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How do you keep your patients so focused? We can’t end our clinic sessions on time but you do. They keep wanting to talk. Your patients don’t.” That was the first time any trainees asked me a question like that, and I’ve been teaching students or residents since my residency began in 1980. I get agita when I run late in clinic so I, myself, am highly focused, to get to the heart of the matter and not inconvenience the remaining patients I’ve yet to see.

There is, however, another point of view, which is that one can’t be too empathetic if the meeting has to run on time. How nice can one be in 20 minutes, or 15 minutes, if the patient and family have needs? How do you spend any number of minutes when someone is grieving for the loss of their dexterity, their voice, their vocation, their hobbies, their future? I try to be nice to everyone. I love my patients. It is a privilege to have a job like mine. I have also wondered for many years about how to teach students about the patient-doctor relationship. I’ve thought a lot about how I learned to relate to patients, and how to be a good role model for students. I would like to be liked. I’ve often wondered if I have, in fact, been a good role model. My evaluations indicate that trainees have perceived me well, although the students are notoriously easy on grading their mentors, even though the ratings are anonymous.

I thought a bit before I responded to the residents. I noted that I thought my age played a role, that patients have treated me increasingly as the wise, old professor, as I became increasingly white-haired. Also, my patients knew that I ran on time, which they appreciated, and understood that this required restraint on their part. But I also shared with them disturbing observations that both my patients and my secretaries have shared with me over the years, particularly my secretaries. Patients would tell them, after our first meeting, “he wasn’t so bad…. You know he looks very intimidating.” Looking intimidating is a very good demeanor to have if you’re a boxer, football player or lawyer, but not something you’d choose for your doctor. Some of my patients came to make fun of me for not smiling. “Dr. Smile, they call you,” one told me, as she giggled. I think that is part of the intimidating feature. Others, perhaps, came to understand that perhaps my facial features were much like what had happened to their own when they developed Parkinson’s disease, the “masked facial expression.” When I teach others how to score the standard Parkinson’s disease assessment tool, I tell them that I rate myself as a “1,” meaning “borderline, could be normal” on facial expression. I assume that the ones who didn’t accommodate to that didn’t come back. The others concluded, like Barack Obama said of Hillary Clinton, “she’s nice enough.” I’d like to be nicer than that, but perhaps I can’t, at least not in 20 minutes.

Recently I saw a patient who came with her sister, a new patient. I heard them in the corridor, the healthy one ordering the one with mild autism and parkinsonism, around. The patient’s sister was mildly hostile. They had lived together for more than 60 years, and their mother had been my patient with Parkinson’s disease many years before. “Do you remember my mother? You took care of her 15 years ago.” Unfortunately, I did not, but I’ve seen so many patients with PD that my forgetting was forgivable. I did ok with the patient and the sister, and at the end, the sister told me, approvingly, that I had “mellowed” a lot since she had come with her mother. I was now, “pretty cool. Back then I could have popped you.”

It was a hit to the gut. It was undoubt-edly good that I had “mellowed,” and that, at least in her eyes, I was now “cool,” but the old me obviously had not fared so well. I didn’t ask her if she came to more than one visit, or if her
mother also felt the same way. Ever since I came across an admonition one doctor imparted to his son, during his training to also become a doctor, “You can’t always be right, but you can always be nice,” I have tried to live by that maxim, undoubtedly failing often. I realize that one person’s assessment isn’t proof of failure, but I also know that few patients are going to share a negative impression of me or their other doctors. I remain unsure whether she had finally “got back” at me for the way she perceived I had treated her mother, or she was being positive and friendly, congratulating me on becoming more of a “mensch.”

I have thought about my patient relationships for a long time. I’m sure most of my physician and other health professional colleagues do as well. There are certainly some people we don’t interact well with and maybe we don’t try our best with them. Sometimes we’re irritable, or tired, or running late. No one’s perfect. Patients may hate us for telling them things they don’t want to hear, and there is no universal way to deliver unwanted news in a way that will always be perceived as warm and caring. I also don’t know how we are perceived as the illness advances and “the expert’s” adjustments simply can’t keep up. There are many ways in which we fail our patients.

It will take a long time for this hurt to fade. It never did for my patient’s sister. I will try harder to be nice (as I can).
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Recognizing the Value of Advanced Practice Providers (APPs)

BRADFORD B. THOMPSON, MD

Fifteen years ago, as a junior neurology resident evaluating a patient for stroke, I consulted cardiology regarding a concerning EKG. Their nurse practitioner came quickly to evaluate the patient. She provided her thoughts, which included that she was not concerned about ongoing ischemia. With some nervousness because I did not want to offend, I forced myself to ask the obvious question: “Are you going to run the case by a doctor?” While maintaining complete professionalism, she proceeded with what I imagined to be a well-worn speech, explaining that she had appropriate expertise in cardiac ischemia based on her training and experience, and that she was empowered by her supervising physician to make appropriate judgments based on her assessment.

At that point in my training I had only been exposed to the typical academic hierarchy. It was my first meaningful interaction with a nurse practitioner or physician assistant—collectively, advanced practice providers (APPs). Embarrassingly, as far as I was aware, APPs, nurses, clinical pharmacists, physical, occupational, speech, and respiratory therapists, and other allied health professionals had no place in that hierarchy. I simply didn’t know any better. I have learned quite a bit since that first lesson, and now count myself among the growing group of physicians who recognize APPs and other allied health professionals for all their worth. Without them, put simply, more people would suffer, and more people would die.

Dr. Friedman’s commentary in September’s Journal (“Physician Overextenders”) misses the mark. As a clinical gait specialist, when he refers a patient for additional opinions on gait, he is justified in expecting that only the best provides those assessments. Best, though, is not defined by the letters after one’s name. The success of APPs and physicians alike depends upon multiple factors, including intelligence, education, experience, and enthusiasm. There are APPs with whom I would gladly entrust the care of a loved one because they bring all of these factors to the table. But don’t take my word for it. Studies have shown APPs to be non-inferior or even superior to physicians in a variety of settings, including primary care, cardiology, oncology, and critical care. Their importance is also recognized within neurology. The American Academy of Neurology released a position paper in that hierarchy. I simply didn’t know any better. I have learned quite a bit since that first lesson, and now count myself among the growing group of physicians who recognize APPs and other allied health professionals for all their worth. Without them, put simply, more people would suffer, and more people would die.

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It is true that a fresh APP graduate with limited or no experience will have a less robust span of knowledge than a fresh physician. However, with time, ongoing education and experience, APPs, like physicians, can develop excellence. Often, that excellence is highly focused, and may well outstrip many physicians. The specialty of my team of APPs is neurocritical care. When someone has the misfortune of requiring their services, those APPs are the exact people one would want there—not just to place a cannula and identify concerns to trigger a phone call to me, but to save lives and function right there on the spot. When the circumstance is such that a good outcome is not possible, they are also there to guide families through what may be the worst moment of their lives. Of course they can call me, and they do. Of course I supervise them. Often though, that supervision feels more like a conversation among colleagues.

I will close with another anecdote. Recently a patient who had suffered severe traumatic brain injury and made a remarkable recovery came back to visit our unit. The patient himself had no memory of his time with us, but his parents could not possibly forget. They expressed their thanks to me and the other physicians involved in their son’s care, but their emotion really came out in reconnecting with our APP staff [and nurses]!. Their hugs and expressions revealed their gratitude, admiration, and respect for the excellent care and profound caring those individuals had provided. I think we physicians should extend the same sentiment.

References

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Experience Counts
KENNETH S. KORR, MD

Medicine is a team sport. That statement, although too frequently overused, remains an ongoing reality of modern medical practice. The rapid growth of Advanced Practice Providers (APPs) in the past two to three decades has been exponential and diversified into every aspect of medical care. APPs play important roles in the OR, the ED, Critical Care Units, as hospitalists, and in office practices and outpatient clinics. They are recognized as a vital, if not indispensable part of the healthcare team providing important expertise and access to quality care in the face of a shrinking physician supply. Having worked with and supervised countless Nurse Practitioners (NPs) and Physician Assistants (PAs) during my career, I have been impressed by their level of compassion, enthusiasm, work ethic and desire to expand their knowledge and experience base. This has been equivalent to what I have seen among physicians, residents and fellows.

Which brings me to Dr. Friedman’s September commentary on “Physician Overextenders.” I did not view it as a critique of NPs or PAs or their skill level and hope it was not viewed that way by the general readership. It does, however, bring into question the different roles that APPs play in diverse practice settings, how they are represented to the public and more importantly the expectations of referring physicians and patients alike. What is the responsibility of a practice that employs APPs to explain their role and how they function within the hierarchy of a particular group? And in the specific example from Dr. Friedman’s commentary, was that expectation fulfilled?

In our cardiology practice we had a PA who specialized in pacemakers and implantable defibrillator devices. She had gained tremendous experience over 30 years and was the “go-to” person for many of us when it came to device interrogation. She may not have possessed the advanced training (4 years of medical school, 3 years of internal medicine residency, 3 years of cardiology fellowship and 1–2 years of electrophysiology training) or technical expertise of our EP docs, but she was more knowledgeable than many of the general cardiologists. She had a large device follow-up clinic and both patients and cardiologists recognized her expertise and were comfortable with her care and decision-making. Her experience counted for a lot.

In the outpatient clinic where I now work, the ratio of MDs to APPs is about 1:1. NPs manage their own patient panels, order testing and refer out to subspecialists. Physicians are available to discuss cases on an as-needed basis and as a cardiologist I am frequently asked to opine on an EKG or advanced care for a complex hypertensive or heart failure patient. So my experience counts. At the same time, as my general medicine knowledge is not that diverse, I seek out their opinions when I feel less confident of my approach. And this is how it should be in this team sport. In our clinic in general, NPs have 1–5 years of experience while the physicians have at least 10 years and frequently more. I suspect this is the trend nationwide as the professional healthcare demographic shifts. We have one Women’s Health NP with more than 20 years of experience in both the in-patient and out-patient settings and she is the “go-to” expert for the more complex women’s healthcare issues. So once again, experience counts.

Throughout my many years of practice I have referred numerous patients to numerous subspecialists and have always had the prerogative of choosing the specific physician or surgeon to refer to. That decision was usually based on the particular physician’s expertise (perhaps for a specific procedure), their experience, their manner and how I felt they would interact with the particular patient. That is what patients are looking for when they go “doctor shopping” or look at Healthgrade scores of physicians and hospitals. It is the expectation that they are going to get the best advice, the best care. In some ways it is at the center of the current national healthcare debate. And of course, that is what Dr. Friedman was looking for as well, the best and most experienced advice. It was his choice to refer to that particular subspecialist and not the NP. In the final analysis, it’s not about the competency of the NP, but whether the expectations of the patient and the referring doc were appropriately met and not just shunted into the office algorithm for how a first-time visit is handled.

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Response to Letters to the Editor
JOSEPH H. FRIEDMAN, MD

I very much appreciate the interest my column on the overuse of Advanced Practice Providers (APPs) generated. We all agree that APPs are an increasingly important and integral part of our health care system. Dr. Korr’s letter is a much clearer statement of my central argument, which was, and remains, that some APPs are being utilized inappropriately, such as having an APP perform a neurosurgical consultation requested by a neurologist instead of by the neurosurgeon to whom the patient was referred. My basic contention is the same as that in a paper cited by Dr. Thompson, that “the value that APPs bring to patient care is “not as [in a] physician replacement model, but rather an advanced practice model of care.” That article strongly supports the value of APPs in acute and critical care settings, but does not address the value of APPs in outpatient consultative specialty care, which was the focus of my column.

Dr. Thompson also cited the recommendations of a committee of the American Academy of Neurology. That article actually supports my own contention. Although supporting the use of APPs for “consultations,” it states that, “Neurologists will remain essential to the process of diagnostic evaluations and development of a care plan through consultation, while APPs may assume the leadership of straightforward cases.” An accompanying editorial on that article agrees. “For example, neurology APPs could follow patients’ anticonvulsant levels or monitor patients with Parkinson’s disease for medication side effects.”

The other three articles Dr. Thompson cites also address the use of APPs in very different settings than were relevant to my column. It is likely that there are publications supporting the value of APPs substituting for physician specialists in outpatient specialty care, as Dr. Korr describes from personal experience, but how they are used must be better thought out than the cases I described.

References

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MEMPHIS, TENNESSEE

A statue of Elvis Presley stands on Beale Street, location of the many historic music clubs where the ‘Memphis Blues’ sound originated. Sun Studio was where the 18-year-old Elvis recorded his first song, and music legends B.B. King, Johnny Cash, and Jerry Lee Lewis helped define the Memphis sound, a blend of blues and country music that formed the roots of rock’n’roll. RIMJ designer Marianne Migliari viewed a recent issue at the entrance to the legendary street.

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Trauma Surgery and Acute Care Surgery: Evolution in the Eye of the Storm

CHARLES A. ADAMS, JR, MD, FACS, FCCM
STEPHANIE N. LUECKEL, MD, ScM, FACS
GUEST EDITORS

Once again, I have the honor to introduce this month’s edition of the Rhode Island Medical Journal focusing on trauma surgery. Ten years ago, in an article entitled “Care of the Trauma Patient: A Discipline in Flux,” I wrote briefly of the developments affecting the management of injured patients as well as those who care for them. Since that time, the evolution of trauma surgery to Acute Care Surgery (ACS) continues and the ACS “model” has become the standard care model in most of the United States. The genesis of ACS is multifactorial and reflects a confluence of several external forces on the practice of trauma surgery. As imaging technology and risk-stratified outcomes data became more refined, trauma surgery shifted away from routine operative interventions to treat most injuries to a more selective operative approach incorporating non-operative management (NOM). NOM was borrowed from pediatric surgeons who long ago established that children with some solid organ injuries, such as splenic lacerations, could be safely and effectively managed without surgical intervention.

Advances in medical imaging enabled trauma surgeons to better identify injuries and define populations of trauma patients who are appropriate for NOM. Non-invasive CT angiography has by and large supplanted invasive angiography in the diagnosis of occult vascular injuries. Formal angiography is generally reserved for those patients in whom embolization will be necessary, particularly in cases of known solid organ injury where NOM is being attempted. Detailed risk-adjusted databases such as the Trauma Quality Improvement Program (TQIP) allow trauma surgeons to formulate data-driven treatment plans incorporating sophisticated outcomes data, which eliminates some of the uncertainty and variability that trauma surgeons routinely encounter. TQIP is an essential component of trauma center verification and participation in the program is mandated by the American College of Surgeons (ACS), the national organization that accredits trauma centers. Unlike many administrative databases in healthcare, TQIP and several other surgical databases such as the National Surgical Quality Improvement Project (NSQIP) database, are risk-adjusted so that like patients can be compared across participating centers. These high-quality, risk-adjusted databases serve as the engine to drive quality improvement. The ongoing commitment to quality improvement attests to the fact that surgeons began the “quality movement” in healthcare more than 150 years ago. At that time, Codman established his “end result system” that tracked patient outcomes as well as oversaw the first mortality and morbidity conferences, thus incorporating quality improvement into the practice of surgery. Continuous quality improvement has been a vital function of the ACS Committee on Trauma for more than 60 years and it is often forgotten that the ACS helped create the Joint Commission on Accreditation of Hospitals.

One of the unintended consequences of NOM was that trauma surgery moved from a very operative profession to a more non-operative one, which lead to an erosion of some of the surgical abilities of surgeons caring for trauma patients. Coincident with this development were changes in the practice of surgery with an explosion in sub-specialization, and less “old school” general surgeons, that adversely affected the ability of hospitals to staff their on-call schedules. Since all trauma surgeons are board-certified general surgeons, they quickly expanded their role to fill the void and many of them incorporated emergency general surgery into their daily practice. The majority of trauma surgeons are double-boarded in critical care, which empowers them to care for the sickest surgical patients, whereas some general surgeons may be hesitant to operate on critically ill patients. The incorporation of emergency general surgery into trauma surgery allowed many institutions to round out their call schedule and ensured that trauma surgeons maintained their sharp operative edge while also maximizing their clinical productivity. The burgeoning ACS movement became solidified and had at its core three disparate but inter-related disciplines: trauma surgery, surgical critical care and emergency general surgery.

During the transformation of trauma surgery into ACS, a similar evolution affected surgical training of both general surgery residents and critical care fellows. The American Council for Graduate Medical Education (ACGME) duty-hour changes of 2003 had unintended adverse effects on the training and ability of general surgery residents to treat many common surgical emergencies that were formerly in the domain of general surgeons. It became apparent that most graduating chief residents, particularly those choosing trauma surgery as their career, required additional training in emergency general surgery. By design, most surgical critical care fellowships are heavily focused on intensive care medicine, and while there are some opportunities for
operative rotations and experience, this was not enough to address the growing deficiencies in graduating surgical chief residents. To fill this gap in training, many surgical critical care fellowships added an additional year of training beyond the ACGME-approved year in critical care training. This additional year was focused on trauma and emergency general surgery and grew into Acute Care Surgery fellowships. These fellowships include advanced surgical training in vascular, thoracic, and hepatobiliary surgery to round out some of the perceived weaknesses in graduating chief surgical residents, as well as to prepare ACS fellows to practice as fully capable trauma surgeons. The governing body of these ACS fellowships was not the ACGME but rather the American Association for the Surgery of Trauma (AAST), which is the premier academic society of trauma surgery. Like ACGME accreditation, AAST accreditation of ACS fellowships requires a diverse didactic curriculum addressing traumatic and general surgery emergencies, in-service examinations, case logs, requirements for scholarly activity as well as continued re-verification of ACS fellowship programs through a rigorous review process incorporating site visits by teams of experienced reviewers.

Presently, most chief surgical residents choosing a career in trauma seek an additional two years of training in ACGME-approved critical care residencies and AAST-approved ACS fellowships, which renders them well versed in treating a wide range of surgical patients. The initial iteration of ACS fellowships sought to address some of the problems that institutions experienced as previously discussed, namely the lack of physicians willing or able to take call due to sub-specialization, fear of medico-legal liability, or simply being spread too thin and overworked. The founders of ACS envisioned that ACS surgeons would fill some of that void through training in basic orthopedic and neurosurgical interventions; however, this never came to fruition due to resistance of the governing bodies of those respective disciplines, as well as fear of litigation and concerns about maintaining competency for low-volume, high-risk interventions. Now, many trauma centers and ACS surgeons perceive a lack of clinical support from vascular surgeons as vascular fellowship training has steadily moved toward endovascular approaches. Consequently, experience in open vascular surgery becomes much less common in general surgery residencies as well as in vascular fellowships. Unfortunately, few traumatic vascular injuries are amenable to endovascular approaches, especially when the patient is hemodynamically unstable, so most require open operative repair. This may create the uncomfortable scenario where the vascular consultant may have less experience in treating the major vascular injury than the ACS surgeon requesting their assistance. Some trauma centers have sent fully trained ACS surgeons for formal training in vascular surgery so that they may serve as the continual in-house consultant to the ACS surgeons, but this is cost and time prohibitive. Based on similar needs in the past, it is possible that ACS fellowships may incorporate an additional year of training dedicated to vascular surgery, which, in effect, will require a three-year time commitment following a general surgery residency. While it is hard to argue against duty-hour restrictions from the point of the trainee’s quality of life and wellbeing, it is apparent that there have been some unintended and adverse effects on the quality of surgical education and training.

Perhaps no recent development has changed the practice of trauma and ACS more than the aging of the US population. Injury is the 7th leading cause of death for patients > 65 years. A tide of aging Baby Boomers has inundated most trauma centers across the US. The leading trauma mechanism requiring admission has shifted from interpersonal violence and motor vehicle collisions to falls. Most of these are falls from standing. The unique aspects of caring for geriatric patients are discussed by DR. ERIC BENoit, et al, in his article, “Geriatric Trauma.” Rhode Island is no exception; in fact, the Rhode Island Trauma Center (RITC) at Rhode Island Hospital has one of the highest average trauma admission ages in the US at 61.3 years. In 2018, the RITC admitted 1,000 patients over the age of 80, and 353 of these patients were 90 years old or older. In response to this development, the trauma service has a collaborating geriatrician who is part of the trauma team and is an invaluable resource to assess frailty and reconsider prophylactic therapies as living arrangements and the need for additional resources such as anti-coagulation or anti-platelet therapies, as well as fear of litigation and concerns about maintaining competency for low-volume, high-risk interventions. Now, many trauma centers and ACS surgeons perceive a lack of clinical support from vascular surgeons as vascular fellowship training has steadily moved toward endovascular approaches. Consequently, experience in open vascular surgery becomes much less common in general surgery residencies as well as in vascular fellowships. Unfortunately, few traumatic vascular injuries are amenable to endovascular approaches, especially when the patient is hemodynamically unstable, so most require open operative repair. This may create the uncomfortable scenario where the vascular consultant may have less experience in treating the major vascular injury than the ACS surgeon requesting their assistance. Some trauma centers have sent fully trained ACS surgeons for formal training in vascular surgery so that they may serve as the continual in-house consultant to the ACS surgeons, but this is cost and time prohibitive. Based on

The concept of frailty is paramount in the care of elderly patients. Recent studies demonstrate that frailty is far more important to outcomes than chronologic age. Admission of geriatric patients to the trauma service is now an opportunity to assess frailty and reconsider prophylactic therapies such as anti-coagulation or anti-platelet therapies, as well as living arrangements and the need for additional resources for these patients. Often, anti-platelet or anticoagulants are discontinued in frail patients and thoughtful risk-to-benefit analysis of these therapies is best conducted in the ambulatory setting after the patient has partially recovered from the effects of injury and hospitalization. The number of approved novel anticoagulants and anti-platelet agents coming to market occurs at a dizzying pace and it can be difficult for trauma surgeons, and many other physicians, to keep abreast of these agents. DR. ANDREW STEPHEN, et al, reviews these agents and their impact on the care of injured patients in the article, “Anticoagulation and Trauma.”

Many blunt trauma patients, particularly the elderly, are susceptible to rib fractures. The RITC admits nearly 1,000

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Many blunt trauma patients, particularly the elderly, are susceptible to rib fractures. The RITC admits nearly 1,000
patients annually with rib fractures, which speaks to the fact that the RITC is a primarily a geriatric and blunt trauma center. Advances in radiographic imaging, particularly three-dimensional reconstructions of the chest, allow the trauma surgeon to fully visualize fracture patterns as well as estimate loss of thoracic volume, etc. and are invaluable in preoperative planning for chest-wall stabilization or rib “plating.” Rib plating represents an advance in technology that unites better radiographic data with open reduction and internal fixation techniques borrowed from orthopedic surgery. The indications for rib plating are still being elucidated but include flail chest, crushed chest, loss of volume, intratable pain, and pulmonary embarrassment. Rib fractures are particularly deadly in the elderly and their sequelae are often misdiagnosed as pneumonia by providers not well versed in their management. The RITC employs a multi-modality, multi-disciplinary approach toward managing these injuries, including intensive care admission for geriatric patients with blunt chest trauma. This approach has paid dividends with lower than expected mortality.12

Advances in technology are also opening new avenues for hemorrhage control, which is critically important since exsanguination remains the leading cause of death following traumatic injury. Retrograde endovascular balloon occlusion of the aorta or REBOA, has emerged as a rapid, bedside approach to temporize intra-abdominal or pelvic hemorrhage. REBOA is performed by trauma surgeons percutaneously at the bedside and can buy time while resources are mobilized to undertake operative or angiographic intervention. Tour- niquets have transitioned from the battlefield into every day civilian life as have other hemorrhage control adjuncts such as hemostatic gauzes and topical agents. Damage control surgery, one of the major advances in trauma surgery of the last few decades, is now accompanied by damage control resuscitation developed and refined on the battlefields of Iraq and Afghanistan. This new approach to hemorrhage control and resuscitation is reducing trauma mortality rates across the United States and worldwide. DR. TAREQ KHEIRBEK, et al, discusses some of these new approaches in the article, “Advances in the Management of Bleeding Trauma Patients.”

Trauma surgery and critical care medicine are experiencing a bit of an existential crisis as clinicians are asking not how to care for critically ill and injured patients, but rather should we treat them at all. The basis for these questions is the emergence of long-term outcome data highlighting the often dismal and devastating effects of the Post-Intensive Care Syndrome (PICS). PICS can leave lifelong cognitive, physical, psychological and social deficits after critical illness, especially sepsis.13 This area remains a hot-bed of research and debate. DR. STEPHANIE LUECKEL, et al, touches upon this controversial topic, focusing on Traumatic Brain Injury (TBI) outcomes in the article, “Predicting Outcomes in Acute Traumatic Brain Injury (TBI).”

Trauma surgery continues to evolve in response to a multitude of external and internal forces. Care continues to become more complex and challenging as technology and big data affords new opportunities to intervene. However, we must never lose sight of the dedicated professionals who devote themselves to the care of injured patients and hopefully we will reduce the burden of trauma, the number one killer of Americans aged 1 to 45.

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Updates in Trauma Care
**INTRODUCTION**

The incidence of trauma in the elderly is increasing. Older patients are less able to tolerate injury due to physiologic alterations associated with aging. Clinicians need to approach geriatric trauma with a high degree of suspicion to promptly recognize and treat injuries and rescue patients from their initial injury and its potential complications.

**EPIDEMIOLOGY**

Trauma is considered a young person’s disease, but the aging of the population is changing that reality. People over 65 are the fastest growing demographic, and by 2020 they will comprise over 20% of the US population. People are living longer, and many of them lead active lifestyles which increase their exposure to trauma. Conversely, a greater proportion of elderly people are living with comorbidities, and this increases their vulnerability to injury. The net effect is an increase in elderly trauma patients, and this is reflected in the proportion of patients over 65 admitted to trauma centers. At the Rhode Island Trauma Center (RITC) at Rhode Island Hospital, the mean age of admitted trauma patients has increased from 50.9 to 61.3 years over the past decade. The cost of trauma care is rising faster than overall healthcare spending, and much of this is driven by the expansion of geriatric trauma in terms of numbers, complexity and resource use.

**TRIAGE & TRAUMA CENTERS**

The Eastern Association for the Surgery of Trauma (EAST) guidelines recommend that patients over 65 years of age with comorbidities or severe anatomic injury should be treated at trauma centers. Centers that treat a higher volume of geriatric patients have improved outcomes with regard to mortality, complications, and failure to rescue (FTR), defined as death after a complication. However, fewer than 50% of patients are appropriately transferred to a higher level of care, and the risk of under-triage increases with age, fall mechanisms, and female gender. This under-triage reflects a failure to appreciate the severity of even minor injury in elderly patients, and contributes to the fact that elderly trauma patients have worse outcomes than younger patients with the same degree of injury. Because early activation of trauma teams and aggressive monitoring improve outcomes in elderly patients, clinicians should have a low threshold to transfer older patients to a trauma center. There are very few “minor” injuries in geriatric patients.

**ALTERED PHYSIOLOGY**

The numerous physiologic changes associated with aging along with co-morbidities complicate the recognition of injury severity, compromise the body’s response to trauma, and predispose to the development of complications. Elderly patients have decreased muscle mass, chest wall recoil, and cough strength, all of which contribute to increased risks of aspiration, atelectasis and pneumonia after injury, regardless of the site of trauma.

The impact of aging on the cardiovascular system is profound in the trauma patient. The heart stiffens with age, resulting in diastolic dysfunction. Older patients exhibit a blunted chronotropic response that may be exacerbated by pharmacologic beta blockade or other rate controlling factors. The data presented in the graph below illustrates the increase in geriatric trauma admissions over the past decade.
agents. These patients cannot augment cardiac output and instead compensate for hemorrhagic shock by increasing systemic vascular resistance. Vital signs that are interpreted as normal in young patients may reflect relative hypotension and decreased end organ perfusion in the elderly, particularly in those with baseline hypertension. Whereas hypotension is defined <90 in younger trauma patients, systolic blood pressures <110 are associated with increased mortality in the elderly trauma patient. This is particularly important in solid organ injuries where episodes of hypotension predict failure of non-operative management.

When assessing older trauma patients with altered mental status, it is challenging to determine if neurologic deficits are due to injury, pharmacologic agents, or baseline cognitive dysfunction. This may delay prompt recognition of injury or complications. Elderly patients are at increased risk of delirium and the high mortality associated with this complication.

Renal cell mass is lost with age, leading to decreased glomerular filtration rate which complicates pharmacokinetics, increases the risk of acute kidney injury [AKI] and impairs recovery to baseline renal function. Urinary tract infections [UTI] are a risk factor for trauma, particularly falls. A study of elderly trauma patients identified 11% with UTI on admission and a further 18% with asymptomatic bacteria. The development of UTI after trauma admission is associated with mortality and this risk increases with increasing age.

The proliferation of anticoagulation for arrhythmias and thromboembolic disease has resulted in an increasing number of elderly patients presenting with coagulopathy. Practitioners should be alert for occult bleeding, particularly within closed compartments like the skull, and clinicians must consider prophylactic pharmacologic reversal prior to obtaining CT in geriatric trauma patients.

Finally, due to impaired thermoregulation, elderly patients may present with hypothermia despite being found indoors. While the degree of temperature derangement is not as profound as with environmental exposure, hypothermia complicates and worsens outcomes from trauma in elderly patients.

The physiologic changes associated with aging and comorbidities are not equally distributed by age. Frailty is a concept that captures physiologic decline better than numeric age alone. Defined as a condition of decreased physiologic reserve and impaired ability to respond to stressors, frailty is both a risk factor for – and a predictor of – poor outcomes. Frail elderly trauma patients have a 25% mortality one year after injury; they are more likely to develop complications and require a prolonged length of stay or discharge to a facility. Because they lack the physiologic robustness to tolerate a complication, frail patients have higher rates of failure to rescue. Recognizing frailty in the elderly trauma population is critical because it allows clinicians to identify patients at high risk of adverse outcomes, intervene promptly, and achieve rescue. It may also play a role in determining futility of care.

There are multiple instruments used to calculate frailty, but there is no consensus on which model is best used across various clinical settings. Although the initial frailty index consisted of 50 preadmission variables, the modified frailty index [mFI] employs 11, including a measure of functional status. Patients who are dependent prior to injury have a worse prognosis with increased postoperative complication rates and mortality compared to independent patients. The mFI has been used to identify high risk elderly trauma patients. To guide conversations with patients and families regarding prognosis and to assist in determining futility, Zhao et al developed a geriatric trauma outcome score consisting of age, injury severity score [ISS] and need for blood transfusion, which predicts risk of hospital mortality.

Comorbidities, frailty and the geriatric trauma outcome score can be incorporated into the decision-making process with older trauma patients.

COMORBIDITIES & FRAILTY

Three of four people over 65 have at least one chronic illness, and the number of comorbidities rises with age. Recent work in emergency general surgery demonstrates that certain combinations are more lethal than others. Hypertension, arrhythmias and fluid & electrolyte [FEN] disorders are the most common and increase with age whereas coagulopathy & FEN disorders confer the highest increased mortality risk. Elderly trauma patients cannot be managed without considering their chronic diseases and socioeconomic features contributing to their disability.
suicide and abuse. The overall incidence of suicide is higher in the elderly than in the general population. Nearly three quarters are due to firearms, which carry a high mortality.\textsuperscript{19} The functionally dependent status of many elderly patients puts them at risk for abuse. While this may present as assault, abuse also takes the form of neglect, with patients found emaciated or dehydrated. Identifying abuse often requires a high level of suspicion.

**PATTERNS OF INJURY**

Several common injury patterns warrant special attention in the elderly.

**Rib fractures**

While rib fractures may be well tolerated in younger patients, as few as two rib fractures in the elderly increases the risk of pneumonia and mortality, and the risk rises with the number of fractures. Pain leads to chest wall splinting, decreased alveolar recruitment, and impaired cough which may progress to pneumonia. Rib fracture management is based on multimodal pain control and aggressive pulmonary toilet. Narcotics have a narrow therapeutic window in the elderly with somnolence and respiratory depression worsening pulmonary toilet. Acetaminophen, gabapentin and pregabalin can improve pain control while minimizing narcotics or the nephrotoxic non-steroidal anti-inflammatories (NSAIDs). Local analgesia with epidural or erector spinae blocks augment pharmacologic pain control. Pulmonary toilet consists of induced coughing, incentive spirometry or flutter valve devices to improve alveolar recruitment, and early mobilization. Aggressive pulmonary toilet and multimodal analgesia are resource-intensive therapies, but they improve outcomes. Our institution adopted a protocol whereby all patients over 65 years with 2 or more rib fractures are admitted to our trauma ICU. We observed improved outcomes with decreased need for intubation (43% to 14%) and decreased mortality (24% to 9%).

**Hip & Pelvic fractures**

Hip fractures in the elderly have a 30% one-year mortality. Early repair of these fractures is warranted as delays beyond 48 hours are associated with increased risk of death.\textsuperscript{20} Ironically, attempting to optimize medical status prior to operation may instead deplete physiologic reserves and worsen outcomes. Elderly patients have a high incidence of pelvic fractures, and even minor injury patterns may precipitate bleeding. Pelvic hematomas may be out of proportion to the severity of fractures due to poor tissue integrity with loss of tamponade effect as well as the prevalence of anticoagulation.Clinicians should have a low threshold to obtain CT imaging, reverse anticoagulation, and pursue interventional radiology to address active bleeding. Pelvic fractures in the elderly are best managed in trauma centers.

**Traumatic brain injury**

It is difficult to differentiate chronic cognitive decline from acute altered mental state due to trauma in an elderly patient; thus, a high level of suspicion is mandatory. Cortical atrophy develops with age, increasing the risk of bridging vessel rupture and intracranial bleeding from even minor mechanisms; anticoagulation increases the risk of intracranial hemorrhage as much as 7–10 fold.\textsuperscript{21} As with pelvic fractures, clinicians should have a low threshold to reverse anticoagulation, even prior to imaging.

**OUTCOMES & GOALS OF CARE**

While all trauma patients are at risk for developing complications, elderly trauma patients are more likely to develop these adverse events and less likely to tolerate them. Failure to rescue from complications is one reason for higher mortality in elderly trauma patients. For those patients who do survive, the traumatic injury may be a sentinel event that precipitates a loss of function and independence. Patients who deplete their physiologic reserve during recovery may fail to achieve their pre-injury functional status and progress to a chronic disease state.\textsuperscript{12}

Despite the challenges of managing elderly trauma patients, there need not be therapeutic nihilism – we can have a positive impact. It is important to recognize outcomes beyond mortality that are valuable to patients and families. Identifying goals of care early in the hospital course includes setting realistic expectations regarding prolonged recovery, anticipated complications, and potential loss of function or independence. Geriatric and palliative care specialists play an important role in caring for trauma patients. Geriatric medicine specialists can optimize management of comorbidities and medications, and the implementation of a multidisciplinary team approach has demonstrated improved outcomes in frail elderly trauma patients.\textsuperscript{22} Early involvement of palliative care services improve clinician and family consensus around goals of care. Palliative care is associated with decreased health care utilization by trauma patients at the end of life.\textsuperscript{23}

**CONCLUSIONS**

The incidence of elderly trauma is increasing. Severity of injury may be underappreciated in elderly patients due to low energy mechanisms, injury patterns and blunted physiologic response to injury, resulting in under-triage to trauma centers, delayed recognition of complications and increased mortality. As a marker of physiologic reserve, frailty is a better prognostic factor than chronologic age. Because elderly patients are less able to tolerate injury or subsequent complications, clinicians should approach these patients with a high degree of suspicion and a low threshold to transfer to a higher level of care to achieve rescue. Trauma may be a
sentinel event leading to loss of function and independence, and this should be reflected in conversations that outline realistic expectations for patients and families.

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Anticoagulation and Trauma

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BACKGROUND

In 1933 Professor Karl-Paul Link of the University of Wisconsin first learned that coumarin, a component of clover hay, was leading to death in cattle from bleeding complications. He created a use for it as a rodenticide and called it warfarin. Warfarin first gained notoriety in 1955 when it was prescribed to President Eisenhower following a myocardial infarction. Physicians began to prescribe warfarin to patients with arrhythmias for stroke prevention, but this was mainly an empiric approach since we were decades away from establishing data on efficacy or safety.

Barritt and Jordan performed the first randomized trial with warfarin in patients with pulmonary emboli and showed improved outcomes in the Lancet in 1960.1 An ongoing problem was the dosing of anticoagulation since lab testing of prothrombin time (PT) was variable among institutions due to difficulty in obtaining uniform thromboplastin reagents. Additionally, there was also little agreement as to what degree a patient should be anticoagulated. Since this original trial, there have been numerous investigations establishing the benefit of anticoagulation for deep venous thrombosis, pulmonary emboli, stroke prevention in patients with atrial fibrillation, and other cardiovascular disease processes.

Currently the use of anticoagulation agents is rapidly increasing as atrial arrhythmias, valvular diseases and other forms of cardiovascular disease are more prevalent in our growing elderly population. Warfarin is used in approximately 13% of patients over 65 but its use is decreasing as direct or “novel” anticoagulants become more popular.2 The widespread use of anticoagulants is problematic in trauma patients with pulmonary emboli, stroke prevention in patients with atrial fibrillation, and other cardiovascular disease processes.

In the last 50 years the indications for anticoagulation use has been tailored through large, randomized, multi-institutional trials. In 1994 a pooled analysis of 5 of these trials revealed a stroke rate of 4.5% in untreated control patients with atrial fibrillation and a rate of 1.4% in those treated with warfarin.4 A subsequent meta-analysis from JAMA in 2002 showed a 45% reduction in CVA and 29% reduction in cardiovascular events when warfarin was used in patients with non-valvular atrial fibrillation. These authors found a significant increase in rates of major bleeding with warfarin, stating that for every 1,000 patients with atrial fibrillation treated with warfarin, 23 ischemic CVAs would be prevented while 9 major bleeding events would occur.5 It is accepted that anticoagulation is beneficial for prevention of CVA and other thromboembolic events but that there is no regimen that is both effective and limits bleeding risks. Other common indications for anticoagulation include pulmonary embolus, deep vein thrombosis, congestive heart failure, known atrial clot, and mechanical heart valves. There is less controversy about the indications, but discussions remain regarding duration and degree of anticoagulation.

CHADS2 AND CHA2DS2-VASC

The most effective anticoagulation strategy minimizes complications, namely bleeding events and exacerbation of injuries, by optimizing patient selection. Most efforts have focused on identifying thromboembolic risk in patients while not assessing risk of trauma or bleeding. The CHADS2 scoring system utilizes the following risk factors for ischemic CVA: congestive heart failure, hypertension, age greater than 75 years, diabetes, and history of prior CVA or transient ischemic attack (TIA). It was developed using a Medicare registry of over 2,000 patient-years of follow-up and was more accurate that two other prediction models. CVA rate was noted to increase by a factor of 1.5 for each one-point increase in CHADS2 score.6 In an attempt to refine this model, CHA2DS2-VASc system incorporated additional categories for vascular disease, age stratification, and sex. The American College of Cardiology, American Heart Association, and European Society of Cardiology recommend use of the CHA2DS2-VASc score to guide decision making. If the bleeding risk per year with anticoagulation is approximately 1–1.5% based on earlier literature, patients should only start an agent if their CVA risk is greater than 1–2% which corresponds to a CHA2DS2-VASc score of two or greater.
EXACERBATION OF INJURY WITH ANTICOAGULANTS

With millions of Americans and thousands of Rhode Islanders on anticoagulation, it is important to understand how anticoagulants affect outcome after injury. An early assessment of 212 patients with subdural hematomas found that 46 of these patients were on anticoagulation; thus anticoagulation appeared to be a risk factor for ICH. Later, patients on anticoagulation, it is important to understand how anticoagulants affect outcome after injury. An early assessment of 212 patients with subdural hematomas found that 46 of these patients were on anticoagulation; thus anticoagulation appeared to be a risk factor for ICH. Later, patients that suffered intraparenchymal brain hemorrhage and subdural hematoma were found to be at higher risk of death compared to patients who suffered similar injuries while not on anticoagulation.

There remains a deficit in data regarding hemorrhagic complications and exacerbation of traumatic injury. The gap in data was filled in significantly in the 2000s with several retrospective reviews. A 5-year review of 3,000 injured patients showed those with INR>1.5 had a relative mortality risk of 3.3 compared to those with INR<1.5. A meta-analysis suggests risk of death from blunt head trauma was doubled in patients on pre-injury warfarin in the 11 pooled studies. Additionally, in our clinical experience at the Rhode Island Trauma Center (RITC), there are large numbers of advanced-age patients that present with low-energy mechanisms (e.g. falls from standing, minor contusions, etc.) that suffer significant morbidity from subcutaneous hematomas due to anticoagulation. These cases and types of injury are not well described in the literature despite requiring hospital admission, transfusions and occasionally operative intervention. It is likely that inclusion of these types of injuries in prior studies would have negated some of the benefits of anticoagulation.

AS THROMBOEMBOLIC RISK RISES SO DOES RISK OF FALLS, TRAUMA EXACERBATION

Those patients at highest risk of thromboembolic events are also at greatest risk of suffering falls and worse outcomes after trauma. This is also illustrated by reviewing components of the CHA2DS2-VASc score; patients of increased age with comorbidities such as CHF, diabetes, and vascular disease are more likely to benefit from thromboembolic prevention while also being more likely to suffer trauma such as falls. Also, these individuals have decreased physiologic reserve and are faced with a more difficult recovery after injury. Strategies of aiming for an INR goal of 1.5–2 have been attempted but there is not enough evidence to recommend the practice.

NOVEL, DIRECT ANTICOAGULANTS

Direct thrombin and factor Xa inhibitors, also known as direct oral anticoagulants (DOACs), are increasingly popular since no monitoring is necessary, unlike with vitamin K antagonists. DOACs are unaffected by dietary changes and have fewer medication interactions. Dabigatran was approved in 2010 for patients with non-valvular atrial fibrillation and the landmark RE-LY trial found similar efficacy with lower bleeding rates with dabigatran compared to warfarin. Other DOACs include melagatran, a thrombin inhibitor, and rivaroxaban and apixaban, both Factor Xa inhibitors. In a 5-year review that compared apixaban, rivaroxaban, and dabigatran to warfarin, patients on apixaban were found to have the lowest rates of CVA or systemic embolism. Apixaban and dabigatran were associated with lower bleeding risk than warfarin. In the early stages of DOAC use, trauma surgeons and emergency medicine providers were concerned about the lack of reversal agents and it was assumed that trauma morbidity and mortality would be increased compared to warfarin. However, a recent retrospective review of injured elderly patients did not show differences in mortality, blood transfusion requirements, and length-of-stay when DOACs were compared to warfarin. Conversely, patients with major blunt trauma, defined as injury severity scores above 15, were shown to have lower rates of mortality and need for transfusion when on pre-injury DOACs versus warfarin.

Head-injured patients are the most vulnerable to bleeding exacerbation from anticoagulation use. DOAC use has been associated with significantly lower mortality, and decreased rates of operative management and discharge to a skilled nursing facility compared to warfarin in cases of blunt TBI. In patients over 65 years of age with ICH from low level falls, there was no difference in mortality, but lower rates of transfusion and shorter ICU length-of-stay with DOACs have been noted compared to warfarin. The reason for these findings may be that, unlike with warfarin, patients do not become “supra-therapeutic” on DOACs due to their fixed dosing.

REVERSAL OF ANTICOAGULATION AFTER INJURY

For reversal of warfarin, most trauma centers including ours, have shifted from using fresh frozen plasma (FFP) and vitamin K to prothrombin complex concentrates (PCC) and vitamin K. PCCs are stored in a freeze-dried powder form and can be rapidly reconstituted without delay, unlike FFP, which requires thawing. The concentration of vitamin K dependent clotting factors of PCCs is much greater than that of FFP. We use 4-factor PCC containing factors II, VII, IX, and X preferentially instead of 3-factor versions of PCC. In the literature, the proportion of patients with INR less than 1.2, within 3 hours of administration, was shown to be 67% versus 9% in ICH patients that received PCC versus FFP. In fact, a 2016 randomized trial was suspended due to safety concerns regarding the low rate of patients’ INRs correction with FFP. Timeliness of INR correction is especially critical in closed non-expansile spaces such as the skull or vertebral column where the goal is to rapidly avoid hematoma expansion.
Patients on DOACs that present with injuries are more complicated. Dabigatran was on the market for more than 5 years before its reversal agent idarucizumab became available. Idarucizumab is a monoclonal antibody that binds strongly to dabigatran and was approved in 2015. Prior to this, urgent hemodialysis was the only way to reduce drug levels of dabigatran, but this was cumbersome. Idarucizumab is used to reverse dabigatran similarly to how PCCs are used to reverse warfarin. In a trial of patients suffering serious bleeding consequences while taking dabigatran, idarucizumab was shown to normalize clotting times in minutes, with side effects and cost comparable to a dose of PCC.19 Furthermore, andexanet is difficult to competitively inhibit the factor Xa at its active site, however there is limited evidence in the literature of the efficacy of this agent and there is no head-to-head data comparing it to PCC, while thrombotic events appear to be more frequent with PCC.20

In patients with normal renal function, Factor Xa inhibitors apixaban and rivaroxaban, have a shorter half-life of 7–9 hours in comparison to dabigatran, whose half-life extends 14–17 hours. Recently, a reversal agent for these drugs, andexanet alfa, became available. While this agent fully reverts the action of apixaban and rivaroxaban in minutes, at present its therapeutic profile is narrow. Andexanet competitively inhibits the factor Xa at its active site, however there is limited evidence in the literature of the efficacy of this agent and there is no head-to-head data comparing it to PCC, while thrombotic events appear to be more frequent than with PCC.19 Furthermore, andexanet is difficult to reconstitute and there is a delay of a half an hour or more in preparing it, and its cost is prohibitive. Until additional evidence is available, and changes are made to the formulation of this agent, its benefits as a reversal agent are more theoretical than real. Many trauma centers, including ours, have opted to use an “end-around” strategy by giving a higher dose of PCC to overcome anticoagulant effects of apixaban and rivaroxaban.

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Thoracic trauma is the second most common injury in the United States and is associated with significant morbidity and mortality.\textsuperscript{1,2} Fractured ribs are the most common thoracic injury and can occur due to a variety of mechanisms ranging from motor vehicle collisions to falls from standing, particularly in the elderly. Historically, the clinical significance of rib fractures was underestimated by clinicians. Over the last few decades the dangers of rib fractures have become more widely known and treatment has improved.\textsuperscript{2,3,4} The Rhode Island Trauma Center (RITC) at Providence Hospital is the busiest level 1 trauma center in New England and admits nearly 4,000 injured patients each year, 25\% of whom have sustained fractured ribs. RITC employs an evidence-based, multi-modal rib fracture protocol that is continually updated and has achieved excellent outcomes.\textsuperscript{1}

A review of the National Trauma Data Bank for patients with rib fractures revealed complications in 13\% of patients and a mortality rate of 10\%.\textsuperscript{2} Complications from rib fractures include atelectasis, hemato- and pneumo-thoraces, pneumonia, Acute Respiratory Distress Syndrome, pulmonary embolus, and empyema.\textsuperscript{2} Additionally, as the number of rib fractures increases, the risk of significant complications also increases.\textsuperscript{2,3} Much of the morbidity of rib fractures is commonly due to poor pain control leading to ineffective pulmonary toilet resulting in atelectasis, pneumonia, and respiratory failure. Multiple institutions have shown improved outcomes when treatment protocols are implemented for patients with rib fractures.\textsuperscript{5,6} Elderly patients are a particularly vulnerable population when it comes to complications related to rib fractures.\textsuperscript{3,4} In fact, one study has shown that the increase in morbidity begins as early as the age of forty-five.\textsuperscript{4}

Rib fractures result in poor pulmonary function due to a combination of both severe pain and pulmonary toilet as well as altered pulmonary mechanics. In most bone fractures, stabilization to minimize movement results in dramatic improvement in pain and facilitates faster healing and recovery. However, in rib fracture cases, the fractures are difficult to stabilize, resulting in pain from rib movement with each breath. Coughing and sneezing can induce incapacitating pain. Due to the pain, patients are predisposed to the complications previously mentioned. In addition to the pain-related complications, the effects of rib fractures on the mechanical function of the chest can contribute to morbidity. Flail chest occurs as the result of multiple adjacent ribs fractured in two or more places. The flail segment behaves as an independent island of chest wall and moves paradoxically in relation to the rest of the chest wall. Clinically the flail segment appears to collapse inward with respiration as the rest of the chest expands outward. This can result in a rapidly progressive respiratory failure. Consequently, management of rib fractures and flail chest focuses on controlling pain and improving pulmonary mechanics, but there is a high incidence of respiratory failure requiring mechanical ventilation. This type of respiratory failure is not readily reversible, and many elderly patients, and their families opt for comfort measures rather than intubation, tracheostomy and long-term custodial care.

**RIB FRACTURE PROTOCOL**

The rib fracture protocol at RITC employs a multi-disciplinary approach to managing patients with rib fractures. The core tenets of the protocol focus on pain control, pulmonary toilet, and restoring normal pulmonary mechanics, with fracture stabilization a newer addition to our treatment regimen. The protocol depends on all members of the treatment team, including, nursing, respiratory therapy, physical and occupational therapy, and physicians as well as the patient their family and friends.

**PAIN MANAGEMENT**

Adequate pain control has been recognized as a vital component of rib fracture management for decades, but recently newer methods of pain control have emerged to improve outcomes in patients with rib fractures. The goal of therapy is to achieve the greatest degree of pain control with the least risk of side effects. Combination therapies utilizing several different agents are preferred in order to minimize the adverse effects of large doses of narcotics.

All trauma patients with rib fractures are initially treated with acetaminophen and ibuprofen unless contraindicated. These medications provide adequate relief for some patients and have a relatively low-risk side-effect profile. Ideally, these agents are dosed on an alternating regimen in order to provide better continuous relief. Administration of ketorolac has been shown to decrease ventilator days and...
frequency of pneumonia and recent evidence indicates that the previously used doses may be cut in half without a degradation in their pain relieving properties. Unfortunately, many elderly patients have diminished glomerular filtration rates as a normal part of aging, despite a “normal” serum creatinine level, thus NSAIDs are frequently contra-indicated in this population. Topical lidocaine patches have been advocated for rib fracture pain, but data regarding these patches is equivocal. In our practice, we have seen benefit in some patients with a low side-effect profile when the 5% strength patches are used, but this benefit is often lost at lower concentrations.

Typically, patients admitted with rib fractures need more potent pain medications added to their regimen, and opioids play an important role in controlling this pain. Narcotic pain medicines provide good pain control in many patients but carry the risk for complications due to respiratory depression or dependency. At RITC we carefully create a treatment plan for patients requiring narcotics to minimize prolonged narcotic use and we have been able to manage most patients without too much difficulty.

Regional anesthetics and catheter-based pain control has been used for decades in many areas of medicine, especially obstetrical care, but have been under-utilized in patients with rib fractures. Epidural catheters have been shown to improve outcomes in multiple studies and catheter-based therapy has been recommended by a joint practice management guideline from the Eastern Association for the Surgery of Trauma and the Trauma Anesthesiology Society. Despite evidence demonstrating improved outcomes with epidural catheters, many providers are reluctant to place catheters due to perceived risks or contraindications in injured patients (spinal fractures, coagulopathy).

For patients with contraindications to epidural catheters, newer, less invasive catheter-based technologies have proven effective and safe for improving rib fracture pain. We have begun using erector spinae blocks (ESB) placed by the anesthesia team with excellent success controlling pain. The catheter for an ESB is placed outside the vertebral column, which decreases the risk of nerve injury and epidural hematomas. Additionally, these catheters can be placed in patients with spinal fractures and/or in patients with coagulopathy or who have recently taken anticoagulants. Multiple studies have now shown improved outcomes with rib fractures following placement of erector spinae blocks.

**PULMONARY HYGIENE**

In addition to good pain control, pulmonary hygiene is paramount in avoiding complications due to rib fractures. All patients admitted to the RITC with rib fractures are assessed with the rib fracture protocol and treated with an aggressive regimen of incentive spirometry and early mobilization when possible. Patients are tested on their maximal inspired volume upon admission and followed throughout their hospital course to assess for worsening pulmonary function. An initial low incentive spirometry volume may predict eventual respiratory compromise and need for positive pressure ventilation. Brown et al. demonstrated the feasibility and utility of a nurse-driven protocol to use Incentive spirometry to predict impending respiratory compromise. The rib fracture protocol also facilitates early mobilization by nursing through multidisciplinary rounds and frequent communication between nursing and the trauma team. Any patients with mobility concerns are then referred early for a physical therapy evaluation.

**RIB STABILIZATION**

Although fixation of rib fractures is not a new therapy, there has been a renewed interest in operatively stabilizing ribs over the last decade as new technology and risk stratified data has shown improved outcomes in some patients following rib open reduction internal fixation (ORIF). The stabilization of the rib fractures is believed to reduce the pain associated with movement of the fractured ribs. Multiple studies have shown improved pulmonary function tests, shortened hospital and ICU lengths of stays, and decreased ventilator days with surgical fixation of rib fractures. Majercik et al demonstrated high patient satisfaction with surgical rib stabilization and 90% of patients were able to return to the same work as prior to their injuries.

We use a rib scoring system to predict patients at risk for morbidity and consider rib fixation in high-risk patients. Patients with significant blunt thoracic trauma have 3D reconstruction of the rib cage performed utilizing the data obtained during their initial CT scan to facilitate characterization of the rib fractures. Patients with any of the following are considered for surgical rib stabilization: flail chest, 30% loss of thoracic volume, and aligned fractures in 3 or more consecutive ribs or severe displacement of rib fractures. Additionally, patients with symptomatic fractures refractory to multi-modal pain control efforts or chronic pain from poorly healed fractures or non-unions may be considered for rib ORIF.

Patients undergoing rib stabilization generally receive an epidural prior to surgery. We then proceed with a muscle-sparing chest wall incision over the ribs to be plated. Through this incision the fractured ribs are exposed and realigned. In the case of volume loss, the internally displaced ribs are elevated to restore the chest wall volume. Titanium plates are then used to span the fracture and fixate the fractured rib in the proper anatomic position. A video-assisted thoracoscopic evaluation of the pleural space is performed at the completion of the case to evacuate any hemothorax and facilitate proper chest tube placement.

In our series of patients, most people have had significant improvement in their pain scores and pulmonary function early after surgery with a very low complication rate. Patients are out of bed on postoperative day one and the chest tube is usually removed within two days.
RIB FRACTURES IN THE GERIATRIC POPULATION

Rib fractures in older patients carry a significantly worse outcome than in younger patients. Patients aged 65 years and older experience significantly higher rates of pneumonia and have higher rates of mortality especially when their fractures are refractory to multi-modal pain control efforts. A meta-analysis revealed an odds ratio for mortality of 1.98 for patients 65 years and older. There are likely multiple reasons for this increase in mortality, including, comorbid medical conditions, reduced physiologic reserve, and a narrow therapeutic window for treatments for rib fractures.

In order to improve outcomes in our geriatric patients, the RTIC initiated a geriatric rib fracture protocol in 2009. Patients aged 65 and older with 2 or more rib fractures were admitted to the trauma ICU where our nurses focus on aggressive pain control, assessment of pulmonary function via incentive spirometry monitoring, physical therapy and optimizing nutrition. The inspiratory volume achieved on the incentive spirometer was followed and if the patient is not able to achieve 10-15 ml/kg on the spirometer or has an inadequate cough, prompt anesthesia consultation is obtained for consideration of an epidural or ESB. Patient outcomes were evaluated before and after the introduction of the protocol. The patients were similar in age and injury severity before and after the protocol. After initiation of the protocol, the rib fracture patients were more likely to be admitted to the ICU (64.4% vs 24.8%, p<0.01). Patients admitted after creation of the protocol had a shorter ICU length of stay (5.5 vs 8 days), fewer patients required mechanical ventilation (5.5 vs 8 days), and the mortality was significantly lower in the protocol group (9% vs 24%; p=0.01).

CONCLUSION

Thoracic trauma and rib fractures are common injuries that can result in significant morbidity and mortality. The Rhode Island Trauma Center cares for hundreds of patients each year with rib fractures. Through a constantly evolving protocol of multi-modal pain control, intensive nursing care, and operative rib stabilization, we have been able to restore health and function to many Rhode Island residents.

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Advances in the Management of Bleeding Trauma Patients

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**Damage Control Resuscitation (DCR)**

Management of traumatic hemorrhage has progressed over the past century. With better understanding of the pathophysiology of hemorrhage and adverse effects of previous practices, resuscitation has shifted to replace lost blood with blood components instead of crystalloids. The resuscitation of injured and bleeding patients is complex and requires a “multi-modal” strategy, now termed damage control resuscitation (DCR). 1

Damage control resuscitation has three pillars: early surgical control of bleeding, permissive hypotension, and blood product transfusions while avoiding crystalloids. Identifying patients at risk of severe hemorrhage who would benefit from DCR is crucial. Early initiation of these practices in prehospital settings could prevent or minimize physiologic complications such as organ failure and mortality, while avoiding excessive use of blood products.

**Permissive hypotension**

Permissive hypotension is a management strategy in which resuscitation is withheld in patients until surgical control of bleeding is obtained. In order to prevent disruption of local hemostasis at the site of injury, providers administer blood or fluids to maintain a systolic blood pressure of about 80 mmHg or to a level that results in an adequate mental status and tissue perfusion. 2 Additionally, permissive hypotension may decrease post-operative coagulopathy and lessen non-surgical bleeding. While several studies have been unable to definitively demonstrate a survival benefit, trends do suggest decreased mortality in both the first 24 hours of care, as well as in-hospital mortality. 3, 4

**Blood Resuscitation**

Current guidelines indicate that bleeding patients should be resuscitated with blood products instead of crystalloid fluids. Traditional administration of large amount of crystalloid increase the risk of outcomes, such as abdominal compartment syndrome, acute respiratory distress syndrome, dilutional coagulopathy and hyperchloremic metabolic acidosis. 5 Simply put, if a patient loses blood, it should be replaced with blood.

Advantages of blood components resuscitation come from their inherent properties – oxygen carrying capacity, presence of coagulation factors and platelets, and avoidance of some of the negative sequelae of saline containing fluid. Using whole blood for resuscitation appears to be the logical choice since it contains the ideal amounts of hemoglobin, platelets and clotting factors. Military protocols have made this a practical element of damage control resuscitation in combat and military personnel are often thought of as “walking blood banks”. However, due to storage and other logistical limitations, whole blood cannot be widely used as a resuscitative fluid. On the contrary, in civilian centers, blood is separated into its components – packed red blood cells [PRBC], plasma, and platelets – to prolong storage duration and availability.

The PROPPR and PROMIT trials examined the ideal ratios of blood components during massive transfusion. 6, 7 A balanced resuscitation that is as close to 1:1:1 of plasma: platelet: PRBC appears to be the most beneficial. This represents a significant departure from past practices where blood components were ordered in response to lab value-detected deficiencies and plasma was not transfused until after 4 or more units of blood were administered. Ensuring early balanced blood resuscitation also appears to improve survival in hemorrhaging trauma patients compared to the common practice of transfusing PRBC first and then catching up with other components later in the resuscitation. 8

The benefit of adding plasma and platelets (plus fibrinogen) early in resuscitation is due to their role in halting and correcting trauma-induced coagulopathy. The COMBAT and PAMPPer trials evaluated whether administering plasma in prehospital settings en route to trauma centers offered any advantage. 9, 10 These studies were designed to simulate rapid and slow transport to a trauma center, respectively. Prehospital plasma administration appears to have the advantage in settings with longer transport times, but not in cases where there is rapid transport to a definitive care setting. Additionally, there are logistical issues to consider. Fresh frozen plasma requires cold storage and then thawing prior to administration which renders it extremely difficult to use in the prehospital setting. Pre-thawed plasma will resolve the storage and thawing limitations; however, it has a short shelf life (<5 days), which leads to increased waste in areas with infrequent rates of use. Never-frozen plasma has a longer lifetime and is possibly the best option in the pre-hospital settings. Freeze-dried plasma has been tested and appears to have similar coagulation parameters with the advantage of...
easy storage and transport.\textsuperscript{11,12} Shelf life is about 2 years and reconstitution only requires mixture with distilled water prior to administration, but this product is not yet approved by the Food and Drug Administration.

**Hemorrhage Control**

Early management of hemorrhage depends on rapid control of the bleeding site. Traumatic hemorrhage can be divided into two categories – compressible and non-compressible. For compressible hemorrhage, pre-hospital interventions have proven to be extremely beneficial. The easiest and fastest method of controlling compressible hemorrhage is direct pressure to the bleeding site. Tourniquets applied by pre-hospital providers, police officers, or bystanders can reduce blood loss from injured extremities significantly, improving survival rates.\textsuperscript{13,14} Hemostatic dressings were developed to simultaneously provide direct pressure as well as initiate thrombotic reaction resulting in cessation of bleeding.

Non-compressible hemorrhage occurs in a cavity where direct pressure or tourniquet use is not possible, such as the thoracic cavity, the abdomen, or the pelvis. Traditionally, once a non-compressible hemorrhage is identified, the patient is transported immediately to the operating room or the interventional radiology suite for control of the source of hemorrhage. Occasionally, in patients with impending traumatic cardiac arrest or those who lose vital signs due to hemorrhage, an emergency department thoracotomy (EDT) is performed to provide manual control of the source of hemorrhage in the chest or clamp the descending aorta in order to halt bleeding in the abdomen or the pelvis. Recently, a minimally invasive approach has gained acceptance in the trauma community to provide early and temporary control of bleeding in the abdomen or the pelvis. The resuscitative endovascular occlusion of the aorta (REBOA) technology borrows from skills commonly used in vascular surgery to deploy a balloon in the descending aorta, like aortic clamping performed in EDT. Advances in this technology have shortened time to access and correct placement of the balloon in the aorta. The aorta is divided into three zones of balloon placement. Zone 1 is in the thoracic descending aorta above the celiac artery and equates with the xiphoid process. The balloon is deployed in zone 1 when intra-abdominal hemorrhage is suspected. Zone 3 lies between the renal arteries and the bifurcation of the aorta. The provider inflates the balloon in zone 3 only if pelvic bleeding is suspected due to presence of pelvic fractures while abdominal sources of bleeding are ruled out. Zone 2 extends from the celiac artery to the renal arteries. The balloon should not be inflated in zone 2 under any circumstances, to prevent ischemic insult to the kidneys and viscera.\textsuperscript{15}

Several centers have implemented REBOA in their damage control resuscitation protocols and have begun reporting their results. Early data supports its use; however, these studies have been critiqued due to lack of an appropriate comparison group.\textsuperscript{16} Joseph et al compared REBOA to a control group using propensity score matching and placement of REBOA resulted in higher mortality and morbidity.\textsuperscript{17} These results should not be interpreted as lack of evidence of benefit. Instead, they should lead to further assessment to identify the injured and bleeding population that could benefit the most from this approach. Pre-hospital application should not be initiated or discussed until more solid data on REBOA’s safety and efficacy has been established.

**Experimental Approach – ResQFoam**

For non-compressible hemorrhage, presently there is no quick option for applying direct pressure at the bleeding site. Immediate surgical control is the only intervention most of the time, with REBOA being an occasional temporary choice \textit{en route} to the OR. Recently, an experimental technology for abdominal hemorrhage was approved for a clinical trial (Clinicaltrials.gov: NCT02880163). This product uses an expandable polyurethane foam that is injected into the peritoneal cavity to create a tamponade effect in the abdomen to stop or slow bleeding as an adjunct to other damage control resuscitation components.\textsuperscript{18,19} Foam is administered into the abdomen within 30 minutes of arrival to the emergency department with definitive surgical intervention to be carried out within 3 hours from foam deployment. Fortunately, this foam does not adhere to vital structures or organs which facilitates its prompt removal once the peritoneal cavity is opened.

**Correcting Coagulopathy**

Bleeding in injured patients can be complicated by the development of trauma-coagulopathy. Resuscitation with blood components, plasma, platelets, and fibrinogen, replace lost and consumed clotting factors. Hemostasis and clotting are tightly coupled to fibrinolysis and dissolution of clots, lest the entire circulatory system would thrombose once clotting was initiated. Injured patients are at risk for excessive fibrinolysis which promotes bleeding and the development of the lethal triad. Tranexamic acid (TXA) is a lysine analogue that results in reversal of thrombolyis. The widespread prehospital use of TXA is based on the CRASH 2 trial, which showed a mortality benefit in patients who were suspected of hemorrhage and received TXA.\textsuperscript{20} However, there were several study design issues and the treatment effect size was small, reducing mortality due to severe hemorrhage from 5.6% to 4.8%. This meant that 125 patients needed to be treated with tranexamic acid to prevent one death. The MATTERs study, a retrospective study of TXA in military settings, showed a mortality benefit due to administration of TXA.\textsuperscript{21} As a result of these two studies, tranexamic acid has become widely used in massive transfusion protocols nationally and internationally. Pre-hospital use has also increased, although there are not enough robust studies to support its prehospital use. The Department of Health in
Rhode Island recommends administering TXA for injured patients with hypotension, tachycardia, or if the prehospital provider determines that the patient is at risk of hemorrhage. When we examined local TXA practices we identified a high rate of administration without clear indication when given by EMS. We believe that TXA should be administered cautiously, ideally in patients with hemorrhage and evidence of fibrinolysis. Data from University of Pittsburgh showed a 3-fold increase in the rate of VTE events, thus further studies are needed to establish appropriate criteria to guide pre-hospital providers to administer such an important medication. 22

Traditionally, evaluation of trauma coagulopathy has relied on tests such as PT, PTT, and INR. The results of these tests are delayed and do not reflect the actual coagulation status of an injured, hypothermic and actively bleeding patient. Additionally, these standard clinical tests are normalized and run at 37°C, while nearly half of all bleeding trauma patients arrive at the hospital hypothermic. Fortunately, there is a technology that provides an assessment of the entire coagulation and thrombolysis status of the patient. This technology, thromboelastogram (TEG), assesses the time to bleeding, the strength of the formed clot, as well as the dissolution of the clot or thrombolysis. Advances in this technology have allowed trauma surgeons to obtain timely and early assessments of the coagulopathy in trauma patients. Therefore, a tailored resuscitation with blood products and choice of pharmacological resources can be given to an injured, hypothermic and actively bleeding patient. 22

STOP THE BLEED CAMPAIGN
Resuscitation and control of traumatic hemorrhage has evolved. Management commences with arrival of prehospital providers where control of compressible hemorrhage is performed, and blood product resuscitation is initiated. Rapid transport to a trauma center within a mature trauma system network ensures timely expert surgical management for these patients – continued resuscitation, correction of coagulopathy and surgical control. However, in cases where prehospital care is delayed due to mass casualty, an active shooter, or logistical factors, some interventions that could be provided by bystanders may prove to be lifesaving. The Stop The Bleed initiative by the American College of Surgeons’ Committee on Trauma and the Hartford Consensus aims to educate lay people on the proper use of tourniquets and hemostatic dressings applications, among other first aid measures, prior to arrival of EMS providers. 23 In neighboring Connecticut [CT], kits containing essential tools for early hemorrhage control [pressure bandages, hemostatic dressings, tourniquets, and personal protective gloves] are placed alongside every automatic external defibrillators in public places. This strategy was mandated by legislation in CT aiming to reduce preventable deaths due to compressible hemorrhage. Bleeding control or “B-con” courses are educational seminars that are routinely provided to large groups such as schools, civic groups, sporting events, etc. The short classes consist of a formal presentation and hands-on practice of bleeding control. In two years since its official launch in February 2017, more than 40,000 classes have been conducted in 77 countries with over 600,000 attendees trained in bystander hemorrhage control methods. Participation, especially when hands-on training is provided, improved laypersons’ willingness to use a tourniquet in an emergency.24 Community education to raise awareness regarding the importance of participation in early bleeding control and engaging in B-Con courses continues to be an important public health matter.25

CONCLUSION
Improved understanding of the pathophysiology of hemorrhage, coagulopathy, and resuscitation, along with technical advances and innovations, have improved outcomes of bleeding trauma patients. But there continues to be a need for early hemorrhage control. Involving bystanders appears to be a promising approach toward improving outcomes. Ongoing research and support by academic and government institutions is a crucial factor in combating mortality from traumatic hemorrhage – a serious public health problem.

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Predicting Outcomes in Acute Traumatic Brain Injury (TBI)

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“No head injury is so serious that it should be despised of nor so trivial that it can be ignored.” — Hippocrates

INTRODUCTION

Acute traumatic brain injury (TBI) is a heterogenous disease ranging from mild concussion to contusions, extra-axial hematomas and traumatic subarachnoid hemorrhage to diffuse axonal injury. It is a leading cause of death and disability in the United States. In 2013, there were 2.5 million emergency department visits and more than 55,000 deaths due to TBI, and TBI accounts for approximately 30% of all injury-related deaths.1 Both injuries and hospitalization rates have increased markedly between 2007 and 2013, and while death due to motor vehicle crashes have decreased, age-adjusted rates of TBI-related ED visits have increased between 2007 and 2013.1 The aggregate leading cause of death among TBI patients is now due to intentional self harm but motor vehicle collisions, sports, and combat-related injuries continue to afflict children and adolescents/young adults [age 0–4, and 15–24 years].1 Older adults have also suffered from an increase in TBI-related hospitalizations and deaths, primarily due to falls.1 These numbers are likely underestimates of the prevalence of TBI, because they do not include persons with TBI sequelae who were treated and released from emergency departments, those who sought care in other healthcare settings, and those who did not seek treatment.2,3

Data from Rhode Island mirrors the national trend. In 2018, 134 children suffered moderate to severe TBI and 6 died. At Rhode Island Hospital, more than 800 adult patients with traumatic brain injury are hospitalized annually, and in 2018, at Rhode Island Hospital, more than 500 adult patients with TBI required long-term care and more than 100 patients died in the acute setting.

Despite significant improvements in the care of the head-injured trauma patient over the last decade, challenges remain in both the treatment and assessment of prognosis of patients who have suffered traumatic brain injuries. The higher incidence of TBI coupled with a lower death rate suggests that there is a growing population of individuals living with a disability related to their TBI.4 Improved understanding of TBI can help guide resource allocation as well as patient and family discussions regarding goals of care in the more acute setting. Here we aim to describe some of the scoring systems and predictive models we use to best understand outcomes for patients with traumatic brain injury.

SCORING SYSTEMS

The Glasgow Coma Scale (GCS) was first described in 1974 to communicate accurately about patients with impaired consciousness. The GCS is used in more than 80 countries and, 45 years later, the original report is the most quoted paper in the neurosurgical literature.5

A key element of the GCS is the motor score (GCS-M). The motor score consists of 6 categories and has been validated to be specific in predicting patients with TBI.6 With this, the Simplified Motor Score (SMS) was developed combining the components of the GCS-M and simplifying them into three categories: [1] follows commands, [2] localizes to pain and [3] withdrawals to pain or worse. Two points are given for following commands, one point for localization of pain and no points for withdrawing to pain or worse. Lower scores suggest worse head injury.7 In 2018, Buitendag et al compared the GCS-M to the SMS and found that there was a decline in survival rate for GCS-M=<4 on admission, and was more pronounced when the score was =<3. When plotted against mortality, both the GCS-M and the SMS were accurate, sensitive and specific, suggesting that these more simplified scales can accurately predict outcomes in patients with TBI when the entirety of the GCS model is difficult to assess.8

The Glasgow Outcome Scale (GOS), also developed by Jennett in 1974, predicts how patients with TBI recover. It consists of five categories: Death, Persistent Vegetative State, Severe, Moderate, and Low Disability.9 This scale was refined in 1981 as the Glasgow Outcome Scale Extended (GOSE).10 Additional categories were added to the GOSE to better describe patients’ disabilities. The GOSE is also meant to be reassessed at 3, 6 and 12 months with a structured interview consisting of questions regarding the patient’s disabilities. All of these scales (GCS, GOS and GOSE) have been used clinically and in research to help predict which patients will have better global outcomes from traumatic brain injury, however, the timing, utilization and application of these scales has been inconsistent.11

More recently, another scoring system is in use to predict the Full Outline of UnResponsiveness (FOUR). The FOUR Score is a neurological assessment score, similar to the Glasgow Coma Score, that adds additional emphasis on brainstem reflexes and respiratory pattern.12 Although a newer scoring system, it is validated and has proven to be a useful measure in predicting mortality and functional recovery. A 2018 systematic review showed that FOUR score was a useful outcome predictor with good inter-rater reliability.
among physicians and nurses. When compared to GCS, it appeared to perform similarly in predicting mortality.

Radiologic imaging scales, including the Marshall scale and the Rotterdam scale, also contribute to prognostic value as they can predict the risk for increased intracranial pressure and outcome in adults. While each of these scales can predict early death, each has limitations and does not provide accurate prognostic value for patients without severe injury.

Other datasets have contributed to prognosis for severely injured patients. The CRASH trial (Corticosteroid Randomization after Significant Head injury) did not show any improvement in outcome in those patients who received steroids, but the database created was helpful in generating a prognostic calculator. This calculator (http://www.crash.lshtm.ac.uk/Risk%20calculator/index.html) can help physicians determine 14-day mortality as well as death and severe disability at 6 months in patients with TBI. Similar to the database generated by the CRASH trial, in 2007, the International Mission of Prognosis and Clinical Trial-TBI (IMPACT-TBI) examined patients with traumatic brain injury over 3 decades. IMPACT investigators have analyzed the existing database to generate a prognostic score to predict 6-month outcome of patients who suffered moderate to severe TBI (GCS ≤ 12), [http://www.tbi-impact.org/?p=impact/calc].

Unfortunately, none of the scoring systems are able to predict with certainty how patients with TBI will do in both the acute and long-term setting. Further complicating the utility of these scores is the clinician’s ability to apply them to their individual patients. However, certain patient characteristics can suggest a better or worse outcome. Young patients continue to do better than older patients in terms of functional recovery from TBI. Not surprisingly, patients with more impairments do worse than those with less impairments. Improvement in disabilities occurs early (if at all), and then plateaus. The extent of these improvements is still very heterogeneous and unpredictable, and frequently, patients who initially improve will eventually decline in their abilities.

Recently, Hammond followed patients 10 years post injury. Patients were evaluated at 1, 2, 5 and 10 years from injury. They demonstrated that improvement occurred throughout the 10-year period and those that recovered earlier improved more. These findings suggest that ongoing directed therapy continues to be important as far as 10 years out. However, Forslun et al also followed patients with moderate to severe TBI over a 10-year period looking at change in GOSE. They found that 37% deteriorated, 7% improved and 56% showed no change in global outcome. Additionally, they sought to better define predictors and found that younger, employed patients with shorter post-trauma amnesia did better, consistent with prior literature. Overall, patients with moderate to severe TBI did not improve.

**CONCLUSION**

The above validated measuring scales and prognosis calculators help us predict the extent of, and recovery from, TBI. Unfortunately, we are still unable to predict which patients to whom these measures best apply. Large databases generated retrospectively have helped us to get closer to predicting the future. However, the ultimate ability to determine true outcomes after TBI will be found by following these patients prospectively after their injuries, thereby generating a database in this fashion. This prospective database has the potential to improve guidance for physicians, patients and families in determining outcomes of patients with traumatic brain injury.

**References**

14. Kasprowicz M, Burzynska M, Melcer T, Kubler A. A compar-i son of the Full Outline of UnResponsiveness (FOUR) score and


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Assessing HIV Testing History, Interest, and Risk-Taking among Adult Patients at the Karl Heusner Memorial Hospital Authority Accident and Emergency Department in Belize

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The results of this investigation will be presented at the American College of Emergency Physicians Research Forum, Denver, CO, October 27–29, 2019.

BACKGROUND

Belize has one of the highest HIV prevalences in Central America, approximately 1.9% of Belizeans 15–49 years-old are infected with HIV.1–2 Two hundred twenty-five people in Belize were diagnosed with HIV in 2016, which translates to an estimated incidence of 1.3 per 1000 persons 15–49 years-old.2,3 Data from 2011–2013 showed that only 28.4% of Belizean adults 15–49 years-old had received an HIV test and knew their results.4

Testing in emergency departments (EDs) has been advocated for and used as a means of identifying those with an undiagnosed HIV infection who might not be tested elsewhere.5–10 Routine HIV testing of patients in the ED can assist staff to provide appropriate clinical care.6,7 It also allows for early detection and linkage to care of HIV-infected individuals who might not be tested until later in their disease course.6,7 The Belize Ministry of Health, World Health Organization, and UNAIDS support HIV testing and treatment as a major initiative to reduce HIV transmission.3,11,12

The Karl Heusner Memorial Hospital Authority (KHMHA) in Belize City is the largest public referral hospital in Belize and its Accident and Emergency [A&E] Department provides care to approximately 25,000 adult patients annually. However, there is no established HIV testing protocol for A&E patients. Given its major role in providing healthcare and the unmet need of HIV testing in Belize, the KHMHA A&E could be an ideal place to conduct HIV screening. Evidence supportive of this role for A&E is needed before a testing program can be designed and launched.

In response to this lack of evidence, we aimed to establish if there is a need for HIV testing in the KHMHA A&E, based on lack of prior HIV testing despite the presence of reported HIV risk-taking behaviors of A&E patients. We also aimed to gauge patient interest in, perceived need for, and possible barriers to HIV testing in the A&E.

METHODS

This cross-sectional survey-based investigation was conducted over an eight-week period from June 2018 to August 2018 at the KHMHA A&E. The study was approved by the Institute of Social and Cultural Research of Belize as well as by the Lifespan Institutional Review Board (947934-5).

Participant Recruitment

A&E patients were assessed for study eligibility over an eight-week study period during five-hour data collection shifts that started between 8 am to 2 pm daily, 7 days/week. The start time for each shift was determined randomly for each day of the study. During these data collection shifts, all patients in the A&E were approached and asked to participate. Each patient underwent an assessment to confirm study eligibility. Eligible participants were: 18–65 years-old [testing ages recommended by the Belize Ministry of Health], English-speaking, not critically ill or injured, not a prison inmate/under arrest, and able to provide consent. Small, non-monetary incentives [e.g., earbuds, pens, and penlights] were provided for study completion.

Eligibility/Questionnaire Procedures

After providing consent, participants were queried about their sociodemographic characteristics [age, sex, race, area of residence, marital status, education, insurance status, primary health care provider status, and HIV testing history]. Participants who believed themselves to be HIV uninfected or did not know their status were asked to complete the remainder of the study using an audio computer self-interviewing (ACASI)-based questionnaire on a tablet computer (QDS Software, Nova Research, Silver Springs, MD). The questionnaire was adapted from prior research by the study authors.13–15

The questions concerned their HIV risk behaviors [from injection-drug use and sex], and opinions of and interest in HIV testing being offered in the KHMHA A&E. For HIV sexual risk, participants were asked to report if they had condomless sex in the past 10 years by sexual partner type [main, casual, or exchange] and the number of each type of partner. Ten years is the expected time period that could elapse before signs and symptoms of AIDS usually appears. All collected data contained no personal identifiers and study staff were blinded to participant responses during data collection.

Data Analysis

Total enrollment, patient demographic characteristics and HIV testing history, interest and risk were summarized with percentages and medians for the entire study population and
also by HIV testing status (ever vs. never tested). Potential differences between participants ever vs. never tested were analyzed using X² testing for categorical data, Fisher’s Exact test for binary variables, and Wilcoxon’s test for continuous variables. Multivariate logistic regression models were used to examine factors associated with ever vs. never tested; odds ratios with 95% confidence intervals (CIs) were estimated. Attitudes toward HIV testing in the A&E and the importance of HIV testing were examined by HIV testing status.

RESULTS
Patient Demographics Characteristics and HIV Testing History

Recruitment results are depicted in Figure 1.

As shown, 18 (6%) of the 301 A&E patients screened for study eligibility self-identified as HIV infected. Of the 264 participants not known to be HIV infected, 25.8% (95% CI: 20.6-31.5) had never been tested for HIV. The majority of participants were female, of Creole descent, and lived in the Belize district (Table 1). Most often participants had either an unmarried partner or a domestic partner, had received less than a tertiary school level of education, did not have healthcare insurance, and had a primary care provider. As compared to those previously tested, those never tested for HIV were more likely to be male, have fewer years of formal education, and less likely to regularly receive medical care.

The most common reasons for previous HIV testing were patient curiosity (7.5%); pregnancy (20.5%); and for a medical exam, hospitalization, or treatment (20.5%).

Table 1. Sociodemographic Characteristics of All Participants and Participants Stratified by HIV Testing Status

<table>
<thead>
<tr>
<th></th>
<th>All Participants (n = 264)</th>
<th>Never Tested for HIV (n = 68)</th>
<th>Ever Tested for HIV (n = 196)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median age (years) (IQR)</td>
<td>36 (27-49)</td>
<td>34.5 (22-55)</td>
<td>36.5 (28-47)</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td>0.0001</td>
</tr>
<tr>
<td>Male</td>
<td>111 (42.1)</td>
<td>43 (63.2)</td>
<td>68 (34.7)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>153 (57.9)</td>
<td>25 (36.8)</td>
<td>128 (65.3)</td>
<td></td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td>0.65</td>
</tr>
<tr>
<td>Creole</td>
<td>172 (65.2)</td>
<td>42 (61.8)</td>
<td>130 (66.3)</td>
<td></td>
</tr>
<tr>
<td>Mayan</td>
<td>8 (3.0)</td>
<td>2 (2.9)</td>
<td>6 (3.1)</td>
<td></td>
</tr>
<tr>
<td>Mestizo</td>
<td>28 (10.6)</td>
<td>6 (8.8)</td>
<td>22 (11.2)</td>
<td></td>
</tr>
<tr>
<td>Garifuna</td>
<td>23 (8.7)</td>
<td>8 (11.8)</td>
<td>15 (7.6)</td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>6 (2.3)</td>
<td>1 (1.5)</td>
<td>5 (2.6)</td>
<td></td>
</tr>
<tr>
<td>Spanish</td>
<td>17 (6.4)</td>
<td>6 (8.8)</td>
<td>11 (5.6)</td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>1 (0.4)</td>
<td>1 (1.5)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>9 (3.4)</td>
<td>2 (2.9)</td>
<td>7 (3.6)</td>
<td></td>
</tr>
<tr>
<td>Residence</td>
<td></td>
<td></td>
<td></td>
<td>0.10</td>
</tr>
<tr>
<td>Belize</td>
<td>232 (87.9)</td>
<td>57 (83.8)</td>
<td>175 (89.3)</td>
<td></td>
</tr>
<tr>
<td>Cayo</td>
<td>9 (3.4)</td>
<td>2 (2.9)</td>
<td>7 (3.6)</td>
<td></td>
</tr>
<tr>
<td>Corozal</td>
<td>5 (1.9)</td>
<td>1 (1.5)</td>
<td>4 (2.0)</td>
<td></td>
</tr>
<tr>
<td>Orange Walk</td>
<td>8 (3.0)</td>
<td>4 (5.9)</td>
<td>4 (2.0)</td>
<td></td>
</tr>
<tr>
<td>Stann Creek</td>
<td>6 (2.3)</td>
<td>4 (5.9)</td>
<td>2 (1.1)</td>
<td></td>
</tr>
<tr>
<td>Toledo</td>
<td>4 (1.5)</td>
<td>-</td>
<td>4 (2.0)</td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
<td>0.23</td>
</tr>
<tr>
<td>Married</td>
<td>16 (6.1)</td>
<td>6 (8.8)</td>
<td>10 (5.1)</td>
<td></td>
</tr>
<tr>
<td>Domestic partner</td>
<td>44 (16.7)</td>
<td>9 (13.2)</td>
<td>35 (17.9)</td>
<td></td>
</tr>
<tr>
<td>Divorced</td>
<td>12 (4.5)</td>
<td>4 (5.9)</td>
<td>8 (4.1)</td>
<td></td>
</tr>
<tr>
<td>Widowed</td>
<td>11 (4.2)</td>
<td>3 (4.4)</td>
<td>8 (4.1)</td>
<td></td>
</tr>
<tr>
<td>Separated</td>
<td>12 (4.6)</td>
<td>1 (1.5)</td>
<td>11 (5.6)</td>
<td></td>
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<tr>
<td>Never married</td>
<td>73 (27.6)</td>
<td>25 (36.8)</td>
<td>48 (24.5)</td>
<td></td>
</tr>
<tr>
<td>Unmarried couple</td>
<td>96 (36.3)</td>
<td>20 (29.4)</td>
<td>76 (38.7)</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td>0.001</td>
</tr>
<tr>
<td>None</td>
<td>8 (3.0)</td>
<td>3 (4.4)</td>
<td>5 (2.6)</td>
<td></td>
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<tr>
<td>Primary school</td>
<td>72 (27.3)</td>
<td>29 (42.7)</td>
<td>43 (21.9)</td>
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</tr>
<tr>
<td>Secondary school</td>
<td>113 (42.8)</td>
<td>29 (42.7)</td>
<td>84 (42.9)</td>
<td></td>
</tr>
<tr>
<td>Tertiary school</td>
<td>43 (16.3)</td>
<td>6 (8.8)</td>
<td>37 (18.9)</td>
<td></td>
</tr>
<tr>
<td>Sixth form</td>
<td>14 (5.3)</td>
<td>-</td>
<td>14 (7.1)</td>
<td></td>
</tr>
<tr>
<td>University</td>
<td>14 (5.3)</td>
<td>1 (1.47)</td>
<td>13 (6.6)</td>
<td></td>
</tr>
<tr>
<td>Health insurance status</td>
<td></td>
<td></td>
<td></td>
<td>0.01</td>
</tr>
<tr>
<td>None</td>
<td>172 (65.2)</td>
<td>54 (79.4)</td>
<td>118 (60.2)</td>
<td></td>
</tr>
<tr>
<td>Regular</td>
<td>27 (10.2)</td>
<td>6 (8.8)</td>
<td>21 (10.7)</td>
<td></td>
</tr>
<tr>
<td>National health insurance</td>
<td>65 (24.6)</td>
<td>8 (11.8)</td>
<td>57 (29.1)</td>
<td></td>
</tr>
<tr>
<td>Receive regular medical care</td>
<td></td>
<td></td>
<td></td>
<td>0.02</td>
</tr>
<tr>
<td>No</td>
<td>115 (43.6)</td>
<td>38 (55.9)</td>
<td>77 (39.3)</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>149 (56.4)</td>
<td>30 (44.1)</td>
<td>119 (60.7)</td>
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</tr>
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</table>
before surgery (16.3%). Of those who had been tested, 19.9% underwent testing more than five years ago, 15.8% between two and five years ago, 12.2% between one and two years ago, 15.3% between six months and one year ago, and 36.7% of participants had been tested less than six months ago. Among those not previously tested for HIV, the most common reasons were that the patient either believed they were not at risk so the test was not necessary (32.4%), or because they had never been asked or offered a test (27.9%).

HIV Risk-taking Behavior and Factors Associated with Previous HIV Testing
Injection-drug use was infrequent among participants, but more common among those who had never been tested for HIV (Table 2). Among all participants, approximately half reported condomless sex with main partners, while fewer reported condomless sex with casual and exchange partners. Condomless sex with main, casual and exchange partners did not differ by testing status. As shown in Table 3, lack of HIV testing was associated with fewer years of formal education and male gender.

Patient Opinion and Interest on HIV Testing
The overwhelming majority of patients thought that it was important or very important for the A&E to offer HIV testing in general (90.1%), while slightly fewer thought it was important or very important for them personally to be tested in the A&E (80.2%) (Table 4). There was no significant statistical difference between the never vs. ever tested group in their opinions on importance of the A&E to offering HIV testing or the importance on personally being tested. The majority of participants did not believe that HIV testing in the A&E delayed medical care, took too long, or was too stressful. However, most were concerned about privacy of testing in this setting. There were no significant statistical differences on beliefs of potential barriers to A&E HIV testing between those tested vs. never tested.

DISCUSSION
The results of this study support the need for HIV testing in the KHMHA A&E. Approximately 25% of A&E patients have not been tested elsewhere, despite the majority of patients having primary care. Of those not previously tested, over a quarter indicated that they had never been offered testing. Among those never tested, a substantial proportion reported injection-drug use or condomless sex with casual or exchange partners, and almost half believed that it was at least possible they were HIV infected but did not know it. Thus, A&E testing might reach these potentially higher-risk individuals, particularly those who are not being tested elsewhere. Furthermore, over 6% of study participants reported living with HIV, which meets previous recommended thresholds for ED-based HIV testing in the US and globally.16,17 The

Table 2. Self-Reported HIV Risk-taking Behaviors of All Participants and Participants Stratified by HIV Testing History

<table>
<thead>
<tr>
<th>Variable</th>
<th>All Participants (n = 264)</th>
<th>Never Tested for HIV (n = 68)</th>
<th>Ever Tested for HIV (n = 196)</th>
<th>p-value p&lt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injection drug Use</td>
<td></td>
<td></td>
<td></td>
<td>0.0002</td>
</tr>
<tr>
<td>No</td>
<td>248 (93.9)</td>
<td>57 (83.8)</td>
<td>191 (97.5)</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>16 (6.1)</td>
<td>11 (16.2)</td>
<td>5 (2.5)</td>
<td></td>
</tr>
<tr>
<td>Condomless sex with main partners</td>
<td></td>
<td></td>
<td></td>
<td>0.05</td>
</tr>
<tr>
<td>No</td>
<td>134 (50.8)</td>
<td>42 (61.8)</td>
<td>92 (46.9)</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>130 (49.2)</td>
<td>26 (38.2)</td>
<td>104 (53.1)</td>
<td></td>
</tr>
<tr>
<td>Condomless sex with casual partners</td>
<td></td>
<td></td>
<td></td>
<td>0.87</td>
</tr>
<tr>
<td>No</td>
<td>194 (73.5)</td>
<td>51 (75.0)</td>
<td>143 (73.0)</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>70 (26.5)</td>
<td>17 (25.0)</td>
<td>53 (27.0)</td>
<td></td>
</tr>
<tr>
<td>Condomless sex with exchange partners</td>
<td></td>
<td></td>
<td></td>
<td>0.81</td>
</tr>
<tr>
<td>No</td>
<td>240 (90.9)</td>
<td>63 (92.6)</td>
<td>177 (90.3)</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>24 (9.1)</td>
<td>5 (7.4)</td>
<td>19 (9.7)</td>
<td></td>
</tr>
<tr>
<td>How likely infected with HIV</td>
<td></td>
<td></td>
<td></td>
<td>0.02</td>
</tr>
<tr>
<td>Not possible at all</td>
<td>182 (72.2)</td>
<td>34 (54.8)</td>
<td>148 (77.9)</td>
<td></td>
</tr>
<tr>
<td>A little likely</td>
<td>41 (16.3)</td>
<td>17 (27.4)</td>
<td>24 (12.6)</td>
<td></td>
</tr>
<tr>
<td>Somewhat likely</td>
<td>12 (4.8)</td>
<td>5 (8.1)</td>
<td>7 (3.7)</td>
<td></td>
</tr>
<tr>
<td>Likely</td>
<td>7 (2.8)</td>
<td>2 (3.2)</td>
<td>5 (2.6)</td>
<td></td>
</tr>
<tr>
<td>Very likely</td>
<td>10 (4.0)</td>
<td>4 (6.5)</td>
<td>6 (3.2)</td>
<td></td>
</tr>
</tbody>
</table>

Table 3. Multivariable logistic model of factors associated with no prior HIV testing

<table>
<thead>
<tr>
<th>Variable</th>
<th>Adjusted Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.99 (0.97, 1.02)</td>
</tr>
<tr>
<td>Male</td>
<td>2.81 (1.50, 5.26)</td>
</tr>
<tr>
<td>Non-Creole</td>
<td>1.11 (0.56, 2.18)</td>
</tr>
<tr>
<td>Living outside of Belize City</td>
<td>1.30 (0.51, 3.31)</td>
</tr>
<tr>
<td>No regular medical care</td>
<td>1.63 (0.86, 3.12)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
</tr>
<tr>
<td>Primary school or less</td>
<td>4.75 (1.83, 12.35)</td>
</tr>
<tr>
<td>Secondary school</td>
<td>2.51 (0.98, 6.39)</td>
</tr>
<tr>
<td>Tertiary school or more</td>
<td>Reference</td>
</tr>
<tr>
<td>Health Insurance</td>
<td></td>
</tr>
<tr>
<td>Regular health insurance</td>
<td>Reference</td>
</tr>
<tr>
<td>National health insurance</td>
<td>0.90 (0.24, 3.33)</td>
</tr>
<tr>
<td>None</td>
<td>1.85 (0.62, 5.51)</td>
</tr>
<tr>
<td>Sexual history in past 10 years</td>
<td></td>
</tr>
<tr>
<td>No condomless sex</td>
<td>Reference</td>
</tr>
<tr>
<td>Main partner only condomless sex</td>
<td>0.73 (0.29, 1.85)</td>
</tr>
<tr>
<td>Casual or exchange partner condomless sex</td>
<td>1.33 (0.64, 2.76)</td>
</tr>
</tbody>
</table>
study results also indicate variations in lack of HIV testing among A&E patients, specifically male gender and lower levels of education. The gap between male and female testing in Belize is well known and has been specifically identified as a problem that needs to be addressed in the Belize Epidemiology Unit’s most recent report. A majority of females in Belize undergo HIV testing during prenatal care, but there are fewer routine testing opportunities for males. By incorporating HIV testing, the A&E might be able to help reduce gender-based HIV testing disparities in Belize City.

The participants overwhelmingly responded positively to testing being offered in the A&E, although they were slightly more likely to recommend it for all patients than for themselves personally. This phenomenon has been observed previously. However, participants did indicate concerns about A&E testing, chiefly about privacy in this setting. A significant minority of patients were concerned about time for testing in the A&E and that it might delay care or increase time spent waiting in the A&E, as well as the stress of being tested. Some possible strategies to mitigate this could be to provide reassurance to patients that their test results will be kept confidential and providing HIV testing results in private to prevent other patients from hearing test results. Educating and patients about HIV testing and preparing them for the experience might reduce stress. Qualitative interviews of patients at the A&E reveal that patients prefer to have their HIV test offered at the beginning of their visit during check-in/triage to reduce delays and that privacy is a significant concern for physicians, nurses, and patients.

Limitations

This study was performed only at one site serving one of Belize’s six districts. As such, these results may not be generalizable to A&Es in other regions of the country. Even though we tried to collect a representative sample of the adult patient population at this A&E, certain patients were excluded. These patients include those who were in the A&E when data was not being collected, i.e., patients evaluated during late night/early morning hours, non-English speaking patients, or presented at other times of the year, assuming a seasonal variation in patient demography. HIV testing and prevalence could differ in these particular patient groups. In addition, the data was self-reported and anonymous which meant that survey responses could not be verified. Finally, small samples might have reduced ability to make comparisons between groups.

<table>
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<tr>
<th>Importance of A&amp;E to offer HIV testing</th>
<th>p-value</th>
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<tbody>
<tr>
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Table 4. Attitudes Towards HIV Testing in the ED and Importance of HIV Testing

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<tr>
<th>Importance</th>
<th>All Participants (n = 264)</th>
<th>Never Tested for HIV (n = 68)</th>
<th>Ever Tested for HIV (n = 196)</th>
<th>p-value</th>
</tr>
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<tbody>
<tr>
<td>Importance of A&amp;E to offer HIV testing</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td></td>
</tr>
<tr>
<td>Not at all important</td>
<td>3 (1.1)</td>
<td>-</td>
<td>3 (1.5)</td>
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</tr>
<tr>
<td>A little important</td>
<td>10 (3.9)</td>
<td>3 (4.8)</td>
<td>7 (3.7)</td>
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<tr>
<td>Somewhat important</td>
<td>12 (4.8)</td>
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<td>9 (4.7)</td>
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<tr>
<td>Important</td>
<td>65 (25.8)</td>
<td>20 (32.3)</td>
<td>45 (23.7)</td>
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<tr>
<td>Very important</td>
<td>162 (64.3)</td>
<td>36 (58.1)</td>
<td>126 (66.3)</td>
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CONCLUSION

The absence of prior HIV testing, lack of being offered an HIV test previously, and the high prevalence of reported HIV risk behaviors indicate that patients at the KHMA A&E could benefit from an HIV testing program. Furthermore, patients are overwhelmingly supportive of A&E-based testing, although some patient concerns about being tested in this setting need to be addressed.

References


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Symptomatic Fibroadenoma Resolves Status Post Cryoablation

ROBERT C. WARD, MD; YIHONG WANG, MD, PhD; ANA P. LOURENCO, MD; MARTHA B. MAINIERO, MD

CASE
A 29-year-old African American female presented to her primary care physician for evaluation of a painful and palpable right breast lump at 11 o’clock, 6 cm from the nipple. She was referred to the breast imaging center where targeted ultrasound demonstrated a 3.2 cm oval circumscribed mass suggestive of a fibroadenoma, BI-RADS 4A – low suspicion for malignancy [Figure 1A]. Ultrasound-guided biopsy was performed with clip placement in the center of the mass [Figure 1B]. Two 12-gauge core specimens were placed in formalin and submitted for histologic evaluation.

Hematoxylin and eosin staining revealed a circumscribed mass with proliferation of both stromal and glandular elements with pericanalicular growth and mild increased bland stromal cellularity but no mitoses. These findings are consistent with a benign cellular fibroadenoma. [Figures 2A, 2B]

Given symptoms and desire for treatment, the patient was referred to a breast surgeon for consideration of surgical excision versus clinical observation with follow-up imaging as needed. She was also offered ultrasound-guided cryoablation. The patient elected cryoablation.

Ultrasound-guided cryoablation was performed with local anesthesia and ultrasound guidance in the breast imaging center. Once the cryoablation needle was placed in the geometric center of the fibroadenoma [Figure 3A], the treatment protocol began with a 5-minute freeze, an 8-minute passive thaw, followed by a second and final 5-minute freeze. Near the end of the first freeze, ice had almost entirely engulfed the fibroadenoma [Figure 3B]. By the end of the second freeze, the fibroadenoma had been completely engulfed by ice. The patient was discharged home within 15 minutes of procedure completion and was able to resume normal activities immediately.

The patient returned for follow-up ultrasound imaging 9 months after cryoablation, which revealed the biopsy clip in place but complete resolution of the previously seen mass [Figure 4]. The patient reported immediate relief of pain, gradual decreased palpability in the interim, and is currently asymptomatic.
Ultrasound-guided cryoablation is a virtually painless, percutaneous, non-operative procedure that can be used to treat breast fibroadenomas and breast cancer. A clinical perspective review article discussing the indications, risks, benefits, post-procedure anticipatory guidance, as well as technical aspects of the procedure and post-procedure imaging has been recently published. A Category I Current Procedural Terminology (CPT) code exists for cryoablation of breast fibroadenomas: 19105.

Fibroadenomas are an extremely common benign growth of the breast. No treatment is necessary for asymptomatic fibroadenomas. Treatment may be indicated for patients with symptoms, such as pain, palpability, and/or growth.

Treatment options include hormone therapy, surgical excision, and ultrasound-guided cryoablation. Cryoablation may be particularly applicable for patients with multiple symptomatic fibroadenomas who have already undergone surgical excision or for those who prefer a nonsurgical treatment option. Notably, fibroadenomas in African American

**DISCUSSION**

Ultrasound-guided cryoablation is a virtually painless, percutaneous, non-operative procedure that can be used to treat breast fibroadenomas and breast cancer. A clinical perspective review article discussing the indications, risks, benefits, post-procedure anticipatory guidance, as well as technical aspects of the procedure and post-procedure imaging has been recently published. A Category I Current Procedural Terminology (CPT) code exists for cryoablation of breast fibroadenomas: 19105.

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Treatment options include hormone therapy, surgical excision, and ultrasound-guided cryoablation. Cryoablation may be particularly applicable for patients with multiple symptomatic fibroadenomas who have already undergone surgical excision or for those who prefer a nonsurgical treatment option. Notably, fibroadenomas in African American
women are twice as common, more likely to be multiple, and tend to occur at a younger age compared to Caucasian women. An estimated 500,000 fibroadenomas are surgically excised every year. The cost of surgical excision in a community hospital is approximately $18,000 versus $3,500 for cryoablation.

The cryoablation system employed in this particular case utilizes closed-loop circulation of liquid nitrogen to create extremely cold temperatures surrounding the active tip of the cryoablation needle in order to kill targeted tissue. The procedure lasts less than 30 minutes and only requires local anesthesia. Patients are able to resume normal activities immediately after the procedure. Our patient experienced immediate relief of pain and gradual reduction to subclinical palpability within 9 months after undergoing cryoablation.

Reported in the literature, treated fibroadenomas show mean volume reduction of 73-89% within 12 months of the procedure. It has been our experience that fibroadenomas with cellular stroma and less collagen are more likely to demonstrate complete or near-complete resolution following cryoablation than fibroadenomas with less cellularity and more collagen. This histologic finding may help triage patients to surgery versus cryoablation in the future.

US-guided cryoablation is a feasible treatment option for women with symptomatic fibroadenomas.

References

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- 2000 word limit
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- Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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Example: Currently, more than 1.1 million people are living with HIV/AIDS in the United States alone, of which a CDC-database modeling estimated 3,730 to 4,061 live in Rhode Island.1

A complete print journal reference includes the following:

- Last name of author, first initial followed by comma and then additional authors
- Title of article (or book and chapter title)
- Abbreviated name of journal [Abbreviate and italicize names of journals according to the listing in the PubMed Journals database.]
- Year of publication, followed by Volume number and Issue number:
- Page numbers


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Tables should be provided as Microsoft Word documents, jpeg, pdfs, or image files should not be submitted for Tables.

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- Legends: Figure legends should be provided individually as Microsoft Word documents.

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Submissions should include:

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- 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.
Accidental or Undetermined Opioid-Involved Drug Overdose Deaths in Rhode Island and Usual Occupation – Higher Rates Observed in Natural Resources, Construction, and Maintenance Occupations

RACHEL SCAGOS, MPH; LEANNE LASHER, MPH; SAMARA VINER-BROWN, MS

The drug overdose epidemic has had an increasing impact for more than a decade in the United States. According to the Centers for Disease Control and Prevention (CDC), Rhode Island (RI) had the 10th highest rate of drug overdose deaths in the country in 2017. It remains a complex issue in the state despite a 6.5% decrease from 2016 to 2018.

To help combat the epidemic, the Rhode Island Department of Health (RIDOH) utilizes a robust fatal overdose surveillance system to identify, track, and respond to changes. Rhode Island’s State Intentional Drug Overdose Reporting System (SUDORS) is a CDC-funded database that contains information abstracted from multiple data sources, including medical examiner records, death certificates, and law enforcement records, and aims to increase the comprehensiveness of reporting fatal opioid-involved overdoses. SUDORS includes detailed information on demographics, toxicology results, circumstances surrounding the death, and other risk factors that may be associated with a fatal overdose. SUDORS can enhance our understanding of the populations most affected by fatal opioid-involved overdoses and the risk factors associated with a fatal overdose.

Occupation is one characteristic that may improve our understanding of the epidemic. In 2018, Massachusetts analyzed occupation among fatal overdose victims utilizing vital records data and found a higher rate of fatal opioid overdose among specific occupations, particularly among those working in construction. Using 2007–2016 data from the National Occupational Mortality System (NOMS), the CDC conducted an analysis of occupational patterns in opioid-involved overdose deaths and found that construction occupations had the highest proportional mortality ratios [PMRs]. Rhode Island analyzed SUDORS data to understand if trends were similar in Rhode Island, to understand differences in fatal overdose risk across occupation groups, and further inform prevention efforts.

METHODS

Opioid-involved unintentional (aka Accidental) or undetermined overdose deaths (herein referred to as overdose deaths) occurring in Rhode Island between July 2016 and June 2018 were identified using SUDORS. Occupation was identified using the ‘usual occupation’ variable, abstracted based on corresponding information on death certificates. Usual occupation refers to the type of work a person usually does to earn a living, and does not necessarily indicate occupation at time of death. Occupation was coded into standard occupation categories [SOCs] according to the Standard Occupational Classification System, followed by manual review.

The data were used to describe rates of overdose death by SOC. Information on the average number of workers in each SOC in Rhode Island was obtained from the American Community Survey, 2017. Of the 569 victims, 418 had occupations that could be coded into a SOC. Of the 151 victims whose occupation could not be categorized within the SOCs, 48 were categorized as ‘Not Seeking Paid Work’, 45 were disabled, 39 were unspecified/unknown, and 19 were unemployed. The Not Seeking Paid Work category included 20 students and 28 listed as ‘homemaker’, ‘caretaker’, or similar.

Rates of opioid-involved overdose death were calculated for the SOCs. To further describe factors associated with higher risk occupations, the characteristics of the victims in the SOC with the highest rate of opioid-involved overdose death were compared with victims whose occupation was within one of the other SOCs using chi-squared tests. Fisher’s exact tests were performed for comparisons involving small cell counts (<5). Analyses were performed using SAS 9.4.

FINDINGS

From July 2016 to June 2018, there were 569 opioid-involved overdose deaths in Rhode Island. A quarter (140/569) of all victims’ occupation was within the Natural Resources, Construction, and Maintenance Occupations category.
Construction, and Maintenance (NRCM) category, which includes occupations such as carpenter, construction worker, laborer, fisherman, mechanic, and others. Of these 140 victims, 104 had an occupation specifically within construction and extraction. Thus, one in five (of all 569) victims had an occupation specifically in construction and extraction. The second largest SOC was Service (18%; n=103), followed by Management, Business, Science, and Arts (17%; n=94), Production, Transport, and Material Moving (9%; n=50), Not Seeking Paid Work (8%; n=48), Disabled (8%, n=45), Unspecified/NA (7%; n=39), Sales and Office (6%, n=31), and Unemployed (3%, n=19).

Rates were calculated for the 418 victims whose occupation could be categorized into an SOC (Figure 1). Among these victims, the rate of opioid-involved drug overdose death was 38.9 per 100,000 workers. The rate differed by SOC, and victims in NRCM occupations had the highest rate of opioid-involved overdose death at 176.7 per 100,000 workers.

We compared the distribution of select characteristics among victims in NRCM occupations to victims in other occupations. In comparison to victims in other occupations, victims in NRCM occupations were more likely to be male (99% compared to 68%) and had a larger representation of Hispanics (17% compared to 9%). Although the drug type contributing to cause of death (COD) did not differ significantly between the two groups, victims in NRCM occupations were more likely to have had alcohol contribute to COD (32% compared to 23%) and less likely to have antidepressant(s) contribute to COD (6% compared to 15%) than compared to victims in other occupations. Victims in NRCM occupations were also less likely to have a known mental health problem (35% compared to 49%), and less likely to have a mental health diagnosis of anxiety (16% compared to 26%), depression (19% compared to 31%), or diagnoses of both anxiety and depression (6% compared to 15%) than compared to victims in other occupations. They were also less likely to have both a known mental health problem and known substance abuse problem (29% compared to 40%) than compared to victims in other occupations. (Table 1.)

### Table 1. Characteristics of Accidental or Undetermined Opioid-Involved Drug Overdose Victims: Natural Resources, Construction, and Maintenance Occupations Versus Other Standard Occupation Categories

<table>
<thead>
<tr>
<th></th>
<th>Other Standard Occupation Categories (SOCs)</th>
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<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>278 (67%)</td>
<td>140 (33%)</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
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<td></td>
</tr>
<tr>
<td>Female</td>
<td>88 (32%)</td>
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<tr>
<td>Male</td>
<td>190 (68%)</td>
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<tr>
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<tr>
<td>34 years or younger</td>
<td>99 (36%)</td>
<td>44 (31%)</td>
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<tr>
<td>35-54 years</td>
<td>133 (48%)</td>
<td>71 (51%)</td>
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<tr>
<td>55 and older</td>
<td>46 (17%)</td>
<td>25 (18%)</td>
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<tr>
<td><strong>Education Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 12th grade</td>
<td>67 (24%)</td>
<td>43 (31%)</td>
</tr>
<tr>
<td>High School/GED</td>
<td>120 (43%)</td>
<td>68 (49%)</td>
</tr>
<tr>
<td>Some College</td>
<td>41 (15%)</td>
<td>17 (12%)</td>
</tr>
<tr>
<td>Associates Degree or Higher</td>
<td>41 (15%)</td>
<td>10 (7%)</td>
</tr>
<tr>
<td>Unknown</td>
<td>9 (3%)</td>
<td>&lt;5</td>
</tr>
<tr>
<td><strong>Race ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White, non-Hispanic</td>
<td>225 (82%)</td>
<td>110 (80%)</td>
</tr>
<tr>
<td>Black, non-Hispanic</td>
<td>20 (7%)</td>
<td>5 (4%)</td>
</tr>
<tr>
<td>Other, non-Hispanic</td>
<td>&lt;5</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>25 (9%)</td>
<td>23 (17%)</td>
</tr>
<tr>
<td><strong>Treated for Pain at Time of Fatal Overdose</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>63 (23%)</td>
<td>24 (17%)</td>
</tr>
<tr>
<td>No</td>
<td>215 (77%)</td>
<td>116 (83%)</td>
</tr>
<tr>
<td><strong>Drug Type Contributing to Cause of Death</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prescription Only</td>
<td>55 (20%)</td>
<td>20 (14%)</td>
</tr>
<tr>
<td>Illicit Only</td>
<td>140 (50%)</td>
<td>83 (59%)</td>
</tr>
<tr>
<td>Prescription and Illicit</td>
<td>346 (17%)</td>
<td>22 (16%)</td>
</tr>
<tr>
<td>Unknown or Missing</td>
<td>37 (13%)</td>
<td>15 (11%)</td>
</tr>
<tr>
<td><strong>Substances Contributing to Cause of Death</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol</td>
<td>63 (23%)</td>
<td>45 (32%)</td>
</tr>
<tr>
<td>Antidepressants</td>
<td>42 (15%)</td>
<td>8 (6%)</td>
</tr>
<tr>
<td>Benzodiazepines</td>
<td>60 (22%)</td>
<td>22 (16%)</td>
</tr>
<tr>
<td>Cocaine</td>
<td>98 (35%)</td>
<td>57 (41%)</td>
</tr>
<tr>
<td>Fentanyl</td>
<td>212 (76%)</td>
<td>112 (80%)</td>
</tr>
<tr>
<td>Heroin</td>
<td>16 (6%)</td>
<td>8 (6%)</td>
</tr>
<tr>
<td><strong>Mental Health and Substance Abuse Circumstances</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Known mental health problem*</td>
<td>135 (49%)</td>
<td>49 (35%)</td>
</tr>
<tr>
<td>Known substance abuse problem*</td>
<td>222 (80%)</td>
<td>118 (84%)</td>
</tr>
<tr>
<td>Known mental health and substance abuse problem*</td>
<td>111 (40%)</td>
<td>41 (29%)</td>
</tr>
<tr>
<td><strong>Mental Health Diagnoses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>72 (26%)</td>
<td>22 (16%)</td>
</tr>
<tr>
<td>Depression</td>
<td>85 (31%)</td>
<td>26 (19%)</td>
</tr>
<tr>
<td>Anxiety and Depression*</td>
<td>43 (15%)</td>
<td>8 (6%)</td>
</tr>
</tbody>
</table>

Source: SUDORS, RDOH.
* Indicates statistical significance at <.05
^ Substance categories are not mutually exclusive or exhaustive.
^^ Mental Health Problem and Substance Abuse Problem may be coded based on information in either the medical record or obtained during the investigation.
^^^^ E xcludes alcohol
^^^^^ Mental health diagnoses are not mutually exclusive or exhaustive.
DISCUSSION
SUDORS provides a rich amount of information about the characteristics associated with fatal overdoses in Rhode Island that can support prevention efforts. This analysis showed a significant difference in rates of opioid-involved overdose death by occupation category. Victims in NRCM occupations had the highest rate of opioid-involved overdose death and accounted for approximately 25% of all overdose victims in the time period. Approximately 20% of all victims were specifically in construction and extraction occupations.

These findings are consistent with previous studies examining opioid-involved overdose death across occupation categories. Studies have also shown that construction occupations have high rates of work-related injuries and illness, and lower availability of paid sick leave and job security. Workers compensation data has indicated high proportions of injured workers receive pain medications as well. These data could not determine if victims in NRCM occupations had a previous work-related injury. This study also did not find a significant difference in drug type contributing to cause of death, and the majority of victims in NRCM occupations died of illicit substances and not prescription medications. Among victims in NRCM occupations, 80% had fentanyl contribute to cause of death compared to 75% among all victims in the time period. More research is needed to understand opioid use or initiation and the work environment.

This analysis also showed significant differences related to mental health between victims in NRCM occupations and victims in other occupations. Victims in NRCM occupations were significantly less likely to have a known mental health problem and less likely to have a dual known mental health problem and known substance abuse problem (excluding alcohol). Additionally, this study highlighted the high proportion of victims who had a known substance abuse problem (excluding alcohol); 80% of non-NRCM occupations and 84% of NRCM occupations. These findings suggest the need for enhanced coordination between substance use and mental health professionals, the importance of occupation history during patient evaluation, and for increased mental health screening.

These findings are subject to some limitations. First, circumstance information in SUDORS is based on information found in the medical record or witness report obtained during the investigation. Therefore, misclassification leading to an underestimate in circumstance information is possible. Second, usual occupation does not necessarily indicate current occupation and it is possible that some victims in the study were misclassified. However, studies have shown high consistency between current and usual occupation, including those based on data found on the death certificate.

This study identified rates of opioid-involved overdose deaths by occupation category and provided added information on the characteristics associated with the highest risk occupation group, but further studies are needed to identify work-related factors along the causal pathway from drug use/initiation to overdose death. To support safe opioid prescribing, Rhode Island’s updated regulations require prescribers to have a conversation that includes discussion of alternative treatments with patients/guardians about the risks of opioid medications before prescribing an opioid. Considering the high proportions of deaths that involve illicit drugs, patient education including information on the utility and availability of naloxone are encouraged as well. Rhode Island’s Governor’s Task Force on Opioid Overdose and Intervention is developing guidelines for Recovery Friendly Workplaces and has targeted prevention education and training to high-risk populations including members of the construction industry. Other efforts include academic detailing to providers on medication assisted treatment (MAT), and cross-sector partnerships with trades seen as ‘trusted sources’, such as barbers/hairdressers. For more information and resources on Rhode Island’s response to the opioid epidemic see PreventOverdoseRI.org.

References

Acknowledgments
The authors thank the following RIDOH staff: Laura Chambers, PhD, Risk and Protective Factor Epidemiologist; Jennifer Koziol, MPH, Drug Overdose Prevention Program Manager; Annemarie Beardsworth, CCPH, Communications; James Rajotte, MS, Chief Center for Health Promotion; James McDonald, MD, MPH, Medical Director, for their contributions to this report.

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Leanne Lasher, MPH, Drug Overdose Surveillance Program Manager, CHDA, RIDOH.
Samara Viner-Brown, MS, Chief, CHDA, RIDOH.
Rhode Island Monthly Vital Statistics Report
Provisional Occurrence Data from the Division of Vital Records

<table>
<thead>
<tr>
<th>VITAL EVENTS</th>
<th>REPORTING PERIOD</th>
<th>APRIL 2019</th>
<th>12 MONTHS ENDING WITH APRIL 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Number</td>
<td>Rates</td>
</tr>
<tr>
<td>Live Births</td>
<td>884</td>
<td>11,245</td>
<td>10.6*</td>
</tr>
<tr>
<td>Deaths</td>
<td>848</td>
<td>10,495</td>
<td>9.9*</td>
</tr>
<tr>
<td>Infant Deaths</td>
<td>5</td>
<td>64</td>
<td>5.7#</td>
</tr>
<tr>
<td>Neonatal Deaths</td>
<td>5</td>
<td>54</td>
<td>4.8#</td>
</tr>
<tr>
<td>Marriages</td>
<td>337</td>
<td>6,616</td>
<td>6.3*</td>
</tr>
<tr>
<td>Divorces</td>
<td>224</td>
<td>2,995</td>
<td>2.8*</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Underlying Cause of Death Category</th>
<th>REPORTING PERIOD</th>
<th>OCTOBER 2018</th>
<th>12 MONTHS ENDING WITH OCTOBER 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number (a)</td>
<td>Number (a)</td>
<td>Rates (b)</td>
</tr>
<tr>
<td>Diseases of the Heart</td>
<td>210</td>
<td>2,497</td>
<td>236.2</td>
</tr>
<tr>
<td>Malignant Neoplasms</td>
<td>204</td>
<td>2,246</td>
<td>212.4</td>
</tr>
<tr>
<td>Cerebrovascular Disease</td>
<td>34</td>
<td>468</td>
<td>44.3</td>
</tr>
<tr>
<td>Injuries (Accident/Suicide/Homicide)</td>
<td>81</td>
<td>920</td>
<td>87.0</td>
</tr>
<tr>
<td>COPD</td>
<td>29</td>
<td>510</td>
<td>48.2</td>
</tr>
</tbody>
</table>

(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.
It’s a new day.

The Rhode Island Medical Society now endorses Coverys.

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RIMS NOTES: News You Can Use

The biweekly e-newsletter exclusively for RIMS members.

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RIMS NOTES is published electronically on alternate Fridays.

Contact Sarah if you’ve missed an issue, sstevens@rimed.org.
The Rhode Island Medical Society held its annual membership Convivium and awards dinner on September 20th at the historic Roger Williams Park Casino in Providence. Peter A. Hollmann, MD, (right) served as emcee, completing his term as RIMS President, prior to his inauguration that evening as Chair of RIMS Board.

President Christine Brousseau, MD, shown at event podium, will lead the newly inaugurated slate of officers.

Elaine C. Jones, MD, received the Dr. Charles L. Hill Award in recognition of her service to the medical profession and the public.

Edward W. Martin, MD, received the Dr. Herbert Rakatansky Award which recognized medical professionalism, and is named in honor of Dr. Rakatansky, founding chair and leader of the Physician Health Program at RIMS.

RI Sen. Joshua Miller received the Dr. John Clarke Award, which recognizes an individual who has promoted the health and wellbeing of state residents through public service. He has served as chair of the RI Senate Health and Human Services Committee since 2013.

Charles B. Kahn, MD, the 135th President of RIMS, received the Halifax Award for medical volunteerism, in particular for his efforts in establishing educational and clinical endocrine/diabetes programs in Kenya.

Pamela Harrop, MD, accepted the inaugural Best of Rhode Island Medicine Award for Clinica Esperanza, Providence, on behalf of its medical director, Anne DeGroot, MD. The recipient was chosen by nomination and vote of the community to recognize significant advances and milestones in health care in the Ocean State.

Clinica Esperanza offers primary medical care to RI residents without health insurance, with an emphasis on Spanish-speaking and culturally accustomed care.

Patrick J. Sweeney, MD, PhD, MPH, (left) was honored for his many years of exemplary service and professionalism with an award presented by Executive Director Newell E. Warde, PhD, (center) and Peter A. Hollmann, MD (right). Dr. Sweeney had the additional pleasure of seeing his daughter, Dr. Brousseau inaugurated as RIMS’ 161st President that evening.
The Rhode Island Medical Society inagurated its 2019–2020 slate of officers on September 20.

President: Christine Brousseau, MD
President-Elect: Catherine A. Cummings, MD
Vice President: Elizabeth B. Lange, MD
Secretary: Thomas A. Bledsoe, MD
Treasurer: Paari Gopalakrishnan, MD, MBA
Chair of the Board: Peter A. Hollmann, MD

The Under 40 Awards were presented to medical professionals in Rhode Island who have demonstrated early-career achievement, leadership and professional promise. Recognized this year were (left to right) Eden R. Cardoza, MD; Adam C. Levine, MD, MPH; Gillian A. Morris, MD; Elizabeth Samuels, MD, and Simone Thavaseelan, MD.
Working for You: RIMS advocacy activities

September 2, Monday
RIMS closed in observance of Labor Day

September 3, Tuesday
RIMS Physician Health Committee:
Herbert Rakatansky, MD, Chair

September 6, Friday
RIMS Notes issue production

September 9, Monday
RI ACEP Emergency Directors’ meeting
regarding new legislation

September 11, Wednesday
Board of Medical Licensure and Discipline
Governor’s Overdose Prevention and
Intervention Task Force
Meeting with Senate HHFS Chair and
staff regarding Reimbursement Impact
Commission
RI Department of Labor and Training
Medical Fee Schedule Task Force
House of Hope 30th Anniversary
Celebration

September 13, Friday
Medical Group Managers Association
(MGMA) MA/RI legislative update and
discussion
World Diabetes Day Executive Committee
conference call

September 17, Tuesday
Governor’s Overdose Prevention and
Intervention Harm Reduction Task Force
RIMS Board of Directors:
Peter A. Hollmann, MD, President
September 18, Wednesday
Primary Care Physician Advisory
Committee

September 20, Friday
RIMS Notes issue production
RIMS Annual Membership
Convivium and Awards Dinner

September 23, Monday
American Tort Reform Association
Digital Privacy webinar

September 25, Wednesday
OHIC Small Business Market Stability
Work Group

September 27, Friday
Rhode Island Mental Health Parity
Initiative

September 28, Saturday
New England Delegation to the AMA and
Council of New England State Medical
Societies, Massachusetts Medical Society
Headquarters: Peter A. Hollmann, MD,
AMA Delegate; Alyn Adrain, MD, AMA
Delegate; Christine Brousseau, MD,
President; RIMS staff

September 30, Monday
Meeting with Hospital Association of RI
(HARI) and Day One

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The Rhode Island Medical Society’s Eleventh Hour CME Event

On a biennial basis, Rhode Island physicians are required to document to the Board of Medical Licensure and Discipline that they have earned a minimum of forty (40) hours of American Medical Association, Physician Recognition Award or American Osteopathic Association (AOA Category 1a) continuing medical education credits. At least four (4) hours of continuing medical education shall be earned on topics of current concern as determined by the director of the RI Department of Health.

2020 topics will be announced soon. Prior years’ topics have included:

- Risk Management
- Opioid Pain Management and Chronic Pain Management
- End of Life and Palliative Care
- Antimicrobial Stewardship

Spring 2020 date to be announced
The Rhode Island Medical Society’s Eleventh Hour Educational Event is usually held on a Saturday in April from 7:30am to 1pm, and is designed to assist physicians obtain the four hours of required CME before re-licensure applications are due on June 1, 2020.

RIMS members will receive a reduced registration fee.

Watch your email for more information regarding the date, topics, and registration deadlines for the 2020 event.
The Rhode Island Medical Society continues to drive forward into the future with the implementation of various new programs. As such, RIMS is expanded its Affinity Program to allow for more of our colleagues in healthcare and related business to work with our membership. RIMS thanks these participants for their support of our membership.

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

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

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

Rhode Island Medical Society

A. Louis Mariorenzi, M.D.
Arthroscopic Surgery

Louis J. Mariorenzi, M.D.
Joint Replacement Surgery

Gregory J. Austin, M.D.
Hand Surgery

Michael P. Mariorenzi, M.D.
Sports Medicine

Christopher N. ChiHas, M.D.
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For more information about group rates, please contact Marc Bialek, RIMS Director of Member Services
Kingston, RI [URI] – A University of Rhode Island professor has been awarded a $249,977 federal grant because a smart glove he is developing to help patients with Parkinson’s disease has the potential for commercial success and societal impact.

The glove, which can collect data based on the movements of those living with Parkinson’s disease and other movement disorders, is being developed by University of Rhode Island Associate Professor of Engineering Kunal Mankodiya, PhD.

Such technology could be of significant help to the hundreds of thousands with the disease in this country. Nearly 930,000 people in the United States will have Parkinson’s disease by 2020, according to a Parkinson’s Foundation study, with the number projected to increase to 1.2 million by 2030.

The data from the glove will help doctors make informed decisions on the type of exercises patients should perform and the medications to prescribe.

The two-year grant was awarded by the National Science Foundation through its Partnerships for Innovation Technology Translation program. The program enables researchers to further develop a previous project funded by the NSF, such as the smart glove, that has commercial potential.

“This funding will enable us to take a deep-dive into the world of fusing different domains, including conductive fabrics, wearable electronics, human-factors design, and smart textile manufacturing,” said Mankodiya. “I’m glad that the NSF created such grant programs where innovative technologies could find their way to the marketplace over the years.”

Nick Constant, who is pursuing a doctorate in electrical engineering at URI, has worked on the smart glove project from its inception and will explore commercial opportunities for the device.

“I spent time building the proof-of-concept glove in the lab for the original NSF CAREER grant,” said Constant. “Its ultimate outcome seemed clear from the beginning, but building a new technology takes time and testing. We have seen this glove go from a hopeful idea to gaining traction in reality through different design iterations and consultations with stakeholders.”

Just as the glove has evolved over time, so has Constant’s role.

“I suppose my involvement has changed from being just the graduate assistant to an entrepreneur,” Constant said. “Kunal and I wrote the new grant side-by-side and plan to pursue the...
research in the same manner. We will work with some partners who are familiar with the manufacturing process, supply chain and medical device regulations.”

According to Constant, they are in the running for a Rhode Island Commerce Corporation Innovation Voucher, which would enable them to partner with someone on the design aspect of the glove.

“Our expected outcome is a glove that can be shown to investors that has a manufacture-friendly design, along with a practical price point,” said Constant, who is from West Warwick, Rhode Island.

Another collaborator on the project will be neurologist UMER AKBAR, MD, who is the co-director of the Movement Disorders Program and the Deep Brain Stimulation Program at Rhode Island hospital. He is also an assistant professor of Brown University’s medical school.

Akbar, who has worked with Mankodiya on a couple of other projects, specializes in caring for patients with Parkinson’s disease.

“The challenge with studying the many symptoms of the disease is that they fluctuate throughout the day,” said Dr. Akbar. “The short window physicians have into their patients’ lives is often inadequate to verify the symptoms, so we sought to develop wearable technology that can remotely and objectively provide clinical data which can help us better treat our patients.”

**Pilot study**

Using a sample size of 20 to 30 Parkinson’s disease patients, a pilot study will be conducted in Mankodiya’s lab, at Rhode Island Hospital and with the gloves being worn in the patients’ homes.

There is one Parkinson’s disease patient who has already worked with Mankodiya and Constant. Andrea Hopkins, ‘68, who is a former assistant vice president of public affairs at URI, has tested smart gloves in the researchers’ lab for a few years.

Diagnosed with the disease in 2002, Hopkins is looking forward to the next phase of the smart glove project.

“There is no cure for Parkinson’s disease, but if doctors can monitor their patients remotely using the smart glove, it would enable them to assess how the medications are working and then make adjustments if necessary,” said Hopkins. “This could also eliminate the need for a follow-up appointment, saving the patient and the doctor time.”

Hopkins believes she’s been able to slow down the progression of the disease due to her exercise regimen, which includes physical therapy in a pool, strength training, yoga, four-mile walks and LSVT BIG, which is a program that trains improved movements for small motor tasks, such as buttoning a shirt and large motor tasks, such as getting up from a chair.

Perhaps someday, patients such as Hopkins will receive the most optimal treatment plan from their doctors based on instant feedback from the smart glove. ✨
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American Lung Association applauds Gov. Raimondo’s action to ban sale of flavored e-cigarettes

PROVIDENCE – Rhode Island GOVERNOR GINA RAIMONDO issued an executive order on Sept. 25th to protect citizens of her state from the ongoing youth e-cigarette epidemic by ending the sales of all flavored e-cigarettes in Rhode Island. The need for such action is even more urgent in light of continuing reports of severe lung illnesses and deaths linked to vaping, as the developing lungs of youth might be at greater risk.

“The American Lung Association applauds Governor Raimondo for announcing this strong action to suspend sales of flavored e-cigarettes in Rhode Island. Most kids initiate tobacco use with flavors, so ending the sale of flavored e-cigarettes is critical to addressing the youth e-cigarette epidemic,” said MICHAEL SEILBACK, National Assistant Vice President of State Public Policy for the American Lung Association. “We are hopeful that all flavored e-cigarettes including mint and menthol will be included in this measure. We were also excited to see the announcement that the state will look to extend the existing tax on other tobacco products to e-cigarette products, and to also look into restricting the sale of tobacco products to 21 years old.

“The American Lung Association once again reiterates the message for the public to stop using e-cigarettes. We also call for strong and decisive federal action from the FDA to clear the market of all flavored e-cigarettes in order to address the youth e-cigarette epidemic nationwide.”

The youth e-cigarette epidemic is nothing short of a public health emergency that must be urgently confronted. In new preliminary data from the National Tobacco Youth Survey, e-cigarette use soared by another 32 percent among high school students from 2018-2019 showing that now 27.5 percent of high school users have used e-cigarettes in the last month.

Dr. Joseph H. Friedman authors online self-help articles for patients with movement disorders

PROVIDENCE – Butler Hospital’s JOSEPH H. FRIEDMAN, MD, chief of the Movement Disorders Program, neurologist, and professor and chief of the Division of Movement Disorders in the Department of Neurology at the Warren Alpert Medical School of Brown University has authored a series of online self-help articles to support patients and their caregivers. Dr. Friedman’s articles will appear on Butler Hospital’s Movement Disorders webpage at http://www.butler.org/butler-ri/programs/outpatient/movement-disorders.cfm.

“Living with a movement disorder, such as Parkinson’s Disease, can be a trying experience for anyone. I’m hoping my articles will shed light on some common misperceptions about Parkinson’s Disease and show patients that with the right treatment and care, this illness can be properly managed. My articles will focus on topics including dementia in Parkinson’s Disease, staging Parkinson’s Disease, misperceptions, and tremors,” said Dr. Friedman.

He received his medical degree from the Columbia University College of Physicians and Surgeons. He is also an adjunct professor in the School of Pharmacy at the University of Rhode Island.

Announcing the Formation of a Weekly Caduceus Group

A Caduceus meeting is a confidential peer support group of doctoral level healthcare professionals who are in recovery. The meetings are not affiliated with any institution or organization and attendance is free.

Mondays 7–8pm
Alumni Hall, Common Room
Brown University
194 Meeting Street
Providence, RI

For more information, email caduceusri@gmail.com or call 401-585-2793
NIA awards $53.4M grant to Brown, Hebrew SeniorLife for Alzheimer’s research incubator

**Federal grant from the National Institute on Aging will fund a collaborative research incubator to support trials across the nation aimed at improving care for people living with dementia.**

PROVIDENCE [BROWN UNIVERSITY] – The National Institute on Aging [NIA] has awarded a five-year grant expected to total $53.4 million to Brown University and Boston-based Hebrew SeniorLife (HSL) to lead a nationwide effort to improve health care and quality of life for people living with Alzheimer’s disease and related dementias, as well as their caregivers.

Together, the institutions will create a massive collaborative research incubator to develop trials aimed at evaluating interventions for Alzheimer’s disease or Alzheimer's-related dementia (AD/ADRD).

“This grant will revolutionize the national infrastructure for research into how care is delivered to people living with dementia and their caregivers,” said VINCENT MOR, PhD, co-leader of the collaboration and a professor of health services, policy and practice at Brown’s School of Public Health. “The key is figuring out how to take an idea that worked in an ideal situation and adapt it so it can be piloted in the messy real-world system of care providers that exists across the U.S.

The grant from NIA, one of 27 institutes and centers of the National Institutes for Health, will support the incubator for the next five years. For Brown, the grant marks the largest federal award in University history.

The research incubator, called the NIA Imbedded Pragmatic AD/ADRD Clinical Trials (IMPACT) Collaboratory, will take on two primary objectives through eight working groups comprising experts from more than 30 top research institutions. The first objective is to fund and provide expert assistance to up to 40 pilot trials that will test non-drug, care-based interventions for people living with dementia. The second objective is to develop best practices for implementing and evaluating interventions for Alzheimer’s and dementia care and share them with the research community at large.

“The NIA IMPACT Collaboratory will transform the delivery, quality and outcomes of care provided to Americans with dementia and their caregivers by accelerating the testing and adoption of evidence-based interventions within health care systems,” said SUSAN MITCHELL, MD, MPH, co-leader of the collaboration, senior scientist at HSL’s Hinda and Arthur Marcus Institute for Aging Research and professor of medicine at Harvard Medical School.

The 40 pilot projects will be embedded in real-world health care systems and generate the necessary data to inform larger, definitive trials supported with federal funding, the researchers said.

Projects will benefit from guidance from the collaboratory’s community of experts, who will assist with ethical concerns (such as how to secure informed consent from people living with dementia); technical support and generation of data on participant populations; statistics and project design; advice on how to measure patient- and caregiver-reported outcomes; dissemination of results and efforts to maximize the likelihood of implementation; partnering with health care systems interested in conducting trials; project administration; training for junior researchers; inclusion of and applicability to people of all backgrounds and cultures; and best practices to engage people interested in this work, including people living with dementia and their caregivers, health care systems and researchers.

Researchers at Brown and HSL have collaborated on aging research for nearly 40 years. Mor is renowned for his expertise in quality measurement and brings decades of experience running clinical trials focused on older adults within real-world health care systems, including skilled nursing centers. Mitchell, director of Palliative Care Research at the Marcus Institute and co-director of the Interventional Studies in Aging Center, has dedicated her career to research to improve the care of people living with dementia, particularly those in the later stages.

For the past four years, Mor and Mitchell have co-led a trial on the effectiveness of videos that guide patients through planning for care preferences to be employed when they become too incapacitated to make decisions. For that trial, they partnered with two large nursing center corporations.

“It’s time for Alzheimer’s and other dementias to receive the same level of research focus and investment as cancer,” said LOUIS WOOLF, HSL president and CEO. “We’re proud to collaborate with Brown University to address this national epidemic that affects not only patients, but their families and caregivers as well.”

Ideally, the yearlong pilot projects will originate with professionals within the affected health care systems, rather than only academic researchers, Mor and Mitchell said. This goal builds on the mission of the Center for Long-Term Care Quality and Innovation, which will lead administration of the
grant and is based at Brown’s School of Public Health. The center focuses on partnering with innovators, including health care providers, to evaluate novel practices to improve the quality of care.

Mor said that the $53.4 million grant is one among many examples of how NIA is supporting research in recognition of the urgent and growing public health need to better care for the millions of American families who face Alzheimer’s disease and related dementias. The Alzheimer’s Association estimates that while more than 5 million Americans currently live with Alzheimer’s or a related dementia, the number is expected to double by 2050. The current annual cost of dementia care exceeds $226 million a year in the U.S. alone.

“The national discourse around Alzheimer’s and other dementias is growing louder by the day as the number of Americans suffering with this disease increases exponentially,” said DR. LEWIS LIPSITZ, director of the Marcus Institute and chief academic officer. “The NIA IMPACT Collaboratory will provide the research infrastructure and community of experts needed to conduct real-world clinical trials that will meet this challenge head-on.”

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**New law expands Good Samaritan Overdose Prevention Act**

**STATE HOUSE** — Legislation sponsored by House Speaker NICHOLAS A. MATTIELLO and Senate President DOMINICK J. RUGGERIO to expand the Good Samaritan Overdose Prevention Act has been signed into law.

The bill (2019-H 5536A, 2019-S 0953), which passed the General Assembly in June and took effect immediately upon its signature by the governor July 15, adds law enforcement and emergency medical personnel to the Good Samaritan Overdose Prevention Act, which protects them from civil or criminal liability arising from helping a person they believe is overdosing.

Many police and EMTs in the state are equipped with kits for administering naloxone – the opioid-overdose antidote commonly known by its trade name, Narcan. In fact, a change made to the Good Samaritan Overdose Prevention Act last year allows them to distribute naloxone kits to at-risk individuals or their families or friends so they are equipped in case of an overdose.

The new law is one of several the two legislative leaders successfully enacted this year and in recent years to help address the opioids crisis.

“Over the course of several years, lawmakers, policymakers, medical professionals and community leaders have been collaborating and working hard to curb the opioid epidemic that has destroyed or taken the lives of so many in Rhode Island and across the nation. We are continuing to identify every possible contributing factor and implement every solution we can find to address this very complex crisis. We are making headway – recent figures show Rhode Island is experiencing fewer overdose deaths – but we still have much work to do to put an end to this devastating epidemic,” said Speaker Mattiello (D-Dist. 15, Cranston).

Said Senate President Ruggerio (D-Dist. 4, North Providence), “We are doing everything we can to address the opioid crisis from every direction, from better interventions for preventing addiction to requiring the pharmaceutical companies who have promoted these drugs to help pay for the problems they’ve caused. I’m proud that my colleagues in both chambers of the General Assembly have made this issue a priority. We all understand that this epidemic is in every one of our districts, affecting the lives of people we know. It’s personal for just about everyone here, and we’re going to keep working to put an end to this crisis.”

Speaker Mattiello and President Ruggerio also both sponsored the creation of the Opioid Stewardship Fund (2019-S 0798A, 2019-H 6189), which later became part of the 2020 state budget bill, to assess a fee on pharmaceutical companies that sell opioids to pay for addiction prevention and treatment programs, as well as a new law (2019-H 5537A, 2019-S 0981) to limit first-time prescriptions to prevent addiction.

Also enacted this year was legislation (2019-S 0799Aaa 2019-H 6184Aaa) sponsored by President Ruggerio and Rep. Justine A. Caldwell (D-Dist. 30, East Greenwich, West Greenwich) to prevent insurers from denying or limiting life insurance to people who fill a prescription for naloxone. Naloxone is available through an open prescription to anyone in Rhode Island and is carried by many people who do not use drugs but keep it to prevent another person’s death.
RI receives two grants totaling $17.1M in federal funding to combat opioid crisis

PROVIDENCE – In an effort to improve the tracking and prevention of opioid-related overdoses and help people and communities who are suffering from the opioid crisis, U.S. SENATOR JACK REED recently announced that Rhode Island is receiving $17.1 million in federal funding to combat the state’s opioid epidemic and support prevention, treatment, and recovery programs.

The U.S. Centers for Disease Control and Prevention (CDC) is awarding the Rhode Island Department of Health (RIDOH) $4.5 million to spend on better tracking of overdose deaths so authorities have faster access to data. The CDC grant – which amounts to about $300 million nationwide this year – is being split among 47 states. And over the next two years, about $600 million more is scheduled to be awarded, subject to appropriations.

In addition, the Substance Abuse and Mental Health Services Administration (SAMHSA) is allocating nearly $12.6 million to Rhode Island through State Opioid Response (SOR) grants. These grants provide funding to states to help reduce overdose related deaths through prevention, treatment, and recovery efforts. Each state receives not less than $4 million through the program, with additional funding provided to the states with the highest mortality rates due to drug overdoses.

“Rhode Island is making progress to combat the opioid epidemic, and these federal funds will bolster the state’s efforts to support effective prevention, treatment, and recovery programs,” said Senator Reed, who serves on the Appropriations Committee, and helped lead efforts to secure this funding in the Department of Defense and Labor, Health and Human Services, and Education Appropriations Act of 2019. “I’m pleased Rhode Island has been granted this additional federal assistance to help save lives, improve treatment, and address this public health crisis.”

The SAMHSA grant is part of $932 million being split among every state in the nation for the second year of the federal government’s State Opioid Response grant program.

On average, 130 Americans lose their lives to a drug overdose involving opioids every day, according to the CDC. According to the Rhode Island Department of Health and statistics compiled by the state’s Overdose Prevention and Intervention Task Force, 314 Rhode Islanders died of accidental drug overdoses in 2018. That number marks a slight decline from the previous year.

Nationally, there were about 68,557 overdose deaths in 2018, about a 5 percent decline from 72,224 deaths in 2017. This marks the first decline in drug overdose deaths since 1990.
The program will be based at Healthcentric Advisors

The goal is to educate more than 5,000 clinicians and future providers RI-GWEP will recruit. In this way, primary care clinicians – doctors, nurses, pharmacists, and other clinicians learn to provide excellent care to patients in their own communities, and can learn from each other in live discussions on the website.

Clark plans to begin the program in early 2020, and is now recruiting health care groups to lead sessions and take part in them, ideally including students, as well as professionals from the same practice to promote a team-based approach. The goal is to educate more than 5,000 clinicians and future clinicians – doctors, nurses, pharmacists, social workers, and other professions – during the five years of the project.

“It’s a team-based model representing different professions who would receive the same training to integrate their care,” Clark said. “It is a virtual, real-time presentation and discussion platform. People are actually sitting down at the same time for a presentation, a virtual discussion online. Providers benefit from specialized knowledge and expertise of the presenters and participants.”

Presentations will cover such elder care topics as fall prevention, multiple medication prescribing, dementia care and more. In addition to the live presentations, educational webinars will be archived on the site, and there is the possibility of in-person seminars. Continuing education credits will be available for select health care professionals. The program will be based at Healthcentric Advisors, a nonprofit healthcare quality improvement organization.

Beyond providing education, the Geriatric Workforce Enhancement Program also seeks to evaluate the effectiveness of the training and its effect on the older adult population of the state. Through an examination of electronic medical records from participating practices, doctor self-reporting and records of care services provided, Clark and his team aim to find out how much impact the five-year project will make.

“We’ll evaluate the result of the educational programs on changing provider clinical behavior,” Clark said. “Do physicians change their patterns based on taking one of the sessions on ECHO. Are we providing a big enough dose of education to move the needle on provider behavior and patient outcomes?”

While the project website is not yet live, more information on the RI Geriatric Workforce Enhancement Project is available on the organization’s website – uri.edu/rigec.

“We’re promoting an age-friendly approach for health care providers. A lot of this age-friendly language is catching on,” Clark said. “But the reality is most providers don’t do this. If we’re really serious about providing quality elder care, these are the kind of really basic, on-the-ground things that we have to do. Let’s try to keep older people healthy and out of the hospital.”

Partners in the program, in addition to URI and Healthcentric Advisers, include Brown University, Rhode Island College, Care New England Health System, Integra Community Care Network, Care New England Medical Group, Care Transformation Collaborative, RI Primary Care Physicians Corporation and the Alzheimer’s Association of Rhode Island.
Hasbro Children’s Hospital announces sweeping transformation plans, reaches $25M campaign milestone

PROVIDENCE – Hasbro Children’s Hospital today announced that it has raised more than $25 million of its $35 million Every Child, Every Day campaign goal and revealed details of the renovation plans that will encompass nearly every inch of the hospital.

State legislative leaders joined hospital leadership and community supporters on September 17 to celebrate the progress of the campaign and to announce the renovations it will fund. The planned projects will encompass Hasbro Children’s emergency department, patient and exam rooms and clinics and create new healing spaces; modernize open space and work stations; and improve the hospital’s comforts, aesthetics, wayfinding, and more. Some projects have already begun, with full completion expected by early 2022.

One of the major improvements the Every Child, Every Day campaign is making possible is the transformation of the Hasbro Children’s emergency department, which is the region’s only Level 1 pediatric trauma center and handles more than 53,000 patient visits a year. Physicians and nurses will have access to state-of-the-art enhancements to care for patients, including those suffering a psychiatric emergency, mental illness, or developmental disability. Along with meeting children’s diverse needs, whether related to trauma or a chronic condition, Hasbro Children’s has experienced a dramatic rise in the number of behavioral patients coming to the emergency department for care.

“This is truly an exciting time for Hasbro Children’s and for Lifespan,” said TIMOTHY J. BABINEAU, MD, president and CEO, Lifespan. “These renovations will ensure that our physical environment matches the level of care we provide, while also enabling us to retain top talent and continue to attract the best and brightest to Rhode Island.”

“Today, we recognize not only 25 years of delivering expert care to a
generation of kids, but celebrate the future of pediatric medicine," said MARGARET M. VAN BREE, MHA, DrPH, president of Rhode Island hospital and Hasbro Children's hospital. “When we embarked on this ambitious campaign three years ago, we set out to revamp Hasbro Children’s into the pediatric hospital of tomorrow. And this truly remarkable progress has been made possible by so many caring and compassionate people who want only the best for our kids.”

The Every Child, Every Day campaign has benefited from a momentous $2.5 million gift from the Yawkey Foundation for the emergency department. Ellen Collins and her family, longtime supporters of Lifespan hospitals, have made a very generous gift to fund expansion of the Bridge Clinic in the emergency department for behavioral health patients. The Champlin Foundation has supported the campaign with multiple gifts totaling more than $2 million in support of renovations hospital-wide. In addition to modifications to the emergency department, renovations will be made to the hospital’s inpatient rooms, nurse stations, surgical services suite and intensive care unit. More private consultation space will be created, and the hematology/oncology clinic, known as the Tomorrow Fund Clinic, will be expanded to feature 50 percent more treatment space dedicated to infusion therapy. The hospital’s inpatient oncology unit will receive important upgrades on the fifth floor.

The hospital’s primary care practice spaces, also where programs provide specialized care for foster children, will be redesigned to better serve the thousands of families who rely on Hasbro Children’s for care. Additionally, the hospital’s lobbies will be reimagined to complement the family-centered practices’ recognition that keeping families comfortable and nearby aids in children’s healing. To execute and oversee its projects, Hasbro Children’s has retained the services of Dimeo Construction Company.

“Our hospitals make Rhode Island a better place to live. The importance of promoting a healthy community can never be overstated,” said ALVERRECCHIA, the former chairman & CEO of Hasbro, Inc., and chair of the Every Child, Every Day campaign. “Philanthropy helped build Hasbro Children’s more than 25 years ago, and it is our community’s generosity that is again the driving force behind making our new dream a reality.”

In the most emotional moments of the announcement event, KAITLYN LIMOGES, age 11, and MIA DEVOLVE, age 9, read their winning submissions to the hospital’s recent essay contest, which invited children to capture – in their own words – why Hasbro Children’s is important for kids. Both patients of the hospital, Mia and Kaitlyn shared their respective medical journeys, highlighting how their Hasbro Children’s caregivers made them smile and provided comfort during difficult times.

“Hasbro Children’s was built to give us kids a chance at another day of seeing the sun rise. When I go to the hospital, the doctors and nurses make me feel like I am going to be okay,” shared Mia.

“Hasbro Children’s is so important to me because the nurses and doctors are heroes. They are all amazing and have worked so hard to make me feel better. Thank you, Hasbro, for all that you do for children and their families,” concluded Kaitlyn.
Lifespan launches portal to enable patient access to clinical trials

Bharat Ramratnam, MD, Lifespan’s Chief Science Officer, presents the new clinical trial portal.

PROVIDENCE – Lifespan recently announced a new portal linked seamlessly from its website, developed to enable patient and family access to information on hundreds of its active and enrolling clinical trials. Lifespan Research Administration has built a comprehensive clinical trial search engine, in partnership with vendor XpertDox, offering information and enrollment contacts for the health system’s clinical research studies, including tests of new drugs, devices, and diagnostics for people with cancer, heart disease, diabetes, brain injury and more.

The search engine simplifies access for patients and providers who could benefit but may be unaware of trials, or unsure of how to access them. The new site gathers all active trials in one place, and is searchable by disease, condition or procedure. It also offers options to view all healthy volunteer trials. Information is provided in layman’s terms, as well as in more technical terms for physician reference, with a simple toggle. Users can also change their view to Spanish with a click.

“We’re proud of the vast array of research happening here in our hospitals,” said Chief Science Officer BHARAT RAMRATNAM, MD. “Hundreds of clinical research studies are currently underway, and this endeavor is a natural next step to connect our research community with the patients they seek to serve.”

Lifespan’s external research funding totaled more than $84 million in fiscal year 2018.

“We are excited to partner with Lifespan to improve patient access to clinical trials in Rhode Island,” said SAMEER A THER, MD, PhD, Chief Executive Officer of XpertDox, “We are proud to collaborate with another comprehensive, integrated, and academic health system and look forward to working together.”

Users will find access to the new clinical trials search portal on Lifespan.org by clicking “Clinical Trials” in the top navigation. It will also be embedded into the informational pages of key clinical service areas offering current trials.

Lifespan VP of Research Administration PEGGY MCGILL explained that the search engine derives study information from ClinicalTrials.gov, maintained by the National Library of Medicine at the National Institute of Health.

Lifespan Urgent Care opens in Warwick

The first of several planned Urgent Care locations

WARWICK – The doors to the first Lifespan Urgent Care in Rhode Island opened on September 16, at 17 Airport Road (at the intersection of Warwick Avenue, Hope St Four Corners).

The Warwick location, and all future Lifespan Urgent Care facilities, will be supervised by Medical Director OLIVIER GHERARDI, DO.

“Urgent care is a safe and cost-effective alternative to the Emergency Department, as we are able to quickly take care of patients who have symptoms or concerns that come up suddenly and who are stable and not in a life-threatening situation,” Dr. Gherardi said. “We’re equipped to do lab tests and X-rays, which allows us to accurately diagnose certain conditions and start treatment promptly and effectively.

“As an added benefit, Lifespan Urgent Care is a great resource to then direct those patients who need further care to the right channels, whether that’s to primary care, or to more focused care, such as therapy, mental health services, or other specialists we can provide.”

Clinic hours will be 8am to 8pm Monday through Friday, and 8am to 6pm on Saturday, Sunday, and some holidays. (Closed New Year’s Day, Thanksgiving, and Christmas.) For added convenience, patients will be able to register online and reserve a time slot.

Lifespan will soon be announcing the opening of other Lifespan Urgent Care locations.
American Foundation for Suicide Prevention (AFSP) award grants to Brandon Gaudiano, PhD; Heather Schatten, PhD

The largest private funder of suicide prevention research, the American Foundation for Suicide Prevention (AFSP), recently announced 26 new grants totaling over $6.2 million. These grants were awarded to researchers from across the world who focus their work on studies that help us learn more about suicide and how to prevent it.

Among those being recognized for their research into suicide prevention are two members of Butler Hospital’s Psychosocial Research Program, Brandon Gaudiano, PhD, an associate professor in the Department of Psychiatry and Human Behavior at the Warren Alpert Medical School of Brown University, and Heather Schatten, PhD, research psychologist and assistant professor at the Warren Alpert Medical School of Brown University, both of whom have received awards.

Dr. Gaudiano’s project, “Post-Hospital Suicide Prevention Intervention for Patients with Schizophrenia-Spectrum Disorders” is a pilot randomized controlled trial to test the efficacy of the Coping Long-term with Active Suicide Program (CLASP), compared to treatment as usual for inpatients with schizophrenia leaving the hospital. Patients assigned to CLASP receive individual, family, and telephone sessions for six months post-discharge in addition to their usual care. Dr. Gaudiano will receive $100,000 from the American Foundation for Suicide Prevention to continue his research.

Dr. Schatten’s project is titled “Feasibility, Acceptability, and Preliminary Efficacy of a Novel Personalized Mobile Intervention for Suicide.” The goal of Dr. Schatten’s study is to develop a novel personalized mobile intervention for suicide, which includes interactive safety planning and direct communication with study clinicians through the mobile application. Following the intervention development period, Dr. Schatten and her team will conduct an open trial and randomized pilot trial among young adult partial hospital patients. Dr. Schatten will receive $97,684 from the American Foundation for Suicide Prevention to continue her research.

Each application for AFSP funding is reviewed multiple times by the top suicide prevention researchers in the world. The research grants are funded mainly through individual donors who attend the AFSP walks and other public education events. Many of the AFSP grantees then go on to receive further funding from the National Institute of Mental Health and other large funding agencies.

CNE announces new patient-centered primary care practice for older adults

WARWICK – Care New England announced a new outpatient primary care practice for older adults located at 215 Toll Gate Road, Suite 104.

The new practice includes daily access to geriatrics clinicians, a 24/7/365 nurse-call system with access to community paramedicine support, same-day availability for appointments, transportation through Uber Health, eligibility for enrollment in Integra’s additional ACO programs, and more.

“As an Age-Friendly health system, CNE is dedicated to improving health care for older adults and creating care that is tailored to patients’ health care needs and convenience. The launch of this new primary care office will allow us to do just that. Offering services that specifically cater to the older adult population in our community, from high-quality clinicians, to transportation services, to our around-the-clock call system, this practice speaks directly to their needs,” said Ana Tuya Fulton, MD, FACP, AGSF, executive chief of geriatrics and palliative care at Care New England and medical director of Integra Community Care Network, LLC.

As part of this new program, a community room has also been outfitted within the practice and will offer nontraditional services to support health and wellness, as well as programming to support those with chronic illnesses. Examples of offerings include exercise classes, fall prevention and recovery workshops, group visits for certain conditions or for education, patient and caregiver education, nutritional programs, and more.

Geriatric medicine outpatient consultations are also available through the CNEMG Geriatric Medicine Consult Practice now located at the new primary care office.
The results of our study suggest that current practice guidelines for treating women with mixed incontinence, which approach surgery with caution for mixed urinary incontinence. “The results of our study suggest that current practice guidelines may be unnecessarily delaying surgery for women with mixed urinary incontinence,” said Dr. Sung, lead author and the principal investigator for the PFDN at the Women & Infants/Brown site. “Our findings have broad implications since one-third to one-half of women with urinary incontinence have mixed incontinence. We hope these findings will improve the care and treatment for women with incontinence.”

The SUPeR trial which was also published in JAMA, was designed to determine if a vaginal mesh hysteropexy is comparable to the typical surgery for uterovaginal prolapse which typically includes a vaginal hysterectomy and a suture repair. The article was co-authored by CHARLES RARDIN, MD, from Women & Infants Division of Urogynecology. The investigators did not find a significant difference between the two surgical options after three years. Further research [including continued follow-up in this trial] is needed to assess whether one treatment may be superior.

To see both articles in their entirety, please visit: jamanetwork.com

VIVIAN SUNG, MD, MPH, FACOG, is a professor at The Warren Alpert Medical School of Brown University and a member of the active staff at Women & Infants Hospital. Dr. Sung is a graduate of Tufts University School of Medicine and completed a residency in obstetrics and gynecology at Magee-Women’s Hospital. Following residency, Dr. Sung completed a dual fellowship in urogynecology and reconstructive pelvic surgery and epidemiology and clinical trials at Women & Infants Hospital.

Dr. Sung is an active researcher and serves as the director of research for the Division of Urogynecology. Dr. Sung achieved certification in Female Pelvic Medicine and Reconstructive Surgery (FPMRS) by the American Board of Obstetrics and Gynecology (ABOG). She is a fellow of the American Gynecological & Obstetrical Society (AGOS) and is past president of the Society for Gynecologic Surgeons. Dr. Sung is committed to advancing the field of urogynecology and improving patient care through rigorous and patient-centered research.

CHARLES RARDIN, MD, FACOG, is a professor at The Warren Alpert Medical School of Brown University and a member of the active staff at Women & Infants Hospital. Dr. Rardin is a graduate of the University of Rochester School of Medicine and completed a residency in obstetrics and gynecology at Beth Israel Deaconess Medical Center. Following residency, Dr. Rardin completed a fellowship in urogynecology and pelvic reconstructive surgery at Mount Auburn Hospital and Harvard Medical School. He is a fellow of the American College of Obstetricians and Gynecologists, as well as the American College of Surgeons. Dr. Rardin has a particular interest in innovative, minimally invasive techniques for the treatment of a variety of conditions of pelvic floor dysfunction. He is past president of the American Urogynecologic Society. He is committed to the academic advancement of the field of urogynecology.
University Surgical Associates hosts opening of new East Greenwich facility

EAST GREENWICH — University Surgical Associates hosted a ribbon cutting ceremony recently to celebrate the grand opening of its newest state-of-the-art facility in East Greenwich at 1407 South County Trail.

The 3,000 square-foot facility was designed with the patient experience in mind. The specialties of surgeons practicing at this facility include general surgery, endocrine, weight loss surgery and colorectal surgery. Additionally, the Center for Breast Care and the Vascular and Vein Center are now on site as well. Patients will also be able to meet with surgeons specialized in melanoma and oncology.

“We are excited to see the broader impact our newest facility will have on the community, and look forward to improving the patient experience for area residents in need of specialized care,” said Dr. William Cioffi, President of University Surgical Associates.

Several healthcare professionals, business leaders, and staff from University Surgical Associates participated in the ribbon cutting ceremony and toured the facility. From left to right: Steve Lombardi, President of the East Greenwich Chamber of Commerce; Matt Uustal, Executive Director of University Surgical Associates; Therese Vezeridis, member of the EG Chamber Board of Directors; Dr. Michael Vezeridis, Harry Waterman, an EG Chamber Ambassador; Dr. Thomas Miner, Dr. Carla Moreira, and Jerilyn Parker, site manager.
Southcoast Physicians Group adds six physicians to cardiology, ob/gyn, cardiovascular surgery, family medicine

NEW BEDFORD – Southcoast Health recently welcomed six new physicians to its staff.

**Timothy Byon, MD**, joined Southcoast Physicians Group Family Medicine in Portsmouth, RI.

Dr. Byon earned his medical degree at De La Salle University College of Medicine, Dasmarias, Cavite, Philippines, and completed his residency in family medicine at Grand Rapids Medical Education Partners in Grand Rapids, Michigan. He earned a Bachelor of Science in Biochemistry from California Polytechnic State University, San Luis Obispo, California.

**William Blair, DO**, has joined Southcoast Physicians Group Family Medicine in Swansea.

Dr. Blair completed his Doctorate in Osteopathic Medicine at the

**Jamie Lea Schaefer, MD**, is a board-certified ophthalmologist who specializes in oculoplastic, reconstructive and cosmetic ocular surgery. She is an Instructor of Surgery, Clinical Educator, at The Warren Alpert Medical School of Brown University.

Dr. Schaefer received her undergraduate degree from Canisius College in Buffalo, New York, and medical degree from St. George’s University. She completed her internship in internal medicine at Nassau University Medical Center and her ophthalmology residency at University at Buffalo in New York. She subsequently completed her ASOPRS/ACGME certified fellowship in oculoplastic and reconstructive surgery at West Virginia University.

**Tatiana Bakaeva, MD, PhD**, is a board-certified neurologist who specializes in neuro-ophthalmological conditions including optic nerve disease, double vision, nystagmus and other eye movement abnormalities, idiopathic intracranial hypertension, ocular stroke, ocular myasthenia gravis, and anisocoria. She is an Instructor of Surgery, Clinician Educator, at The Alpert Medical School of Brown University.

Dr. Bakaeva earned her medical degree from I.M. Sechenov Moscow Medical Academy in Russia, where she also completed her residency in ophthalmology. She earned her PhD in ophthalmology from First Moscow State Medical University, where she completed her thesis on the biocompatibility of implantation materials used in orbital surgery. She completed her residency in neurology at New York University hospitals, including NYU Langone Medical Center, Bellevue Hospital and the Manhattan VA Hospital, and completed a fellowship in neuro-ophthalmology at Massachusetts Eye and Ear Infirmary/Harvard Medical School in Boston.

**Celine Saade, MD**, is a board-certified ophthalmologist who specializes in medical retina, cataract surgery, and comprehensive ophthalmology. She is an Instructor of Surgery, Clinician Educator, at The Warren Alpert Medical School of Brown University.

Dr. Saade earned her medical degree from Saint Joseph University Medical School in Beirut, Lebanon. She completed a residency in general surgery at the Hôtel Dieu de France, a preliminary year in internal medicine at Staten Island University Hospital, and a residency in ophthalmology at Rhode Island Hospital and the Alpert Medical School. Dr. Saade completed a medical retina fellowship at Boston University Medical School.

**Lifespan Physician Group Ophthalmology (LPG) welcomes three new physicians**

**Jamie Lea Schaefer, MD**, is a board-certified ophthalmologist who specializes in oculoplastic, reconstructive and cosmetic ocular surgery. She is an Instructor of Surgery, Clinical Educator, at The Warren Alpert Medical School of Brown University.

Dr. Schaefer received her undergraduate degree from Canisius College in Buffalo, New York, and medical degree from St. George’s University. She completed her internship in internal medicine at Nassau University Medical Center and her ophthalmology residency at University at Buffalo in New York. She subsequently completed her ASOPRS/ACGME certified fellowship in oculoplastic and reconstructive surgery at West Virginia University.

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**People / Places**

**Appointments**

**Lifespan Physician Group Ophthalmology (LPG) welcomes three new physicians**

**Jamie Lea Schaefer, MD**, is a board-certified ophthalmologist who specializes in oculoplastic, reconstructive and cosmetic ocular surgery. She is an Instructor of Surgery, Clinical Educator, at The Warren Alpert Medical School of Brown University.

Dr. Schaefer received her undergraduate degree from Canisius College in Buffalo, New York, and medical degree from St. George’s University. She completed her internship in internal medicine at Nassau University Medical Center and her ophthalmology residency at University at Buffalo in New York. She subsequently completed her ASOPRS/ACGME certified fellowship in oculoplastic and reconstructive surgery at West Virginia University.

**Tatiana Bakaeva, MD, PhD**, is a board-certified neurologist who specializes in neuro-ophthalmological conditions including optic nerve disease, double vision, nystagmus and other eye movement abnormalities, idiopathic intracranial hypertension, ocular stroke, ocular myasthenia gravis, and anisocoria. She is an Instructor of Surgery, Clinician Educator, at The Alpert Medical School of Brown University.

Dr. Bakaeva earned her medical degree from I.M. Sechenov Moscow Medical Academy in Russia, where she also completed her residency in ophthalmology. She earned her PhD in ophthalmology from First Moscow State Medical University, where she completed her thesis on the biocompatibility of implantation materials used in orbital surgery. She completed her residency in neurology at New York University hospitals, including NYU Langone Medical Center, Bellevue Hospital and the Manhattan VA Hospital, and completed a fellowship in neuro-ophthalmology at Massachusetts Eye and Ear Infirmary/Harvard Medical School in Boston.

**Celine Saade, MD**, is a board-certified ophthalmologist who specializes in medical retina, cataract surgery, and comprehensive ophthalmology. She is an Instructor of Surgery, Clinician Educator, at The Warren Alpert Medical School of Brown University.

Dr. Saade earned her medical degree from Saint Joseph University Medical School in Beirut, Lebanon. She completed a residency in general surgery at the Hôtel Dieu de France, a preliminary year in internal medicine at Staten Island University Hospital, and a residency in ophthalmology at Rhode Island Hospital and the Alpert Medical School. Dr. Saade completed a medical retina fellowship at Boston University Medical School.

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Virginia College of Osteopathic Medicine prior to his completion of a Family Medicine Residency at the Warren Alpert Medical School of Brown University. He graduated with a Bachelor of Arts in Psychology from Vassar College with a Minor in Religion and completed a Post-Baccalaureate program at Columbia University and City College of New York.

During the time between his undergraduate and medical schooling, Dr. Blair served as a research coordinator for the Mount Sinai School of Medicine, New York State Psychiatric Institute and the University of North Carolina at Chapel Hill investigating PTSD, Bipolar Disorder and Substance Abuse.

He will practice at Southcoast Physicians Group Family Medicine in Swansea, MA.

CHRISTOPHER ZAMBRANO, DO, has joined Southcoast Physicians Group Cardiovascular Surgery in Fairhaven, Fall River, and Providence.

Dr. Zambrano completed his medical degree at Philadelphia College of Osteopathic Medicine, where he also earned a Master’s of Biomedical Sciences. He completed his undergraduate degree, a Bachelor of Science in Biology, at Lehigh University.

Dr. Zambrano completed a general surgery residency at the NYU/ Lutheran Medical Center. He recently completed a fellowship in cardiothoracic surgery at the Johns Hopkins Hospital, which focused in adult cardiac care including bypass surgery (both on and off pump), complex valve, open aortic work, TAVR, heart failure/ECMO and lung/heart transplant. He also trained in VATS and robotic lung resections.

He has a special interest in double arterial revascularization.

Dr. Zambrano is a member of the American College of Osteopathic Surgeons, American Osteopathic Association and the Society of Thoracic Surgeons.

ROBERT VAZQUEZ, MD, has joined Southcoast Physicians Group Cardiology in Fairhaven.

Dr. Vazquez earned a medical degree from Pennsylvania State University College of Medicine. He completed his residency in internal medicine and a fellowship in general cardiovascular disease at the Warren Alpert Medical School of Brown University. He served there as the Chief Cardiology Fellow from 2018 to 2019 and received the Resident Student Teaching Award in 2016.

Previously, he earned a Bachelor of Science in Biomedical Engineering from Rutgers University, New Brunswick, NJ.

Dr. Vazquez is certified by the American Board of Internal Medicine where he is also board eligible in general cardiology. He is a member of the American Cardiology Society, the American Heart Association and the American College of Physicians.

SUSAN CORNELL, DO, has joined Southcoast Physicians Group Obstetrics & Gynecology in New Bedford.

Dr. Cornell completed her medical degree at the University of New England College of Osteopathic Medicine prior to her residency at the Saint Francis Hospital and Medical Center Department of Obstetrics and Gynecology. She graduated Cum Laude with a Bachelor of Arts in Spanish from the University of Massachusetts Amherst as a member Commonwealth Honors College.

During the time between her undergraduate degree and medical school, Dr. Cornell completed research at both Dana-Farber Cancer Institute and Beth Israel Deaconess Medical Center. She is a junior member of the American College of Obstetricians and Gynecologists.

ERNesto GONzALEz, MD, has also joined Physicians Group Obstetrics and Gynecology in New Bedford.

He earned his Doctor of Medicine degree from the University of Connecticut School of Medicine in Farmington, Conn., and completed his residency at the University of Buffalo Department of Obstetrics & Gynecology. Previously he completed the Health Careers Program at Harvard University and a Bachelor of Arts from the University of San Diego, San Diego, California.

Dr. Gonzalez is fluent in Spanish. His special interests include high-risk obstetrics, ultrasound and quality improvement.

He is a member of the Society of Maternal Fetal Medicine and the American College of Obstetricians and Gynecologists. ✴
Care New England Medical Group’s pulmonary care division is expanding its clinical services with the addition of three physicians, all members of the Brigham and Women’s Pulmonary Associates at Care New England. Their primary hospital affiliation is Kent Hospital and the physicians will see patients in their East Greenwich office.

Care New England (CNE) welcomes Walter E. Donat, MD, interim chief of Care New England Pulmonary Care; William M. Corrao, MD, pulmonary care specialist; and Michael L. Stanchina, MD, pulmonary care and sleep medicine specialist, and medical director of the Kent Hospital Progressive Care Unit. These experts will work with patients in the diagnosis and treatment of a wide variety of pulmonary and sleep disorders.

“This is a very exciting time at CNE, as we continue to expand our clinical affiliation with Brigham Health. Today, after nearly 10 years, our relationship continues to grow and strengthen so that we can provide our community and our patients with the best possible access to high quality care. I am pleased to welcome these physicians and their clinical expertise to Care New England,” said James E. Fanale, president and CEO, CNE.

WALTER E. DONAT, MD, completed his undergraduate work at Dartmouth College, earning his medical degree from Brown University. He is board certified both in pulmonary medicine and cardiology, as well as internal medicine and critical care. A member of the Brown University clinical faculty since 1984, Dr. Donat currently serves as a clinical associate professor of medicine. He has also served as director of both Rhode Island Hospital’s Intensive Care Unit, and Respiratory Intensive Care Unit. On more than one occasion, Dr. Donat has been the recipient of the prestigious Milton W. Hamolsky Teaching Award in Medicine. He has also served as a member of Rhode Island Hospital’s Intensive Care/Critical Care Quality Assurance Committee and was named outstanding clinician of the year in 2009 by the American Thoracic Society.

WILLIAM M. CORRAO, MD, completed his undergraduate work at Brown University, earning his medical degree from the University of Rochester School of Medicine. He specializes in pulmonary disease and internal medicine. Dr. Corrao has over 40 years of medical experience and currently holds the position of clinical professor of medicine at The Warren Alpert Medical School at Brown University. Additionally, he has also served as the medical director of Attending Service and medical director of the Department of Respiratory Therapy at Rhode Island Hospital. He served on the board of trustees at Rhode Island Hospital for nine years and is the recipient of the prestigious Milton W. Hamolsky Teaching Award in Medicine.

MICHAEL L. STANCHINA, MD, medical director of the Kent Hospital Progressive Care Unit, completed his undergraduate work at Washington and Lee University, earning his medical degree from West Virginia University School of Medicine. He completed the Harvard Combined Pulmonary/Critical Care Fellowship Program, with a second Sleep Medicine Fellowship at Brigham and Women’s Hospital. Dr. Stanchina is board certified in both pulmonary and sleep medicine, as well as internal medicine and critical care. He serves as a physician at Rhode Island Hospital’s Amyotrophic Lateral Sclerosis (ALS) Clinic, and has been a member of the Brown Medical School faculty since 2002. He is also a clinical assistant professor of medicine and has served as associate director of Lifespan Hospitals’ Sleep Disorders Center, currently serving as medical director of EPOCH Sleep Centers. Dr. Stanchina is a diplomate of the American Academy of Sleep Medicine, past president of the RI Thoracic Society, member of the American Thoracic Society, and a Fellow of the American College of Chest Physicians.
Appointments

University Surgical Associates expands its pediatrics, general and bariatric divisions

PROVIDENCE – University Surgical Associates is expanding its pediatrics, general and bariatric division with the addition of three specialized physicians with the appointments of Drs. Marcoandrea Giorgi (General), Andrew Luhrs (Bariatric), and Julie Monteagudo (Pediatrics).

MARCOANDREA GIORGI, MD, is a surgeon who specializes in treating conditions of the abdomen and related structures. He completed his residency in general surgery at Rhode Island Hospital/Brown University and a fellowship in minimally invasive and bariatric surgery at the UC Davis Medical Center.

ANDREW LUHRS, MD, specializing in bariatric surgery, treats a range of obesity-related conditions using minimally invasive procedures. Dr. Luhrs completed his residency at Rhode Island Hospital, and a fellowship in minimally invasive and bariatric surgery at the Duke University Medical School.

JULIE MONTEAGUDO, MD, an accomplished surgeon and researcher, specializes in pediatric surgery and is affiliated with Hasbro Children’s Hospital and Rhode Island Hospital. Dr. Monteagudo, who is board certified in general surgery by the American Board of Surgery, will also lead the ECMO Program.

These physicians will see patients at the main office locations, including University Surgical Associates’ newest facility in East Greenwich, located at 1407 South County Trail.

CNE expands orthopedic surgery and sports medicine services

Care New England Medical Group’s orthopedic surgery and sports medicine division is expanding its clinical services with the addition of two Brigham Health affiliated physicians to the Care New England Department of Orthopedic Surgery and Sports Medicine. Their primary hospital affiliation is Kent Hospital and the physicians will see patients in both their Providence and Warwick offices.

Care New England (CNE) welcomes Andrew Matson, MD, orthopedic surgeon, specializing in hand and upper extremity, and Seth O’Donnell, MD, orthopedic surgeon, specializing in trauma and foot and ankle. They will work with patients in the diagnosis and treatment of medical problems related to the skeleton, joints, tendons, and ligaments.

ANDREW MATSON, MD, completed his undergraduate work at Middlebury College, earning his medical degree from the Warren Alpert Medical School of Brown University where he was inducted into the Alpha Omega Alpha Honor Society. He completed an orthopedic surgery residency at Duke University and attended the Harvard hand and upper extremity fellowship, where he trained at Brigham and Women’s Hospital, Boston Children’s Hospital, and Massachusetts General Hospital. Dr. Matson has published peer-reviewed research articles on disorders of the hand, wrist, elbow, and shoulder, and is a reviewer for the Journal of Hand Surgery. He is a member of the American Academy of Orthopedic Surgeons, the American Society for Surgery of the Hand, and the Rhode Island Medical Society.

SETH O’DONNELL, MD, completed his undergraduate work at the University of Notre Dame, earning his medical degree from New York Medical College. He also served in the United States Navy as an undersea medical officer with training in hyperbaric and diving medicine. He completed an orthopedic surgery residency at the Warren Alpert Medical School of Brown University, followed by a trauma fellowship at Brown University, and the Harvard foot and ankle fellowship at Brigham and Women’s Hospital. Dr. O’Donnell has been active in resident education at Brown and Harvard Universities, is a clinical instructor at Harvard Medical School, has authored multiple peer-reviewed publications, and presented his research at national and international conferences.
As the Emergency Medicine Residents’ Association (EMRA) celebrates 45 years of supporting the future of emergency medicine, it recognized 45 Under 45 influencers in Emergency Medicine.

Among the awardees are two Rhode Island physicians, selected from a field of more than 400 nominees, whose contributions embody the spirit of the specialty.

**JEREMIAH SCHUUR, MD, MHS, FACEP**, is the Frances Weeden-Gibson–Edward A. Iannuccilli, MD Professor & Chair of the Department of Emergency Medicine at the Alpert Medical School of Brown University; Physician-in-Chief of Emergency Medicine at Rhode Island, Hasbro Children’s, The Miriam and Newport Hospitals, and President of Brown Emergency Medicine.

Dr. Schuur is a practicing emergency physician. He received his MD from New York University (NYU) and did his Emergency Medicine residency at Brown Medical School/Rhode Island Hospital, where he was a Chief Resident. He was then a Robert Wood Johnson Clinical Scholar at Yale. Previously, he was on faculty at Harvard Medical School and served as the Vice Chair of Clinical Affairs and founding Chief of the Division of Health Policy Translation for the Department of Emergency Medicine of the Brigham and Women’s Hospital.

Dr. Schuur’s scholarly interests focus on quality of care and patient safety in emergency medicine and the intersection of emergency care and health policy. He has been funded by governmental agencies and foundations including the Agency for Healthcare Research and Quality, the Patient Centered Outcomes Research Institute, the Robert Wood Johnson Foundation, and the Centers for Medicare and Medicaid Services. He is currently co-leading ACEP’s 4-year $4 million E-QUAL network, a national quality network funded by the Centers for Medicare and Medicaid Innovation.

**MEGAN L. RANNEY, MD, MPH, FACEP**, is an associate professor in the Department of Emergency Medicine at the Alpert Medical School of Brown University and founding director of the Brown Emergency Digital Health Innovation program (www.browndhi.org). Dr. Ranney’s career focus is on developing, testing, and disseminating digital health interventions to reduce risk of violence and mental illness. She currently has 9 active federally funded grants and over 100 peer-reviewed publications. She holds numerous national positions, including serving as an elected member of the board of the Society for Academic Emergency Medicine, chair of the Rhode Island Governor’s Working Group for Gun Safety, and editor for Annals of Emergency Medicine.

Dr. Ranney is also Chief Research Officer of AFFIRM (www.affirmresearch.org), the country’s only non-profit committed to ending the gun violence epidemic through a public health approach. She has received numerous awards for technology innovation, public health, and research, including Rhode Island Woman Physician of the Year and the American College of Emergency Physicians’ Policy Pioneer Award and Spokesperson of the Year Award. She is a Fellow of the fifth class of the Health Innovators Fellowship Program and a member of the Aspen Global Leadership Network. She earned her bachelor’s degree in History of Science, graduating summa cum laude, from Harvard University; her medical doctorate, graduating Alpha Omega Alpha, from Columbia University; and her master’s in public health from Brown University. She was previously a Peace Corps Volunteer in Côte d’Ivoire.
Providence – The Rhode Island Quality Institute (RIQI) recently named University Gastroenterology a top performer among more than 350 health care organizations for a Centers for Medicare & Medicaid Services (CMS) practice transformation program known as the Transforming Clinical Practice Initiative (TCPi). As one of the top 12 performers in the program, University Gastroenterology has demonstrated its commitment to improving patient care in Rhode Island.

Advanced by the Affordable Care Act, the TCPi launched in 2015 for the purposes of supporting over 140,000 clinician practices in developing strategies that strengthen patient care and reduce health care costs. More importantly, the peer-based learning initiative was designed to help health care providers further develop comprehensive quality improvement strategies to achieve large-scale transformation.

“We greatly appreciate the recognition given to us by the Transforming Clinical Practice Initiative and have enjoyed learning from our involvement in such a pioneering program,” said Eric Berthiaume, MD, President of University Gastroenterology. “The program has reinforced University Gastroenterology’s commitment to reducing the costs of care, efficiently coordinating patient services, and enhancing the quality of care we provide.”

University Gastroenterology was recognized for its achievement during a ceremony hosted by RIQI at the Warwick Country Club in August. During the event, University Gastroenterology was commended for its success in multiple key initiatives, including tracking and improving clinical quality measures; embracing new workflows to be successful in the Quality Payment Program (QPP); and successfully adopting the use of Rhode Island’s Health Information Exchange.

“Eric Berthiaume, MD, President of University Gastroenterology, and Darlene Morris, Senior Director, Development & Grants at RIQI shown at awards event.

“...The physicians at University Gastroenterology have learned a great deal from this collaborative network and we are excited to apply new solutions to help improve our patients’ experience,” Dr. Berthiaume added.”
Obituaries

CHRISTOPHER J. ALLEGRA, MD, 60, died peacefully after a courageous battle with cancer on September 5, 2019. Born in Providence, Rhode Island, to Drs. Salvatore and Marisa (Calzolari) Allegra, he attended the Moses Brown School in Providence. Chris would forever cherish his wonderful summer adventures with his brothers and friends in Jamestown, RI, swimming, sailing, spearfishing, and catching lobsters.

He graduated from Tufts University School of Medicine in 1991 and completed his residency in Adult Psychiatry at Columbia University College of Physicians and Surgeons in 1995, and training in Psychoanalysis at Columbia University Center for Psychoanalytic Training & Research in 1999. He was awarded the Rodman Gilder Scholarship for Psychoanalytic Training, Columbia University Center for Psychoanalytic Training and Research, in 1994, and the Alumni Association Horowitz Award for Clinical Excellence, Columbia University College of Physicians and Surgeons, in 1995. He taught at the Columbia Psychoanalytic Center, Psychotherapy Division, and the Columbia Psychiatry Residency Program. He served on the Columbia faculty starting in 1996. He taught psychoanalytic theory and technique, and was a clinical supervisor for fourth-year psychiatry residents. His clinical practice was a source of great personal and professional joy, and he brought his intellect, warmth, kindness, and compassion to his work with his patients.

He had an abiding passion for music and played the piano throughout his life. He was a member of two bands, playing the keyboard. He organized annual musical events with family and friends at his beloved summer home in Jamestown, RI, where everyone sang and played instruments. Chris loved nature and spent endless hours throughout his life studying and exploring animal behavior. He was an avid skier and sailor. Many fine summer afternoons found him sailing with his children on Narragansett Bay in their catamaran, flying across the bay to Newport.

Chris will be remembered for his openhearted warmth, his generosity of spirit, and his love of science, art, music, and nature. He had an authentic curiosity and appreciation of what makes us human. He brought out the best in people.

He is survived by his beloved wife of 35 years, MaryEllen; three children, who were the joy of his heart, Nicholas, Ryan, and Alessandra; his loving mother, Marisa [Calzolari] Allegra, MD, [partner Edwin Ofgant], two cherished brothers, Ludwig Allegra, MD, [Arlene], and David Allegra, MD; and much-loved niece Alexis Allegra [Daniel Carr]. He was preceded in death by his father, Salvatore R. Allegra, MD.

ANTHONY DOMINIC D’UVA, MD, 90, of North Kingstown, formerly of Cranston, passed away peacefully September 7, 2019 at home.

Dr. Duva was a magna cum laude graduate of Providence College and the University of Bologna Medical School. He devoted his professional life to the practice of Otolaryngology (ENT surgery) for over 40 years, serving as Chief of the department at the Lady of Fatima Hospital and the St. Joseph’s Hospital in Providence.

He is survived by his beloved wife of 65 years, Josephine “Pina” M. [Rescio], and 4 children: Adrienne B. Ronci [predeceased], Gary G. of Cranston, Audrey Duva-Frissonia of Westham, MA, and Anthony W. of North Attleboro, MA. They raised 2 of their 9 grandchildren, Gina Ronci-Mohamed and Bill Ronci in their home; he also leaves behind 7 great-grandchildren.

He is also survived by his brother Carmine L. “Lou” D’Uva Jr. of North Kingstown and was predeceased by his brother Vincent D’Uva.

Beyond his reputation as a compassionate physician and gifted surgeon, he is remembered for his multifaceted talents, boundless energy, and “joie de vivre”. A disciplined athlete, he avidly pursued alpine skiing and competitive hockey well into his 70s. He loved the sea and immersed his family in sailing, swimming, waterskiing and fishing from his children’s earliest memories. As a young boy, he was intrigued by the classic yachts on Narragansett Bay, and later took great pride, along with his brother Lou, in the restoration of the wooden sailing yacht, King Haakon, a Norwegian Classic 8 Metre built in 1947. They crossed the Gulf Stream aboard King Haakon with several family members and friends in a memorable celestially navigated voyage from Marion to Bermuda and back. He raced weekly summer regattas through his octogenarian years, landing many awards at the Wickford Yacht Club.

His passions and talents transcended medicine and sports into the performing arts. He was a renowned operatic singer, making a professional debut as Captain Pinkerton, lead tenor in Puccini’s Madama Butterfly. His joy of singing flourished well into his 9th decade, as he continued to perform at The Music Mansion in Providence.

His legacy, the love of life, family and career, will live on in the hearts and souls of those he touched, particularly his children and grandchildren. He will be dearly missed.
EDWARD G. STOPA, MD, of East Greenwich, passed away peacefully on September 18, 2019 at 65 years of age after a brief and courageous battle with pancreatic cancer. He was the loving and devoted husband of Karen E. (Madras) Stopa, MD, for 39 years.

Throughout his career, Dr. Stopa was an outstanding and well-respected physician-scientist, bearing the loads of clinical diagnostic neuropathology, funded researcher, and educator in both neuroscience and neuropathology. Besides his major role as a diagnostician, over the past 25 years, Dr. Stopa served as Director of the Neuropathology Division at Rhode Island Hospital and oversaw the Brown Brain Bank, which provides human tissue for neuroscience research, particularly Alzheimer’s disease. He also oversaw a laboratory funded by the National Institutes of Health focusing on neurodegeneration, was a medical advisor to the Alzheimer’s Association of Rhode Island, and published over 120 articles in peer-reviewed journals.

Dr. Stopa was a Professor of Pathology and Neurosurgery at The Warren Alpert Medical School of Brown University. He trained dozens of fellows in neuropathology and trainees from neurosurgery, neurology, and psychiatry. His engaging and entertaining teaching style drew numerous undergraduate, medical, and graduate students to brain science research.

Dr. Stopa received his undergraduate degree in physiology in 1976 and medical degree in 1980 from McGill University in Montreal, Canada. He completed his residency in pathology and fellowship in neuropathology at Brigham and Women’s Hospital in Boston, MA. Prior to working in Rhode Island, Dr. Stopa had a distinguished career as an Assistant Professor of Pathology at Tufts University School of Medicine and subsequently as an Associate Professor of Pathology at the State University of New York.

He is survived by loving family members, including his four daughters: Emily S. Stopa and her husband John C. MacMillan, Jr. of Chevy Chase, MD; Eva K. Stopa of Pawtucket; Eliza R. Stopa of Boston and Arielle M. Stopa of Worcester, MA; four grandchildren and extended family members.

Although he excelled in his career and research endeavors, the ocean was Dr. Stopa’s true passion. He was an enthusiastic scuba diver, sailor, swimmer and beach-goer. When he was not on or in the water, Dr. Stopa enjoyed cycling and skiing and had a passion for astronomy. But above all else, Dr. Stopa loved spending time with his family and particularly cherished his role as a grandfather.

Dr. Stopa will always be remembered for his vibrant personality, his larger-than-life stories that provided entertainment for countless hours, his eccentric clothing style, and his brilliant mind. We are grateful for the time we had with him.

Donations in his memory may be made to either: Pancreatic Cancer Action Network (www.pancan.org) or the Alzheimer’s Association (www.alz.org).

MARK A. PALUMBO, MD, 57, loving husband and father of three, passed away September 15, 2019, surrounded by his loving family.

He is survived by his beloved wife of 31 years, Anne (Pagliuca) Palumbo and his three cherished children, Kristen M. Palumbo, Nicole A. Palumbo and Mark A. Palumbo; his parents Ralph and Marie (Mallette) Palumbo, brother Ralph A. Palumbo and sister Cheryl (Palumbo) Rey. Mark also leaves behind many nieces and nephews.

He graduated from Boston University, and Boston University Medical School [’88]. He did his residency at Rhode Island Hospital and fellowship at the Case Western Reserve University Spine Fellowship Program.

Dr. Palumbo was a practicing spine surgeon for more than 25 years, and the Chief of Spine Surgery at Rhode Island Hospital. He was the recipient of many academic honor awards during his medical career. His most cherished was the Award for Excellence in Teaching-Brown University Orthopedic Residency Program. He was recently honored for several AAOS Achievement Awards 2018–2019. He published and co-published over 70 publications for medical journals. Dr. Palumbo was a true mentor, healer, teacher and loyal friend to so many.

With a passion for the outdoors, he enjoyed hiking, skiing, bicycling and walking his dog Elle. Most of his free time was spent doing all these activities with his family and friends. He was also an avid reader and enjoyed traveling, frequently visiting museums and art galleries. He was a Boston sports fan.

His family extends immense gratitude and thanks of appreciation to the entire staff at University Orthopedics and Rhode Island Hospital. Memorial contributions may be made to: The Tomorrow Fund, 593 Eddy Street, Providence, RI 02903.