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Personalized Medicine

Is it a concept only for the super-rich?

JOSEPH H. FRIEDMAN, MD
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I read about President Obama’s recent call for something he called, “the precision medicine initiative,” popularly referred to in the press as “personalized medicine.” I did not read the White House’s press releases so I may be behind the times. I have read some of the news coverage, and, quite frankly, I’m stunned by the gap between “the cup and the lips.” Perhaps “gap” is too euphemistic a term. Chasm or mountain, may be a better description.

The notion behind personalized medicine is reasonable and appropriate for super rich people in the 21st century. The goal is to choose therapies specifically targeted for each individual’s illness. If you have a cancer caused by a particular mutation you may be likely to respond to some chemotherapy regimes but not to others. If you have cystic fibrosis, there may be unusual therapies that will work for your expression of the disease. The issue of cost has not entered the discussion, other than to state that the federal government is interested in putting $215 million dollars into the research.

The problem is not the research. In my field, it is likely that within the next decade or two we will have worked out the genetic underpinnings for the major neurodegenerative disorders like Alzheimer’s disease and Parkinson’s disease, each of which, by the way, has been associated with a large number of individual gene derangements, implying that there are many sub-types of both of these diseases. In the future we may talk about having Alzheimer’s type 27 running in a family, as distinct from the other 50 types of Alzheimer’s disease. We will hopefully learn, before too long, which of the many different abnormalities that may cause seizures are causing epileptic seizures in our child, which will guide us to choosing the best anti-convulsant drug.

These will be wonderful advances, but what will they mean? Every new drug on the market is expensive. In some cases this is because its development required huge outlays and must be recouped, and excesses used to fund future research. In some cases the costs are simply due to lack of competition. When generic drugs suddenly get approved for well known uses, the price may skyrocket a hundred-fold (such as has happened with some drugs for epilepsy and gout), without any justification except the pharmaceutical company could get away with it.

The real problem is money. My patients are increasingly finding themselves unable to pay for their old, generic medications because they have become “tier 2” or “tier 3” drugs, a classification that changes every year. A drug that had required a co-pay of $10 per month is now, commonly, costing $300 per month. Of course, this is for inexpensive drugs. Expensive drugs are a different kettle of fish. These require prior authorization, the bane of most doctors. I can’t blame insurers for putting up hurdles. They want to make the doctor think, or at least sweat and swear, before ordering a drug that costs $5,000/month. Some drugs cost $100,000/year. In general, the fewer the number of patients getting a drug, the more expensive it is. When you’re talking about targeted therapy, you’re talking about very small numbers of patients. This translates into tens or hundreds of thousands of dollars per year, possibly for the rest of one’s life, since all of these targeted therapies are treatments, not cures. For example, there are nine immune-modulating drugs approved for treating multiple sclerosis (MS), a disorder that, while uncommon, is not rare. Although one would expect competition to lower
prices, and perhaps this has happened, the first such drug, approved by the FDA in 1983 and generic for many years, still costs over $4,000/month. In fact, every single one of these MS drugs costs over $50,000/year. However, this is NOT targeted therapy. Targeted therapy would be therapy approved for MS patients who had a particular gene abnormality, thus lowering the number of potential patients, thus increasing the cost. Ten years from now $50,000/year will look cheap.

I am not a medical economist, but I’m not stupid either, and I’m not hiding my head in the sand. Precision medicine will be available soon. It will be the best possible therapy for people who either work in the U.S. Congress and vote themselves the best medical insurance, or are extremely well to do. The costs of these drugs will not be affordable by most wealthy people, however, and will probably be limited to the top 1% or so of Americans. People who make $500,000/year are not going to be able to spend $250,000 of after-tax income every year, often for disorders that will make them unable to make that kind of money any more.

Precision medicine is a nice concept. It is a bioengineering feat that will be attained, but will not serve most of us. Targeted therapy, developing interventions that are generalizable, that can be used to interfere with the expression of bad genes that cause disease, should be the goal, not developing drugs that ameliorate the disorder based on the gene. We want interventions that keep Huntington’s disease from starting, that keep cancer genes from initiating their cascade of events leading to tumors, and not so much drugs that ameliorate but do not prevent or cure. While these interventions will be wonderful for those who will be wealthy enough to receive them, it seems to me that, like so many things, money should be invested more wisely elsewhere. Public health has been, and remains, the most productive investment in medicine everywhere in the world, including the United States.

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Contributions report on an issue of interest to clinicians in Rhode Island. Topics include original research, treatment options, literature reviews, collaborative studies and case reports. Maximum length: 2000 words and 20 references. JPEGs [300 ppi] of photographs, charts and figures may accompany the case, and must be submitted in a separate document from the text. Color images preferred.

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Materia Medica & Diagnostic Dilemmas in Downton Abbey

HERBERT RAKATANSKY, MD

Medical matters have been an essential part of the narrative in Downton Abbey, the widely viewed TV series. Downton Abbey strives to be historically accurate in costume, culture and setting over the period it depicts (1912–1924).

Most of the medical conditions are described accurately and contribute to the story line in a historically informed fashion. Conditions such as trauma, PTSD, eclampsia (misdiagnosed, resulting in death), being a disease, were portrayed accurately, concordant with the historical period.

Several significant medical misadventures are worthy of note, however.

The Cook’s Cataract
Early in the series Mrs. Patmore, the beloved cook, underwent cataract surgery. But what is highly sophisticated and safe surgery today was then crude. Dilatation with belladonna dates from 1796 and cocaine anesthesia from 1884, but the incision in the eye was large (compared to today) and patients were thought to require prolonged rest (10 days) after the procedure. However, ambulatory cataract surgery was described by a Dr. HD Bruns (in a little recognized 1915 paper in that pre-information age) in the US with a complication rate of about 7%, no different from hospitalized patients. Before the early 1950s, very thick, heavy eyeglasses were needed after cataract removal, as there was no lens to focus an image. Lightweight plastic eyeglass lenses were introduced only in 1952.

Shortly after World War II Dr. Howard Ridley noted that small acrylic plastic fragments (from fragmented airplane cockpits) that lodged in the eye did not provoke an inflammatory response. He then introduced the first plastic replacement intraocular lens in 1949. However, like hand washing suggested by Semmelweis (1847), antisepsis suggested by Lister (1867) and H Pylori described by Marshall (1980), this innovation initially was derided and ignored. It took a number of years for the practice to be accepted. Contrast this with the discovery of anesthesia (1846) and X-ray (1895), both of which were accepted rapidly.

The thick spectacles, without which the world would have been only a visual blur for Mrs. Patmore, are absent in all subsequent episodes of Downton Abbey. Without those glasses, however, she could not have continued her cooking career.

The Earl’s Abdominal Pain
In the final episode of the 2015 season set in 1924, the Earl of Grantham develops some intermittent pain in the lower chest and upper abdomen. He is worried about angina and developing a heart attack. After consulting a specialist he is sent for “tests” after which he happily announces that he only has “an ulcer.” In 2015 intermittent chest pain would prompt an urgent cardiac work-up, including a cardiac catheterization if indicated.

The Earl would have had an EKG. In 1918 Guy Bousfield described EKG changes during a spontaneous episode of angina in a single patient with syphilitic aortitis. EKG changes associated with a myocardial infarct were first described by Harold Pardee in 1920. The exercise stress test was first suggested by Wollerth and Wood in 1931 but was thought to be too dangerous. A modified, safer stress test was introduced in 1932 by Goldhammer and Scherf. They also introduced chest leads in 1932 allowing evaluation of previously “silent” areas of the heart. Prior to this, EKG changes in the anterior heart could not be detected. The current lead configuration was initiated in 1942 by Emmanuel Goldberger. Also in 1942 the standard two-step stress test was described by Arthur Master. Thus, in 1924, absent an EKG demonstrating changes in the inferior part of the heart during a spontaneous episode of angina, it would have been impossible to conclude that the Earl’s intermittent pain was or was not cardiac. Interestingly, it was in 1924 that William Einthoven won the Nobel Prize for having invented the EKG some 20 years earlier.

Angina is usually progressive and since the Earl did well without apparent pain between the medical evaluation and the conclusion of the season, many months later, at Christmas, I do not think he had angina (or other, progressive diseases such as cancer or vascular problems).

Today’s patient would then have an endoscopy. But there was no endoscopy in 1924. The Earl probably had an x-ray. An upper GI series (using barium contrast media) with fluoroscopy, then in common use, enabled visualization of the stomach and intestines. Some ulcers could be seen, but not all.

The only treatment for ulcers available to Lord Grantham was diet, antacids and abstinence from “gastric irritants” including alcohol. The Sippy diet, named after Dr. Bertrand Sippy (1866–1924) not because one sipped it, was popular at that.

COMMENTARY
time. It started with milk and cream, taken hourly. One authority suggested carrying a thermos to ease compliance. The diet then progressed to soft or ground food and avoidance of meat, spices and coarse vegetables. Abstinence from alcohol was a part of this larger, more comprehensive regimen. Strict adherence to this program was thought to relieve symptoms in several days but to require several months for actual healing. The Earl declined the strict diet and his only treatment was abstinence from alcohol (until Christmas).

Ulcer pain typically is persistent, burning, gnawing and associated with food, not spasmodic as experienced by Lord Grantham. I suggest therefore that even if he had an ulcer, it is unlikely to be the cause of his pain. The fact that abstinence from alcohol coincided with resolution of the pain does not alter this opinion.

If not angina or ulcers, then what caused the pain? During the one episode of pain caught on camera the Earl clutched his side and the pain was brief. Gallstones are a common culprit in this situation. Many patients with gallstones have isolated episodes of pain and then do well for long periods of time. There were no ultrasounds or CT scans in 1924.

Radio-opaque gallstones can be seen but the gallbladder itself cannot be visualized on a plain x-ray. An experimental intravenous dye, excreted by the liver, that opacified the gallbladder was being investigated in 1924. This initial contrast was toxic. In 1925 safe oral and IV formulations became available and the gallbladder could be seen routinely, though not perfectly [IV and oral cholecystogram]. So even if gallstones had been considered as a cause for Lord Grantham’s pain, there was no way to identify them in 1924. If the illness had occurred one year later in 1925, however, the Earl’s “tests” could have included such imaging. Treatment was available if [radio-opaque] gallstones had been demonstrated and/or his symptoms were very severe and thought, clinically to be due to gallstones. Cholecystectomy was first performed by Langebuch in 1882 and was an accepted procedure in 1924.

Because of the nature of the pain and the clinical course I believe gallstones are the most likely cause of Lord Grantham’s pain. If this smoking gun is pursued in season six with medical complications of the supposed ulcer, I still would not conclude that the Earl’s season five pain was due to an ulcer. Complications of gallstones [pancreatitis, cholecystitis, jaundice, etc], in season six could reasonably be expected however.

**The Chauffeur’s Cardiac Condition**

In season two, Tom Branson, a chauffeur, is rejected by the British army during World War I because of a cardiac condition. The reason given for his rejection, however, is historically and medically inaccurate. He was told that he had mitral valve prolapse with a pan systolic murmur. But the syndrome of mitral prolapse with a cardiac murmur was first described in 1966 by Dr. John Barlow. The structural abnormality had been known to pathologists, but no clinical correlation had been made.

Cardiac disease was the third-leading cause of disability [after “wounds and trauma” and “chest complaints”) in British soldiers during World War I. In the latter part of the 19th Century it was thought that external forces, such as tight uniforms and heavy packs might be the cause of heart problems.

This concept gave way in the early 20th Century to the view that the heart was a machine and that heart disease resulted from global dysfunction and that cardiac dysfunction was not tied to a specific mechanical defect, but rather was manifested by symptoms such as “chest pain, dyspnoea, palpitations on exertion, and tachycardia.” Audible murmurs, clicks and other sounds, in the absence of functional impairment, were felt to be of little significance.

Much time and money were devoted to the study of heart disease in soldiers and a diagnosis of “soldier’s heart” evolved, typified by the symptoms mentioned above. In retrospect, it likely was not due to primary cardiac disease. However, it was thought to be critical to establish criteria for recruits so that men with supposed heart disease were recognized and not accepted.

In 1915 the eminent physician James Mackenzie established written guidelines for the examination of recruits, published by the British War Office. As described by Joel Howell: “MacKenzie saw as the primary issue the functional efficiency of the heart. Murmurs and irregularities were important only if they diminished the functional efficiency. If they did not, and this was to be ascertained either by asking the candidate how much exertion he was accustomed to or by observing him undergoing exertion without distress, then the candidate’s heart was sound and he was fit for duty.” EKGs were not part of this approach.

But even by current standards, the description of Branson’s condition is most likely inaccurate. Mitral prolapse is characterized by a late systolic rather than a pansystolic murmur. It is possible in very advanced disease to have a pansystolic murmur, but these persons are usually clinically ill with dyspnea, fatigue and fluid retention.

As a vigorous, healthy, physically active young man, based on those criteria, Branson would not have been rejected. Rejection for cardiac disease would have been only for a global cardiac dysfunction impairing exercise tolerance, not for asymptomatic mitral prolapse, that, as noted, was not identified as a clinical syndrome until 50 years later.

Generally, the medical issues portrayed in Downton Abbey help us to appreciate our current medical sophistication and shed light on the practice of medicine 100 years ago. The occasional inaccuracies are an opportunity to become reacquainted with a few morsels of medical history. No doubt similar observations will be made 100 years from now as authors then try to recreate our current medical world in future “period pieces.”

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Cluster of Vaccine-related Invasive Pneumococcal Disease in Previously Vaccinated Healthy Children in Rhode Island

THERESA M. FIORITO, MD; KIMBERLE CHAPIN, MD; JACLYN SKIDMORE, MSc; IAN C. MICHELOW, MD, DTM&H

Invasive pneumococcal disease (IPD) is a serious and life-threatening condition. Introduction of the 7-valent pneumococcal conjugate vaccine (PCV-7) in the United States in 2000 led to a sharp reduction in the incidence of vaccine-related IPD, that was further decreased after introduction of the 13-valent pneumococcal conjugate vaccine (PCV-13). We report a cluster of cases of IPD in previously healthy vaccinated children.

METHODS

After observing a cluster of IPD cases among children hospitalized at Hasbro Children’s Hospital, Providence, RI, we queried the institution’s database for children under the age of 18 years who presented during 2014 with positive blood, cerebrospinal fluid, or pleural fluid cultures. We abstracted demographic, clinical, and microbiological information including pneumococcal serotypes from the medical records. The Institutional Review Board of Rhode Island Hospital approved the study.

RESULTS

Five previously healthy children without identifiable comorbidities or suspected immunodeficiencies were diagnosed with IPD between October 26 and November 19, 2014 based on culture results. Their cultures were forwarded to the RI DOH (Rhode Island Department of Health) for subsequent serotyping. There were three other pediatric cases of S. pneumoniae bacteremia in Rhode Island, in 2014, outside of this cluster: one in January, one in July, and one in the beginning of October. None of those patients’ cultures were serotyped. The patient in January, although fully vaccinated, was immunocompromised and on chemotherapy. The patient that presented in July had received 3 out of 4 PCV-13 vaccines, and had no underlying medical conditions or complications. The patient that presented in the beginning of October was unvaccinated against pneumococcal species, and had three positive blood cultures before clearance was observed.

The average age of patients within this cluster was 3.64 years (0.62–5.58 years). Three patients were male. Four children had previously received appropriate immunizations with PCV-13. Three children were found to have serotype 19A (one of whom was unvaccinated, secondary to parental decision), and one child was found to have serotype 4. Both 19A and 4 are included in PCV-13. The fifth child had serotype 17F, which is not included in PCV-13. S. pneumoniae was isolated from peripheral blood cultures in all cases. Four children presented with pneumonia, confirmed by consolidation on chest X-ray, and one presented with a unilateral infection involving the skin around the eye (preseptal cellulitis).

All five pneumococcal isolates were susceptible to beta-lactams and macrolides. Children with bacteremic pneumonia were treated initially with either ampicillin (n=2) for 1–2 days, followed by amoxicillin for a total course of treatment of 10–14 days, respectively, or ceftriaxone (n=2, one of whom had a non-anaphylactic allergy to penicillin), for 1–2 days, followed by amoxicillin or cefpodoxime for 10–14 days, respectively. The patient with preseptal cellulitis received one dose of ampicillin/subactam followed with standard dose amoxicillin/clavulanate for 10 days.

The patients recovered without complications, except for one child with serotype 4 pneumococcal pneumonia. This child developed empyema after discharge, but was successfully treated with video-assisted thoracoscopy and amoxicillin therapy.

DISCUSSION

We report a cluster of IPD among five previously healthy children in Rhode Island who presented in 2014. Four of these children had been appropriately vaccinated with PCV-13, therefore these cases represent breakthrough pneumococcal infections. An increase in the number of invasive pneumococcal infections caused by 19A, and other serotypes not included in PCV-7, has been observed since 2005 in a number of studies. Only one of our patients had a serotype that was not covered by the vaccine.

The purpose of this report is to raise awareness of possible breakthrough pneumococcal infections despite vaccination with PCV-13 in apparently healthy children.

References

Guidelines for Letters to the Editor

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

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

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

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

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Actual and Perceived HBV Status Among Asian Pacific Islander Americans in Rhode Island: A Cross-Sectional Study

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ABSTRACT

Chronic hepatitis B (HBV) in the Asian and Pacific Islander (API) American population is an under-recognized health issue in the United States. Among foreign-born API, the prevalence of HBV is approximately 10%. The prevalence in the general population is below 0.5%; among non-Hispanic whites it is below 0.2%. We examined beliefs held by the API populations in Rhode Island (RI) about personal HBV status and compared them with their actual HBV status. Of 59 total study participants, only 19 (32%) participants correctly knew their HBV status. Six (10%) participants were carriers of HBV; 18 (31%) lacked immunity to the virus. This pilot study suggests the RI API population is not knowledgeable about their own HBV status and are inadequately screened, vaccinated against, and treated for HBV. Increased statewide screening and education efforts, tailored to address this population, are needed to identify and inform those in need of medical attention or vaccination.

KEYWORDS: Hepatitis B, screening, vaccination, Asian American, Asian and Pacific Islander

INTRODUCTION

Chronic hepatitis B (HBV) in the Asian and Pacific Islander (API) American population is an important under-recognized health problem in the United States (US). Among foreign-born API in this country, the prevalence of HBV is approximately 10%. In contrast, the prevalence in the general US population is below 0.5%; among non-Hispanic whites it is below 0.2%.¹ In Rhode Island (RI), this health issue has not been addressed, although the state is home to 36,763 APIs.² Civil war, historical trauma, and genocide throughout Southeast Asia forced many to immigrate to the US in the 1970s and 1980s from Cambodia, Vietnam, and Laos. Immigrants from China, Taiwan, the Philippines, and Thailand also comprise a substantial part of the state’s API population. HBV is endemic in these regions, where most infections are acquired perinatally from mother-to-child transmission during childbirth.³

Chronic HBV infection is a leading cause of liver cancer and one that is preventable by an affordable and widely available vaccine.⁴ Lack of coordinated national vaccination programs in countries of origin, as well as vertical and sexual transmissions of the virus, contribute to the high prevalence of HBV among APIs.⁵ Current Centers for Disease Control and Prevention (CDC) guidelines recommend universal HBV screening in populations born in regions of endemicity greater than 2%, all pregnant women, and infants born to HBV surface antigen (HBsAg) positive mothers.⁶ However, due to many structural, cultural, and economic limitations, these guidelines are not being followed in high-risk communities.⁷,⁸

The public health problem of HBV in API populations is often neglected because the majority of HBV cases are asymptomatic. In persons with persistent chronic infection, cirrhosis and hepatocellular carcinoma can develop decades after exposure, resulting in the death of 15% to 25% afflicted.⁹,¹⁰ Data indicate that the majority of API Americans are not aware of or protected against HBV.¹¹-¹⁷ Lack of awareness may lead to a false sense of security and disinterest in participating in HBV screenings even when they are available, leading to worse health outcomes. Culturally sensitive education initiatives have the potential to significantly increase HBV screening rates among API Americans and are cost effective.¹⁸

No studies have been done to quantify the prevalence of HBV in APIs in RI or to characterize their knowledge and attitudes about HBV. The purpose of this study was to [1] explore beliefs held by the Chinese, Cambodian, and Laotian populations in RI about their personal HBV status, [2] examine self-reports of HBV status and [3] compare self-report results with actual HBV status. In the current study, we report the relationship between perceived HBV status and actual HBV status in a cohort of API Americans in RI.

METHODS

Population studied

A convenience sample of participants of Chinese, Cambodian, or Laotian descent and of legal age was recruited. Recruitment took place face-to-face after ESL courses, community events, church services, and other outreach events at the Chinese Christian Church of Rhode Island (CCCRI) and Center for Southeast Asians (CSEA). This study was approved by the Institutional Review Board of Brown University. Written informed consent was obtained from each study subject.
CONTRIBUTION

Our findings underscore the value of HBV screening among API Americans because there exists effective, evidence-based treatment for active HBV infection and vaccines that confer immunity to future exposures. The CDC recommends universal HBV screening in populations born in regions of endemicity greater than 2%, all pregnant women, and infants born to HBsAg positive mothers. The United States Preventive Services Task Force recommendations for HBV vaccination also cover household contacts of persons with HBV infection.

The HBV vaccine is safe and efficacious. Universal HBV vaccination is the current public health strategy to eliminate HBV transmission and prevent disease. Antiviral therapy with the goals of sustained suppression of HBV replication and remission of liver disease can reduce morbidity and mortality among those infected. HBV screenings are cost effective and, if done systematically and comprehensively, have the potential to lead to significant savings for the healthcare system as a whole. However, screening rates remain low. Data suggest that even primary care physicians of API descent do not routinely screen their API American patients for HBV.

In a systematic review of factors contributing to HBV screening among Vietnamese Americans, Nguyen-Truong

Table 1. Summary of Actual vs. Perceived HBV Status (n = 59). Highlighted cells on the principal diagonal represent those participants with correct perception. One asterisk (*) denotes the one participant at risk for improper management of current active disease. Two asterisks (**) denote participants at risk for not receiving vaccination.

<table>
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<th>“Unprotected”</th>
<th>“Don’t Know”</th>
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<tr>
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<td>0</td>
<td>9**</td>
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<td>19</td>
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<td>14</td>
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</tbody>
</table>

Figure 1. Pie Chart Representation of Actual and Perceived HBV Status. Compare categories with corresponding colors for the correlation between actual and perceived HBV status.

Survey Administration

We administered an 18-question survey (Appendix A), which inquired about the subjects’ perceived HBV status as well as socioeconomic and health-related variables such as insurance and employment status, and prior knowledge of HBV. The survey was an investigator-generated survey and was adapted from previous studies. Participation was voluntary; subjects were asked to complete as many questions as they felt comfortable answering. Participants were given the choice of responding to study items in English or their native language. Interpreter services were available to all participants who requested or required them.

Laboratory Data

Blood samples were obtained by licensed phlebotomists under the supervision of a licensed pathologist and tested for HBV surface antigen (HBsAg) and HBV surface antibody (HBsAb). HBsAg positive individuals are hereafter defined as Carriers, and HBsAb positive individuals are hereafter defined as Immune. Susceptible participants are defined as those who tested negative for both HBsAg and HBsAb.

Statistical Analysis. Descriptive statistics (numbers and percentages) were calculated and cross-tabulated.

RESULTS

Of 59 subjects, 6 (10%) were carriers, 18 (31%) were susceptible, and 35 (59%) were immune to HBV (Table 1, rows). Data for 2 subjects were excluded from analysis because their laboratory test results were inconclusive. With regard to perceived status, only 3 (5%) thought they had active disease, 19 (32%) thought they were protected, 23 (39%) thought they were unprotected, and 14 (24%) did not know (Table 1, columns). Only 19 study subjects (32%) correctly predicted their HBV status (Table 1, cells with diagonal lines). 52 (88%) were foreign-born and 55 of 59 participants (93%) listed a primary language other than English.

DISCUSSION

In the first study to focus on HBV among API Americans in RI, our results suggest that the HBV prevalence in API American population in RI mirrors national prevalence data gathered from other cross-sectional studies: 10% were found to be carriers and ~30% were found to be susceptible to future HBV exposure and thus in need of immunization. Post-screening management in the patient serologically negative for both HBsAg and HBsAb would be aided by the detection of serum IgM antibodies against HBV core antigen [IgM anti-HBc]. Uncommonly some individuals may have present, but undetectable levels of serum HBsAg or HBsAb. Future screening will incorporate anti-HBc testing in these potentially susceptible individuals.

Our findings underscore the value of HBV screening among API Americans because there exists effective, evidence-based treatment for active HBV infection and vaccines that confer immunity to future exposures. The CDC recommends universal HBV screening in populations born in regions of endemicity greater than 2%, all pregnant women, and infants born to HBsAg positive mothers. The United States Preventive Services Task Force recommendations for HBV vaccination also cover household contacts of persons with HBV infection.

The HBV vaccine is safe and efficacious. Universal HBV vaccination is the current public health strategy to eliminate HBV transmission and prevent disease. Antiviral therapy with the goals of sustained suppression of HBV replication and remission of liver disease can reduce morbidity and mortality among those infected. HBV screenings are cost effective and, if done systematically and comprehensively, have the potential to lead to significant savings for the healthcare system as a whole. However, screening rates remain low. Data suggest that even primary care physicians of API descent do not routinely screen their API American patients for HBV.

In a systematic review of factors contributing to HBV screening among Vietnamese Americans, Nguyen-Truong
and others identified male gender, age, knowledge about HBV vaccines, access to regular healthcare, and encouragement from a physician to be positively correlated with screening participation. They also noted “consistently low” screening rates in this community and recommended the use of public media education and a culturally tailored intervention using Vietnamese lay advisors. In the Baltimore-Washington metropolitan area, liver cancer education programs specific for the Chinese, Korean, and Vietnamese populations were shown to be successful in motivating participants to get screened for HBV. They included culturally-sensitive components such as bilingual staff, an ethnicity-specific photo-novel and all materials featuring Asian Americans. No culturally-specific public media or education programs exist in Rhode Island on the topic of HBV in the API population. Our study examined the effects of this lack of resources and public awareness.

A surprisingly high proportion of our study population thought that they were unprotected, contradicting our hypothesis that API Americans would underestimate their risk for HBV due to the disease’s long asymptomatic phase. It is worrisome that only 32% correctly perceived their HBV status; especially concerning are the 12 participants (20%) who either thought that they were protected or did not know but, in fact, needed medical attention or vaccination [Table 1, asterisks]. These 12 people and others like them locally and nationally are at risk for improper management of active disease or inadequate protection from future HBV exposure.

There are several limitations to this study. Participants were recruited from a convenience sample of attendees at community and church-based events. Therefore, inferences about population-level frequencies cannot be made based upon this data alone. However, responses from convenience samples may be useful for identifying issues, defining ranges of alternatives, or collecting other types of non-inferential data. A larger sample, which will be achieved with planned future HBV screenings, might reinforce our findings or modify our tentative impressions. Lastly, self-report of HBV serologic testing and vaccination may be faulty due to inaccurate recall or confusion with other blood tests. To address this issue, participants can bring in immunization records.

Increased statewide HBV screening and education efforts are needed to identify those in need of medical evaluation or vaccination and encourage at-risk populations to participate in screenings. Most importantly, we hope to engage API community leaders in this effort to spearhead these campaigns. It is valuable to have the opinions and support of the API community and have their input in creating HBV education and screening materials. Augmenting media attention, increasing educational opportunities and health insurance coverage, as well as provider education may have a positive impact on HBV awareness and improve health outcomes for this community. More than 90% of our subjects had a primary language other than English. Attention to possible health illiteracy is a crucial component of community-wide efforts. Our findings provide a framework upon which the state of Rhode Island can base large-scale, culturally specific HBV interventions.

Acknowledgments

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ABSTRACT
What we believe we will experience from a treatment – our expectation – has a substantial impact on what we actually experience. Expectation has been established as a key process behind the placebo effect. Studies in both laboratory and clinical settings consistently show that when people ingest a pharmacologically inert substance (placebo) but believe that it is an active substance, they experience both the subjective sensations and physiologic effects expected from that active substance. Expectation has an important place in the response to “real” treatment as well. This paper provides an overview of the data which point to the role of expectation in both the placebo effect and the response to treatment. These data suggest that clinicians might enhance the benefit of all treatments by promoting patients’ positive expectations.

KEYWORDS: expectation, placebo effect, response to treatment

In 1962 the Kyoshu Journal of Medical Science included a report that is as baffling today as it was when it first appeared. Ikemi and Nakagawa had studied 13 boys who were hypersensitive to the leaves of the Japanese lacquer or wax trees. These leaves produce effects similar to those of poison ivy. The researchers touched the students on one arm with leaves from a harmless tree but told them that these were poisonous leaves; they then touched the students on the other arm with poisonous leaves but told them that the leaves were harmless. All 13 arms touched with the harmless leaves showed a skin reaction but only two touched with the poisonous leaves did so. In this study the harmless leaves not only induced a dramatic skin reaction but that reaction was greater than the one produced by the poisonous leaves. According to this study, the mere thought that one is being touched with a poisonous leaf can bring on a skin eruption.

That the expectation alone of a skin eruption can lead to one smacks more of science fiction than of science. The results of this study are difficult – no, impossible – to reconcile with what we know about how leaves cause contact dermatitis. Although the study was methodologically sound, the investigators were experienced scholars and researchers in psychosomatic medicine, and the journal was a respected one, we are tempted to dismiss this report as either fraudulent or a fluke. Even those convinced that the mind and brain are linked to the body find it difficult to come up with a pathway by which a thought could produce skin inflammation. In fact, this contact dermatitis study has not been replicated so it’s hard to know just how solid its remarkable findings may be.

Nevertheless this study does not stand alone. A library worth of reports attests to the fact that what we believe we will experience from a treatment – our expectation – has an enormous impact on what we actually experience. Countless studies, many of which stand up to replication and rigorous scrutiny, show that the power of expectation is as dramatic and perplexing as it was in the poison leaf study. Not uncommonly, as was the case in the poison leaf study, expectation alone can both duplicate and annul a treatment’s specific effects.

For example, Benedetti et al looked at the influence of expectation in 6 patients with severe Parkinson’s disease who had been implanted with stimulating electrodes. When the electrodes were turned on, these patients underwent a dramatic improvement in their ability to move. When the electrodes were turned off, they once again froze up. But after several weeks of stimulator treatment, simply the thought that the stimulator was on or off had almost as much impact on movement as the stimulation itself. When the patients were told that the stimulator had been turned off, their motor velocity decreased even though, in fact, the stimulator had remained on. When patients with asthma inhaled an innocuous substance that they were told was an allergen, their airways constricted; when they inhaled an innocuous substance that they were told was a bronchodilator, they began to breathe more easily.

The Power of Expectation
Expectation has been established as a key process behind the placebo effect. Studies in both laboratory and clinical settings show time and again that when people ingest a pharmacologically inert substance (placebo) but believe that it is an active substance, they experience both the subjective sensations and physiologic effects expected from that active substance. Although studies conducted over the past several decades have established the fact that expectation alone can produce the effects of medicinal and recreational drugs that span the entire pharmacopoeia, controlled laboratory investigations have focused on the ability of expectation to mimic the
effects of caffeine, alcohol and analgesics. These substances lend themselves particularly well to controlled studies of expectation; they are widely used, their effects are well known and they can be given safely to healthy subjects.

Schneider et al’s study of caffeine expectation is noteworthy for its rigorous methodology.4 The investigators took great care to both promote the expectation that caffeine would be ingested and to maintain double-blind conditions. Two groups of 15 subjects each were given decaffeinated coffee. One group was told that the coffee was decaffeinated, the other that the coffee was regular [caffeinated]. Both groups watched as the experimenter added scoops of coffee to the coffee machine and brewed the coffee. Before drinking the coffee, all participants read a one-page flyer about the effects of caffeine on the cardiovascular system, cognitive efficiency and alertness.

Participants who were told that they would consume caffeinated coffee reported greater alertness than those who were told (accurately) that the coffee was decaffeinated. The caffeine expectation group also showed an increase in diastolic blood pressure and an improvement in reaction time not seen in the control group.

A key feature of expectation – induced placebo responses – is that they are shaped by what a person believes they will experience from a substance and not by the pharmacologic properties of that substance. In many instances what a person believes about a drug's effects is close to its actual effects. But when belief diverges from reality, it is the belief more than the pharmacologic reality that determines the nature of the response.

For example, people who believe (incorrectly) that alcohol increases sexual arousal, report an increase in sexual arousal when they drink either real or placebo alcohol. Likewise the extent to which people believe that alcohol will induce intoxication or result in problems with coordination determines the degree to which they, in fact, experience these effects.

Expectation and the Response to “Real” Treatment

Although the role of expectation in treatment response has been most thoroughly investigated in experimental studies of placebo treatment, it is abundantly clear that expectation has a sizeable impact on the response to “real” treatments. Not uncommonly expectation has a greater impact on clinical outcome than a drug's pharmacologic activity. In one of the few studies that have examined the specific influence of expectation on the results of a clinical trial, a large number of depressed patients were treated with either placebo, St. John’s wort or the antidepressant, sertraline.6 Patients improved to the same extent with all three treatments. But when patients were asked to guess the treatment to which they had been assigned, those who thought they had been assigned to placebo showed little clinical improvement irrespective of what they had actually received; those who guessed that they had been given St. John’s wort showed uniformly large improvement irrespective of what they actually received (including placebo) and those who guessed that they had received sertraline showed large improvements whether they actually got sertraline or placebo. The researchers concluded that, “Patient beliefs regarding treatment may have a stronger association with clinical outcome than the actual medication received.” Consistent with these findings, depressed patients who expected an experimental antidepressant to be very effective were far more likely to respond to the treatment (90% responded) than those who anticipated that the same antidepressant would be only somewhat effective (33% responded).7

The importance of the placebo response, and in particular expectation, to the outcome of “real” treatment is dramatically illustrated in studies of open versus hidden treatment.8 In hidden treatment patients are not aware of when they receive treatment. The treatment is delivered intravenously by a preprogrammed infusion machine. Open treatment is provided in the usual manner; a doctor comes to the bedside, administers the infusion, and tells the patient what to expect from the medication [eg, “This is a potent painkiller; your pain should subside in a few minutes.”]. Invariably open treatment produces substantially greater effects than hidden treatment. For example, in comparisons of open and hidden morphine infusion in patients with postoperative pain, the open morphine infusion provided significantly greater pain relief than the same amount of morphine administered without the patient's knowledge. In some studies of analgesics, patients given open treatment got substantial pain relief, whereas those treated covertly got no pain relief whatsoever.

Likewise in a study of postoperative patients treated for anxiety, those who received open infusions of diazepam experienced significant relief, whereas those who got hidden diazepam infusions had no reduction in anxiety.8

The difference in outcome between open and covert treatment is a measure of the placebo effect, or more precisely, the impact of the perception that one is receiving beneficial treatment on the response to that treatment. The facts that a treatment’s effectiveness is notably greater when the patient knows that the treatment is being administered and that in some instances the treatment’s effectiveness depends entirely on that knowledge can usefully inform the manner in which treatments are applied. Clearly patients benefit most from medication when it is given along with information and a ritual that promote the expectation of relief. Whether a deliberately enhanced treatment ritual – such as the wearing of a white coat and stethoscope or prolonged, elaborate cleansing of an area to be injected – further enhance medication benefit remain to be seen.

Patients come to treatment with a surfeit of expectations about what sort of treatment they need, what treatment will be of most benefit, and how they will respond to a specific treatment. But it is what their physician conveys to them about treatment that has the greatest impact on their expectations and, accordingly, on the component of their response – and it can be a considerable one – attributable to the placebo.
effect. The doctor’s words shape a patient’s expectations, and more often than not their response to treatment, across the entire range of medical and psychiatric conditions. Take, for example, a patient with a backache. In one scenario the doctor hands the patient a prescription and says, “Try this, it may work.” Alternatively the doctor could offer the same prescription and say, “This is a powerful painkiller. It’s going to help you.” Or consider the depressed patient who is likely to benefit from an antidepressant. As she presents the prescription, the doctor might say, “This is worth a try.” An equally truthful statement but one that creates very different expectations would be, “Try this; it should help you to start feeling much better in a few weeks.”

Although the idea that patients benefit when clinicians are optimistic may seem self-evident and collecting evidence in support of it unnecessary, this notion has, in fact, been subjected to and supported by empirical study. For example, in what has become a classic investigation, KB Thomas, a general practitioner in Southampton, England randomly assigned 200 patients with symptoms of minor illness – most had cold symptoms or muscle pains – to receive either a “positive consultation” with or without treatment or a “negative consultation” with or without treatment. In the positive consultation, the patient was given a diagnosis and told that he would be better in a few days. If no prescription was given the patient was told that none was required; if a prescription was given the patient was told that the treatment would certainly make him feel better.

In the negative consultation the doctor said: “I cannot be certain what is the matter with you.” If the doctor gave no prescription, he added: “And therefore I will give you no treatment.” If he gave the patient a prescription, he said: “I am not sure that the treatment I am giving you will have an effect.” The negative consultation concluded with the doctor telling the patient to return if he or she were not feeling better in a few days. The treatment in both consultations was a prescription for thiamine hydrochloride tablets used as a placebo.

Two weeks after the consultation, a card was sent to each patient asking if he or she had gotten better; 64% of the patients who received a positive consultation reported that they were better, compared to only 39% of those who received a negative consultation.

A dozen or so other studies have compared the outcome of treatment when a doctor is deliberately enthusiastic and optimistic about the treatment or deliberately neutral or negative. Many of the studies involve patients treated for anxiety or pain in the context of dental treatment. The studies vary in methodologic quality and not all of them find that the clinician’s attitude about the treatment influences outcome. But the majority of the studies show that when the treating physician conveys optimism about the treatment, patients perceive the treatment to be more helpful.

The studies of expectation are not entirely consistent; because of differences in methodology, they do not lend themselves to systematic comparison or collation, and publication bias (the tendency to publish the results of positive rather than negative studies) may be at play. Nevertheless, on the basis of a review of the existing published studies, the United Kingdom’s Health Technology Assessment Programme, which advises the National Health Service, concluded in 1999 that the evidence to date justifies strategies to “enhance patients’ beliefs in the benefits of effective medical treatments.” They recommended that healthcare professionals should receive training in how to communicate positive expectations effectively.10

References

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How Expectation Works: Psychologic and Physiologic Pathways

WALTER A. BROWN, MD

ABSTRACT

Although expectation has been the most widely studied of the mechanisms that drive the placebo effect, we still don’t know how it works. We don’t know how the thought that one will respond to a substance in a certain way is converted to symptom relief, intoxication, or airway resistance; the pathway between expectation of a response and the response itself remains uncharted. Nonetheless, in the last decade, brain-imaging studies have begun to uncover this pathway. This paper reviews both long-standing psychologic concepts about the underpinnings of expectation and some of the contemporary brain imaging research, which shows that when expectation alleviates depression, produces pain relief or improves parkinsonian symptoms, these effects come with relevant changes in brain activity and chemistry. These findings oblige us to reevaluate some of the traditional common sense notions of how expectation brings about its effects and how placebos work.

KEYWORDS: expectation, brain imaging, placebo

A raft of observations from both laboratory and clinical studies leave no doubt that what we believe we will experience from a treatment – our expectation – plays a major role in what we actually experience. Yet, although the phenomenon of expectation has been widely studied, we are far from understanding how expectation works; the pathway between expectation of a response and the response itself is just beginning to be charted. So far we don’t have the basic neuroscience information, the technology or the conceptual framework to understand how the thought that one will respond to a substance in a certain way is converted to actual symptom relief, intoxication or airway resistance. We do know, though, about some of the processes that play a part. First, what sorts of information and experiences shape expectations?

Sources of Expectation

Expectations come from a variety of sources. Principal among them is what the doctor says about a treatment. The comments of family members and friends about their treatment experiences can also be influential. In addition, when substances are widely used and their effects well known, as is the case with caffeine and alcohol, people come to them with built-in expectations about how they will respond. These expectations are based on previous experience with the substance and on general knowledge of its effects. Publicity about drugs generated by media reports, drug company marketing and word of mouth also creates expectations that can have a powerful effect on drug responses. The hype surrounding new drugs, for example, contributes in no small part to the fact that new drugs often appear more effective at first than they do after they have been around for a while. The 19th-century medical dictum, “Use new drugs quickly, while they still work,” has lost none of its relevance.

Responses to recreational drugs may be especially shaped by expectation. Heated media coverage, the reports of blissful users and the context in which these drugs are taken combine to create powerful expectations. In retrospect, and in light of recent controlled studies, expectation probably played an essential role in the psychedelic experiences described by the drug users of the 1960s.

Expectations are also produced by some of the external features of treatment. Injections, for example, are perceived as more effective than pills, capsules as stronger than tablets, two pills as more helpful than one, and pills administered frequently as more effective than those taken less frequently.

The color of a tablet bears a strikingly consistent relationship to its perceived effects. Yellow, orange and red drugs are perceived as having stimulant or antidepressant effects; blue and green drugs as having hypnotic, tranquilizing, sedative effects. Going beyond the influence of drug color on a drug’s presumed effects, a few studies have shown that color influences the actual responses to a drug. For example, in a study of medical students given pink or blue placebos, those taking the blue placebo felt less alert and more drowsy than those taking the pink one. And in a study of hospitalized patients given both a hypnotic drug and placebo in either orange or blue capsules, those who got blue capsules fell asleep more quickly and slept longer than those who got orange capsules.

What lies behind the consistent relationship between drug color and expected drug action? The available sedative drugs and those with antidepressant or stimulating properties neither differ consistently in color nor do they have characteristic colors, so it’s not simply that we have learned that certain types of drugs come in certain colors. On the other hand cross-cultural studies show that many colors have universal meanings. It’s not inconceivable, then, that the calming effect associated with blue tablets and the stimulating...
effect with yellow ones may rest on innate responses to these colors.

Any feature of a treatment that influences the expectation of benefit or harm is likely to affect the response to that treatment. It’s a truism of marketing, for example, that the pricier the product the higher its perceived quality. Accordingly it comes as no surprise that patients often place greater value on new high-priced drugs than on equally effective but less expensive alternatives. It’s a bit of a surprise, though, that the price of a drug seems to have an effect not only on its perceived value but on its actual efficacy. in study of experimentally-induced pain, Ober et al showed that when healthy volunteers got placebo pills presented as a new analgesic, those who were told that the pills cost $2.50 a piece experienced significantly more pain relief than those who were told that the cost of the pills had been reduced to $0.10. The results of this study are of more than academic interest. They suggest that when a clinician recommends a low-priced generic or over-the-counter treatment, she should address the concern-almost always present but almost always unspoken—that a less expensive treatment is inherently less helpful.

How Expectation Works

One widely believed and plausible explanation for the seeming influence of expectation is that when given a treatment that’s supposed to provide symptom relief, people say that their pain or depression is better, whether or not it actually is, simply because that’s what they think the doctor or researcher wants to hear. They want the doctor to look upon them favorably, they give the “socially desirable” response. Another widely believed explanation for the impact of expectation is that when people take a placebo that they believe to be a pain killer or antidepressant and then report that their pain or depression is relieved, they are merely imagining this relief; the pain or depression is “really” still there.

Although the tendency to respond in a socially desirable fashion and imagined reactions probably account for some of what looks like the influence of expectation, these two processes are far from the whole story. Neither a desire to please nor imagined reactions can bring on bodily changes that are not under conscious control. Yet some of the placebo effects that arise from expectation are involuntary physiological responses, like bronchoconstriction, that are not under conscious control.

Previous experience with a treatment influences both conscious expectation and subsequent responses. The key role of prior experience in shaping placebo response was illustrated in a classic study of hospitalized patients with painful conditions. They were treated first with varying doses of an analgesic (propoxyphene) and several days later with an identical-appearing placebo. Patients who had previously received relatively high doses of the analgesic had better pain relief with placebo than those who had received lower, largely ineffective, analgesic doses. There was, in fact, a strong dose-response relationship between the preceding dose of analgesic and the response to placebo. This sort of relationship may well involve a form of learning akin to classical conditioning.

But expectation-induced responses also occur without previous exposure to the substance under study. In these instances some process other than conditioning or another other form of learning must be in play. Until recently the mechanisms hypothesized to mediate the relationship between expectation and response were stated strictly in psychological terms. Along with the tendency for patients to report what they think their doctor wants to hear and the imagined reactions mentioned previously, suggestibility has been put forward as one of the mechanisms behind expectation-induced responses and thus behind the placebo effect. Irving Kirsch, a psychologist who has investigated expectancy and the placebo effect for several decades, hypothesizes that expectation is a basic psychological mechanism that produces subjective responses directly without any intervening mechanisms.

Although these psychological explanations continue to usefully inform our understanding of expectation and its role in both the placebo effect and the response to treatment, recent discoveries based on brain imaging call for new thinking about how expectation (and placebos) bring about both voluntary and involuntary responses.

For more than 30 years one of the main ideas about how placebos provide pain relief is that, astounding as it still sounds, they do so by activating the brain’s endogenous opioids. The evidence for this is that under certain conditions placebo-induced pain relief is reversed by administration of the opioid receptor blocker, naloxone. These findings are sufficiently robust and consistent that they have led to the notion that, at least in some circumstances, placebo analgesia is mediated by the brain’s opioid system, the neural pathways involved in pain perception and regulation. Although founded on meticulous research, this concept was for many years considered tentative because it was based necessarily on indirect evidence. There was no way to directly examine the actual brain circuits thought to be involved. But now brain-imaging technology allows us to do that.

In 2002 Petrovic et al, using positron emission tomography (PET), showed that pain relief with placebo is associated with increased activity in the rostral anterior cingulate cortex, an area of the brain that is also affected by opioid medication. Subsequent studies using functional magnetic resonance imaging have also shown that pain relief with placebo involves changes in pain-sensitive areas of the brain.

Along similar lines, a study of patients with Parkinson’s disease using PET technology showed that when patients expected to receive a drug that would relieve their Parkinsonian symptoms (apomorphine) but actually received placebo, they showed substantial release of dopamine in the striatum. The degree of clinical improvement with placebo correlated with the amount of dopamine released.
Mayberg et al used PET to measure changes in brain glucose metabolism in 17 men with depression.9 Some of the men received placebo and some the antidepressant fluoxetine. Those who improved with placebo showed metabolic changes in a number of brain areas including the prefrontal cortex, anterior cingulate, posterior cingulate, and thalamus. These areas of metabolic change overlapped with those that were observed in patients who responded to fluoxetine. Among patients who responded to fluoxetine, changes were also seen in some other brain areas. The depressed patients who did not respond to fluoxetine or placebo did not show these metabolic changes.

These studies show that when people are given placebos but believe that they are getting an analgesic, an anti-Parkinson drug or an antidepressant, they undergo changes in brain activity that mimic in whole or in part those that occur with the active drug. And, the extent to which people undergo these placebo-induced brain changes seems related to the quality and degree of their response.

We don’t have a ready explanation for how the anticipation of symptom relief produces pertinent changes in brain activity. A complex interaction between expectation and conditioning may be at play. It’s been suggested, for example, that expectations acquired as a result of verbal instructions might be conditioning stimuli that reactivate earlier stimulus associations.10

Although this area of research is still fairly new and has so far been confined to expectations involving drugs that affect the central nervous system, the findings to date oblige us to reevaluate some of the traditional common sense notions of how expectation brings about its effects and how placebos work. Clearly, when a placebo produces pain relief or when a depressed patient improves with placebo, something more than imagination or a desire to please is at play.

References

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Divergent Elbow Dislocation and Risk of Compartment Syndrome

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ABSTRACT

BACKGROUND: Divergent pediatric elbow dislocations are very rare injuries.

CASE: An eight-year-old boy presented to the emergency department with elbow pain after a fall. On examination his elbow was swollen; skin and neurovascular function were intact. Radiographs demonstrated a divergent elbow dislocation. After successful closed reduction under sedation, the arm was casted; gentle motion was initiated at three weeks. At four months, the patient had full strength, no symptoms, and nearly full range of motion.

INTERPRETATION: The literature on the treatment of this injury is limited because of its rarity. We present a case of successful nonoperative management. The return of this patient for compressive symptoms should serve as a reminder that these injuries may be at high risk for compartment syndrome, possibly due to the high level of soft tissue disruption.

KEYWORDS: pediatric, divergent, elbow dislocation

INTRODUCTION

Pediatric elbow dislocations are uncommon, comprising only 3% of pediatric elbow injuries in a series of 1579 patients. Simple dislocations involve only ligamentous injury, while complex dislocations involve concomitant fracture. Posterior dislocations occur far more commonly than anterior dislocations, in both of which the radius and ulna move together as a unit. In divergent dislocations, the proximal radius and ulna are wedged apart by the humerus. In a combined series of 317 elbow dislocations, only five were anterior dislocations, comprising 1.6%. There were no divergent dislocations, so presumably these were even less frequent. This very rare injury was first described clinically in 1854 and radiographically in 1981.

Although pediatric elbow dislocations peak in the second decade of life, divergent dislocations are more common in the first decade, with an average age of 8.5, thought to be secondary to increased ligamentous laxity. Typically, these injuries involve disruption of both the annular ligament and interosseous membrane of the forearm.

CASE REPORT

An eight-year-old boy presented to the emergency department with left elbow pain after falling backwards off a playground slide. His skin was intact, and his elbow was swollen with limited range of motion. He was neurovascularily intact, with a palpable radial pulse. Radiographs demonstrated a posterior elbow dislocation with divergence of the proximal radius and ulna, with a small avulsion fracture of the coronoid. Under conscious sedation, the elbow was closed reduced with longitudinal traction and direct posterior pressure over the olecranon. After reduction, the joint was stable through a full arc of motion. The patient was placed in a long arm cast in ninety degrees of elbow flexion and neutral forearm rotation. The patient returned twice over the next two days with...

Figures 1–2. Anteroposterior (AP) and lateral radiographs of left elbow obtained at time of injury.

Figures 3–4: AP and lateral radiographs of the elbow after closed reduction and casting.
increased pain, which resolved with the cast being split with a cast saw and widened with cast spacers. Immobilization was continued for three weeks, followed by transition to a removable splint and gentle elbow range of motion for four weeks. At four months post-injury, the patient had strength equivalent to his contralateral side, without deformity or tenderness. Final radiographs showed normal alignment of the joint (Figures 5 and 6). The range of motion of the injured left elbow was 0-145 degrees which lacked approximately five degrees of extension compared to the contralateral side (Figures 7 and 8).

**DISCUSSION**

The proposed mechanism of divergent dislocations involves a combination of axial compressive with rotational forces on an outstretched, pronated arm. The injury begins with displacement of the trochlea anteriorly with resultant disruption of the annular ligament from its ulnar attachment. In a complex dislocation, the coronoid process may then fracture. Pronation of the forearm results in lateral translation of the radial head on the capitellum with eventual dislocation. The humerus acts as a wedge driven between the proximal radius and ulna with disruption of the interosseous ligament. Concomitantly, the patient may sustain rupture or avulsion fracture of the medial collateral ligament or medial epicondyle.2

When the humerus wedges between the proximal radius and ulna, they can diverge either anteroposteriorly or mediolaterally.13 A cadaveric study was unable to recreate a stable transverse divergent dislocation with adult cadaveric elbows, though a stable anteroposterior dislocation was obtained by releasing all the ligamentous stabilizers of the elbow. Because the authors could not reproduce dislocations in directions other than posterior, they argued that only posterior divergent elbow dislocations truly exist, and poor quality, oblique injury radiographs likely contribute to the appearance of multiple directions of dislocation.10

The majority of reported cases describe conservative, closed reduction with cast immobilization.10 Conscious sedation or general anesthesia are required for muscle relaxation, analgesia, and anxiolysis. In this case, traction was applied with a posterior force applied to the olecranon resulting in closed reduction of the dislocation. Other authors have described traction with a medial-lateral compressive force applied to the proximal radius and ulna to assist in reduction.10 Stability throughout the entire elbow range of motion including pronation and supination must be assessed by the provider and documented along with neurovascular status following reduction. Casting is preferred, especially in young children, due to the necessity for immobilization and the difficulty of removing the cast by the patient. A splint, either plaster or fiberglass, can also be used for immobilization provided it is reinforced with extra cotton cast padding and applied to a reliable patient who will not remove it prior to follow-up. Instability, especially in the setting of a large coronoid fracture, may be an indication for surgical intervention.2

Regardless of the method of treatment, the family and child should be instructed to scrupulously ice and elevate the extremity. There are no documented cases of compartment syndrome following a pediatric divergent elbow dislocation in the literature; however, considerable injury to soft tissues including the interosseous membrane during the injury could result in the development of this serious condition.10 In this case, the patient’s soft tissue injury caused increasing swelling even after closed reduction, which resulted in increased pain due to a constrictive cast on the expanding soft tissues. Fortunately, the increasing symptoms prompted an expeditious return to the emergency department, where splitting of the cast resolved the symptoms prior to development of compartment syndrome. Following cast splitting, the patient should be observed until full resolution of symptoms, which often occurs instantaneously with release of a constrictive cast. The most reliable indicator of acute compartment syndrome in pediatric patients is an increasing analgesia requirement.14 Other potential complications of divergent elbow dislocations include persistent elbow instability and entrapment of the median nerve during reduction.13
CONCLUSION

The literature on the treatment of divergent elbow dislocations is limited to case reports and reviews because of the extreme rarity of these injuries. As such, we present a case of successful conservative management of this injury with closed reduction and a period of immobilization. The return of this patient for compressive symptoms due to the cast should serve as a reminder that these injuries may be at high risk for compartment syndrome, and that casts should likely be split at the time of application. One must be vigilant and have a high index of suspicion to detect compartment syndrome after reduction of these injuries, and proper counseling of the patient and family in the signs and symptoms of impending compartment syndrome is paramount in the treatment of this injury.

References


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‘Angina’ of the papillary muscle: an overlooked but reversible etiology of mitral regurgitation

FADY Y. MARMOUTH, MD; MAZEN O. AL-QADI, MD; WASEEM Y. BARHAM, MD; AHMAD M. ABDIN, MD; AHMAD H. DARAGHMEH, MD; JOE F. YAMMINE, MD

KEYWORDS: Ischemic Mitral Regurgitation, Papillary Muscle Dysfunction, Coronary Heart Disease

INTRODUCTION
In the absence of acute myocardial infarction (MI), ischemic papillary muscle dysfunction (PMD) is a rare complication of coronary artery disease. Dynamic PMD results in intermittent mitral regurgitation (MR). We present a successfully-treated case of recurrent pulmonary edema due to dynamic PMD secondary to chronic coronary heart disease involving the mitral apparatus. A pathophysiologic similarity could be drawn with intermittent angina pectoris (“angina equivalent”).

CASE PRESENTATION
A 46-year-old woman was hospitalized for the third time within two months, with the same clinical picture of severe acute dyspnea shortly after ingesting a high load of salt and water (eating popcorn and drinking soda). Her medical history was significant for hypertension, dyslipidemia, active tobaccoism and chronic mild to moderate mitral regurgitation (her ejection fraction was known to be preserved). Physical exam revealed severe respiratory distress, bilateral crackles in her lungs, elevated jugular venous distension and an apical systolic murmur; no leg edema was noted. An acute myocardial infarction was ruled out by serial electrocardiograms and cardiac enzymes, which remained unremarkable throughout her stay. Echocardiographic evaluation this time showed severe MR with an anteriorly directed jet (Figure 1). She was treated with diuretics and her condition improved. Coronary angiography showed 80–90% middle circumflex artery stenosis, which was successfully-treated with angioplasty and stenting. Four weeks later, a follow-up echocardiogram demonstrated complete resolution of her MR (Figure 2). She had no recurrence of symptoms over the next two years.
**DISCUSSION**

The mitral valve apparatus consists of two leaflets, the annulus, chordae tendineae, anterolateral and posteromedial papillary muscles. These structures work in full synchrony within a high-pressure environment. Voci P. et al demonstrated that the anterolateral papillary muscle has more often a dual blood supply from the left anterior descending artery through the first diagonal artery and from the left circumflex artery through the first obtuse marginal artery while the posteromedial papillary muscle has a single blood supply in 63% of the cases through either the right coronary artery in 80% or the third obtuse marginal artery in 20% branching off the left circumflex artery. These findings match our case, where the culprit lesion was in the mid circumflex artery, giving rise to ischemia distally at the level of third obtuse marginal branch. The mitral valve is attached to the left atrial and ventricular walls, therefore, the valvular function is altered if one or both walls are diseased or dilated.

Mitral regurgitation is frequently associated with coronary heart disease. While it is commonly referred to as “ischemic MR,” this is rather a misnomer as the etiology is usually not related to ischemia of the mitral apparatus per se; the pathophysiology is rather explained by conditions such as annular dilatation, adverse left ventricular remodeling with posterior papillary muscle displacement, or geometrical derangement of different components of the mitral apparatus. Papillary muscle displacement is secondary to either regional or global ventricular remodeling, giving rise to tethering effects as the papillary muscle is non-extensible and therefore tenting (which is asymmetric in posterior papillary muscle displacement), which eventually results in malcoaptation of the leaflets. Acute MR is seen in acute inferior wall MI or endocarditis. Because of the usually permanent damage seen in these entities, it tends to be irreversible. This is supported by the study of MacHaalany J. et al which showed that moderate to severe ischemic MR following ST elevation MI does not improve after percutaneous coronary intervention [PCI] and that the severity of ischemic MR was determined by the duration of ischemia during the acute event reflecting the irreversible nature of MR following MI. In terms of the outcome, our case demonstrated a single vessel disease related MR with complete resolution of MR after PCI. On the other hand, Yousefzai R. et al found in a prospective study that PCI improved severe ischemic MR in one third of the patients and that left atrial size was the only predictor of improvement after PCI. Moreover, outcomes of coronary artery bypass surgery and stenting of multi-vessel disease in ischemic MR were similar. Reversible ischemia of the posterior papillary muscle from high grade stable lesions involving the supplying vessel [the left circumflex artery in our case], and causing acute intermittent and reversible MR is rarely reported.

Exercise increases the regurgitant volume across the mitral valve in subjects with established left ventricular dysfunction admitted with acute pulmonary edema. In our case, a similarity with “stable angina” could be established where dyspnea and the MR were the angina equivalents, while the volume stress from salt and volume overload was the decompensating factor.

**CONCLUSION**

Dynamic PMD from high-grade stable coronary ischemia of the mitral apparatus territory could be an overlooked etiology of acute and recurrent mitral regurgitation. This under-reported entity should be differentiated from other more common mechanisms of MR. It can be reversed by coronary revascularization.

**References**


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Chest Pain in a 60-Year-Old Man

HEATHER RYBASACK-SMITH, MD; PAUL PORTER, MD; WILLIAM BINDER, MD

From the Case Records of the Alpert Medical School of Brown University Residency in Emergency Medicine

DR. HEATHER RYBASACK-SMITH: The patient is a 60-year-old male who presented to the hospital with the sudden onset of non-radiating anterior chest pain after eating dinner. He reported associated nausea and mild shortness of breath. The pain was described as moderate in intensity, intermittent, and alleviated by resting and remaining still. He had never experienced chest pain prior to this episode. His past medical history was significant for hypertension (treated with lisinopril), alcohol abuse, and type II diabetes managed with oral glipizide and metformin. He took a daily aspirin, disulfiram, a multi vitamin and ibuprofen and smoked ½ pack per day. He was married, employed as a truck driver, and lived with his wife. Initial vital signs included blood pressure of 133/63 with a pulse of 72. Physical exam revealed clear lungs, normal heart sounds without a murmur or gallop, equal pulses and blood pressures bilaterally and a soft and non-tender abdomen. He had no edema. The patient was alert and in no acute distress. On his initial evaluation he was pain-free.

The initial impression was acute coronary syndrome (ACS) and the patient was given an aspirin and a workup was initiated. The patient’s initial ECG (figure 1) was non-ischemic and an initial CXR showed no acute abnormalities—there was no effusion, widened mediastinum or abnormal aortic knob, and there was no evidence of congestive heart failure. Lab results were significant only for mild hyperglycemia [glucose 125 mg/dl], a normal creatinine and a negative troponin. Plans were made to admit the patient to the medical service for a rule out myocardial infarction.

Several hours into his hospital stay, the patient developed persistent, sharp chest pain and had a blood pressure of 175/70 mm Hg. A repeat ECG was unchanged. He received sublingual nitroglycerin with minimal affect. Approximately 3 hours after initial evaluation, the patient became hypotensive to 75/52 mm Hg with a pulse of 79 beats per minute. He received fluid resuscitation along with blood products and a dopamine infusion, and a surgical consult was requested.

An emergency CTA chest/abdomen/pelvis (figure 2) showed an extensive Type A aortic dissection beginning at the root of the aorta and continuing to the bilateral iliac arteries. It involved the bilateral subclavian and right brachiocephalic arteries, the celiac axis, and the left renal artery. There was a large amount of hemopericardium, and the left kidney had complete absence of contrast dye.

DR. MARK GREVE: This patient had none of the classic signs of aortic dissection. What led you to suspect the diagnosis?

DR. RYBASACK-SMITH: Initially, the patient’s presentation was concerning for acute coronary syndrome (ACS). However, the sudden recurrence of severe pain with hypotension led clinicians to quickly reevaluate the cause of his unremitting pain and consider other life threatening etiologies, including aortic dissection.

Acute aortic dissection (AAD) is a
notoriously difficult diagnosis to make, and is often missed in the emergency setting. Data from the international registry of aortic dissection (IRAD) revealed that classic findings such as aortic regurgitation and pulse deficits were only seen in 31.6% and 15.1% of patients, respectively.1,2 A normal chest x-ray was noted in about 12.5% of cases and a widened mediastinum or an abnormal aortic contour can be seen as infrequently as 20%–60% of cases.3,4 While acute onset of severe chest pain is the most common presenting complaint, data from IRAD and other sources note painless dissection in 4.5%–12% of cases, and in one older study up to 27%.1,3,5,6 These patients are likely to be older, chronic steroid users, patients with Marfans, or those who present with syncope (9–13% of type A dissections), stroke or congestive heart failure.1,5 While the majority of patients do report chest pain, it is usually distinguished as abrupt and sharp, rather than tearing.1,4,7

The ability of EM physicians (EMPs) to diagnose AAD has been evaluated in several studies. In 33–57% of cases practitioners do not suspect the diagnosis on initial presentation and some studies have indicated an overall rate of missed diagnosis between 40–55%.5,8,9,10 When patients present with classic findings of chest and back pain, an accurate diagnosis was made in 86% of cases studied.9

There is a great deal of overlap between the clinical symptoms and signs of ACS and AAD. ACS is the most common misdiagnosis and age and anterior chest pain are confounding factors often leading to premature closure.2 Additionally, evidence of acute ST elevations occur in 1–7% of patients with proximal aortic dissection. This most commonly occurs in the right coronary circulation as the dissection can extend into the right coronary ostium leading to posterior-inferior injury.11 CK-MB and troponin have been shown to be insensitive in distinguishing between AAD & ACS, and have been implicated in missed diagnoses.8

Consequences of missed diagnosis are potentially catastrophic. The mortality for Type A dissections without treatment approaches 1–2% per hour in the first 48 hours after the event.10 Predictors of death and poor outcome include age >70 years, abrupt onset of chest pain, hypotension/shock and tamponade, kidney failure, pulse deficit and an abnormal ECG.12 In modern EM, there is a push toward aggressive treatment for ACS due to worsening outcomes from delayed reperfusion.13 Yet, the consequences of inappropriate treatment with antithrombotic agents are great and can lead to delayed diagnosis, major bleeding, greater hemodynamic instability, increased risk of aortic rupture and an overall trend toward increased mortality.2 Given the risks of inappropriate antithrombotic treatment in AD and the potential for misdiagnosis, a low threshold for imaging is appropriate.

**DR. ROBERT TUBBS:** What type of patient typically presents with aortic dissection?

**DR. WILLIAM BINDER:** Numerous primary and acquired risk factors for AAD have been identified through IRAD and other studies. These are noted in Table 1 and include: male gender, age >50 years, tobacco use, DLD, cocaine/stimulant use, pheochromocytoma, atherosclerosis, connective tissue disorders such as Marfan Syndrome and vascular Ehlers-Danlos Syndrome, infectious diseases, inflammatory diseases such as Takayasu and Behcet’s diseases, trauma, chronic corticosteroid use and polycystic disease.1,14,15 Systemic hypertension is the most common...
risk factor for both Stanford A and B types of dissection. However, up to 25% of all patients who present with acute aortic syndrome, including thoracic aortic dissection, have a positive family history of aortic disease. Mutations in greater than a dozen genes are related to syndromic and nonsyndromic forms of familial thoracic aortic aneurysm and dissection.

Acute aortic syndromes, whether genetic or acquired, appear to share a common pathophysiologic pathway: degradation of the medial wall and subsequent stiffening and fibrosis of the vessel intima. The initial insult can be a result of genetic or acquired disease such as atherosclerosis, vasculitis, connective tissue or inflammatory diseases, or a bicuspid valve. In hypertension, chronically high pressures lead to intimal thickening, fibrosis, calcification and fatty acid deposition, the walls become stiff and weakened. Often a rupture of a plaque is the nidus for intimal tear, which can spread anterograde or retrograde to the tear.4,18

Table 1.

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male gender</td>
<td>&gt; 50 years old</td>
</tr>
<tr>
<td>Long Standing Arterial Hypertension</td>
<td>Tobacco use, Dyslipidemia, Cocaine/Crack/stimulants, Pheochromocytoma</td>
</tr>
<tr>
<td>Atherosclerosis</td>
<td>Can lead to penetrating ulcer</td>
</tr>
<tr>
<td>Infectious Diseases</td>
<td>Syphilis, Salmonella, Tuberculosis</td>
</tr>
<tr>
<td>Inflammatory Disorders</td>
<td>Takayasu’s arteritis, Behcet’s disease, Ormond’s disease, Systemic Lupus Erythematosus</td>
</tr>
<tr>
<td>Pregnancy</td>
<td>*controversy exists as to whether this is a risk factor</td>
</tr>
<tr>
<td>Iatrogenic causes</td>
<td>Cardiac surgery/Valvular Surgery, Vascular surgery, Catheter/instrumentation</td>
</tr>
<tr>
<td>Trauma</td>
<td>Deceleration injury, MVA, Air bag, Fall from height</td>
</tr>
<tr>
<td>Other</td>
<td>Weight Lifting, Polycystic Disease, Chronic corticosteroids</td>
</tr>
</tbody>
</table>

DR. MEHRY KAMAT: What was the patient’s clinical course?

DR. RYBASACK-SMITH: Upon arrival to the operating room (OR), the patient’s exam had changed markedly. He was noted to have a ruddy colored face and chest, a non-palpable left radial pulse and 1+ trace right radial pulse. He had bilateral edema and mild expiratory wheezes. In the OR he was noted to have a large pericardial effusion with tamponade physiology, which was relieved through creation of a pericardial window and extraction of clot. He underwent repair of the dissection with a tube graft. Post-operatively his ejection fraction was estimated to be 45–50%. The patient was extubated post-operatively day 0, developed atrial fibrillation requiring amiodarone, and was discharged to home on hospital day 9 with VNA services. He had minimal blood flow to his left kidney at time of discharge but had normal right kidney perfusion. His peak creatinine was slightly elevated at 1.64 mg/dl, but normalized at the time of discharge.

FINAL DIAGNOSIS: Type A Aortic Dissection

References


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Motor vehicle crashes cause serious injuries and premature deaths throughout the world. Although motor vehicle deaths have declined tremendously since 1925, motor vehicle crashes continue to be a leading cause of death in the United States. Unintentional injury is the fourth leading cause of death in the US with motor vehicle injuries being the second leading contributor. As the second largest cause of unintentional injury deaths in the United States, it is a major public health challenge.

Motor vehicle injury prevention is a top priority for the National Center for Injury Prevention and Control (NCIPC) and Centers for Disease Control and Prevention (CDC)-wide. Seatbelt use remains a highly effective preventive method of reducing motor vehicle occupant injuries/deaths in motor vehicle crashes. Increasing seatbelt use to 92% is an objective of IVP-15 under the Unintentional Injury Prevention chapter in the U.S. Healthy People 2020. Therefore, it is crucial to public health to examine seatbelt non-use. With several data sources available, we sought to estimate the prevalence of motor vehicle occupants who self-report as “not always wearing seatbelt” by socio-demographic characteristics and to compare adult seatbelt non-use across the three different data sources in Rhode Island.

**Methods**

**Data sources**

Data from the 2013 Behavioral Risk Factor Surveillance System (BRFSS) were used to calculate prevalence of seatbelt non-use by socio-demographic characteristics. The CDC developed the BRFSS to monitor the major health conditions, injuries, health risk behaviors, and emerging problems among individuals who were at least 18 years old in the US. The BRFSS is a state-based, anonymous, voluntary, cross-sectional, and random-digit-dialing telephone survey of adults in 50 states, the District of Columbia, and three territories. It uses a complex survey sampling strategy, so the weighted data are representative of Rhode Island adults.

Police crash reports document the details of all crashes occurring throughout the state including information on the crash location, circumstances, vehicles involved, characteristics of the crash, etc., but usually include limited information about the cost and outcome of the crash. The 2012 crash data were available from the Highway Safety Program at the Rhode Island Department of Transportation.

Hospital discharge data (HDD), observation, and Emergency Department (ED) records were linked to the crash records to provide data with detailed crash and health outcome information (e.g., duration of hospital stay and medical charges). Since there is no uniform identifier that can serve to link all the records across crash, HDD, observation, and ED data sets, the data linkage was a sophisticated process. Linkage elements included date of crash/ED visit/admission, date of birth, sex, and town of residence. To ensure the most accurate linkage of records across the four data sources, deterministic methods and careful human review of results were required. A step-wise linkage process was performed to avoid duplication. The linked rate for the 2012 crash and hospital data was 60.9%.

**Measures for Seatbelt Use**

The 2013 BRFSS included a question on driver or passenger seatbelt use. The seatbelt-use question was: “How often do you use seat belts when you drive or ride in a car?” Possible responses were 1) always wear a seatbelt, 2) nearly always wear a seatbelt, 3) sometimes wear a seatbelt, 4) seldom wear a seatbelt, 5) never wear a seatbelt, and 6) never drive or ride in a car. For analyses, responses were dichotomized as “always used” versus “not always used.” Adults who indicated that they never drive or ride in a car or with missing responses were excluded.

The 2012 crash data had a protection system field, which included 1) not applicable, 2) none used, 3) shoulder and lap, 4) shoulder only, 5) lap only, 6) type unknown, 7) child – forward facing, 8) child – rear facing, 9) booster seat, 10) child unknown, 11) helmet used, 12) other, and 13) unknown. The authors restricted the crash and linked data to adults aged 18 years old and older, drivers and passengers, and the categories 2–5 of the protection system to be consistent with the BRFSS data in this study. Responses were dichotomized as “seatbelt non-use” vs. “seatbelt use.”

**Measures for Socio-demographics**

Socio-demographic characteristics included age (18–34, 35–44, or 65 years and over), sex, race/ethnicity (non-Hispanic white or minorities), city of residence (core-city including four designated RI cities in which 25% and more of children live in poverty – Central Falls, Pawtucket, Providence, and Woonsocket; non-core city, or out of state), insurance (yes/no), income (less than $50,000 or $50,000 and
higher), education level (high school or less, some college, or college graduate), marital status (married/widowed, divorced/separated, or never married/unmarried couple), and rent or own home (own or rent/other arrangement).

### Table 1. Adult not always wearing seatbelt by demographic characteristics using the 2013 BRFSS data, Rhode Island

<table>
<thead>
<tr>
<th>Socio-demographic characteristics</th>
<th>Total</th>
<th>Not always wearing seatbelt</th>
<th>Weighted</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>n</td>
<td>Estimated prevalence</td>
</tr>
<tr>
<td>Total</td>
<td>5,813</td>
<td>607</td>
<td>12.8</td>
</tr>
<tr>
<td>Age group (years)**</td>
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<td></td>
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<tr>
<td>18-34</td>
<td>744</td>
<td>139</td>
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<tr>
<td>35-44</td>
<td>723</td>
<td>79</td>
<td>11.2</td>
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<tr>
<td>45-64</td>
<td>2,413</td>
<td>212</td>
<td>9.7</td>
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<tr>
<td>65 and over</td>
<td>1,873</td>
<td>171</td>
<td>8.3</td>
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<tr>
<td>Sex***</td>
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<tr>
<td>Male</td>
<td>2,289</td>
<td>359</td>
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<tr>
<td>Female</td>
<td>3,524</td>
<td>248</td>
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<td>Race/Ethnicity*</td>
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<tr>
<td>White, Non-Hispanic</td>
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<td>493</td>
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<td>Minorities</td>
<td>894</td>
<td>114</td>
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<td>City of residence</td>
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<td>Core city a</td>
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<tr>
<td>Non-core city</td>
<td>4,121</td>
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<td>Yes</td>
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<td>Annual household Income*</td>
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<td>Less than $50,000</td>
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<td>High school or less</td>
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<td>Some college</td>
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<td>Married/Widowed</td>
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<td>Own</td>
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</table>

Data Analysis

For the BRFSS data, we calculated unweighted frequency, and weighted percentages and frequencies. For the crash data and crash/hospital-linked data, we calculated seatbelt non-use percentages. Significance was assessed using a chi-square test statistic. All analyses were conducted by using SAS version 9.4 (SAS Institute, Inc, Cary, North Carolina), to account for the complex survey sampling of the BRFSS.

### RESULTS

An estimated 12.8% (94,452) of adults in Rhode Island reported they did not always wear a seatbelt when driving or riding in a car (Table 1). The 18–34 years age group had the highest prevalence of persons who reported that they did not always wear a seatbelt (20.9%) and the 65 years and over age group had the lowest (8.3%). Males were twice more likely than females to not always wear a seatbelt. Persons without health insurance were more likely to report not always wearing a seatbelt than those having health insurance. As education level decreased, so did seat belt use. Those who were never married or a member of an unmarried couple had the highest prevalence of reported not always wearing a seatbelt, compared to married or widowed persons.

Only 2.0% of adult drivers and passengers involved in motor vehicle crashes did not use a seatbelt (Table 2); however 5.5% of adults admitted to a hospital did not use

### Table 2. Adult seatbelt non-use among motor vehicle crashes by demographic characteristics using the 2012 crash data, Rhode Island

<table>
<thead>
<tr>
<th>Demographic characteristics</th>
<th>Total</th>
<th>Seatbelt non-use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Total</td>
<td>47,615</td>
<td>958</td>
</tr>
<tr>
<td>Age groups (years)**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-34</td>
<td>20,400</td>
<td>522</td>
</tr>
<tr>
<td>35-44</td>
<td>7,576</td>
<td>163</td>
</tr>
<tr>
<td>45-64</td>
<td>14,037</td>
<td>231</td>
</tr>
<tr>
<td>65 and over</td>
<td>5,602</td>
<td>42</td>
</tr>
<tr>
<td>Sex***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>24,519</td>
<td>664</td>
</tr>
<tr>
<td>Female</td>
<td>23,084</td>
<td>294</td>
</tr>
<tr>
<td>City of residence***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Core city a</td>
<td>9,833</td>
<td>281</td>
</tr>
<tr>
<td>Non-core city</td>
<td>30,858</td>
<td>529</td>
</tr>
<tr>
<td>Out of state</td>
<td>6,370</td>
<td>121</td>
</tr>
<tr>
<td>Car insurance***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>20,371</td>
<td>288</td>
</tr>
<tr>
<td>No</td>
<td>764</td>
<td>66</td>
</tr>
</tbody>
</table>

*Core-city: Central Falls, Pawtucket, Providence and Woonsocket.**

***, <0.001; **, <0.01; *, <0.05
a seatbelt (Table 3). Our analyses indicated that seatbelt non-use was higher for young adults, males, adult drivers and passengers who resided in the four core-cities (Central Falls, Pawtucket, Providence and Woonsocket), and adults with no car insurance. In each category of demographics, adults with motor vehicle-related injuries who were admitted to the hospital had higher percentages of seatbelt non-use (Table 3) than overall drivers or passengers who were involved in motor vehicle crashes (Table 2).

Table 3. Adult seatbelt non-use among motor vehicle crashes by demographic characteristics using the 2012 crash/hospital-linked data, Rhode Island

<table>
<thead>
<tr>
<th>Demographic characteristics</th>
<th>Total</th>
<th>Seatbelt non-use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Total</td>
<td>5,112</td>
<td>279 (5.5)</td>
</tr>
<tr>
<td>Age groups (years)*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-34</td>
<td>2,513</td>
<td>147 (5.9)</td>
</tr>
<tr>
<td>35-44</td>
<td>827</td>
<td>48 (5.7)</td>
</tr>
<tr>
<td>45-64</td>
<td>1,295</td>
<td>74 (5.7)</td>
</tr>
<tr>
<td>65 and over</td>
<td>477</td>
<td>11 (2.3)</td>
</tr>
<tr>
<td>Sex***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>2,246</td>
<td>205 (9.1)</td>
</tr>
<tr>
<td>Female</td>
<td>2,867</td>
<td>75 (2.6)</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
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<td></td>
</tr>
<tr>
<td>White, non-Hispanic</td>
<td>3,523</td>
<td>200 (5.7)</td>
</tr>
<tr>
<td>Minorities</td>
<td>1,546</td>
<td>77 (5.0)</td>
</tr>
<tr>
<td>City of residence</td>
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<td></td>
</tr>
<tr>
<td>Core city *</td>
<td>1,672</td>
<td>95 (5.7)</td>
</tr>
<tr>
<td>Non-core city</td>
<td>3,209</td>
<td>170 (5.3)</td>
</tr>
<tr>
<td>Out of state</td>
<td>231</td>
<td>15 (6.3)</td>
</tr>
<tr>
<td>Car insurance***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>2,024</td>
<td>112 (5.5)</td>
</tr>
<tr>
<td>No</td>
<td>146</td>
<td>25 (16.8)</td>
</tr>
</tbody>
</table>

*Core-city: Central Falls, Pawtucket, Providence and Woonsocket.
***, <0.001; **, <0.01; *, <0.05

DISCUSSION

Our findings indicate that young adults, males, persons who resided in the core cities, and adults without insurance or low socio-economic status, were at risk for not always wearing seatbelts or for seatbelt non-use. Our study also showed the persistence of these disparities for driver or passenger seatbelt non-use across the three data sources.

The burden of motor vehicle–related crash deaths/injuries to society is tremendous from an economic perspective. The cost of deaths/injuries from motor vehicle crashes is more than $150 billion annually in the U.S.2 Seatbelt non-use is strongly associated with increase in motor vehicle occupant injury. Decreasing seatbelt non-use could dramatically reduce these injuries.2,8 Our study found that 279 seatbelt non-users in Table 3 were charged almost five million dollars and the average of their medical charges was about $17,000 per seatbelt non-user (data not shown). Previous data show that lap and shoulder seatbelt use can reduce 45%-60% of deaths and 50%-83% of fatal injuries to the head, chest, or extremities among driver/passenger.2 More lives and medical expenses could be saved if the percentage of seatbelt non-use decreases in Rhode Island.

It is well documented that passage of a primary enforcement seatbelt law, combined with enhanced enforcement of seatbelt use, and public education campaigns can reduce motor vehicle injuries.9 Secondary enforcement laws are not as effective at increasing seatbelt use and reducing serious injuries compared to primary enforcement laws that allow police officers to stop a vehicle solely for an observed seatbelt violation.1,2 A primary seat belt law in Rhode Island went into effect on June 30, 2011 [R.I.G.L. § 31-22-22].10 Raboin and Chaudhary’s report showed seatbelt use in Rhode Island increased from 80.4% in 2011 to 87.4% in 2014.11

Disparities of seatbelt non-use across the three data sources suggest that targeted interventions are needed to promote seatbelt use for high-risk adult population. Even as rates of seatbelt non-use were lower than 10%, a small sub-population of drivers or passengers having habitual seatbelt non-use were at high risk and can still benefit from targeted interventions.3 Steptoe et al. study showed that seatbelt non-use was related to other high-risk driving behaviors.4 Adults who self-reported not always wearing a seatbelt were more likely to drink and drive and less likely to obey speed limits compared to those without high-risk driving behaviors.4

Information alone is not enough to change behavior. Enhanced enforcement campaigns, such as incentive programs and community campaigns, may target high-risk populations in a variety of settings.2 Enforcement strategies can utilize mass media, checkpoints, police officers, or alternative penalties to promote adult seatbelt use. In order to be effective, the Rhode Island Violence and Injury Prevention Program works closely with other partners, such as the RI Department of Transportation Office of Highway Safety, state and local police, the Office of the Attorney General, Mothers Against Drunk Driving [MADD], and local SAFE KIDS organization [www.safekids.org].3

The limitations of the three data sources should be noted. First, not always wearing a seatbelt was based on self-reported data in the BRFFS. Previous studies have found that adult drivers or passengers over-report seatbelt use by 5% to 20%.3,11 Therefore, the actual prevalence of not always wearing a seatbelt among adults may be even higher than the estimates based on self-reported BRFFS data. Second, the number of adults not wearing seatbelts identified in the crash data is likely higher [maybe much higher] due to under-reporting by police officers. An officer, unless he is actually on the scene when the crash occurs, cannot always determine if occupants were wearing seatbelts or not. Sometimes an
officer can determine from the damage to the car and the types of injuries if an occupant was wearing the seat belt or not. However, normally, by the time the officer arrives on scene the occupants of the vehicles are no longer sitting in the vehicles. Since Rhode Island has a primary seat belt law, drivers and passengers are not likely to volunteer to the officer that they were not wearing seatbelts and risk being fined. In our 2012 crash data, overall, there were 27.3% of missing values and 10.7% of unknown category for protection system. There were variations among cities/towns by 1.5% [Little Compton] to 77.3% [Middletown] of missing values and 1.3% [Smithfield] to 23.3% [Providence] of unknown category. In general, small towns or rural areas reporting quality is much better than big towns/cities or urban areas. Third, there were only four variables for the data linkage, and there was no unique identifier for the crash/hospital data linkage. Because the linked rate for the 2012 was 60.9% and the hospital data did not capture office visits (outpatient data), we might underestimate medical charges and seatbelt non-use.

Although the findings present some limitations, there are consistencies in the identification of high-risk groups. The analyses provide opportunities to target high-risk populations and focus interventions to promote seatbelt use, and reduce motor vehicle crash injuries and deaths.

Acknowledgments

This brief was funded by the Rhode Island Department of Transportation. The number of crash/hospital data linkage project was NHTSA94146. We gratefully appreciate Andrew M. Koziol, previous Highway Safety Program Coordinator, who was instrumental in securing this grant. We would like to express our special thanks to Edward Donnelly, Center for Health Data and Analysis, Rhode Island Department of Health, for his generous help. The authors would also like to thank Kathy Taylor, Hospital Data Manager, Center for Health Data and Analysis, Rhode Island Department of Health, who provided the 2012–2013 hospital discharge, observation and Emergency Department data for our use.

References


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Disclosure

The authors have no financial interests to disclose.

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

<table>
<thead>
<tr>
<th>VITAL EVENTS</th>
<th>REPORTING PERIOD</th>
<th>NOVEMBER 2014</th>
<th>12 MONTHS ENDING WITH NOVEMBER 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Number</td>
<td>Rates</td>
</tr>
<tr>
<td>Live Births</td>
<td>936</td>
<td>11,299</td>
<td>10.7*</td>
</tr>
<tr>
<td>Deaths</td>
<td>801</td>
<td>9,871</td>
<td>9.4*</td>
</tr>
<tr>
<td>Infant Deaths</td>
<td>8</td>
<td>58</td>
<td>5.1#</td>
</tr>
<tr>
<td>Neonatal Deaths</td>
<td>7</td>
<td>48</td>
<td>4.2#</td>
</tr>
<tr>
<td>Marriages</td>
<td>404</td>
<td>7,048</td>
<td>6.7*</td>
</tr>
<tr>
<td>Divorces</td>
<td>105</td>
<td>3,046</td>
<td>2.9*</td>
</tr>
<tr>
<td>Induced Terminations</td>
<td>177</td>
<td>2,971</td>
<td>262.9#</td>
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<tr>
<td>Spontaneous Fetal Deaths</td>
<td>57</td>
<td>574</td>
<td>50.8#</td>
</tr>
<tr>
<td>Under 20 weeks gestation</td>
<td>52</td>
<td>488</td>
<td>49.4#</td>
</tr>
<tr>
<td>20+ weeks gestation</td>
<td>5</td>
<td>76</td>
<td>6.7#</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>MAY 2014</th>
<th>12 MONTHS ENDING WITH MAY 2014</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>198</td>
<td>2,313</td>
<td>219.6</td>
</tr>
<tr>
<td>Malignant Neoplasms</td>
<td>216</td>
<td>2,442</td>
<td>231.9</td>
</tr>
<tr>
<td>Cerebrovascular Disease</td>
<td>36</td>
<td>399</td>
<td>37.9</td>
</tr>
<tr>
<td>Injuries (Accident/Suicide/Homicide)</td>
<td>58</td>
<td>734</td>
<td>69.7</td>
</tr>
<tr>
<td>COPD</td>
<td>50</td>
<td>480</td>
<td>45.6</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 1,051,511 (www.census.gov)
(c) Years of Potential Life Lost (YPLL).

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

The Rhode Island Medical Society now endorses Coverys.

Coverys, the leading medical liability insurer in Rhode Island, has joined forces with RIMS to target new levels of patient safety and physician security while maintaining competitive rates. Call to learn how our alliance means a bright new day for your practice.

401-331-3207
RIMS CME Event:

Navigating the Changing Environment to Provide Optimal Patient Care

Presented by RIMS on April 25 at the Crown Plaza Hotel, this CME event featured presentations by RIMS President Peter Karczmar, MD; Tom Douglass of BCBSRI; Robin Morin, RN, CPHRM of Coverys; and an EMR Pro vs. Con session with Yul Eijnes, MD and Norman Gordon, MD.

Sponsors and exhibitors included AbbVie, Actavis, Aetna, AstraZeneca, Baystate Financial, Blue Cross Blue Shield of RI, Boehringer Ingelheim Pharmaceuticals, Coverys, Mallinckrodt Pharmaceuticals, MEDA Pharmaceuticals, Mylan Inc, NetCenergy, Novo Inc, Nordisk, Open MRI of New England/Advanced Radiology, Pfizer, RI Chapter, American College of Physicians, and RIMS-IBC.
Working for You: RIMS advocacy activities

April 1, Wednesday
AMA conference call regarding SGR
Health Care Planning and Accountability Advisory Committee
OHIC Administrative Simplification meeting
Legislative Hearings
Senator Coyne fundraiser

April 2, Thursday
Good Samaritan Overdose Prevention Act Coalition meeting, James Crowley, MD, and RIMS staff attending
Legislative hearings, James Griffin, DO, making a house call; RIMS staff attending

April 6, Monday
Reinventing Medicaid Taskforce meeting, Elizabeth Lange, MD, and RIMS staff attending

April 7, Tuesday
Physicians Health Committee, Herbert Rakatansky, MD, Chair
Site visit NALARI Health regarding teledermatology
Meeting with HARI regarding Administrative Simplification
Legislative Hearings
Chairman Miller fundraiser, Elaine Jones, MD, RIMPAC Treasurer and Public Laws Vice-Chair and RIMS staff attending; Representative Bennett fundraiser

April 8, Wednesday
Board of Medical Licensure and Discipline OHIC Administrative Simplification Workgroup
Legislative Hearings
Senator Lynch fundraiser, Representative Slater fundraiser

April 9, Thursday
Meeting with Blue Cross Blue Shield of RI regarding legislative matters
State Innovation Model Steering Group meeting
Legislative Hearings

April 14, Tuesday
RIMS President Peter Karczmar, MD, and RIMS executive staff met with Nicole Alexander-Scott, MD, Rhode Island’s new Director of Health.
Legislative hearings; James Crowley, MD, making a house call
Representative Canario fundraiser, Representative Carnevale fundraiser, Chairman DaPonte fundraiser

April 15, Wednesday
Primary Care Physician Advisory Committee, Department of Health Workers Comp Advisory Council
Meeting with Attorney General regarding legislation, Josiah Rich, MD, and RIMS Staff attending
Legislative hearings
RIMS Insurance Brokerage Corporation Board Meeting, Peter A. Hollmann, MD, Chair; RIMS-IBC and RIMS staff attending

April 16, Thursday
Legislative hearings

April 17, Friday
Meeting with HARI regarding Administrative Simplification and Legislation
Legislative hearings

April 20–24
General Assembly in Recess

April 20, Monday
Governor’s Task Force on Overdose Prevention

April 21, Tuesday
Workers Comp Fee Schedule Review Committee, Gregory Austin, MD, and RIMS staff attending

April 22, Wednesday
Reinventing Medicaid Task Force meeting, Patricia Flanagan, MD, Jerry Fingerut, MD, and RIMS staff attending

April 23, Thursday
Mental Health and Substance Abuse Coalition meeting with Director of BHDDH

April 25, Saturday
Annual Education Event: Navigating the Changing Environment to Provide Optimal Patient Care
Why You Should Join the Rhode Island Medical Society

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

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

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  - Insurance, medical banking, document shredding, collections, real estate services, and financial planning
- Powerful advocacy at every level
  - Advantages include representation, advocacy, leadership opportunities, and referrals
- Complimentary subscriptions
  - Publications include Rhode Island Medical Journal, Rhode Island Medical News, annual Directory of Members; RIMS members have library privileges at Brown University

Member Portal on www.rimed.org
- Password access to pay dues, access contact information for colleagues and RIMS leadership, RSVP to RIMS events, and share your thoughts with colleagues and RIMS
Rhode Island Medical Society and Baystate Financial have embarked upon a long-term relationship to bring good financial advice and quality, fee-based financial planning to Rhode Island physicians.

This free one hour seminar will be covering the topic of:

Retirement Income Distribution Strategies

Avoiding the Potholes in Retirement

This educational seminar will provide guidance on:

- Maximizing your cash flow
- Reducing investment risk
- Minimizing income tax
- Maximizing social security

Join us on either of the following dates

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  Registration 6:30 pm - 7:00 pm
  Seminar 7:00pm - 8:00pm
  235 Promenade St. #500
  Providence, RI 02908
  (401) 331-3207
  Light refreshments and hors d’oeuvres will be provided

- Wednesday, May 13 2015
  Registration 6:30 pm - 7:00 pm
  Seminar 7:00pm - 8:00pm
  235 Promenade St. #500
  Providence, RI 02908
  (401) 331-3207
  Light refreshments and hors d’oeuvres will be provided

Please RSVP to Brian Falconer at:
bfalconer@baystatefinancial.com || 401.432.8836

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PROVIDENCE – Constantine Gatsonis, professor and chair of biostatistics at Brown, will lead the statistical analysis for a new national study on whether having the results of a diagnostic scan for amyloid plaques in the brain can affect the care and medical outcomes of people with dementia or mild cognitive impairment.

To help find the answers, the $100-million, four-year “Imaging Dementia — Evidence for Amyloid Scanning” (IDEAS) study will assemble a registry of more than 18,000 people who have had PET scans and will select a control group who have not. Researchers will then gather data for two aims:

1. assessing whether having a scan result affects how care is managed — for instance whether the scans result in changes in the therapies or counseling offered patients; and

2. determining whether patients who have scans are less likely to have adverse outcomes that require visits to the hospital or the emergency room in the following 12 months.

“The purpose of the IDEAS study is to examine how brain imaging, specifically an amyloid PET scan, helps guide doctors in diagnosing and treating Alzheimer’s and other dementias in cases where the cause of cognitive impairment is difficult to diagnose,” said Dr. Gil D. Rabinovici, MD, IDEAS study chair and associate professor of neurology at the University of California–San Francisco. “We believe the study will show that, in diagnostically uncertain cases, knowledge of amyloid status will lead to significant changes in patient management — such as earlier counseling and prescription of more appropriate drugs — that will translate into improved long-term outcomes.”

Brown researchers have direct experience with the kind of data in the study. The University’s Center for Statistical Sciences, which Gatsonis directs, hosts the biostatistics center for the studies of the National Oncology PET Registry.

The new study will generate a huge amount of data, and tasks such as identifying appropriate matches to make meaningful comparisons will be difficult, Gatsonis said. He and Brown School of Public Health colleagues Roe Gutmann and Ilana Gareen, who collaborated to help design the study, will lead the complex statistical analyses needed to answer the questions.

“The study poses major methodological challenges,” he said. “[They] require innovation in both statistics and computation.”

The study will be funded by the Centers for Medicare & Medicaid Services and various private sources.

School of Public Health holds annual research day

PROVIDENCE – The Brown School of Public Health held its annual research day on April 20th, which featured 59 poster presentations of research projects by undergraduates, graduate students, postdoctoral researchers, partner hospitals, and the Department of Health.

At the end of the poster presentation, awards were given to the best undergraduate, master’s, and doctoral or postdoctoral presenters. The winners in those respective categories were Lauren Colwell, Joseph Servadio, and Liangyuan Hu. The runners up in each category were Katherine Caine, Brady Bennett tied with Elizabeth Kinnard, and Yi Zhao.

Terrie Fox Wetle, dean of the School of Public Health, praised the “exceptional posters showcasing just a tiny portion of the exciting public health research being done by Brown students, faculty, and community partners.”

Public health figures honored

Dean Wetle concluded the event with a reception honoring three leading figures in public health: Stephen Buka, chair of epidemiology; William Rakowski, associate dean for academic affairs; and Dr. Michael Fine, former director of the Rhode Island Department of Health.

In honoring them, Dean Wetle acknowledged their importance in the formation and continued success of the School of Public Health. She outlined their vital contributions, including their ability to recruit outstanding faculty to the School, their interdisciplinary and internationally recognized research, their dedication to students, their valued leadership within the University, and their tireless service to the health and well-being of the public.
Buka, who is stepping down from his role as chair of the epidemiology department, describes Public Health Research Day as part of the “magic of conducting public health research at Brown University.” It’s a reminder, he says, “of the breadth and talent of the faculty and students.” As proud as he is of his tenure as chair, he has “even greater expectations” for the future.

In addition, Public Health Research Day “generates a lot of enthusiasm among students and faculty,” says Rakowski, who is retiring this summer. And while the research on display demonstrates wide-ranging interests, there is also coherence. “It is something the School does as a unit. That makes it important.” Rakowski especially enjoys the combination of socializing and academics. “It’s fun to talk to the students about what they’ve done, and sometimes throw them a tough question or two,” he adds. “They kind of expect it from me.”

In honoring Dr. Fine, Dean Wetle highlighted the important relationship between the School and the Department of Public Health, which had several of their own posters on display. When policy-makers and academics present side-by-side, particularly at an event such as Public Health Research Day, it drives home the School’s mission of learning public health by doing public health.

ED team at RIH publishes results of Google Glass to diagnose skin conditions

Patients liked remote access to specialists not normally available in emergencies

PROVIDENCE – One enterprising team of physicians at Rhode Island Hospital experimented with Google Glass to gauge the effectiveness, security and patient acceptance of a real-time, video dermatological consultation. The research results were published today in JAMA Dermatology.

Skin problems account for 3.3 percent of emergency department visits, and most patients wait months to see a dermatologist. For the patients who qualified for the trial, the emergency department physicians at Rhode Island Hospital used Google Glass – a pair of eyeglasses with a computer, camera and microphone built into the frame – to contact a dermatologist through a video link using Glass and running a third-party, Health Insurance Portability and Accountability Act (HIPAA)-compliant video platform. Later, patients were surveyed about their experience with teledermatology.

“While the patients prefer in-person visits, they said they preferred the video consultation over a more widely practiced telephone consult,” said PAUL S. PORTER, MD, the principal investigator and a physician in the emergency department of Rhode Island, Hasbro Children’s and The Miriam hospitals. “For patients, a fast and accurate diagnosis means a faster path to satisfactory treatment. A device like this democratizes telemedicine because a hospital can start a program for a few thousand dollars and gain access to an experience that was only previously available at a much higher price point.”

Because of the interactive nature of the device, the teledermatologists were able to appreciate both the gestalt of nonspecific skin eruptions and specific dermatoses, or skin diseases. Additionally, the off-site doctors were able to interact with the on-site doctors by asking questions and requesting additional skin locations to examine. During the process of informed consent, medical staff explained to patients that no information was stored, and the live transmission was encrypted. The participants overwhelmingly believed that their privacy was protected.

Rhode Island Hospital was the first hospital in the U.S. to test Google Glass in an emergency department setting. The study began in March, 2014 and concluded after six months.

The study had several limitations: Because of the small size and single-site status, results cannot be generalized to other institutions; the accuracy of the diagnosis in the cases wasn’t measured; and the financial and workflow effects of the device weren’t addressed.

The study was funded by the University Emergency Medicine Foundation.

Dr. Porter, the principal investigator, is a physician in the emergency department of Rhode Island, Hasbro Children’s and The Miriam hospitals and assistant professor of emergency medicine at The Alpert Medical School of Brown University. Other researchers involved in the study were Jayne Bird, MD, and Sandy Chai, MD, of the department of dermatology, Rhode Island Hospital; Roger Y. Wu, MD, MBA, Megan L. Ranney, MD, MPH, and Brian Zink, MD, of the department of emergency medicine, Rhode Island Hospital; and Peter R. Chai, MD, MMS, of the University of Massachusetts School of Medicine.
Hasbro study finds link between adverse childhood experiences and pediatric asthma

Children who experience violence, substance abuse at home report significantly higher rates of asthma

PROVIDENCE – ROBYN WING, MD, an emergency medicine physician at Hasbro Children’s Hospital, recently led a study that found children who were exposed to an adverse childhood experience (ACE) were 28 percent more likely to develop asthma. The rate of asthma occurrence further increased in children with each additional ACE exposure. The study, recently published in the Annals of Allergy, Asthma & Immunology, suggests that psychosocial factors may contribute to pediatric asthma.

“Asthma is one of the most common chronic childhood conditions, currently affecting 7 million, or 9.5 percent, of children in the U.S.,” said Dr. Wing. “The biological risk factors for asthma onset and severity, such as genetics, allergens, tobacco smoke, air pollution and respiratory infections, have been well established by previous studies. But, psychosocial factors, such as stress, which we know can be physically harmful, are now being examined as a risk factor for asthma in children.”

Dr. Wing’s team analyzed data from nearly 100,000 children and teens in the 2011-2012 National Survey of Children’s Health and compared parent or guardian reports of a child having asthma to whether a child had experienced an ACE at home. An ACE is classified as whether a child has ever:

- Lived with a parent or guardian who got divorced or separated while child was present.
- Lived with a parent or guardian who died.
- Lived with a parent or guardian who served time in jail or prison while child was present.
- Lived with anyone who was mentally ill or suicidal, or severely depressed for more than a couple of weeks.
- Lived with anyone who had a problem with alcohol or drugs.
- Saw or heard parents, guardians or any other adults in the home slap, hit, kick, punch or beat each other up.

Children exposed to one ACE had a 28 percent increase in reported asthma compared to those with no aces. These rates increase with each additional ACE, with children exposed to four ACEs having a 73 percent increase in reported asthma.

Most prior asthma studies have focused on neighborhood and urban-related issues, such as family poverty, poor quality housing and access to community resources. But, disruptive family relationships within the home can be a significant source of psychosocial stress for children.

“Psychosocial stressors activate the sympathetic nervous system, which controls our ‘fight or flight’ responses when we experience stressful situations,” said Dr. Wing. “Increased activity of this system releases cortisol, a stress hormone, which has been shown to affect the activity of immune cells. Occasional increases in these hormones are protective, but excessively high or prolonged exposures, such as those experienced by children exposed to ACEs, can be harmful.”

Dr. Wing hopes this study, and others like it, will underscore the complex causes of asthma, enabling clinicians to better target preventative medications and other interventions. “Physicians taking care of children with asthma should take the time to ask about the child’s home situation,” said Dr. Wing. “For children experiencing stressors at home, encouraging efforts to increase the child’s capability of handling stressors, using methods such as individual or family therapy, may help target pediatric asthma.”

She continued, “Stress should be viewed as a risk factor for asthma development and asthma exacerbations, much like tobacco smoke and dust mites. At the very least, clinicians can share with parents the impacts of ACEs on their child’s asthma, perhaps acting as a motivating factor for parents to remove or shield a child from a stressful home situation.”

Compassion unleashed with Memorial Hospital’s new Pet Therapy Program

PAWTUCKET – The Center for Rehabilitation at Memorial Hospital of Rhode Island has launched a pet therapy program to enhance the environment of care for patients of all age levels.

KEITH RAFAL, MD, MPH, chief of rehab and medical director of the Center for Rehabilitation, said, “Memorial Hospital’s pet therapy program is a special way we show compassion for our patients, their families and hospital staff.”

Pet therapy is a guided interaction between a patient and a trained animal. It also involves the animal’s handler. Therapy dogs are family pets, not service dogs like those that assist the disabled. These dogs are obedient and deal well...
with different situations and enjoy meeting people. Memorial’s program is offered to patients on the Center for Rehabilitation, both in the therapy area and patient rooms. Susan Higgins, owner/handler of her pug dog, Bridget, currently visits Memorial’s rehab patients once a week for one hour. Bridget has been a therapy dog for the past six years.

Dr. Rafal adds, “You can feel the joy and see the smiles that our lovable volunteers bring to all.”

The owners ensure their animals meet all the standards set by Therapy Dogs International, Inc. for medical pet therapy, including providing licensing, credentialing and general liability insurance.

PICTURED LEFT TO RIGHT IN THE CENTER FOR REHABILITATION AT MEMORIAL HOSPITAL, SUSAN HIGGINS, OWNER/HANDLER OF BRIDGET, THERAPY DOG, VISITING WITH WILLIAM BLACK, A REHAB PATIENT AND PROVIDENCE RESIDENT, AND KEITH RAFAL, MD, MPH, CHIEF OF REHAB AND MEDICAL DIRECTOR OF THE CENTER FOR REHABILITATION.

**IN THE NEWS**

URI engineering students develop wristband to measure tremors in PD

**KINGSTON** – For the 4 million people worldwide with Parkinson’s disease, a smart wristband invented by a team of University of Rhode Island engineering students could let them lead healthier lives.

Known as TeleTremor, the wristband uses high-quality motion sensors to detect tremors and movement difficulties in people with Parkinson’s disease and send the information over a secure Internet connection to doctors. Though innovative visualizations, TeleTremor enables neurologists to make more informed decisions by measuring the effect of prescribed medications and progression of the disease.

Biomedical engineering student **TREVOR BERNIER**, computer engineering student **JOSEPH TUDINO** and electrical engineering student **AKINTOYE ONIKOYI** teamed up to design the system and build a prototype.

In March 2015, they garnered international exposure as one of 23 finalists at the International Undergraduate Global Health Technologies Design Competition at Rice University in Houston.

“TeleTremor is a product of URI’s continuous efforts toward nurturing excellence, leadership, innovation and real-world experience through collaboration in our next generation of engineers who are acquiring the right skills for today’s highly dynamic marketplace,” says **KUNAL MANKODIYA**, an assistant professor of biomedical engineering who supervised the team.

It’s not the first time Mankodiya and his students have leveraged smart technology to improve patient care. Another team of students is working on a smartphone system that can monitor vital signs and send the information to doctors over the Internet. It’s all part of the college’s push to connect education with improving lives.

URI’s Kunal Mankodiya, an assistant professor of biomedical engineering, supervised the team.

URI engineering students showcase TeleTremor at the International Undergraduate Global Health Technologies Design Competition.
Gold by special delivery intensifies cancer-killing radiation

KINGSTON – Researchers from the University of Rhode Island and Brown University have demonstrated a promising new way to increase the effectiveness of radiation in killing cancer cells.

Building on research by URI Physics Professors Yana Reshetnyak and Oleg Andreev, the new approach involves gold nanoparticles tethered to acid-seeking compounds called pHLIPs. The pHLIPs (pH low-insertion peptides) home in on the high acidity of malignant cells, delivering their nanoparticle passengers straight to the cells’ doorsteps. The nanoparticles then act as tiny antennas, focusing the energy of radiation in the area directly around the cancer cells.

In a paper published April 13 in the Proceedings of the National Academy of Sciences, the research team shows that the approach substantially increases the cancer-killing power of radiation in lab tests.

“This study was a good proof of concept,” said Michael Antosh, assistant professor in Brown’s Institute for Brain and Neural Systems and the paper’s lead author. “We’re encouraged by our initial results and we’re excited to take the next step and test this in mice.”

The team is hopeful that the approach could ultimately improve radiation treatment for cancer patients. By increasing the effectiveness that a given dose of radiation has on cancer, the technique could reduce the overall radiation dose a patient requires, which would in turn reduce side effects. It could also increase the effectiveness of radiation at doses currently administered.

Reshetnyak and Andreev, along with Yale University Professor Donald Engelman, invented the pHLIP technology. They had previously developed pHLIPs as a potential delivery system for cancer drugs and diagnostic agents. Cancer cells are generally more acidic than healthy cells, and pHLIPs are natural acid-seekers.

“We previously demonstrated that pHLIP-nanogold particles could find and accumulate in tumors established in mice,” Reshetnyak said. “Now our task is to test if we can treat cancer by irradiating tumors with nanogold particles more efficiently in comparison with traditional radiation treatment.”

Both theoretical and experimental work had shown that gold nanoparticles could intensify the effect of radiation. The particles absorb up to 100 times more radiation than tissue. Radiation causes the particles to release a stream of electrons into the area around them. If the particles were in close proximity to cancer cells, that stream of electrons would inflict damage on those cells.

“The idea here was to bring this all together, combining the nanoparticles with the delivery system and then irradiating them to see if it had the desired effect,” said Leon Cooper, the Thomas J. Watson Sr. Professor of Science at Brown and one of the study’s co-authors. Cooper, who shared the Nobel Prize in 1972 for explaining the behavior of electrons in superconductors, has been working for the last several years to better understand biological responses to radiation.

Gold is an especially good choice for amplifying radiation. When matter is hit by radiation at certain energies, electrons are released through a process known as the photoelectric effect. But gold has an additional source of electron emission, known as the Auger effect, that results from the particular arrangement of electrons orbiting gold atoms. It’s the effect of the Auger electrons that the researchers were working to maximize. Working out the quantitative details of the process involved a complex series of calculations and simulations.

Experiments showed that cancer cells irradiated in the presence of pHLIP-delivered gold had a 24-percent lower survival rate compared to those treated with radiation alone. The pHLIP samples had a 21-percent lower survival compared to irradiation with just gold but no pHLIPs. That suggests that the pHLIPs were effective in getting the gold close enough to the cells to do damage.

The next step, the researchers say, is to test the approach in a rodent model, which the team is planning to do soon.

“This work is a great example of successful collaboration between Brown and URI,” Andreev said. “We hope that the results of this research moving forward will lead to clinical application of pHLIP-based nanotechnology.”

Medical Odysseys Available!

Medical Odysseys: A Journey through the Annals of the Rhode Island Medical Society, was published for the Society’s Bicentennial in 2012. A limited number of copies remain. Readers of Dr. Stanley Aronson’s uniquely erudite and entertaining essays on medicine, medical history, language and forensic folklore will cherish this compilation, which also includes commentaries by Dr. Joseph Friedman, executive editor of the Rhode Island Medical Journal, as well as essays on aspects of RIMS’ history by RIMJ managing editor Mary Korr.

The cost is $15 and includes postage. Please contact Sarah at the RIMS office: sstevens@rimed.org or 401-528-3281.
Borderline Personality Disorder as Debilitating as Bipolar Disorder

Mark Zimmerman, MD, compared psychiatric disorders to predict morbidity

PROVIDENCE – The deterioration of psychiatric and physical health caused by borderline personality disorder (BPD) rivals that of bipolar disorder, according to Mark Zimmerman, MD, a researcher at Rhode Island Hospital. His research was published online in the British Journal of Psychiatry last week.

“The level of psychosocial morbidity and suicidality associated with BPD is as great, or greater, than that experienced by patients with bipolar disorder,” said Zimmerman, director of outpatient psychiatry at Rhode Island Hospital and director of the Rhode Island Methods to Improve Diagnostic Assessment and Services (MIDAS) project. “From a public health perspective, improving the detection and treatment of BPD is as imperative as diagnosing and treating bipolar disorders.”

The National Institute of Mental Health estimates that 1.6 percent of the U.S. population is diagnosed with BPD, compared with 2.6 percent of those with bipolar disorder.

This is the largest comparison of patients who have been diagnosed with BPD or bipolar disorder. Persons with BPD have difficulty regulating emotions and thoughts, often teetering at extremes. They engage in impulsive and reckless behavior, and their relationships with other people are rocky. While persons with bipolar disorder experience the same mood for weeks, those with BPD cope with intense bouts of anger, depression and anxiety that are short in duration. According to Zimmerman’s study, clinical experience suggests that BPD is as disabling as bipolar disorders. In psychiatric patient samples, BPD is as frequent as bipolar disorder.

Like bipolar patients, persons with BPD are likely to also suffer from depression, anxiety disorders, substance abuse, eating disorders and suicidal behaviors. These co-occurring mental illnesses may have symptoms that overlap with BPD, making it difficult to recognize BPD in patients with these other mental illnesses.

“Despite the clinical and public health significance of both of these disorders, it sometimes seems as if BPD lives in the shadow of bipolar disorder,” said Zimmerman. “Bipolar disorder is a widely researched, well-publicized, well-funded topic. By contrast, BPD is seldom discussed and it is not included in the Global Burden of Disease study, a comprehensive registry that quantifies diseases by cost, mortality, geography, risk and other factors.”

This study was a component of the MIDAS project, which is an ongoing clinical research study at Rhode Island Hospital involving the integration of research assessment methods into routine clinical practice.

No external financial support was provided for this research study. Zimmerman’s principal affiliation is Rhode Island Hospital and The Miriam Hospital, members of the Lifespan health system in Rhode Island. He also has an academic appointment at the Alpert Medical School of Brown University, department of psychiatry and human behavior. Other researchers from that department involved in the study were William Ellison, PhD, Theresa A. Morgan, PhD, Diane Young, PhD, Iwona Chelminski, PhD, and Kristy Dalrymple, PhD.

Sandra Salzillo to speak at international trauma treatment conference

PROVIDENCE – Sandra Salzillo, MA, CAGS, LMHC, APA, a licensed mental health clinician with the Program in Women’s Oncology at Women & Infants Hospital, was invited to serve on the faculty for an international conference on trauma treatment.

“After the Storms: Psyche’s Response to Trauma, Resilience and Healing” will take place June 18 to 21, at The Assisi Institute, an international psychological organization founded in 1989 and located in Mystic, CT. Salzillo joins some of the world’s leading scholars, psychologists and trauma experts on the faculty.

“The psychological, emotional and physical impact of trauma is a daily reality for millions of Americans,” Salzillo says. “About 70 percent of us have experienced some type of traumatic event at least once in their lives. Of these people, at least 20 percent, or about 44 million people, will develop post-traumatic stress syndrome or PTSD as a result.”

The conference will highlight the need for a more nuanced approach in working with people who struggle with the daily realities of PTSD, and will offer some of the latest research in neurological and somatic studies. In addition, presentations on innovative approaches to helping integrate and work with the ongoing effects of trauma are planned.

Salzillo is a nationally-acclaimed visual artist, expressive arts facilitator and archetypal pattern analyst. She is a senior faculty member at the Assisi Institute and an adjunct professor in the holistic counseling master’s program at Salve Regina University. At Women & Infants, she facilitates groups and workshops, and provides individual counseling to patients. Her work is based on connecting women to their imaginative abilities, which allows for a deeper understanding of their personal process.
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Dr. Stanley M. Aronson first came to Rhode Island in 1970. At the time he lived in New Rochelle, N.Y., with his first wife, the late Betty E. Aronson, MD, and their two younger daughters. The public schools in New York, he explained, were in turmoil and the private school applicant list was long. Faced with few school options for the girls, Betty suggested a locale change. The Miriam Hospital in Providence, the city where Betty had spent her childhood, was seeking a pathologist-in-chief. Aronson, Professor of Pathology and Chairman at Downstate Medical Center in Brooklyn, and Assistant Dean of its College of Medicine, contacted the East Side hospital and was invited for an interview.

The Miriam’s leadership impressed him as decisive, pragmatic and visionary. It was refreshing to be in a hospital that “didn’t have its own police force with guns in the halls,” Aronson said, unlike the sprawling Kings County Hospital Center, where he had been Director of Laboratories. “Coming to Rhode Island was such a joy. It was quiet and peaceful. We bought a farm in Rehoboth.”

His arrival in 1970 coincided with Brown University’s plans to extend its six-year master of medical science program to form a four-year program leading to the M.D. degree within its division of biology and medicine. The prior year Brown had opened a Biomedical center on campus and affiliated with a network of regional hospitals.

It wasn’t long after Aronson arrived that Brown invited him to discuss leading the medical school effort. The university was impressed with his credentials and Aronson was intrigued with the challenge of starting a medical school. In 1970, Brown appointed Aronson a Professor of Medical Science and Chairman of its formative Department of Pathology and Laboratory Medicine.

“There was a small faculty of dedicated and enthusiastic pioneers and exceptional students who helped in the design of the program,” Aronson said. The tasks were daunting: to develop the network of affiliated teaching hospitals, form a curriculum, organize and recruit faculty/physicians, oversee operating committees and myriad other challenges, not the least of which was securing state funding.

Neighboring states had allocated millions in opening state medical schools that same year. Rhode Island’s Gov. Frank Licht was able to secure a small grant of $245,000 from the State Legislature for the fledgling medical program at Brown and the state medical society offered strong support as well, by recruiting physicians for the program. At times, it seemed to Aronson, the medical school was made of “second-hand clothing and held together by scotch tape,” he wryly recalled. “The Dean’s Office was a cubbyhole in the Biomed building which I shared with my secretary, and the classroom was a former laboratory holding room in the basement of the same building.”
Aronson juggled multiple leadership positions at the hospital and university, where he also assumed a heavy teaching load. He set up a cot in his Miriam office to catch catnaps when working late — sometimes long past the midnight hour.

In August 1972, Aronson and his small staff set about preparing for a visit from the National Accrediting Liaison Committee of Medical Education, which included preparing the voluminous documentation required for this week-long process. Lacking host-related funds, “I recruited the students to act as chauffeurs,” Aronson recalled. It would turn out to be an effective strategy. The students were such enthusiastic ambassadors, the committee made note of them in their report. By October 1972 the school had been granted provisional accreditation. Brown then appointed Aronson its first Dean of Medicine.

The first clinical rotations were in surgery at the Rhode Island and Miriam hospitals. Due to the contributions of volunteer physicians in the Rhode Island network of hospitals, which also included Memorial Hospital in Pawtucket, and the Lying-In and Roger Williams Hospitals in Providence, the program offered more than a hundred clinical electives. There were also opportunities to participate in medical programs in rural America, at a Native American health center in Arizona, and in Afghanistan and Brazil.

In 1975, the program in medicine received its full accreditation and Brown awarded 58 students the M.D. degree that spring. Aronson shepherded Brown’s program in medicine for 11 years, until 1981.

Through the years, the name of the school has changed; it is now the Warren Alpert Medical School of Brown University, named for a benefactor. The location moved off-campus in August 2011 to the jewelry district in Providence.

In January 1999, after 10 years as editor-in-chief of the state medical journal, Aronson retired. The staff, without his knowledge, contacted several of Aronson’s early students and asked them to share their recollections.

**Anthony Caldamone, MD, ’75**, remembered a meeting in the Biomed building when the dean wrote his home phone number on the blackboard, and said: “Call me anytime, day or night, if you have a problem or if you just need to talk.”

**Mitchell H. Driesman, MD, ’77**, described Aronson as “our father figure; with his thoughtful eloquence, his work ethic, his boundless love of all learning.”

“Dean Aronson gave us the strength of faith in ourselves,” **Julianne IP, MD, ’78**, wrote.

“Dr. Aronson taught us that medicine is the most scientific of the humanities, the most human of the sciences,” noted **Jonathan Gell, MD, ’75**.

Today, the medical school continues to flourish and grow, like the Tree of Hippocrates fronting the Arnold Lab on Waterman Street. Historically known as the learning tree, where Hippocrates taught his students in the shade, it is an apt symbol for both the medical school and its founding dean, who first nurtured it from the “mother” tree in Greece on his Rehoboth farm in 1972.
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Publications

Recognition

**Betty Vohr, MD, receives award for contributions to high-risk infant care**

**PROVIDENCE** – **BETTY VOHR, MD**, medical director of the Neonatal Follow-Up Program in the Department of Pediatrics at Women & Infants Hospital and professor of pediatrics at the Alpert Medical School, was awarded the Stan and Mavis Graven’s Leadership Award for Outstanding Contributions to Enhancing the Physical and Developmental Environment for High-Risk Infants and their Families at the 28th Annual Graven’s Conference on the Physical and Developmental Environment of the High Risk Infant, in collaboration with March of Dimes, in March in Clearwater Beach, FL.

The Graven’s Leadership Award is presented annually to an individual who has made a substantial contribution to the health and care of newborns in intensive care facilities.

Dr. Vohr has been the director of Women & Infants Hospital’s Neonatal Follow-up Clinic since 1974 and medical director of the Rhode Island Hearing Assessment Program since 1990. She has been the national coordinator of the National Institute of Child Health and Human Development Neonatal Research Network follow-up studies since 1990. Her primary clinical and research interests focus on improving the long-term outcomes of high-risk premature infants and infants with hearing loss.

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**Rosemarie Bigsby at W&I honored for contributions to neonatal care**

**PROVIDENCE** – **ROSEMARIE BIGSBY, SC, OTR/L, FAOTA**, has been elected as a recipient of the National Association of Neonatal Therapists (NANT) for the inaugural Pioneer Award for Neonatal Therapy.

She is a clinical professor of pediatrics, psychiatry and human behavior at the Alpert Medical School and coordinator of neonatal intensive care unit (NICU) services at the Brown Center for the Study of Children at Risk/Center for Children and Families of Women & Infants Hospital.

Bigsby was honored with the award at the 5th Annual NANT Conference recently in Phoenix, AZ. The Pioneer Award was created to honor neonatal occupational therapists, physical therapists and speech-language pathologists who contribute tirelessly to establish and advance the specialized field of neonatal therapy. This inaugural presentation of the award reflects decades of largely unrecognized work by those who established the art and science of neonatal therapy.

Bigsby is a pediatric occupational therapist with a career-long interest in infant development. Her current focus is on improving outcomes for infants in the NICU, through developmental assessment, interventions and developing an interdisciplinary approach to initiating and progressing breast and bottle feeding.

She received her bachelor’s of science in occupational therapy and biology at Western Michigan, her masters degree in advanced pediatric practice and occupational therapy education and her doctor of science in therapeutic studies at Boston University.

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**Pulmonary Hypertension Center at RIH earns Pulmonary Hypertension Association Accreditation**

**PROVIDENCE** – The Pulmonary Hypertension Center at Rhode Island Hospital is one of the nation’s first centers of its kind to be accredited by the Pulmonary Hypertension Association (PHA). For those affected by pulmonary hypertension (PH), accreditation assures them and their providers that they have access to the most advanced care available in the country.

“Because of our accreditation status, health care professionals in the community will know that the depth and breadth of our resources are available to them and their patients,” said **JAMES R. KLINGER, MD**, medical director of the center.

“Twenty years ago, no treatment was effective against this disease. Today, a quick and accurate diagnosis is critically important to ensure patients get access to treatment early,” added **COREY E. VENTETUOLO, MD, MS**, the center’s associate director.

“Health care centers across the country are undergoing the rigorous review process to receive accreditation and demonstrate that they meet and exceed national standards of excellence,” said **DR. MURALI CHAKINALA**, a member of PHA’s Pulmonary Hypertension Association Oversight Committee. “In addition to providing lifesaving care for patients, these specialty care centers, like the one at Rhode Island Hospital, are valuable resources for medical professionals and families of people living with pulmonary hypertension.”

To be designated as a PHA-accredited Center of Comprehensive Care (CCC), facilities must demonstrate quality and depth of resources as well as an array of therapies.
Recognition

**Drs. He and Tseng, W&I pathologists, honored at 2015 USCAP annual meeting**

**Providence – Mai (Mike) He, MD, and Yun-An (Ann) Tseng, DO, medical director of the Hematology Laboratory at Women & Infants Hospital and assistant professor of perinatal pathology at the Alpert Medical School, and Yun-an (Ann) Tseng, DO, the Stuart C. Lauchlan Fellow in Women’s Pathology at Women & Infants Hospital, were honored at the 2015 United States and Canadian Academy of Pathology (USCAP) annual meeting in March.**

Dr. He won the Enid Gilbert Barness prize for his study, “Comparison of placental findings in type 1 and type 2 diabetic pregnancies.” Dr. He earned his undergraduate and medical school degrees at Shanghai Medical college of Fudan University and doctorate degree at University Medicine and dentistry of New Jersey (Rutgers University). He completed his residency in anatomic and clinical pathology at University hospital in Newark, NJ and completed three fellowships in postdoctoral surgical oncology research at New Jersey Medical School, pediatric pathology at Coney Island Hospital/Downstate Medical Center, and diagnostic molecular pathology at Memorial Sloan-Kettering Cancer Center. Dr. He is board certified in anatomic and clinical pathology, pediatric pathology and molecular genetic pathology.

Dr. Tseng won the Surgical Pathology Award for her poster presentation, “Endometrial Surface Epithelial Change (ESEC) in Endometrial Samplings: A Banal Appearing Histologic Marker of Underlying Endometrioid Adenocarcinoma in Postmenopausal Women.” Out of 3,100 abstracts in surgical pathology-related disciplines, Dr. Tseng’s presentation received first place in the competition for the award. Dr. Tseng earned her undergraduate degree in chemistry at Rutgers University. After completing medical school at New York College of Osteopathic Medicine, Dr. Tseng went on to complete a pathology residency at Winthrop University Hospital in Mineola, NY and is now nearing the end of the Stuart C. Lauchlan Fellowship in Women’s Pathology at Women & Infants. She is board certified in anatomic pathology.

**Miriam Hospital earns Magnet recognition for 5th time**

**Providence – The Miriam Hospital has again attained Magnet recognition as part of the American Nurses Credentialing Center’s (ANCC) Magnet Recognition Program. The voluntary credentialing program for hospitals recognizes excellence in nursing and is the highest honor an organization can receive for professional nursing practice.**

The unanimous ANCC decision to redesignate The Miriam was based on its continued adherence to rigorous national standards of nursing practice, as well as meeting specific goals for nurse certification and nurse satisfaction and engagement. The Miriam is one of only four hospitals nationwide to achieve Magnet designation for a fifth time.

“We are so proud and thrilled to receive our fifth Magnet designation,” said Maria Ducharme, MS, RN, NEA-BC, senior vice president of patient care services and chief nursing officer at The Miriam. “This is a celebration and recognition of our unique culture at The Miriam and the standards of nursing excellence that are ingrained in our model of patient care.”

To achieve Magnet recognition, organizations must pass a rigorous and lengthy process that demands widespread participation from leadership and staff. The process begins with the submission of an electronic application, followed by written documentation demonstrating qualitative and quantitative evidence regarding patient care and outcomes. If scores from the written documentation fall within a range of excellence, an on-site visit will occur to thoroughly assess the applicant. After this rigorous on-site review process, the Commission on Magnet will review the completed appraisal report and vote to determine whether Magnet recognition will be granted. Currently there are 410 ANCC Magnet-recognized organizations.

**Marco Delbove, pharmacy coordinator at Memorial Hospital, recognized for excellence in teaching**

**Pawtucket – Marco Delbove, PharmD, pharmacy clinical coordinator at Memorial Hospital of Rhode Island was awarded the University of Rhode Island [URI] 2014 College of Pharmacy Advanced Pharmacy Practice Preceptor of the Year Award in recognition of excellence in teaching. Delbove was presented the award at URI’s 30th Annual Seminar by the Sea Northeast Regional Conference on March 11.**

Marco Delbove, PharmD, pharmacy clinical coordinator at Memorial Hospital, and Kathleen Fisher, RPh, MBA, director of pharmacy experiential education, University of Rhode Island College of Pharmacy.
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Appointments

Dr. Scott Haltzman named Medical Director of the Department of Behavioral Health at Fatima Hospital

NORTH PROVIDENCE – DR. SCOTT HALTZMAN has been named Medical Director of the Department of Behavioral Health at Fatima Hospital. Along with providing clinical leadership in his department, he will assist in the establishment, integration and implementation of clinical services across CharterCARE Health Partners. Dr. Haltzman previously served as Medical Director for NRI Community Services (now called Community Care Alliance) in Woonsocket.

Dr. Haltzman has a long history of behavioral health leadership with programs like SSTAR in Fall River, the Miriam Hospital, and the Providence Veterans Administration Medical Center. He is very familiar with the St. Joseph organization, having worked on the inpatient units intermittently from 2007–2014.

Most recently, Dr. Haltzman was the Senior Outpatient Psychiatrist at The David Lawrence Community Mental Health Center in Naples, Florida.

Dr. Haltzman received his undergraduate and medical degree from Brown University, completing the Family Practice Honors Program. He completed a residency at Yale University School of Medicine and served as chief resident, inpatient unit in Yale-New Haven Hospital’s Psychiatric Outpatient Department.

In 2003, he was named a Distinguished Fellow of the American Psychiatric Association. Prior to moving to Florida, Dr. Haltzman was on the faculty of the Warren Alpert Medical School. He now is an associate professor of psychiatry at Florida State University.

Dr. Haltzman has developed an international reputation for his interest in relationships and marriage. He presents to audiences across the country, and has authored four books and a number of book chapters on the topic. He has served on numerous committees and been appointed to several boards during his career.

Kent’s Lisa Gould, MD, publishes study on healing skin graft wounds

WARWICK – Kent Hospital’s LISA GOULD, MD, PhD, FACS, medical director of the Wound Recovery and Hyperbaric Medicine Center, has published a clinical research study in the Journal of the American College of Surgeons exploring new treatments in healing skin graft wounds.

Dr. Gould’s research compared the effects of noncontact, low-frequency ultrasound [MIST® Therapy] plus standard care to standard care alone, in subjects with split thickness donor sites.

The study, “A Prospective Randomized Controlled Trial Comparing the Effects of Noncontact Low Frequency Ultrasound to Standard care in Healing Split Thickness Donor Sites,” measured time to healing, pain and itching scores, and wound recurrence.

All patients who had MIST® Therapy combined with standard care were fully healed by four weeks compared to only 71 percent in standard care alone. The average healing time was 12 days for patients treated with MIST® Therapy combined with standard care, compared to 21 days for those treated with standard care alone. Fewer patients were treated for suspected infection, pain scores were reduced and significant differences in itching were observed in the MIST® Therapy group. In addition, the MIST® Therapy group remained healed with a recurrence rate of only eight percent at the six week follow up visit compared to 45 percent in the standard care group.

“Given the remarkable results from this study, MIST® Therapy should be considered for treatment of acute surgical skin graft donor sites, particularly in subjects who are at higher risk for surgical site infections or delayed healing,” Dr. Gould said.

She is a board certified plastic surgeon and is a nationally recognized researcher and educator. Dr. Gould is an affiliate professor in the Department of Molecular Pharmacology and Physiology at the University of South Florida. Prior to her arrival at Kent, she was co-director of the University of South Florida Plastic Surgery Research Laboratory in Tampa, FL. She also served as staff surgeon at James A. Haley VA Hospital, where she was chief of plastic surgery from 2007-2010. Last spring, Dr. Gould was named president of the Wound Healing Society, a national premier scientific organization focused on wound healing.

Dr. Gould served on the executive board of the Wound Healing Society for more than ten years and chaired its Education Committee for six years. She has authored publications such as The Wound Healing Society’s Guidelines for the Treatment of Pressure Ulcers, Guidelines for the Treatment of Venous Ulcers, Guidelines for the Prevention of Pressure Ulcers, and Guidelines for the Prevention of Venous Ulcers. Dr. Gould was instrumental in creating the Basics of Wound Care Course, a regular feature at the Symposium on Advanced Wound Care, the nation’s largest wound care conference.
Appointments

Denise M. Arcand, MD, named president of medical staff at Kent

Dr. Herbert “Hub” Brennan recognized for dedicated service

WARWICK – Denise M. Arcand, MD, has been appointed as the 47th president of the Kent Hospital medical staff. Dr. Arcand succeeds Herbert J. “Hub” Brennan, DO, who has served as medical staff president since 2013. This leadership position is filled every two years by a member of the Kent medical staff who is distinguished as a leader in the field of medicine, chosen by their medical staff peers.

Dr. Arcand is a board certified family medicine physician, who has served on the Kent Hospital medical staff since 2001. She is the lead physician at Arcand Family Medicine, in West Warwick, where she has practiced since 2001.

Dr. Arcand also currently serves as the medical director of Alpine Nursing Home, in Coventry. She received her medical degree from Laval University in Quebec, Canada, and completed a family medicine residency at Central Maine Medical Center in Lewiston, ME. Her special clinical interests include women’s health and geriatrics. Dr. Arcand’s father, Alfred A. Arcand, MD, also served as president of Kent’s medical staff from 1990–1992.

“On behalf of Kent Hospital, I would like to congratulate Dr. Arcand on her appointment as president of the Kent medical staff,” said Michael J. Dacey, MD, MS, FACP, president and COO at Kent Hospital. “Dr. Arcand is a well-known community physician who brings great oversight and clinical leadership to our medical staff. I would also like to express great appreciation to Dr. “Hub” Brennan for his years of outstanding leadership and dedication to the Kent Medical Staff and the hospital community. Dr. Brennan will continue to be a tremendous advocate for Kent, his patients and the community.”

Dr. Brennan is an internal medicine physician and has been a member of the Kent Hospital medical staff since 1996. Dr. Brennan is a partner in Brennan, Cronin and Peters Internal Medicine in East Greenwich, RI, and serves on a number of boards and committees focusing on health care governance and transformation. As a lifelong, avid off-road motorcyclist, he was recently appointed to the International Medical Panel of the Federation Internationale de Motocyclisme (FIM) at its Annual Congress in Jerez de la Frontera, Spain. Dr. Brennan is one of four U.S. representatives to the organization and the sole U.S. physician on the medical panel.

Suzanne Palinski, MD, named chief of pediatrics at Bradley

East Providence – Suzanne Palinski, MD, has been named chief of pediatrics for Bradley Hospital. In her new role, Dr. Palinski will oversee the pediatric care of all inpatient and partial treatment patients at Bradley Hospital.

The appointment of Dr. Palinski accompanies an increasing number of children and adolescents who are hospitalized with co-occurring medical and psychiatric illnesses. The ability to treat both simultaneously is vital to the overall wellness of young patients.

“Over the last several years we have had impressive growth in our pediatric services with an increasing ability to address the needs of children with challenging medical presentations,” said Henry Sachs, MD, chief medical officer of Bradley Hospital. “Along with our nurse practitioners on staff, we look forward to Dr. Palinski enhancing our ability to serve the unique needs of this patient population.”

Dr. Palinski will also spend a portion of her time providing pediatric care in the Adolescent Medicine Center at Hasbro Children’s Hospital.

She received her medical degree from the University of Vermont College of Medicine and completed her residency in pediatrics at University of Maryland Medical Center. After one year in Jai Medical Systems in Baltimore, Dr. Palinski became a staff pediatrician at the Downtown Medical Center in New York City where she subsequently became the associate medical director, a position she held until her move to Rhode Island with her family in the fall of 2014.
**Appointments**

**Dr. Aaron B. Bloomenthal joins Department of Surgery at Roger Williams Medical Center**

Providence – **Dr. Aaron B. Bloomenthal** has joined the Department of Surgery at Roger Williams Medical Center and will focus his practice in the weight loss surgery program led by Dr. Dieter Pohl. Roger Williams has been a Bariatric Surgery “Center of Excellence” since 2005.

He joins Roger Williams from Newton-Wellesley Hospital where he was a surgeon in the Center for General and Weight Loss Surgery. He was also an assistant clinical professor in the Department of Surgery at Tufts University School of Medicine.

Dr. Bloomenthal completed a fellowship in Minimally Invasive Gastrointestinal/Hepatobiliary and Pancreatic Surgery at Thomas Jefferson University. He was an Advanced Endoscopy Fellow in the Division of Gastroenterology at Beth Israel Hospital and an Endoscopy Fellow in the Division of Gastroenterology at University of Massachusetts Medical School.

He completed his residency in General Surgery at University of Massachusetts Medical School, where he also completed a research fellowship in the Division of Transplantation. Dr. Bloomenthal received his medical degree from Boston University School of Medicine. He is certified by the American Board of Surgery, a Fellow in the American College of Surgeons and a member of The Society for Surgery of the Alimentary Tract.

**Dr. Taro Minami teaches critical care medicine in Germany**

Pawtucket – **Taro Minami, MD, FACP, FCCP**, director of pulmonary and critical care simulation and ultrasound training, as well as subspecialty coordinator of resident and medical student education at Memorial Hospital and assistant professor of medicine (clinical) at the Alpert Medical School, spent two weeks recently at the University of Tübingen, Germany, teaching critical care medicine. This was part of the exchange program between Brown University and the University of Tübingen.

Dr. Minami trained 16 medical students – nine from Germany, five from Brown, one from Italy and one from Indonesia. Sessions included lectures, simulation training, ICU rounds, hands-on procedure training at the anatomy lab using a cadaver, critical care ultrasonography, and procedures such as central venous catheter insertion.

**Drs. Borkan, Kahn participate in Tar Wars®**

Pawtucket – **Jeffrey Borkan, MD, PhD**, physician-in-chief, Department of Family Medicine, and **Dr. Malasa Kahn**, first-year family medicine resident, participated in the Tar Wars® program and spoke to 100 fifth-graders recently at the Nathaniel Greene School in Pawtucket.

Tar Wars® is a tobacco-free education program for kids from the American Academy of Family Physicians (AAFP). Tar Wars® works to both educate school children about the effects of smoking and encourage their creativity in constructing anti-smoking posters. The goal is to foster prevention at an age when it can be effective. Dr. Borkan has taken part for the past 13 years as a way to foster collaboration with the Memorial Hospital’s local community.

Rhode Island presents to more schools than any other state. The Rhode Island Medical Society ran this program for the last 20 years; current sponsorship is by the Rhode Island Academy of Family Physicians.
Making kids smile at Samuels Sinclair Dental Center

PROVIDENCE – On April 10 the Samuels Sinclair Dental Center celebrated the 13th annual “Give Kids a Smile Day” (GKAS) with underserved, uninsured and underinsured children throughout Rhode Island. Children received dental care in clinics and private dental offices statewide, and 94 children received dental care at Rhode Island Hospital’s event.

“This is my first opportunity to experience the Give Kids a Smile event here at the dental center and it has been extraordinary to see the outpouring of support and hard work from those who donated their time and talents along with the staff at the Samuels Sinclair Dental Center to make this event happen,” said ELIZABETH BENZ, DMD, director of the Samuels Sinclair Dental Center at Rhode Island Hospital. “For many of these children, this special event allows them to visit a dentist for the very first time, and I am so grateful that our volunteers and sponsors make it such a fun and welcoming experience.”

As the centerpiece to National Children’s Dental Health Month, and sponsored by the Rhode Island Dental Association and the American Dental Association, GKAS was designed to provide dental care to low-income children who would not otherwise have access to care. The event also raises awareness of the importance of dental coverage for children’s health.

Children received dental screenings, oral examinations, radiographs, cleanings, fillings and educational materials at Rhode Island Hospital’s Samuels Sinclair Dental Center. The event included visits from Paws, the PawSox mascot, a group of superheroes, pet therapy dogs and the Tooth Fairy. Members of Team Hasbro, Hasbro, Inc.’s employee volunteer program, brought toys and games to entertain the children while they waited to see their dentist and dental hygienist, many for the very first time. Dental supplies for the day were donated by national sponsor Henry Schein and Patterson Dental.

Amos House provided breakfast for the event, while Texas Roadhouse supplied lunch. Other refreshments were provided by East Side Marketplace, Stop & Shop and Shaw’s Supermarkets. Hasbro, Inc. also provided a toy for each child to take home.

The Samuels Sinclair Dental Center has been providing dental services to underprivileged children and individuals with special needs for over 80 years. It is the site that launched the first “Give Kids a Smile” program in Rhode Island, and annually organizes statewide events.

Peter J. Snyder, PhD, named Editor of new online, open-access Alzheimer’s and Dementia Journal

PROVIDENCE – Lifespan’s PETER J. SNYDER, PHD, is the editor-in-chief of a new online, open-access journal of the Alzheimer’s Association that will serve as an additional channel for publishing important Alzheimer’s and dementia scientific findings and commentaries. Alzheimer’s & Dementia: Diagnosis, Assessment & Disease Monitoring (DADM) is the companion to the Alzheimer’s Association’s flagship journal Alzheimer’s & Dementia. It is published by Elsevier B.V.

As an online, open-access journal, Alzheimer’s & Dementia: DADM will streamline the publishing process allowing for the research around reliable biomarkers, which are essential to identifying new clinical trials or non-drug interventions and detecting the disease earlier, to be published more quickly.

Snyder, who is Lifespan’s chief research officer and senior vice president, acknowledged the importance of having an additional venue for making key research findings public and easy to access. “Biomarkers play a critical role in advancing Alzheimer’s disease research and it’s important that researchers be able find and cite this research,” Snyder explained. “All research submitted will go through a high-quality peer review process, with the entire process designed to publish new research within a two-week window.”

Alzheimer’s & Dementia: DADM will cover a range of topics focused on the early and accurate detection of individuals with memory complaints and/or asymptomatic individuals at elevated risk of various forms of memory disorders. All forms of biomarkers will be considered, ranging from gene expression and proteomic markers, to imaging, cognitive and functional markers of disease progression or treatment responses.

“Alzheimer’s & Dementia: DADM will drive scientific advances by creating linkages between the discovery and validation of novel biomarkers,” said Snyder. “The journal will also report on the application of biomarkers to more sensitively and reliably diagnose disease, assess disease severity, and monitor progression both in the clinic and within the context of clinical trials.”

In addition to articles, Alzheimer’s & Dementia: DADM will publish comprehensive literature reviews, occasional editorials and perspectives. All material will be available without a subscription and can be accessed through the journal’s online format: www.dadm.alzdem.com.
DR. LAURA B. FIXMAN died April 1, 2015, at home. She was the beloved wife of Dr. Kenath J. Shamir for 20 years. Born in Pittsburgh, PA, a devoted daughter of Marshall Fixman of Ft. Collins, CO and the late Marian [Beatman] Fixman, she had lived in Barrington for 19 years, previously residing in Providence.

Dr. Fixman was a psychiatrist with Family Associates of Warwick and Angel Street Psychiatry of Providence for many years. She was a graduate of Brandeis University, Class of ‘82 and Tufts University Medical School, Class of ‘88.

She was a former captain in the U.S. Army Reserve, and a member of the Rhode Island Psychiatric Society.

LAURA R. VIEHMANN, MD, 55, of Cumberland, passed from this life March 31, 2015 surrounded by family. She was the beloved wife of the late Richard A. Sheehan.

Dr. Viehmann practiced medicine at Mill River Pediatrics, Pawtucket. She served as co-ordinator for the Rhode Island Chapter, American Academy of Pediatrics, and Chair of the Physicians’ Committee for Breastfeeding in Rhode Island. She advocated for nursing mothers and was recognized by The Rhode Island Breastfeeding Coalition with the Creme de la Creme award. The Rhode Island Department of Health recognized her care for underserved children. She promoted awareness of ovarian cancers subtle symptoms.

Dr. Viehmann received her MD from the University of Cincinnati College of Medicine, completed her residency at Brown University, and earned a BA from Brown.

Loving and beloved mother of Patrick and Andrew Sheehan, also survived by her father, Norman Viehmann and his wife, Barbara Carlson, her siblings Douglas Viehmann and his wife, Ann Vivian, Elizabeth Viehmann and her husband, Steven Johnson, and Martha Viehmann and her husband, Richard Boyce, and 6 nephews. She was predeceased by her mother, Elaine. Also mourned by the Sheehan family, Mary, Dr. Lester and his wife, Joan, and their children, Marc and Megan Wanczyk.

She was a devoted member of First Baptist Church Attleboro. In lieu of flowers, donations may be sent to the church or American Academy of Pediatrics Section on Breastfeeding.
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800-559-6711
April 14, 1865 was a mercilessly long night. As President Abraham Lincoln lay dying in Petersen’s House across the street from Ford’s Theatre, **STEPHEN H. CRANE, MD**, cradled his head. The Newport-born Crane, 40, was a career Army officer and executive assistant to **SURGEON GENERAL JOSEPH K. BARNES**.

The two had been hastily summoned to the president’s bedside where they joined Lincoln’s personal physician, Dr. Robert King Stone, and three Army physicians who had rushed to Lincoln’s aid after being shot by John Wilkes Booth during a performance of “Our American Cousin.”

The president’s son, Capt. Robert Lincoln, soon arrived with John Hay, Hermann Faber, a civil war medical artist on duty that night, illustrated the death room scene for posterity once the President’s body was removed. Dr. Barnes later approved it for accuracy. It shows Dr. Crane, distinctive by his long, flowing beard, supporting the head of the president.

Lincoln’s private secretary. A hysterical Mary Todd Lincoln remained in an adjoining room for most of the night, with intermittent visits to the president’s bedside. The chamber soon swelled with Cabinet members.

Dr. Charles S. Taft, one of the Army officers, recorded an account of the bedside vigil in the *Medical and Surgical Reporter*, published a week later, on April 22, 1865. He reported: “The wound began to ooze very soon after the patient was placed on the bed. The only surgical aid that could be rendered consisted in maintaining the head in such a position as to facilitate the discharge, and in keeping the orifice free from coagulum. Col. Crane, Surgeon, U.S.A., had charge of the head during a great part of the time.”

In his account Taft noted, “about 30 minutes after he was placed upon the bed [approximately 11:15 p.m.], discoloration from effusion began in the internal canthus of the right eye, which became rapidly discolored and swollen with great protrusion of the eye. About 11:30 p.m. twitching of the facial muscles of the left side set in and continued some 15 or 20 minutes. Sinapisms over
the entire anterior surface of the body were ordered, together with artificial heat to the extremities.”

At 2 a.m. Surgeon General Barnes investigated the wound with “an ordinary silver probe,” standard procedure prior to the discovery of X-rays. According to archival reports at the National Library of Medicine, the probe “met an obstruction at a depth of about three inches.” Barnes determined it was a plug of bone lodged in the path of the ball. “He then introduced a long, Nelaton probe that passed into the track of the wound two inches beyond the plug of bone and struck what he believed was the bullet.”

Taft wrote no further attempt was made to explore the wound. “After the cessation of the bleeding from the wound, the respiration was stertorous up until the last breath, which was drawn at 21 minutes and 55 seconds past seven; the heart did not cease to beat until 22 minutes and 10 seconds past seven. My hand was upon the heart and my eye on the watch of the Surgeon General, who was standing by my side, with his finger on the carotid.”

The president’s body was then transported by carriage to the White House, where a post-mortem was conducted. The results showed the ball was lodged in the anterior lobe of the cerebrum, immediately behind the right orbit. It dropped out during the autopsy.

A year after the assassination, Crane, a graduate of Harvard Medical School, was promoted to Assistant Surgeon General under Barnes. He succeeded him in 1882, but died after a short illness on October 10, 1883.

On October 11, the New York Times reported in his obituary: “Dr. Crane was 58 years of age, tall, large of frame, and wore a full iron-gray beard. He was born in Rhode Island [at Fort Woolcott on Goat Island, to its commanding officer, Col. Ichabod Crane] but was appointed to the Army from Massachusetts on February 14, 1848. After several promotions, he was, on March 13, 1865, made Brevet Brigadier-General for meritorious services during the War of the Rebellion, and on July 28, 1866 was promoted to be Colonel and Assistant Surgeon-General.”

The obituary noted Crane was selected as Surgeon General partially at the behest of Secretary of War Robert Lincoln, the president’s eldest son, in appreciation for Crane’s efforts “attending President Lincoln when he was shot by Booth.”

Secretary Lincoln served as one of the pallbearers at Crane’s funeral. His body was returned by train to Rhode Island, and then buried in Shelter Island, New York, in the family plot of his wife.
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