diagnosis and getting the children into intensive services, including behavioral therapy," Morrow said. "So if we're identifying girls later, that may delay their treatments."

Sheinkopf, an associate professor of psychiatry and pediatrics at Brown, emphasized the importance of early recognition.

"We need to think about how we can improve recognition of autism in individuals – including many of these girls – who don't have the same level of primary language delay but may have other difficulties in social communication, social play and adapting to the social world," he said. "And as we improve diagnosis for the full range of individuals in the early years, we must also rethink early interventions to make sure they're designed appropriately for children who might need assistance on more nuanced elements of social adaptation. We need to refine treatments so they cater to individual needs."

Based at Bradley Hospital in East Providence, the team behind RI-CART represents a public-private-academic collaborative – a partnership between researchers at Brown, Bradley Hospital and Women and Infants – that also involves nearly every site of service for families affected by autism in Rhode Island. The study team also integrated members of the autism community, family members and particularly the Autism Project, a family support service for autism in the state.

By engaging both the community and treatment providers, the study enrolled more than 20 percent of pediatric-age individuals with autism in Rhode Island. Participants were recruited from all geographic regions of the state, and as part of the study, they were given rigorous in-person assessments.

Most participants had received an autism diagnosis prior to entering the study (a community diagnosis), and their diagnosis was subsequently confirmed by an in-person assessor, meaning that they also received a research diagnosis. The study also included individuals whose diagnoses were less clear-cut. For example, some individuals received either a community diagnosis or a research diagnosis, but not both. Other individuals were referred to the study but did not have evidence of autism from either a community evaluation or the research assessment.

"The group that was diagnostically less clear-cut represents the complexity that clinicians encounter on a daily basis, so it's a realistic sample in that sense," Sheinkopf said. "This full range of heterogeneous autism presentation is rather unique to our study."

The other major finding of the study was that people with autism frequently exhibit co-occurring psychiatric and medical conditions.

Nearly half of the participants reported another neurodevelopmental disorder (i.e., attention-deficit/hyperactivity disorder (ADHD) or intellectual disability), while 44.1 percent reported a psychiatric disorder, 42.7 percent reported a neurological condition (i.e., seizures/epilepsy, migraines, tics), 92.5 percent reported at least one general medical condition and nearly a third reported other behavioral problems.

"These co-occurring conditions need also to be a focus of treatment for patients," Morrow said.

"Many people with autism need support for the psychiatric and emotional challenges that are prevalent in people who share this one diagnosis," Sheinkopf added. "These are clinically complicated individuals who deserve strong, sophisticated, multidimensional, multidisciplinary care."

Sheinkopf and Morrow say they're encouraged by the support and collaboration of a variety of health care providers, community members and particularly, by the level of commitment shown by the families who participated in the study. Going forward, they're hopeful that the RI-CART registry will lead to more studies that will improve the lives of people with autism and their families, particularly because the cohort currently involves such a wide age range of participants, including individuals with autism ages 2 to nearly 64.

"Given that autism is a developmental disorder, the field really needs to focus on longitudinal studies: following people's development and transitions," Morrow said. "I think we're going to learn even more when we follow children from a very young age as they develop, including into adulthood."

In addition to Sheinkopf and Morrow, other Brown University authors on the study were Carolyn McCormick, Brian Kavanaugh, Danielle Sipsock, Giulia Righi, Lindsay Oberman, Daniel Moreno-De Luca, Ece Gamsiz Uzun, Carrie Best, Beth Jerskey, Pei-Chi Wu, Rebecca McLean, Todd Levine, Hasmik Tokadjian, Kayla Perkins, Elaine Clark, Brittany Dunn, Alan Gerber, Elena Tenenbaum and Thomas Anders. Additional contributors include Joanne Quinn and Susan Jewel from the Autism Project.

The study was funded by the Simons Foundation Autism Research Initiative (286756), the Hassenfeld Child Health Innovation Institute at Brown University, the National Institutes of Health (though the National Center for Advancing Translational Sciences), the Clinical and Translational Sciences Award (KL2 TR002530 and ULI TR002529) and the National Institute of Mental Health (R25 MH101076 and T32 MH019927).

RI-CART received pilot support from the Carney Institute for Brain Science at Brown, the Norman Prince Neuroscience Institute and the Department of Psychiatry and Human Behavior. ❖

CODAC Behavioral Healthcare joins the Horizon Healthcare Partners Network

CRANSTON – CODAC Behavioral Healthcare (CODAC) has joined the Horizon Healthcare Partners (HHP) service network as part of its ongoing effort to improve the quality of care for individuals in recovery. The partnership is expected to help individuals with a substance use disorder receive a holistic approach to care while reducing medical costs for the state of Rhode Island.

Through membership in the network, CODAC Behavioral Healthcare will work with other partner organizations to help patients meet their unique medical needs. "Horizon Healthcare Partners is an incredible asset for the state of Rhode Island, and the recovery community. The evolving nature of the opioid crisis has necessitated a greater need for the coordination of healthcare services across organizations in the Ocean State," said **LINDA HURLEY**, CEO/President of CODAC Behavioral Healthcare. "This partnership serves as a promise to our community that we are actively looking for ways to provide targeted healthcare solutions."

Leaders at CODAC and HHP are also hopeful that the partnership will help patients reduce their medical costs, and reduce expenses at CODAC Behavioral Healthcare through expanded collaboration. "Each organization in the behavioral health space must strengthen and deepen its relationships with like-minded providers in order to thrive in this environment. Programs are more effective when organizations collaborate and coordinate services," said **JIM RYCZEK**, CEO of Horizon Healthcare Partners.

Administrators are still working on the programming that would be appropriate to collaborate on with other HHP partners, Hurley says. "If there is an opportunity to bring one of our successful programs to more people, we're certainly open to making that possible," Hurley added.

Horizon Healthcare Partners has already worked with CODAC on streamlining MAT inductions – the medically monitored startup of medication assisted treatment – and referrals to ongoing treatment through the BH Link, Ryczek explained. BH Link is the state's emergency behavioral health triage center that coordinates behavioral health services with partners in the medical field. HHP has a state contract to manage the BH Link program. "CODAC is excited to provide further specialty care for SUD/OUD through this collaborative effort," said Hurley.

Through the partnership, CODAC has also secured an advocacy platform on HHP's 2020 legislative agenda. "I am thrilled to welcome such a well-respected community-based organization like CODAC to the HHP family," said Ryczek. "We share a common mission and set of values to serve the people of Rhode Island who need us, and I am looking forward to working with CODAC as an HHP Partner."

Other community partners include The Kent Center, Tides Family, Community Care Alliance, and Newport Mental Health. ❖

AMA issues checklist for the transition to E/M office visit changes

CHICAGO – The American Medical Association (AMA) is helping physician practices integrate fundamental changes to the coding and documentation of evaluation and management (E/M) office visit services that account for nearly $23 billion in Medicare spending. New Medicare office-visit coding and documentation guidelines are simpler and more flexible, but physician practices will need to prepare in the new year to get the full benefit of the burden relief the changes are designed to bring.

The AMA worked with the Centers for Medicare & Medicaid Services (CMS) and convened specialty societies and other health professionals to simplify the requirements, make them clinically relevant, and reduce excessive documentation burden. Key elements of the E/M office visit overhaul include:

- Eliminating history and physical exam as elements for code selection. While significant to both visit time and medical decision-making, these elements alone should not determine a visit's code level.
- Allowing physicians to choose whether their documentation is based on medical decision-making (MDM) or total time. This builds on the movement to better recognize the work involved in non-face-to-face services like care coordination.
- Modifying MDM criteria to move away from simply adding up tasks to focus on tasks that affect the management of a patient's condition.

"These foundational changes are intended to reduce documentation burden and provide physicians more time with patients, not paperwork, said AMA President **PATRICE A. HARRIS, MD, MA**. "There's a lot to understand and to prepare for before the new guidelines take effect Jan. 1, 2021. The AMA is helping physician practices to start planning now and offers resources to anticipate the operational, infrastructural and administrative workflow adjustments that will result from this overhaul."

The following 10-point AMA checklist and linked resources will help guide physician practices for a smooth transition to the simpler and more flexible guidelines:

1. Identify a project lead
2. Schedule team preparation time
3. Update practice protocols
4. Consider coding support
5. Be aware of medical malpractice liability
6. Guard against fraud & abuse law infractions
7. Update your compliance plan
8. Check with your electronic health record vendor
9. Assess financial impact
10. Understand additional employer or payer or medical liability coverage requirements

To learn more about these significant CPT code set revisions, visit the CPT E/M webpage. Additionally, the AMA has created an interactive educational module, a detailed description of the code and guideline changes, along with a table illustrating medical decision making revision to educate physicians practices. ❖

Appointments

Lifespan elects Phillip Kydd to Board

PROVIDENCE – The Lifespan Board of Directors has elected a new member – **PHILLIP KYDD**, of Warwick. He is the Deputy Director for the Rhode Island Department of Transportation and has had an impressive tenure as an Executive in Residence at the University of Rhode Island, advising executive leadership on capital improvements across the University's four campuses. He developed the URI 2017–2025 R.I. Transportation Improvement Program and created and implemented URI's award-winning Transportation and Parking Master Plan.

Prior to his role at URI, Kydd spent 29 years at RIDOT, serving as deputy director and chief operating officer from 2010 until his assignment at URI began in 2015. He is a life trustee of The Miriam Hospital Foundation, a past chairman of The Miriam's neighborhood and community relations committee, and vice chairman of the HarborOne RI Foundation.

"I'm very pleased to join the Lifespan Board of Directors," Kydd said. "I have enjoyed my board service at The Miriam Hospital and am happy to put my experience in transportation, mobility management and planning to work for the Lifespan system. I look forward to collaborating with my fellow directors and Lifespan executives in the months and years ahead." ❖

Angela M. Taber, MD, named Medical Director of the Cancer Center at South County Health

ANGELA M. TABER, MD, has joined South County Health as the Medical Director of the Cancer Center. She joins the Center from The Miriam Hospital and Rhode Island Hospital.

She is the only physician in Rhode Island board certified in both Oncology and Palliative Care.

As the Cancer Center Medical Director, Dr. Taber leads a multidisciplinary team of expert physicians and highly trained staff practicing the latest medical advances in cancer diagnosis, treatment, and follow-up care.

The South County Health Cancer Center is one of only 24 accredited cancer programs in the United States to receive the 2018 Outstanding Achievement Award from the Commission on Cancer. ❖

Sarah Pagliarini, NP, joins University Neurology

CRANSTON – **SARAH PAGLIARINI, NP**, a board-certified Advanced Practice Nurse Practitioner specializing in treating patients with various neurological disorders, has joined University Neurology.

"We are truly excited someone with such a valuable and diverse background is not only returning home to Rhode Island but has also decided to use her extensive skills here at University Neurology to help treat patients with Alzheimer's, Parkinson's, epilepsy, migraines, ALS, multiple sclerosis, traumatic brain injury, headache, and stroke," said University Neurology founder Dr. Joseph Centofanti.

Pagliarini received her Master of Science in Nursing from Kaplan University in Chicago, where she graduated magna cum laude. She received her Bachelor of Science in Nursing from Florida Gulf Coast University.

Originally from Rhode Island, Pagliarini began her career as a registered nurse in New England working at Saint Raphael's Hospital in New Haven, Connecticut; Brigham and Women's Hospital in Boston; and The Miriam Hospital in Providence. She eventually moved out west, working as an RN in San Jose and Santa Monica, California before becoming a Family Nurse Practitioner at St. John's Well Child & Family Center in Los Angeles, providing primary and urgent care needs to patients of all ages, while also serving as a mentor and preceptor for both nursing students and nurse practitioner students. ❖

Rhode Island Free Clinic elects Board, expands members

PROVIDENCE – The Rhode Island Free Clinic is enacting changes to its Board of Directors as of January 2020. Board President **MARK GIM**, President and COO of the Washington Trust, is stepping down from his position to take a President Emeritus position, to be succeeded by **WILLIAM FITZGERALD**, Vice President at Amica Mutual Insurance Company. Mr. Fitzgerald had previously served the Clinic as the Board Treasurer, and he will be succeeded as Treasurer by **DOMENIC DELMONICO**, Executive Director of Rhode Island Medicaid at Tufts Health Plan.

Mr. Fitzgerald is currently a Vice President in Sales & Client Services at Amica Mutual Insurance Company, where he has worked since 1993. He has served on the Clinic's Board of Directors since 2009 and has previously served as Board Secretary and Board Treasurer.

Mr. Gim is the President and Chief Operating Officer of the Washington Trust Company, where he has worked since 1993. He began serving on the Clinic's Board of Directors in 2009 and was elevated to Vice President in 2011. Mr. Gim has served as the President of the Board of Directors since 2014 and serves on the board of many other philanthropic organizations in the greater Rhode Island area.

William Fitzgerald shared, "Mark's vision has positioned the Rhode Island Free Clinic to continue executing on our mission of meeting the healthcare needs of those in our community without insurance or access to care. His dedicated leadership has moved us forward over the past decade and will be felt well into the future."

Domenic Delmonico is the executive director, Rhode Island Medicaid, at Tufts Health Plan, and previously served as a senior vice president at Care New England. Mr. Delmonico started on the Board of Directors for the Clinic in August of 2013 and has served as the Clinic's Treasurer in previous years.

In addition, new members have joined the Board: **LOREE DUBOIS**, of Kahn, Litwin, Renza, and **JOE PERRONI**, of Delta Dental of Rhode Island, come aboard. Both Ms. Dubois and Mr. Perroni join as the Clinic reached new records in number of patients seen and extent of services offered for the working uninsured population of Rhode Island.

Loree Dubois is a Partner at KLR, working in the Corporate Tax Services Group, where she chairs the firm's Corporate Tax Group and is Co-Chair of the Healthcare Services Group. Ms. Dubois has over twenty-five years of experience providing tax advisory services and has served as an instructor at the Center for Women and Enterprise.

Joe Perroni is the President and CEO of Delta Dental of Rhode Island and previously worked at Delta Dental of Rhode Island as the Chief Sales Officer and Vice President Business Relations. Mr. Perroni has twenty-five years of experience in the dental insurance industry and serves on the boards of a number of local charities including Make-A-Wish Massachusetts and Rhode Island. ❖

Recognition

Miriam Hospital named Top Hospital in the U.S. by Leapfrog Group

PROVIDENCE – The Miriam Hospital is one of just 120 hospitals across the country to be recognized as a Top Hospital by The Leapfrog Group, a national watchdog organization focused on health care safety and quality.

Close to 2,100 hospitals were considered for Top Hospital awards in four categories, with The Miriam being included among the Top Teaching Hospitals – a select group of just 55 hospitals nationwide. The prestigious honor, which The Miriam has received for three consecutive years, follows the "A" grade that Leapfrog recently awarded The Miriam for the eighth time in a row in its semi-annual ratings.

Hospitals that made the list met a rigorous set of standards across many areas of hospital care, including infection rates, safe surgery practices, and capacity to prevent medication errors. To qualify, hospitals must rank tops among peers in the 2019 Leapfrog Hospital Survey, which assesses hospital performance on the highest known standards for quality and patient safety. ❖

Jack R. Wands, MD, elected AAAS 2019 Fellow

Jack R. Wands, MD
[PHOTO: BROWN UNIVERSITY]

More than 400 members of the American Association for the Advancement of Science have earned the lifetime distinction of AAAS Fellow, in honor of their invaluable contributions to science and technology.

Fellows are elected each year by their peers serving on the Council of AAAS, the organization's member-run governing body. The 2019 group will receive official certificates and rosette pins in gold and blue, colors symbolizing science and engineering, in a ceremony on Feb. 15, 2020, during the AAAS annual meeting in Seattle.

JACK R. WANDS, MD, Director of The Liver Research Center, Rhode Island Hospital and Brown University, has been named in the Section on Medical Sciences. He is the Jeffrey and Kimberly Greenberg-Artemis and Martha Joukowsky Professor in Gastroenterology and Professor of Medical Science at Brown.

The 443 newly elected Fellows represent each of AAAS's 24 sections, from neuroscience and psychology to social, economic and political sciences. The honor recognizes diverse accomplishments, including pioneering research, leadership within a given field, teaching and mentoring, fostering collaborations and advancing public understanding of science.

In order to be considered for the rank of Fellow, a AAAS member must be nominated by three previously elected Fellows, the steering group of a AAAS section, or the organization's CEO. Nominations go through a two-step review process, with the relevant steering group reviewing nominations in their section and the AAAS Council voting on the final list. ❖

The 2019 Fellows will receive rosette pins in gold and blue, colors symbolizing science and engineering, at the 2020 AAAS Annual Meeting. [PHOTO: AAAS]

IMAGES IN CLINICAL MEDICINE

Original, high-resolution images which have not been published elsewhere will be considered for publication. Submit 2–4 images.

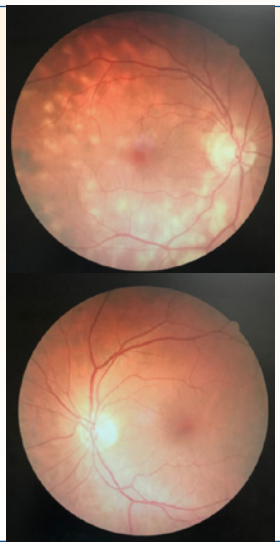
Submissions should include:

Brief title: 8 words or less

Content: Relevant clinical information, findings, clinical course, and response to treatment if initiated. Limit: 400 to 600 words

Legends: All labeled structures in the image should be described and explained in the legend. Any identifying information should be removed from the image.

Author information: Names, professional degree, academic/hospital affiliations, address, email and telephone number.



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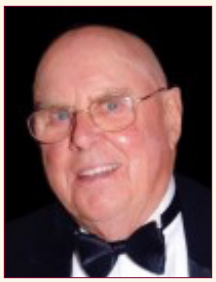
Obituaries



DR. DAVID M. BARRY of Fort Myers, Florida, formerly of Providence, a retired Rhode Island neurosurgeon, passed away peacefully on Jan. 6th surrounded by his loving family. He was just four weeks shy of his 92nd birthday.

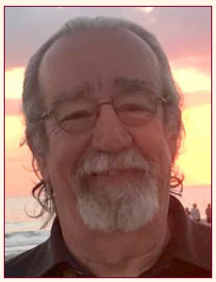
He received his medical degree from Thomas Jefferson University and did his post- graduate training at St Elizabeth's Hospital, the Boston City Hospital, Dartmouth Hitchcock Medical Center and Yale Medical School. During this time, he paused his training to serve as a surgical medical officer in the United States Air Force.

He was one of the youngest individuals to be certified by the American Board of Neurological Surgery and served as the first president of the RI Chapter of the American College of Surgeons. He was elected President of the New England Neurosurgical Society and was appointed to several positions to both the Congress of Neurosurgery and the American Association of Neurologic Surgeons. While his contributions to the medical field were countless, most importantly, Dr. Barry was known as a kind and compassionate man always putting his patients at ease. He was humble to his core and felt fortunate to dedicate himself to the work he loved.

During his career in Rhode Island, Dr. Barry served as Chief of Neurosurgery at Miriam Hospital, Memorial Hospital, Kent Hospital, and St Joseph's Hospital. Always interested in teaching, in 1982 he temporarily closed his RI practice to become the Visiting Professor of Neurosurgery at Dartmouth Medical School. He retired from active practice in 1991.

With his cup always half full, he felt blessed to have lived a happy and long life and was grateful for all those who were a part of it, including his many beloved four-legged friends who brought him so much joy. He is survived by his loving wife JoAnn, as well as his three children, David Barry, Kathleen Barry, and Lorraine Pickell (Kirk), along with his stepdaughter Grace Hagino (Owen) and his son-in-law Gregg Swajian. He leaves ten grandchildren whom he loved fiercely. They will treasure his stories forever and pass them on to the next generation. He was predeceased by his daughter Maureen Swajian and the mother of his children, Lorraine Barry.

In his memory, contributions to American Diabetes Association, P.O. Box 15829, Arlington, VA 22215, would be appreciated. ❖



REID W. COLEMAN, MD, FACP, 69, of Columbia, Maryland, died peacefully on December 2, 2019, having been treated for several malignancies. He is survived by his wife, Katherine (Newberry) Coleman, two children – Brendan Coleman of Raynham, MA, and Laura Coleman Bacon of Catonsville, MD, and his grandchildren, Skylar and Owen Bacon.

Beside his wife, children and grandchildren Reid is survived by his sister Lynn Ferrari Neilson and her husband Ron, sister-in-law Deirdre Jordan Coleman, and several nieces, great nieces and nephews. He was predeceased by his brother Thomas Coleman.

After receiving his MD from Brown University, he practiced internal medicine for over twenty years in Providence. In 2001 he became the Medical Director for IS at the Lifespan Health System until 2011 when he became CMIO for Nuance Communications. Throughout his career he continued to teach residents and students in the Brown system and received many teaching awards. After retiring in 2017, he pursued traveling, woodworking, and playing bridge

Reid asked that anyone wishing to make a memorial gift donate to their favorite charity. ❖

DR. ALICJA RUDNICKA-MacGILLIVRAY, 77, of Sutton, MA, passed away on Jan. 5, 2020 at home, surrounded by her family, after a courageous battle with cancer.

She graduated from the Warsaw Medical Academy in Poland before immigrating to the United States in 1968. After moving to Massachusetts, she continued her medical education at Brown University, where she was Chief Resident and Teaching Fellow in Medical Science at Brown Medical School.

She then became a Fellow of the American Academy of Dermatology and opened a private practice in Webster, MA. She also worked for 24 years at Fallon Clinic and Reliant, retiring in April 2019.

She was the wife of William MacGillivray, MD, from 1968 until his death in 1996, after which she married Piotr Ferensowicz, in 2003, to whom she remained married until her death. She is survived by several step-children and grandchildren.

She was a member of the Massachusetts Medical Society, the Worcester District Medical Society, the Rhode Island Dermatological Society, the International Center of Worcester, the Massachusetts Horticultural Society, and the Polish Heritage Foundation. ❖

Martha H. Mowry, MD: Pioneer in Medicine, Suffrage Movement

MARY KORR
RIMJ MANAGING EDITOR

One hundred years ago, on Jan. 6, 1920, Rhode Island ratified the 19th Amendment giving women the right to vote. It would become federal law in August 1920. Rhode Island physician **MARTHA HARRIS MOWRY, MD**, (1818–1899), was a leader of the suffrage movement in the state and although she did not live to see the Amendment's passage, her lifelong advocacy for women's rights helped lay the foundation for this historic milestone.

2020 marks the Centennial of the 19th Amendment, which prohibits states from denying the right to vote on the basis of sex.

Dr. Mowry was the first woman medical practitioner in the state, according to an article in the 1971, Vol. 54, issue of the *Rhode Island Medical Journal,* by Dr. Seebert J. Goldowsky, its editor-in-chief. He wrote she began to study medicine in 1844 as an apprentice with Drs. Briggs, Fabyan, Fowler and Mauran, who advised her to continue her studies in Boston, particularly in laboratory dissections. In 1850, she worked at a medical college in Boston (probably the New England Female Medical College) with "Drs. Cornell, Page, Gregory and others," according to *Woman of the Century: Fourteen Hundred-Seventy Biographies*, published in 1893 by Francis E. Willard and Mary A. Livermore.

At the same time, The Providence Physiological Society, founded in 1850, sponsored monthly lectures and meetings, attended mostly by women, for 12 years. According to Rhode Island Historical Society records, "Many lectures were given by the Society's members, including Dr. Martha H. Mowry, one of the first female physicians practicing in Rhode Island and president of the Society for several years. Topics of lectures ranged from anatomy lessons to discussions of women's rights."

In 1850, Dr. Mowry was an organizer and among the speakers, who also included Frederick Douglass and Sojourner

Martha H. Mowry, MD, from "A Woman of the Century: A Crowdsourcing Project of the Nineteenth and Twenty-First Centuries." [WWW.MARYKATEMCMASTER.ORG/WOC/ITEMS/SHOW/29]

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SUFFRAGE PROCLAIMED BY COLBY, WHO SIGNS AT HOME EARLY IN DAY

50-Year Struggle Ends in Victory for Women

NO CEREMONY IN FINAL ACTION

Secretary Felicitates Leaders; Hails New Era.

Ratification of the nineteenth amendment to the Constitution of the United States, granting suffrage to women, was proclaimed officially today by Secretary Colby of the State Department.

The proclamation was signed by Secretary Colby at 8 o'clock this

PROCLAMATION ENFRANCHISES WOMEN OF U. S.

Bainbridge Colby, Secretary of State of the United States of America.

To all to whom these presents shall come, greeting:

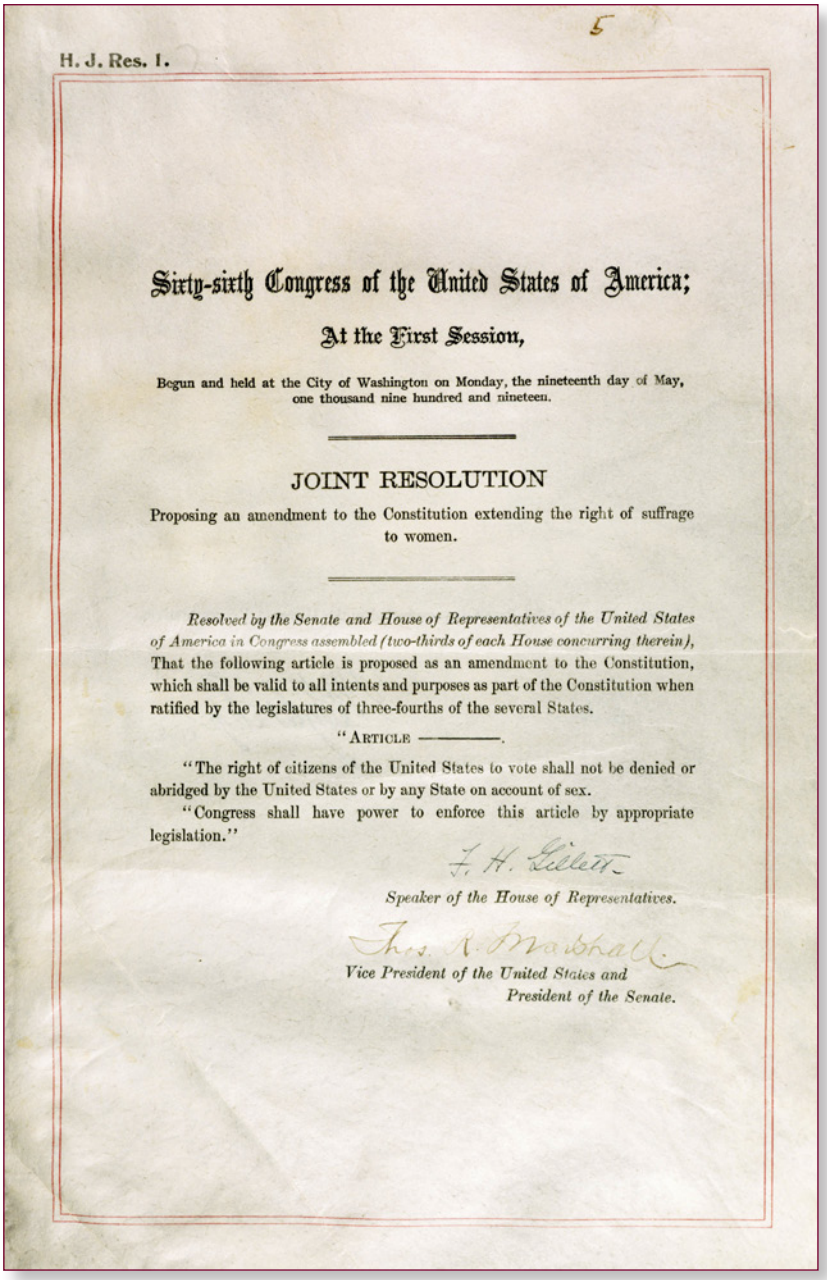
Know ye, that the Congress of the United States at the first session, Sixty-sixth Congress, begun at Washington on the nineteenth day of May, in the year one thousand nine hundred and nineteen, passed a resolution as follows, to wit:

Joint resolution, proposing an amendment to the Constitution extending the right of suffrage to women.

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled (two-thirds of each House concurring therein), that the following article is proposed as an amendment to the Constitution, which shall be valid to all intents and purposes as part of the Constitution when ratified by the legislatures of three-fourths of the sev-

Headline of Washington Evening Star, August 26, 1920: "Suffrage proclaimed by [Bainbridge] Colby [Sec'y of State]…50-year struggle ends in victory for women" [CREDIT: LIBRARY OF CONGRESS]

A group of suffragettes from the Congressional Union for Woman's Suffrage standing in front of the organization's National Summer Headquarters, 128 Bellevue Avenue, Newport, RI, circa 1914. [CREDIT: LIBRARY OF CONGRESS, PHOTO BY ERNST & THUOT, NEWPORT, RI]



H. J. Res. 1.

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Sixty-sixth Congress of the United States of America;

At the First Session,

Begun and held at the City of Washington on Monday, the nineteenth day of May, one thousand nine hundred and nineteen.

JOINT RESOLUTION

Proposing an amendment to the Constitution extending the right of suffrage to women.

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled (two-thirds of each House concurring therein), That the following article is proposed as an amendment to the Constitution, which shall be valid to all intents and purposes as part of the Constitution when ratified by the legislatures of three-fourths of the several States.

"ARTICLE ————.

"The right of citizens of the United States to vote shall not be denied or abridged by the United States or by any State on account of sex.

"Congress shall have power to enforce this article by appropriate legislation."

F. H. Gillett

Speaker of the House of Representatives.

Thos. R. Marshall

Vice President of the United States and President of the Senate.

Joint Resolution presented to the 66th Congress of the U.S. on May 19, 1919, proposing an amendment to the Constitution extending the right of suffrage. [LIBRARY OF CONGRESS]

Truth, at the first National Woman's Rights Convention held in Brinley Hall in Worcester, Mass. The "History of Woman Suffrage," (Vol. 1 1848–1861) edited by Elizabeth Cady Stanton and Susan B. Anthony, quoted *The New York Tribune* about the event: "Above a thousand persons were present, and, if a larger place could have been found, many more thousands would have attended." The editors wrote that: "The debates on the resolutions were spicy, pointed and logical, and were deeply interesting. As there was no phonographic reporter present, most of the best speaking, that was extemporaneous, cannot be handed down to history."

Speakers argued for the right to vote, to own property, to be admitted to higher education, medicine and other professions. The formal acknowledgment of Dr. Mowry's entry into the medical profession was accomplished several years later, in 1853, when she was awarded an MD diploma from an allopathic medical school in Philadelphia, after examination by a committee of physicians who visited her in Providence. She was then appointed Professor of Obstetrics and Diseases of Women and Children in the fledgling Women's Medical College of Pennsylvania. During her first address at the college, among her auditors was Nantucket native Lucretia Mott, an abolitionist, social reformer and leader of the women's suffrage movement. The two were of like minds and began a lifelong association which first began at the 1850 Woman's Right Convention.

Following a brief tenure as an academician, in 1854 Dr. Mowry returned to Providence at the wish of her father, a merchant whose wife had died shortly after the birth of Dr. Mowry. She opened a medical practice at 22 South Main Street. "Her father presented her with a horse and chaise, and since then, for nearly 40 years, she has constantly kept one or two horse in use in her rounds of practice," wrote Richard M. Bayles, in the *History of Providence County, Rhode Island* in 1891.

Dr. Mowry was also a trustee of the Woman's Educational and Industrial Union of Providence, a member of the Rhode Island Woman's Club, and vice-president for her State of the Association for the Advancement of Women. She worked closely with the leaders of the Rhode Island Woman's Suffrage Association, formed in 1868, who included suffrage luminaries Paulina Wright Davis and Elizabeth Buffam Chace.

Dr. Mowry practiced medicine on South Main St. until 1880, when she partially retired from practice, "but the demands upon her seemed so pressing that she consented in 1882 to resume work under limitations absolving her from going out nights, except in extreme cases," Bayles wrote.

Upon her death in 1899 at the age of 81, Dr. Mowry was eulogized by her sister suffragettes at the 32nd annual convention of the National American Woman Suffrage Association held in Feb. 1900 in Washington D.C. She was hailed as a pioneer in the suffrage cause and in many reforms for human welfare, as well as in promoting professional, medical and scientific work for the women of the United States.

She achieved much in her lifetime, paving the way for women in the medical profession and fighting to break the boundaries of social, gender, political and economic inequalities. Perhaps her only regret was never having cast a vote in a presidential election. Yet her work has allowed women to do this for one hundred years – a lasting legacy. ❖