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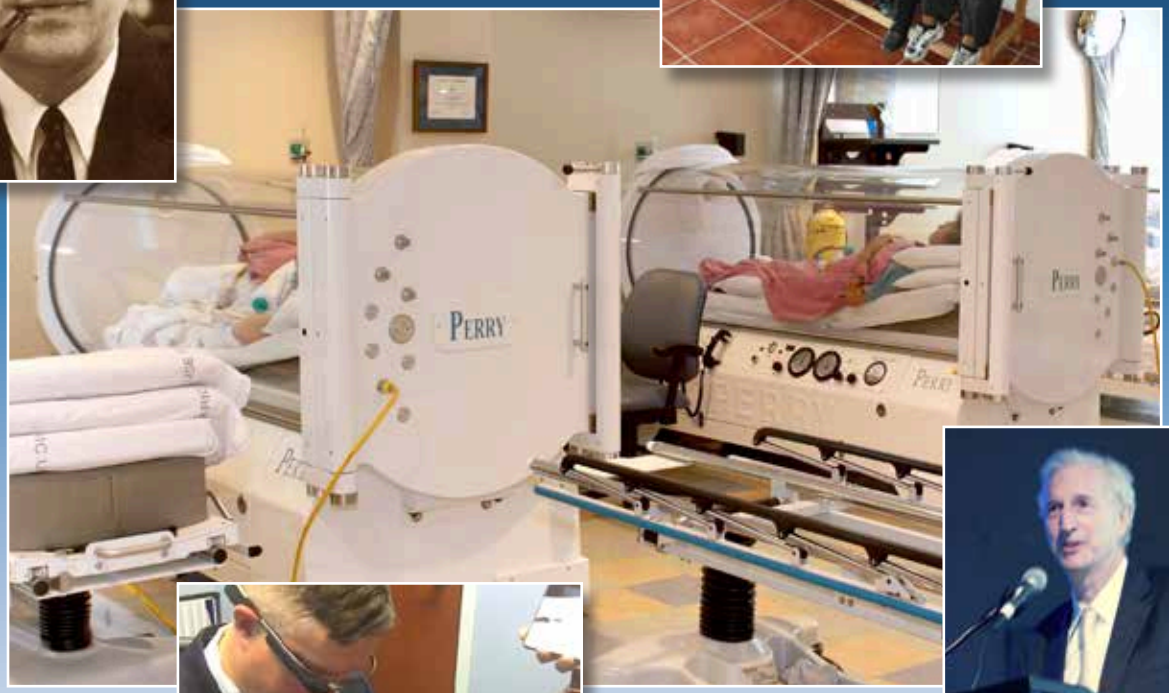

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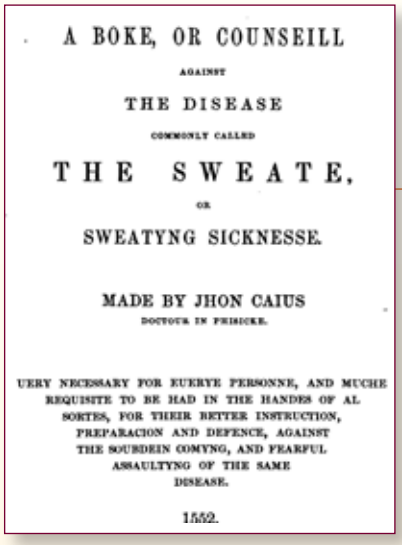
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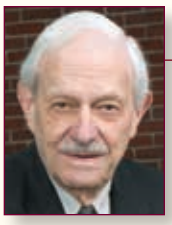


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An Up-Front Guide to Getting Promoted: Slow and Steady

JOSEPH H. FRIEDMAN, MD
joseph_friedman@brown.edu

The following is a report presented at the annual American Academy of Medical Faculties' meeting held recently in Boston.

Keywords:
seating arrangements, academic promotions, aging, junior faculty

Abstract

For many years there has been a debate about the explanation for the common observation that faculty who sit nearer the front of the conference room at departmental grand rounds are more likely to have higher academic rank. There is an obvious correlation between rank and age, so that the natural tendency of older faculty to be closer to the front in order to hear and see better poses one confounding variable. But the underlying questions – whether faculty who sit closer to the front get promoted because they sit closer or choose to sit closer in order to get promoted or sit closer because they feel more engaged and want to participate rather than be more passive, or nap – has never been addressed. It is akin to a nature/nurture question, but the truth of the observation has never been supported by data. The following study, financed by the Academy, was intended to answer this contentious question and provide a path forward.

Fifteen years ago the Academy funded a large study to investigate this question via a long-term, multi-center trial. The following is an analysis of the results.

Aim

To determine if promotions among academic faculty at a medical school were influenced by seating arrangements at departmental grand rounds.

Methods

The deans of every medical school in the U.S. were informed of this study and asked to submit a letter indicating interest in participating. Of the 141 accredited medical schools and 30 approved schools of osteopathy, 55 chose to participate. All were asked to submit attendance records for the preceding six months. To qualify, fulltime faculty had to have maintained a 50% attendance record in each department. Using this criterion, only 3 universities qualified. Attendance requirements were reduced to 30% in each department and then to 25% in half the departments. At this level of attendance, 14 programs met criteria. However, only 10 were able to obtain IRB approval (See* below).

In each department photos were taken of the conference room halfway through a baseline presentation. The initial protocol called for photos at the beginning or the end of the presentation but that captured only half the maximum audience and was modified shortly after the project began. Faculty who sat halfway or more towards the rear were then randomly assigned to either maintain their current seat or to move to a row in the front quarter of the room. No other intervention was made. Faculty were then tracked for promotion. The data-analysis committee was kept blinded to assignment. A sample-sized calculation revealed that 4,356 subjects would be required with an attendance record of 50% over 10 years to achieve a p value under .05 if standard statistical analyses were performed. Therefore, a dichotomous, minimalist, forced-choice regression analysis using Friedman's parametric Manichean-fold distortion-free universal constants was chosen, reducing the number required to 86. In addition to this analysis, bar graphs were also employed.

Outcome

880 subjects were enrolled, of whom 640 were still participating by the end of the study. There were 324 faculty who sat in the back of the room and remained in the back of the room. The remaining 316 were asked to move to the front. Of note was the difference in the percentages of junior faculty who, before the

**IRB approval was not obtained within the 18-month limit at 4 universities due to the need for approval from multiple different hospital IRBs.*

study, sat in the front versus the back in the different departments (e.g., 90% of general surgery junior faculty sat in the first two rows whereas 90% of pediatricians sat in the last two rows). Of those who moved to the front, 123 ended up moving to the back of the room. These were analyzed separately. Of 324 junior faculty whose seats were not changed, 75 of 150 who were instructors were promoted to assistant professor; of 174 assistant professors, 30 were promoted to associate or full professor. Fifteen of the 123 who were asked to move but then withdrew were promoted, but only from instructor to assistant professor. None of these achieved associate or full professor status. Of the 193 who were moved to the front and stayed there, 148 were promoted, 14 of 140 to assistant professor and the remainder (134 of 153) to associate or full professor rank. The odds ratio of promotion to associate or full professor based on seating was 5.1 with a confidence interval of 3.01-7.2. The odds ratio for promotion to assistant professor was far less skewed.

Discussion

These results indicate that junior faculty who sit in the back of the grand rounds conference room but are forced to move to the front are more likely to be promoted than those who remain in the back. No data were collected on promotions of junior faculty who naturally sat in the front.

Follow-up

The Committee on Promotions and Outcomes (CoPOut) has developed plans based on this study in order to be proactive: advise all junior faculty to sit in the front row if they wish to advance their academic careers; move all senior faculty to the back rows to force junior faculty forward; move conferences to rooms that have great width but little depth so that there are only 3 rows; move the speaker's lectern to the back of the room. A decision on how to move forward will be rigorously discussed at the next CoPOut meeting, to be held this summer.

Respectfully submitted,
Joseph H. Friedman, MD
April Fool's ❖

Author

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

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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.

By the Sweat of Your Brow

STANLEY M. ARONSON, MD
smamd@cox.net

English, more than any other language, provides its users with an abundance of synonyms, euphemisms and paraphrases ideally suited for the many socioeconomic stations and interactions in life. For example, the word, sweat, defines the physiologic excretion of fluids that accumulate particularly on the skin of those who labor. The word has an earthy, utilitarian quality and fits congenially in street conversation.

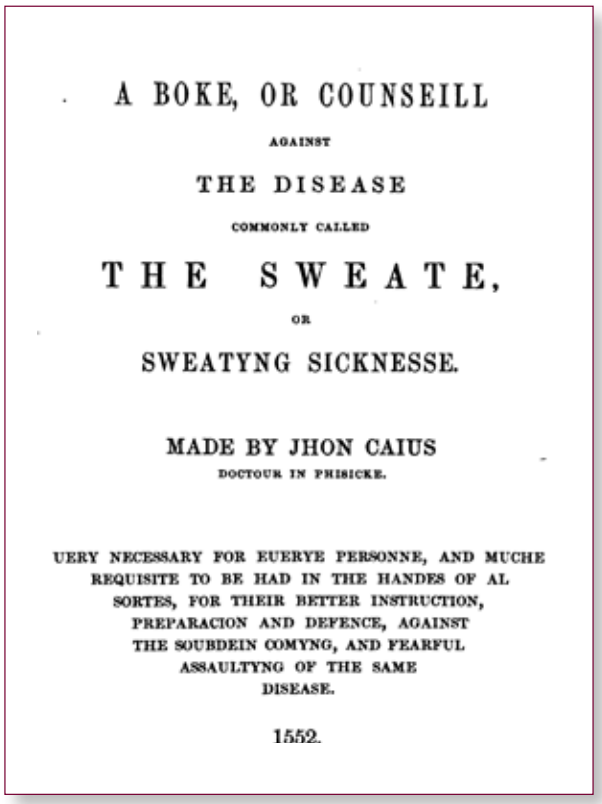
If, however, the subject of sweat arises in the course of an afternoon tea at the local parish house, it is likely that the synonym, perspiration, will be employed. And further, if a patient at the neighborhood clinic might exhibit an unexplained volume of perspiration, the young attending physician, proud of his ample vocabulary, might note in the chart: "The patient exhibits excessive diurnal diaphoresis of undetermined etiology."

There is a certain neatness to this much like owning an ample wardrobe that meets the needs of a variety of climates. It is comforting to have a menu of words suitable for a variety of purposes, whether one's avowed mission is social correctness, clarity or intentional ambiguity.

Certainly sweating blood sounds more intense, more like an expletive than perspiring blood. And would the embattled British in 1940 have responded so readily to a demand from Churchill, if he had asked for their "vascular fluid, labor, lachrymal excretion and perspiration" instead of "blood, toil, tears and sweat"?

The island called Britain has been invaded repeatedly over the many centuries, each aggressor adding its alien language and customs to the local ethos. The Norman invasion of the 11th Century added French to the British dialogue – but not uniformly so. French, the language of the invaders, became the vocabulary of the newly-established administrators, judicial courts and clergy, while the mass of peasantry continued to use their German-based Anglo-Saxon tongue. And so, at least two hierarchies of words came into use: A German-based kitchen and market-based tongue: words that were blunt, monosyllabic, less nuanced and sometimes quite vulgar. This earthy vocabulary contrasted with the Latin-based French which was eminently suited for such administrative tasks as judicial decisions, legal contracts and state documents. Physicians, on the other hand, were reluctant to abandon the moribund languages of Greek and Latin,

Indeed, in the first epidemic, the lord mayor, the chief sheriff, six London aldermen and the Prince of Wales were mortally afflicted.



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1552.

Page from a vintage book written at the time of the appearance of the English Sweating Sickness in Great Britain.

requiring, until the 16th Century, that their students be conversant in both.

And so through historic circumstance, the English language was endowed with a richly stratified vocabulary derived from many sources; the initially separate streams of words intermingling over the centuries to form a panoramic language allowing subtly varied ways of expressing ideas.

In 15th-Century England, sweating evolved into more than an unaesthetic event. A mysterious and highly virulent illness overtook much of the nation. Shortly after the Battle of Bosworth Field, on August 22,1485, a rapidly fatal febrile disorder killed thousands, particularly in London. The illness was characterized by intense sweating (hyperhidrosis), violent seizures, headache and terminal delirium. And in contrast to most epidemic pestilences, this new disorder preferentially affected the wealthier adults rather than the impoverished children. Indeed, in the first epidemic, the lord mayor, the chief sheriff, six London aldermen and the Prince of Wales were mortally afflicted. For want of a better name the illness was called the English Sweating Sickness (and in Latin, *sudor anglicus*).

The sweating sickness returned to England in the early summers of 1502, 1507, 1517 and 1528. By 1492 it had spread to Ireland (then called *plaigh allais*) and the European mainland, principally affecting the Scandinavian and Baltic nations. The mysterious sweating disease then subsided in the mid-16th Century never to emerge again. Centuries later, Oscar Wilde made metaphoric reference to the disorder:

And the wild regrets,
and the bloody sweats,
None knew so well as I.
For he who lives more lives that one
More deaths than one must die.

And the causation of this essentially English disease? Scientists are still sweating over it. ❖

Author

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

Disclosures

The author has no financial interests to disclose.

The Kent Hospital Wound Recovery and Hyperbaric Medicine Center: A Brief Overview, 1998–2013

LISA J. GOULD, MD, PhD; CATHERINE DECIANTIS, RN, CHRN; RONALD P. ZINNO, MD; GEORGE A. PERDRIZET, MD, PhD

ABSTRACT

A brief description of the Wound Recovery and Hyperbaric Medicine Center, now in its second decade of service, will inform the general medical community of this valuable asset.

Demand for wound care services is predicted to grow steadily over the next several decades. Kent Hospital's vision for wound care is embodied in its thriving Wound Recovery and Hyperbaric Medicine Center. New cost-effective wound healing therapies must be developed and evidence-based practices established. New physicians and support staff must be trained. Only through a blending of high quality clinical care with research and education will these objectives be achieved and future successes in the management of patients and their wounds be made possible.

KEYWORDS: Chronic wound care, hyperbaric medicine, diabetic foot ulcer, radiation tissue injury, decompression illness, Undersea and Hyperbaric Medicine Society

HISTORICAL

The Kent Hospital Wound Recovery Center (KHWRC), established by Dr. Robert Baute (President 1995–2006), opened July 30, 1998. Dr. Baute recognized the need to develop a program that could meet the growing demand for wound care services. Diabetes, venous, arterial, and autoimmune diseases, necrotizing infections, and recalcitrant healing in previously radiated tissue of cancer survivors is a partial list of chronic wounds for which the established systems of medical care were ill prepared to manage.

Historically wound care practice has been driven by the nursing profession, out of a combination of need and as a natural extension from that profession's responsibility for skin care. With the growing incidence of chronic wounds and new regulatory oversight focused on pressure ulcers, physicians have become more proactive. Comprehensive wound care programs began to flourish, as did the knowledge base related to wound healing and care. The average physician is unprepared to manage chronic wounds and cannot devote the necessary time and effort required in the management of these patients. Wound centers add value to the institutions and communities in which they serve.

As the field has expanded, the science of chronic wound care has also grown. The increased utilization of hyperbaric oxygen therapy (HBOT) is one example of this new growth. Approximately 10-15% of patients presenting to wound care centers will qualify for HBOT. Oxygen deficiency is a critical component of many wound types for which HBOT may provide the cure or substantially boost other healing interventions. Under the direction of Dr. Stephen Cummings, Kent Hospital acquired three hyperbaric chambers in March 2002, prompting a name change to the Kent Wound Recovery and Hyperbaric Medicine Center (KWRHMC) (**Figure 1**). The KWRHMC quickly took on a life of its own, extending treatment to include emergent and critical care therapies. Kent Hospital made a decision to offer HBOT services on a 24/7 basis and treat emergencies such as carbon monoxide poisoning and diving injuries. Board certification of physicians became a standard and programs in fellowship training and research were established.

Figure 1. Three single-person (monoplace) chambers in use.

KENT HOSPITAL

THE PRESENT

Today KWRHMC performs over 8,000 wound care treatments per year (**Figure 2**). The KWRHMC has achieved Undersea and Hyperbaric Medical Society (UHMS) accreditation *with distinction* and is one of only two programs in the northeast region that provide 24/7 critical care therapy. The KWRHMC provides over 2,000 hyperbaric treatments per year primarily to treat diabetic foot ulcers and radiation-related tissue injuries while offering 24/7 access to manage emergent conditions such as carbon monoxide poisoning, necrotizing fasciitis and compromised myocutaneous flaps (**Figure 2**). The hyperbaric unit is staffed by 4 physicians, 4 registered nurses (RNs), 1 respiratory therapist (RT), and 1 certified hyperbaric technologist (CHT).

Current Indications

The KWRHMC treats all of the labeled indications recognized by UHMS and Centers for Medicare and Medicaid Services (CMS). Fifteen diagnoses are recognized as valid indications for HBOT (**Table 1**). The list appears to be a grouping of unrelated medical diagnoses, reflecting the diverse effects HBOT has been shown to have on tissues. It is often stated there is little or no evidence for the use of HBOT in medical care. The evidence is listed in **Table 1**.

Hyperbaric oxygen therapy is defined as the exposure of the entire patient (not just a limb or digit), within an enclosed, rigid chamber that contains 100% oxygen at greater than 1 atmosphere pressure absolute (1 ATA). For most diagnoses, therapeutic pressures range from 2.0 to 3.0 ATA. Typical time spent inside the chamber is 90-120 minutes per treatment. Prior to initiating HBOT, all patients receive a comprehensive medical evaluation by a certified physician. During this assessment, appropriateness of therapy is confirmed and contra-indications excluded (**Table 2**). Risk-benefit ratio is determined for each individual. A comprehensive informed consent process is performed to fully educate the patient about expected benefits and potential adverse effects of HBOT. It should be emphasized that *topical* oxygen therapy is not *hyperbaric* and is not recognized by UHMS or CMS as an effective therapy.

Figure 2.

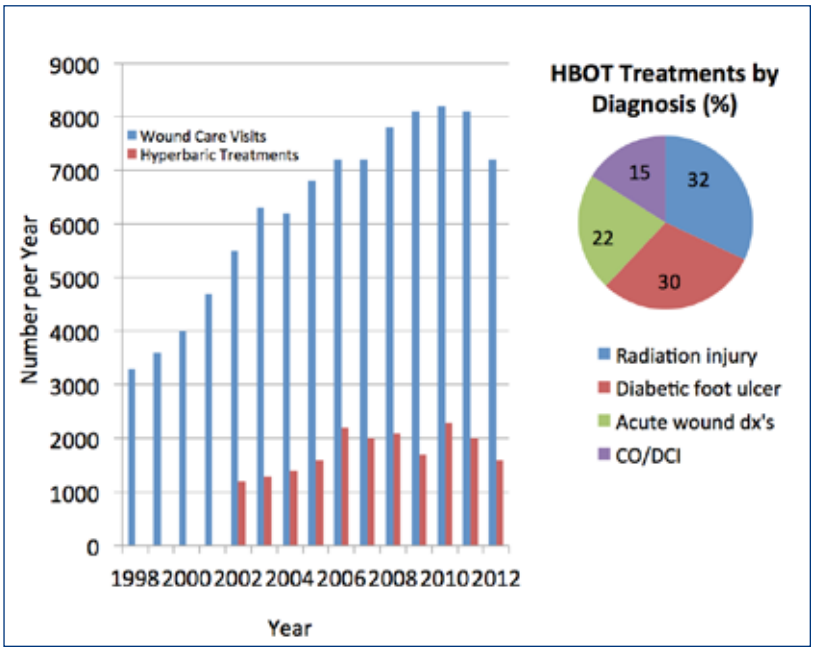

Table 1. UHMS approved diagnoses for HBOT.[4]

Diagnosis	Level of Evidence	Class of Recommendation	Citation
Arterial insufficiencies*	A	I	5,6
Air embolism	C	I	7
Refractory osteomyelitis	B	IIa	8
Compromised grafts/tissue flaps	C	IIb	9
Crush Injury, acute traumatic ischemia	A	IIa	10
Decompression illness	C	I	11
Delayed radiation tissue Injury-ORN and soft tissue radionecrosis	A	I	12,13,14,15
Diabetic foot ulcer	A	I	16,17
Idiopathic sudden sensorineural hearing loss	A	IIa	18
Severe anemia	C	IIb	19
Severe carbon monoxide poisoning	A	IIa	20
Severe soft-tissue infections-Clostridial and other necrotizing infections	B	IIa/b	21,22
Acute thermal burn	C	IIb	23
CNS abscess	C	IIb	24

According to Methodology Manual and Policies from the ACCF/AHA Task Force on Practice Guidelines 2010. Briefly, Level of Evidence: A – randomized controlled trials, meta-analysis; B – case-control study, clinical series; C – case reports, standard of care, expert consensus and laboratory studies. Class of Recommendation: I – is recommended; IIa – is reasonable; IIb – may be considered; III – not beneficial or may be harmful.[25]
*Includes acute central retinal artery occlusion, acute arterial embolism or thrombosis and selected problem wounds.

Table 2. Contraindications to HBOT

Absolute
Current or recent bleomycin therapy
Untreated pneumothorax
Relative
Acute upper respiratory tract infection/sinusitis
Adriamycin-related cardiotoxicity
Bullous lung disease
ESRD – if volume overloaded
Fever
History of spontaneous pneumothorax
Need for supplemental oxygen therapy (FiO_2 > 50%)
Remote bleomycin therapy

Table 3. Risks associated with HBOT

Condition	Frequency	Severity**
Otic barotrauma	40-60%	mild
Myopia	20-30%	mild
Confinement Anxiety	10-20%	mild
Seizure-CNS oxygen toxicity*	0.01-0.02%	severe
Pulmonary barotrauma	Essentially nil	NA
Pulmonary oxygen toxicity	Essentially nil	NA
Fire	Essentially nil	severe

* Incidence is 10-fold less than that reported for some antibiotic and antidepressant medical therapies.

** Definitions are from the January 2007 OHRP *Guidance on Reviewing and Reporting Unanticipated Problems Involving Risks to Subjects or Others and Adverse Events*, OHRP Guidance, http://www.hhs.gov/ohrp/policy/advevntguid.html.

Dive Medicine

The KWRHMC provides regional support to the diving community. The program is a member of the Diver's Alert Network (DAN, Duke University, Durham, NC), which is an international organization that provides information and therapy to divers. The KWRHMC serves the region's recreational SCUBA, civil service, research and commercial dive teams. The medical support for divers ranges from performing fitness-to-dive evaluations to the management of critically ill diving accident victims. Breathing compressed air (78% nitrogen) while diving quickly places the individual at risk. Most cases of decompression illness ("the bends") are mild; however, the only effective treatment is recompression in a HBO chamber. Comprehensive evaluation of the diver is essential prior to their entry into the hyperbaric chamber. The KWRHMC evaluates 3-6 diving accidents each year, of which one or two require treatment.

Risks

The adverse events associated with HBOT are well described in the hyperbaric medical literature. In short, the potential risks associated with HBOT are minimal in both their frequency and severity (**Table 3**.) A seizure, due to CNS oxygen toxicity (Paul Bert effect), is the only serious adverse event that a patient may experience during HBOT (1 in 5-10,000 treatments). Implications for the patient are relatively minor as the seizure abates by discontinuing the oxygen therapy and no short- or long-term disability is seen.

HBOT chambers meet very exacting manufacturing standards coupled to a rigorous system of inspection and safety as regulated by the guidelines from the American Society of Mechanical Engineers' Pressure Vessel for Human Occupancy (ASME-PVHO). The National Fire Prevention Association defines the safety guidelines as they relate to hyperbaric chambers within medical facilities, (NFPA-99, Chapter 14 "Hyperbaric Facilities"). HBOT facilities are required to have a certified Safety Director, who is a Certified Hyperbaric Technologist (CHT) and has obtained additional training to perform the role as Safety Director.

Registered Nurses and Certified Hyperbaric Technologists

Nursing Standards for care during HBOT have been established by the Baromedical Nursing Association. Hyperbaric staff nurses obtain advanced training in hyperbaric nursing and become Certified Hyperbaric Registered Nurse (CHRN). The hyperbaric nurse is responsible for the initial and daily assessment and education of the patient. The nurse identifies and addresses HBOT-specific barriers to treatment to ensure comfortable and safe treatment and is present at all times during the patient's treatment. The nurse's primary goal is to be fully informed of the patient's current status and ensure the highest level of safety possible. Close communication with the supervising technologists and physicians allows for a collaborative practice. All nursing staff are required to be ACLS-certified to support the 24/7 critical care activity.

Hyperbaric technologists represent a key component to the safe and efficient daily delivery of HBOT. Technologists typically have a prior background in a healthcare-related field such as emergency medical technician or respiratory therapist. These individuals must obtain formal didactic training and practical experience before being qualified to take a certifying examination administered by The National Board of Diving and Hyperbaric Medical Technology. The technologist serves an integral role as a member of the hyperbaric team and provides patient treatments. The technologist is responsible for the safe operation and daily maintenance of the hyperbaric chamber. A technologist or nurse is always present during patient treatments to provide monitoring and support. The patient-to-staff ratio is always 2:1.

Status of Graduate Medical Education in Hyperbaric Medicine

Currently, the teaching of wound care in medical schools and residencies is paltry at best, focusing primarily on acute wound healing. Presently there are no ACGME-accredited wound care fellowships nor is there board certification; however, both are available for hyperbaric medicine.

Board certification in Undersea and Hyperbaric Medicine (UHM) is co-sponsored by the boards of Emergency Medicine and Preventive Medicine and recognized as a subspecialty by the American Board of Medical Specialties. There are approximately 12 fellowship training programs in the US. Kent Hospital has the only UHM fellowship in the US supported by the American Osteopathic Association. Board certification requires holding an active board certification in a primary discipline, such as medicine or surgery, plus completion of a one-year approved fellowship and successful board examination.

Kent Hospital is a major teaching affiliate of the University of New England College of Osteopathic Medicine (UNECOM) with residencies in emergency medicine, family medicine and internal medicine. The Kent Hospital Osteopathic Fellowship in UHM was established in 2011. The one-year fellowship combines the theory and practice of diving and hyperbaric medicine and emphasizes research, teaching and evidence-based medical practice. Fellows are required to successfully complete a 40-hour National Oceanic and Atmospheric Administration (NOAA)-sponsored course in dive medicine and spend several weeks training at an offsite, multiplace chamber facility. Fellows manage a wide array of complex wounds and become proficient in chronic wound care. Fellows also engage in independent research and are encouraged to present and publish their findings. Due to Kent Hospital's close ties with UNECOM, the fellows have teaching responsibilities and interact directly with UNECOM residents in family practice and internal medicine. Brown University family medicine and podiatry residents also rotate at the KWRHMC during their surgical clerkship, where a minimum of 24 residents per year learn the basics of wound care and hyperbaric medicine.

Lastly, KWRHMC staff and fellows provide educational outreach programs to the community that focus on dive medicine, diabetes care and enterostomal support. As the demand for wound care intensifies, the need has never been greater to prepare future doctors for this mission. This will only be achieved through programs that can blend clinical care with research and education.

The Future – What Research is Telling Us About HBOT

The application of HBOT to human disease was initially predicated on the reversal of tissue hypoxia. Since that time an understanding of the molecular and cellular effects of HBOT is emerging, including recognition that gene-expression changes are initiated during HBOT and continue beyond the patient's brief stay within the chamber. One of us (LG) has recently reported HBOT-induced alterations in tissue biochemistry that supports the favorable wound healing responses seen clinically.[1] Our ongoing collaborative investigations with University of Connecticut (Storrs, CT) scientists have demonstrated the remarkable effect HBOT can have on the gene expression and function of human microvascular endothelial cells. Following a single 60-minute exposure of human cells to HBOT, over 8,000 genes alter their baseline expression to increase cell proliferation and cytoprotection.[2] Basic science studies in wound healing have recently recognized the important role being played by bone marrow-derived stem cells. These pluripotent cells appear to be defective in diabetic patients and may contribute to poor wound healing responses. HBOT stimulates the mobilization and proliferation of endothelial progenitor cells in both diabetic and non-diabetic patients.[3] This stem-cell effect is receiving significant scientific attention and will likely extend the applications of HBOT well beyond its current state.

SUMMARY

Kent Wound Recovery and Hyperbaric Medicine Center is maturing. The future is bright given the growing need for cost-effective wound care services. New knowledge from the lab and clinic will improve the current standard of care and allow wounds to heal more reliably and quickly than ever before.

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References

1. Zhang Q, Gould LJ. Hyperbaric oxygen reduces matrix metalloproteinases in ischemic wounds through a redox-dependent mechanism. *J Invest Dermatol*. 2014;134(1):237-46.
2. Godman CA et al. Hyperbaric oxygen treatment induces antioxidant gene expression. *Ann. N.Y. Acad. Sci*. 2010;1197:178-83.
3. Thom SR. Stem cell mobilization by hyperbaric oxygen. *Am J Physiol Heart Circ Physiol*. 2006;(4):H1378-86.
4. Gesell LB. Chairman and editor. Hyperbaric Oxygen 2008: Indications and Results: The Hyperbaric Oxygen Therapy Committee Report. 12th edition, Kensington, MD: Undersea and Hyperbaric Medical Society, 2008.
5. Warriner RA, Hopf HW. The effect of hyperbaric oxygen in the enhancement of healing in selected problem wounds. *UHM*. 2012;39(5):923-35.
6. Murphy-Lavoie H, et al. Central retinal artery occlusion treated with oxygen: A literature review and treatment algorithm. *UHM*. 2012;39:943-53.
7. Muth C, Shank E. Primary Care: Gas Embolism. *NEJM*. 2000;342:476-482.
8. Hart B. Osteomyelitis (refractory) with literature review supplement. *UHM*. 2013;39(3):753-775.
9. Friedman, HIF et al. An evidence-based appraisal of the use of hyperbaric oxygen on flaps and grafts. *Plast. Reconstr. Surg.* 2006;117(Suppl.):175s-190s.

10. Strauss MD. The effect of hyperbaric oxygen in crush injuries and skeletal muscle-compartment syndromes. *UHM*. 2012;39(4):847-55.
11. Bennett MH, et al. Recompression and adjunctive therapy for decompression illness. Cochrane Database Syst. Rev. 2012;5:CD005277.
12. Marx RE, et al. Prevention of osteoradionecrosis: a randomized prospective clinical trial of hyperbaric oxygen versus penicillin. *J Am Dent Assoc*. 1985;111(1):49-54.
13. Clarke RE, et al. Hyperbaric oxygen treatment of chronic refractory radiation proctitis: a randomized and controlled double-blind crossover trial with long-term follow-up. *Int J Radiat Oncol Biol Phys. 2008;72(1):134-143.*
14. Feldmeier JJ. Hyperbaric oxygen therapy and delayed radiation injuries (soft tissue and bony necrosis): 2012 update. *UHM*. 2012;39(6):1121-39.
15. Corman JM, et al. Treatment of radiation induced hemorrhagic cystitis with hyperbaric oxygen. *J Urol.* 2003;169(6):2200-2.
16. Faglia E, et al. Adjunctive systemic hyperbaric oxygen therapy in the treatment of diabetic foot ulcer. A randomized study. *Diabetes Care*. 1996;19:1338-43.
17. Löndahl M, et al. Hyperbaric oxygen therapy facilitates healing of chronic foot ulcers in patients with diabetes. *Diabetes Care.* 2010;33(5):998-1003 .
18. Murphy-Lavoie H, et al. Hyperbaric oxygen therapy for idiopathic sudden sensorineural hearing loss. *UHM*. 2012;39(3):777-92.
19. Van Meter KW. The effect of hyperbaric oxygen on severe anemia. *UHM*. 2012;39(5):937-42.
20. Weaver LK, et al. Hyperbaric oxygen for acute carbon monoxide poisoning. *NEJM*. 2002; 347:(14):1057-67.
21. Jacoby I. Necrotizing soft tissue infections. *UHM*. 2012;39(3):739-52
22. Clark LA, Moon R. Hyperbaric oxygen in the treatment of life-threatening soft-tissue infections. *Resp Care Clinics of North America*.1999;5:203-219.
23. Cianci P, et al. Adjunctive hyperbaric oxygen therapy in the treatment of thermal burns. *UHM.* 2013;40(1):89-108.
24. Barnes RC. Intra-cranial abscess. *UHM*. 2012;39(3):727-730.
25. http://my.americanheart.org/professional/StatementsGuidelines/PoliciesDevelopment/Development/Methodologies-and-Policies-from-the-ACCAHA-Task-Force-on-Practice-Guidelines_UCM_320470

Authors

George A. Perdrizet, MD, PhD, FACS, is Medical Director of The Kent Hospital Wound Recovery and Hyperbaric Medicine Center; Adjunct Professor of Molecular and Cell Biology, University of Connecticut, Storrs, CT; Past President, Northeast Chapter of the Undersea and Hyperbaric Medicine Society.

Lisa J. Gould, MD, PhD, FACS, is Associate Director, The Kent Hospital Wound Recovery and Hyperbaric Medicine Center; Affiliate Professor of Molecular Pharmacology and Physiology, University of South Florida, and President-elect of the Wound Healing Society.

Catherine DeCiantis, RN, BS, CWCN, CHRN, is Clinical Manager of The Kent Hospital Wound Recovery and Hyperbaric Medicine Center.

Ronald P. Zinno, MD, is Staff Physician, The Kent Hospital Wound Recovery and Hyperbaric Medicine Center; Active member of UHMS and AAWC, and is Board Certified by the American Board of Plastic Surgery.

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Correspondence

George A. Perdrizet, MD, PhD, FACS
Medical Director
Wound Recovery and Hyperbaric Medicine Center
Kent Hospital
15 Health Lane, Building 2-D
Warwick, RI 02886
401-736-4646
Fax 401-736-4248
gperdrizet@kentri.org

Successes and Challenges to Implementing an Early Childhood Supplemental Feeding Program in Rural Honduras: A Qualitative Study

HARAN MENNILLO; FADYA EL RAYESS, MD, MPH

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ABSTRACT

BACKGROUND: Malnutrition is a major cause of childhood illness, stunted growth and death worldwide. A supplemental nutrition program for young children was implemented in Guachipilincito, Honduras. This study explores early successes and challenges to implementing this program.

METHODS: We conducted a qualitative, semi-structured, key informant interview study in 2012. Two researchers analyzed interview transcripts using the immersion/crystallization method of qualitative analysis.

RESULTS: The program evolved from addressing macronutrient deficiency in 2010, to targeting micronutrient deficiency. Successes include: consistent food distribution, positive community feedback and establishment of a Honduran community oversight committee. Challenges include: tracking growth data, sharing of food among family members, and long-term sustainability. Next steps include: obtaining stable funding, utilizing local food suppliers, and increasing crop diversity. Participants identified cultural and economic factors contributing to challenges with these steps.

CONCLUSION: While the feeding program is having successes, it still faces many challenges. Additional interviews with Honduran-based staff, community leaders and program recipients may identify the best ways to address these challenges.

KEYWORDS: Childhood malnutrition, global health, supplemental feeding, micronutrient deficiency.

Brown/Shoulder to Shoulder Guachipilincito clinic opening in 2011.

INTRODUCTION

Malnutrition is a major cause of childhood illness, stunted growth, and death worldwide.[1,2] When people think of malnutrition, they typically think of macronutrient or protein-energy malnutrition, which is responsible for wasting in almost 10% of children under 5 worldwide.[1] However, micronutrient deficiency (vitamin and mineral malnutrition) also plays a significant role in childhood health, with over two billion people worldwide suffering from iron, vitamin A, and iodine deficiencies.[3,4] These micronutrient deficiencies account for 7.3% of the global burden of disease and almost 3.5 million preventable deaths annually of children under the age of 5, mostly in underdeveloped countries.[3,5] Health complications include stunting, wasting, greater susceptibility to both infectious and non-communicable disease, and interference with brain development.[2] These deficiencies are especially problematic during periods of accelerated growth, such as pregnancy, early childhood (<5 year olds) and adolescense.[2,6]

In developing countries, supplementary feeding programs, iron and vitamin supplementation, and fortifying local foods are important steps to lowering rates of childhood illness and death.[7,8] The World Health Organization has developed guidelines that promotes starting supplementary feeding programs for children older than 6 months and for mothers who are breast feeding.[1,2] Encouraging exclusive breastfeeding is another way to decrease malnutrition in infants.[7,9] Although studies have demonstrated the effectiveness of these interventions, there remain many barriers to implementing these programs in underdeveloped countries, particularly in remote, rural locations.

Honduras is a country in which many children suffer from the health effects of chronic malnutrition, and over 30% of children are stunted due to poor diet.[10] Like many other developing countries, Honduras' lack of financial resources

Children waiting in clinic.

and lack of access to a variety of foods in rural areas make addressing childhood nutrition more challenging. A countrywide, school-based feeding program for children over the age of 5 has been in place for a few years. However, poor nutrition in children under the age of 5 and in pregnant women still plays a significant role in the overall health of children, resulting in permanent health problems.[3,4]

Shoulder to Shoulder (StoS), a US-based nonprofit organization that is partnered with several academic family medicine departments, has been working in Honduras for about 20 years.[11]

StoS is also partnered with a grassroots sister organization in Honduras called Hombro a Hombro, which is a nonprofit non-governmental organization (NGO). In addition to clinic-based healthcare services in sites around the country, StoS has developed several community-based public-health programs to improve the health of the community, including nutrition, clean water, and community education programs.

Guachipilincito is a rural village of 500 people who until recently had to walk over an hour to reach the nearest health clinic in the town of Concepcion. The Brown Department of Family Medicine started a partnership with Shoulder to Shoulder to address the health needs of this community several years ago, resulting in the opening of a permanent, year round, local clinic in 2011. Many physicians, family medicine residents, medical students, college students and other professionals from Rhode Island, Brown University, The University of Rhode Island, and other parts of the country have volunteered their time to develop community health programs in Guachipilincito. In 2010 Shoulder to Shoulder started a new supplemental feeding and vitamin supplementation program for pregnant women and children under five in Guachipilincito, to complement the existing countrywide school-based feeding program. Initially this program struggled; however, it evolved and was bolstered after the opening of a new StoS permanent village health clinic in 2011.

Patients file into the clinic.

Countries worldwide have attempted to implement supplemental feeding programs, but very few programs are evaluated. This is in part because when the scope of a feeding program is expanded, monitoring and evaluation are often neglected due to financial challenges.[12] This explorative qualitative research project, conducted in 2012, aimed to evaluate the early successes and challenges to full implementation of the Shoulder to Shoulder supplemental feeding program for children under 5 in Guachipilincito, Honduras.

METHODS

Design

This is a qualitative semi-structured, individual interview study of key informants. Institutional Review Board (IRB) approval was obtained.

Setting

Guachipilincito is a remote village in Honduras with a population of about 500. Shoulder to Shoulder (StoS) is a non-profit US organization working in Honduras for 20 years partnered with a sister Honduran organization, Hombro a Hombro. StoS's efforts in Guachipilincito are supported in collaboration with the Brown Department of Family Medicine.

Participants

Eight US-based key informants, including pediatricians, internists, family physicians, medical students, and a nurse practitioner agreed to participate in this study.

Instrument

A semi-structured interview guide was developed for this study. Interviews were conducted in person or by phone in Honduras and in the USA by one researcher (HM). Interviews were audio recorded and transcribed verbatim.

Analysis

Two researchers (HM & FER) analyzed the interview transcripts for emerging themes using the immersion/crystallization method of qualitative analysis.[13]

RESULTS

Eight interviews were completed and analyzed. Major themes included evolution of the feeding program, successes of the program, and challenges to the program. Formal outcome data of the overall feeding program is pending as the childhood feeding program is still in its infancy. **Table 1** includes representative quotations from participant interviews for each of the themes described below.

Evolution of the Guachipilincito Childhood Feeding Program

In the fall of 2011, the feeding program radically changed the types of foods that were distributed from foods common in the local diet (corn, rice, beans), to other types of foods such as fortified oatmeal, eggs, and wheat. The purpose of this was to shift from addressing only macronutrient deficiencies in children, to also include micronutrient deficiencies. These changes were implemented after a StoS program-wide study, which sampled serum from participating children and identified significant micronutrient deficiencies (iron, vitamin A, selenium, etc.) in Honduran children.[11]

Successes

One success of the program is that all children under 5 and pregnant mothers who qualify are able to get the food from the program every month. While it is too early to see definitive clinical outcomes such as increase in participants' weight for height, the feeding program has been met with a lot of positive feedback from the local community. Higher levels of community engagement have included the development of a Honduran community nutrition committee that administers and monitors the program and uses Honduran health promoters to do outreach.

Challenges

Challenges include problems with recording data, as the growth charts that the program had been using for the last few years were lost. This makes it difficult to properly analyze whether or not the children are benefiting from the food

Table 1. Evolution, Successes and Challenges

Theme	Subtheme	Example Quotation
Evolution of the program	Diversify diet	"We're not going to give the children those micronutrients just by giving them more rice and beans. We needed to diversify their diet. And that is why we changed it to eggs, oatmeal…milk."
Successes	Monthly food distributed to all children < 5 years.	"On a monthly basis the food stuffs are provided to the recipients…it's a two-day process."
	Program is well received	"Had a meeting with the community…they felt it was an urgent need with their children being underweight…it was something the community very much wanted." "In general, that it's gone over well."
	Community is taking ownership of the program	"A nutrition committee…provides the program and monitors the program. It is …volunteers from the community members, people who are being served by the program and the health promoter in the area."
Challenges	Growth data tracking	"When you came the first time in 2011 all the growth curves from 2010 were gone. Like no one could find them. So that's really frustrating for me, like more than any social or economic challenge… so when we came back next year we had to start growth curves all over again."
	Sharing of food	"So many difficulties to try to figure out culturally what's the right way of doing a program such as this." "…and you want to focus on these children who are under the age of 5, but there also happens to be a 6-year-old, and 8-year-old, a 10-year-old, and a 12-year-old in the house. What's a mother to do?" "Also may be cultural issues as well…who gets the food first."
	Sustainability	"Funding…major work of the board of the Brown University affiliate." "…It just doesn't seem sustainable long-term to have all the resources be coming from outside of the community…it will never work unless…(the community is) excited about changing some of the ways they farm…"

The clinic in rural Guachipilincito, Honduras.

that they are given. Since the fall of 2011, when the Brown Department of Family Medicine-sponsored Guachipilincito medical clinic opened, a new tracking system has been put in place that is recording the data in several places and linking it to participants' health records.

Another concern is that the food distributed by the childhood feeding program is being shared among family members of the recipients of the program other than the pregnant mother or young child. This sharing of food is troubling as it means that the food is not going to the intended recipient, and as a result the recipient's micronutrient deficiency is not being treated sufficiently. For the most part this is due to poverty, resulting in the need for wage-earning family members to have something to eat so they can go out and work.

In order to prevent the local population from becoming dependent on the food from the program, a system has been set up by the local community where, in exchange for the monthly food, mothers come to the local clinic and help to clean it for about an hour. Mothers who do not wish to pay with service can choose to pay a small fee in exchange for the food instead. This is a positive development as it demonstrates that the community is becoming involved in the implementation of this program. There is a resulting ethical dilemma however. If a mother won't or can't do either of these things, should she and her children still get the food from the program?

A final challenge to the childhood feeding program is that it is currently funded solely through fundraisers in the United States. Ways to improve sustainability include producing more of the food locally. For example, all of the eggs distributed by the program are now produced by local farmers. Another idea has been to diversify the crops grown locally. However, local beliefs about the uses of certain plants can sometimes pose a barrier to change. For example, health promoters suggested to the local community that they cultivate a spinach-like crop native to the area (which contains many micronutrients missing from the local diet). This proved problematic, as this plant is considered by the local people to be an aphrodisiac, which leads to a reluctance to openly farm this plant.

DISCUSSION

Preliminary results show that the Guachipilincito supplemental nutrition program is having several successes including accessibility and distribution of food, acceptance from the local community and engagement of community members in the running of the program. However, it still faces many significant challenges such as uncertainty regarding food consumption by the intended recipient, data tracking, and sustainability.

Numerous challenges exist to establishing supplemental feeding programs in developing countries. Some of these challenges are commonly encountered, while others are unique to the particular country or location. Economic issues and sustainability are ubiquitous challenges.[4,14] Distribution and cultural challenges, however, are more variable. For example, an evaluation of a feeding program in Mali identified food distribution challenges such as delays in delivery, that were very different from the challenges identified in our study.[14] The cultural issue seen in Guachipilincito regarding the acceptability of eating a very nutritious and readily available leafy vegetable is likely unique to this particular community.

A limitation of this preliminary process study is that only US-based key informants were interviewed. For a broader understanding of this early childhood supplementary feeding program, interviews should also be conducted with Honduran-based staff, recipients of the program, and community leaders.

Next steps to better understand the unique needs, challenges and solutions to implementing the supplemental feeding program in Guachipilencito include conducting the above mentioned additional key informant interviews. Quantitative analysis of growth data as it becomes available will also be important. In order to move towards long-term sustainability for this program and reduce recipient dependence on this particular source of food, multiple solutions need to be explored. Possible strategies include identifying a more stable source of funding, obtaining food from local suppliers, and increasing crop diversity. Several authors advocate the development of home kitchen gardens to provide a sustainable source of nutritious food in developing countries.[15,16] It is unclear at this time whether this will be a feasible solution in Guachipilincito.

Childhood malnutrition is a serious problem that needs

to be addressed worldwide. Supplemental feeding programs are an effective way of combating childhood malnutrition; however, implementation is often challenging. This qualitative process study of the program in Guachipilincito demonstrates that creative solutions are needed to address the unique challenges faced by Guachipilincito and other rural villages in developing countries.

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References

1. Powell C. Nutrition. In: Markle WH, Fisher MA, Smego RA (ed). *Understanding Global Health*. McGraw-Hill Co. New York 2007.
2. Caballero B. Global Patterns of Child Health: The Role of Nutrition. *Ann NutrMetab*. 2002;46(suppl 1):3-7.
3. Ahmed T, Hossain M, Sanin KI. Global burden of maternal and child undernutrition and micronutrient deficiencies. *Ann Nutr Metab*. 2012;61(suppl 1):8-17.
4. Bhutta ZA, Salam RA, Das JK. Meeting the challenges of micronutrient malnutrition in the developing world. *British Medical Bulletin.* 2013;106:7-17.
5. de Pee S, et al. How to ensure nutrition security in the global economic crisis to protect and enhance development of young children and our common future. *The Journal of Nutrition*. 2010;140:138S-142S.
6. Bhutta ZA, et al. What works? Interventions for maternal and child undernutrition and survival. *Lancet*. 2008;371:417-40.
7. Huffman SL, Schofield D. Enhancing young child nutrition and development in developing countries. *Maternal and Child Nutrition*. 2013;9(suppl 1):6-11.
8. Bhutta ZA, et al. A comparative evaluation of multiple micronutrient and iron-folic acid supplementation during pregnancy in Pakistan: Impact on pregnancy outcomes. *Food and Nutrition Bulletin*. 2009;30(4)496-505.
9. Yang W, et al. Anemia, malnutrition and their correlations with socio-demographic characteristics and feeding practices among infants aged 0-18 months in rural areas of Shaanxi province in northwestern China: a cross-sectional study. *BMC Public Health*. 2012;12:1127.
10. Honduras Health Profile WHO website. http://www.who.int/gho/countries/hnd.pdf Accessed 1/11/14.
11. Shoulder to Shoulder website. http://shouldertoshoulder.org/ Accessed 1/11/14.
12. Gelli A, Espejo F. School feeding, moving from practice to policy: reflections on building sustainable monitoring and evaluation systems. *Public Health Nutrition*. 2012; 16(6):995-999.
13. Borkan J. Immersion/Crystallization. In: *Doing Qualitative Research*, second edition. Thousand Oaks, CA: Sage Publications, Inc. 1999:179-94.
14. Masset E, Gelli A. Improving community development by linking agriculture, nutrition and education: design of a randomized trial of "home-grown" school feeding in Mali. *Trials*. 2013;14:55.
15. Faber M, Phungula MAS, Venter SL, Dhansay MA, Benad*é* AJS. Home gardens focusing on the production of yellow and dark-green leafy vegetables increase the serum retinol concentrations of 2-5-y-old children in South Africa. *Am J Cln Nutr*. 2002;76: 1048-54.
16. Jones KM, Specio SE, Shrestha P, Brown KH, Allen LH. Nutrition knowledge and practices, and consumption of vitamin A-rich plants by rural Nepali participants and nonparticipants in a kitchen-garden program. *Food and Nutrition Bulletin*. 2005;26(2): 198-208.

Authors

Haran A. Mennillo is a student at The University of Rhode Island.

Fadya El Rayess, MD, MPH, is Assistant Professor (Clinical), Director of Global Health and Associate Residency Director in the Department of Family Medicine, Alpert Medical School of Brown University.

Correspondence

Haran Mennillo
60 Governor Bradford Drive
Barrington, RI 02806
401-595-3214
haranmennillo@gmail.com

Post-Traumatic Raynaud's Phenomenon Following Volar Plate Injury

YOSEF G. CHODAKIEWITZ, BA, MD'15; ALAN H. DANIELS, MD; ROBIN N. KAMAL, MD; ARNOLD-PETER C. WEISS, MD

ABSTRACT

Post-traumatic Raynaud's phenomenon following non-penetrating or non-repetitive injury is rare. We report a case of Raynaud's phenomenon occurring in a single digit 3 months following volar plate avulsion injury. Daily episodes of painless pallor of the digit occurred for 1 month upon any exposure to cold, resolving with warm water therapy. Symptoms resolved after the initiation of hand therapy, splinting, and range-of- motion exercises.

KEYWORDS: Raynaud's phenomenon, Volar plate injury, Raynaud's syndrome

INTRODUCTION

Raynaud's phenomenon is a condition in which a digit experiences episodic vasospasm, producing sharply demarcated pallor, coolness, paresthesias, and numbness in the digit distal to the affected vessels. The episodes are typically induced by exposure to cold temperatures and may represent an exaggerated cold response in the affected digit. Diagnosis of Raynaud's relies solely on physical exam and history.

Raynaud's phenomenon involves an increased vascular contractile response to sudden cooling and alpha-2-adrenergic agonists, which is particularly pronounced in the acral body parts because of their major thermoregulatory requirements.[1] The condition may be idiopathic or secondary to an underlying pathology. In idiopathic Raynaud's, also called primary Raynaud's phenomenon, patients are typically female, in their second or third decade of life.[2] When an underlying disorder is identified as the cause of Raynaud's phenomenon it is called secondary Raynaud's phenomenon.

The most common causes of secondary Raynaud's phenomenon are systemic rheumatic disorders, such as scleroderma or systemic lupus erythematosus.[2,3] Raynaud's phenomenon secondary to scleroderma, which is the most studied presentation, involves a vasculopathy consisting of diffuse intimal fibrosis, activation of smooth muscle cells, and endothelial cell perturbations.[4] Endothelial cell autoantibodies have been found in high frequency in scleroderma patients,[5] and it has been postulated that activation or apoptosis of endothelial cells due to action of these antibodies could lead to the release of vasoconstrictors and decreased production of vasodilators.[4]

Figure 1. Clinical photograph: index finger Raynaud's phenomenon with sharp demarcated pallor at level of volar plate injury.

Secondary Raynaud's phenomenon also may occur after trauma, such as after digital replantation[6] or after prolonged repetitive vibration trauma, as in the Vibration White Finger (VWF) syndrome typically seen in construction workers working with vibrating power tools.[7,8] Raynaud's phenomenon secondary to these types of trauma appears to be driven by perivascular nerve damage. Loss of calcitonin-gene-related-peptide (CGRP) nerve fibers in digital cutaneous perivascular nerves has been observed in patients with VWF.[8,9] CGRP is a potent vasodilator and its loss leads to the vasoregulatory imbalance characteristic of Raynaud's phenomenon. In VWF, endothelial cells may play an additional role in further driving this misbalance, as it has been shown that oscillatory mechanical forces can induce increased expression and release of endothelin-1, a potent vasoconstrictor, from cultured endothelial cells.[10,11]

While post-traumatic Raynaud's phenomenon has been reported to occur after penetrating trauma or prolonged

vibration trauma, there are no English-language reports, to our knowledge, that describe the presentation and management of secondary Raynaud's phenomenon following an isolated blunt trauma to a digit.

CASE REPORT

A 26-year-old nonsmoking male university student presented to our office with diminished flexion and extension of the right index finger at the proximal interphalangeal joint (PIP). He reported that he "jammed" his finger three months prior to presentation while playing basketball. He also complained of recurrent transient episodes of sharply demarcated pallor and numbness just distal to the injured PIP when exposed to cold, which began abruptly 2 months following injury (**Figure 1**).

Radiographic examination of the index finger revealed an avulsion fracture fragment at the base of the volar surface of its middle phalanx consistent with a volar plate injury (**Figure 2**). Physical examination revealed soft tissue swelling about the PIP joint, and limited range of motion from 10^0 to 80^0. No skin abnormalities, other joint abnormalities, or other signs of systemic conditions were found on physical exam. The likelihood of scleroderma, SLE, or other connective tisue disease was deemed very unlikely due to lack of suggestive history or physical findings. Therefore he was diagnosed with isolated Raynaud's secondary to local blunt trauma. We recommended cold avoidance, and referred the patient for hand therapy for splinting, aggressive range-of-motion exercise, and a home stretching program. On follow-up one month later, after two hand therapy sessions and daily regimen of self-directed exercises, the patient had improving range of motion of the injured PIP from 5^0 to 95^0. He reported resolution of the episodes of Raynaud's phenomenon since the initiation of hand therapy. At one-year follow-up, the patient continued to be free of Raynaud's symptoms. Physical examination revealed resolved soft tissue swelling and normal range of motion of 0^0 to 115^0.

Figure 2. Lateral radiograph of index finger 3 months following injury revealed volar plate avulsion fracture (arrow) and 10-degree proximal interphalangeal joint contracture.

DISCUSSION

Raynaud's syndrome secondary to isolated blunt non-penetrating trauma to a finger appears to be exceedingly rare. Interestingly, the onset of symptoms in our patient had a delay of 2 months after the inciting injury, and it resolved promptly with range-of-motion exercises. In general, symptoms of Raynaud's do not resolve quickly in the majority of patients and the etiology following blunt trauma may involve non-neurogenic factors as well.

Treatment of Raynaud's syndrome using a dihydropyridine calcium-channel antagonist has been reported to be successful, depending on patient tolerability of the drug.[12-14] However, it is preferable to first try conservative measures involving simple risk-factor avoidance, such as smoking cessation and avoidance of cold-exposure in an effort to reduce attack frequency and avoid the need for pharmacological treatment. These more conservative methods are often successful, and pharmacological intervention becomes unnecessary.[15-17]

In the case of our patient, our initial therapy involved conservative non-pharmacological methods. However, in addition to recommending risk-factor avoidance, we also initiated hand therapy to improve range of motion in the patient's injured finger. The patient eventually regained full range of motion, as well as complete reduction in finger swelling, after completing the prescribed therapy regimen. Furthermore, at one year following initial presentation, the patient reported that he no longer avoids cold-exposure and was free of Raynaud's symptoms. This case illustrates the value of a trial of conservative measures before prescribing pharmacological interventions in patients who present with secondary Raynaud's syndrome from trauma.

References

1. Sunderkotter C, Riemekasten G. Pathophysiology and clinical consequences of Raynaud's phenomenon related to systemic sclerosis. *Rheumatology (Oxford).* Oct 2006;45 Suppl 3:iii33-35.
2. Block JA, Sequeira W. Raynaud's phenomenon. *Lancet.* Jun 23 2001;357(9273):2042-2048.
3. Gayraud M. Raynaud's phenomenon. *Joint Bone Spine.* Jan 2007;74(1):e1-8.
4. Grader-Beck T, Wigley FM. Raynaud's phenomenon in mixed connective tissue disease. *Rheum Dis Clin North Am.* Aug 2005;31(3):465-481, vi.
5. Sgonc R, Gruschwitz MS, Boeck G, Sepp N, Gruber J, Wick G. Endothelial cell apoptosis in systemic sclerosis is induced by antibody-dependent cell-mediated cytotoxicity via CD95. *Arthritis Rheum.* Nov 2000;43(11):2550-2562.

6. Povlsen B. Cold-induced vasospasm after finger replantation; abnormal sensory regeneration and sensitisation of cold nociceptors. *Scand J Plast Reconstr Surg Hand Surg.* Mar 1996;30(1):63-66.
7. Stoyneva Z, Lyapina M, Tzvetkov D, Vodenicharov E. Current pathophysiological views on vibration-induced Raynaud's phenomenon. *Cardiovasc Res.* Mar 2003;57(3):615-624.
8. Noel B. Pathophysiology and classification of the vibration white finger. *Int Arch Occup Environ Health.* Apr 2000;73(3):150-155.
9. Goldsmith PC, Molina FA, Bunker CB, et al. Cutaneous nerve fibre depletion in vibration white finger. *J R Soc Med.* Jul 1994;87(7):377-381.
10. Ziegler T, Bouzourene K, Harrison VJ, Brunner HR, Hayoz D. Influence of oscillatory and unidirectional flow environments on the expression of endothelin and nitric oxide synthase in cultured endothelial cells. *Arterioscl Thromb Vasc Biol.* May 1998;18(5):686-692.
11. White CR, Haidekker MA, Stevens HY, Frangos JA. Extracellular signal-regulated kinase activation and endothelin-1 production in human endothelial cells exposed to vibration. *Journal Physiol.* Mar 1 2004;555(Pt 2):565-572.
12. Lambova SN, Muller-Ladner U. New lines in therapy of Raynaud's phenomenon. *Rheumatol Int.* Feb 2009;29(4):355-363.
13. Huisstede BM, Hoogvliet P, Paulis WD, et al. Effectiveness of interventions for secondary Raynaud's phenomenon: a systematic review. *Arch Phys Med Rehabil.* Jul 2011;92(7):1166-1180.
14. Goundry B, Bell L, Langtree M, Moorthy A. Diagnosis and management of Raynaud's phenomenon. *BMJ.* 2012;344:e289.
15. Garcia-Carrasco M, Jimenez-Hernandez M, Escarcega RO, et al. Treatment of Raynaud's phenomenon. *Autoimmun Rev.* Oct 2008;8(1):62-68.
16. Bowling JC, Dowd PM. Raynaud's disease. *Lancet.* Jun 14 2003;361(9374):2078-2080.
17. Pope JE. The diagnosis and treatment of Raynaud's phenomenon: a practical approach. *Drugs.* 2007;67(4):517-525.

Authors

Yosef G. Chodakiewitz, BA, MD'15, The Warren Alpert Medical School, Brown University, Providence, RI

Alan H. Daniels, MD, Department of Orthopaedics, The Warren Alpert Medical School, Brown University, Providence, RI

Robin N. Kamal, MD, Department of Orthopaedics, The Warren Alpert Medical School, Brown University, Providence, RI

Arnold-Peter C. Weiss, MD, Department of Orthopaedics, The Warren Alpert Medical School, Brown University, Providence, RI

Correspondence

Arnold-Peter C. Weiss, MD
Professor, Department of Orthopaedics
Warren Alpert Medical School, Brown University
2 Dudley St.
Providence, RI 02905
401-457-1520
Fax 401-831-5874
apcweiss@brown.edu

Parents' Vaccine Beliefs: A Study of Experiences and Attitudes Among Parents of Children in Private Pre-Schools

CATHERINE ROGERS

ABSTRACT

Even among highly vaccinated populations such as Rhode Island (RI), there exists a vulnerability to disease outbreaks. This is the basis for requiring proof of immunization for enrollment into school. Although RI grants medical, temporary, and religious vaccination exemptions, little is known about the beliefs of RI parents who seek exemptions for their children. The purpose of this small-scale, cross-sectional, Web-based survey is to describe the vaccine behaviors and beliefs of parents of children attending private pre-school in Providence, RI.

In spite of limitations, the results provided the intended baseline assessment of the target population. While such findings should be interpreted with caution, they can be used as the foundation for future research and interventions.

KEYWORDS: Pediatrics, Vaccination, Questionnaires, Diphtheria-Tetanus-Pertussis Vaccine, Influenza Vaccines

BACKGROUND

When a critical mass of a community is immunized against a contagious disease, there is little opportunity for an outbreak.[1] However, "community immunity" is limited, especially as the proportion of unvaccinated individuals increases. Even among highly vaccinated populations, there exists a vulnerability to outbreaks of disease.[2,3,4,5] For that reason, enrollment in many educational settings is contingent upon proof of immunization. For example, public and private schools in RI require that children receive certain immunizations before attending, but with some exceptions;[6] more than 90% of RI children entering kindergarten are vaccinated.[7]

Objective

The purpose of this survey was to describe the vaccine behaviors and beliefs of parents of children attending private pre-school in Providence, RI.

METHODS

Survey Instrument

This Web-administered survey was designed to capture a moment-in-time representation of respondent characteristics that may be related to vaccine behaviors and beliefs. This mode afforded both anonymity (no information could be linked to a specific respondent) and privacy (there was no social presence of an interviewer, which has been shown to influence responses).

The questionnaire was carefully prepared based on principles related to good survey and question design.[8] After establishing basic eligibility criteria, the questionnaire covered five topic areas that progressed from the broad to the specific with the most sensitive questions appearing last: (1) eligibility; (2) relationship to the pre-schooler; (3) behaviors related to vaccines; (4) beliefs related to vaccines, including evaluation of information sources; and (5) demographic characteristics.

Participants

The target population for this survey was parents or guardians of children who attend private pre-school in Providence, RI. Several logistical factors contributed to this decision. First, this population has had a relatively recent experience with childhood vaccines and would be more likely to remember the pertinent details about their experiences and beliefs. Second, unlike public schools that require research to be approved by municipal bodies, private schools require only the approval of the headmaster or principal.

Schools that were asked to participate were listed on the Web site: www.privateschoolreview.com; those included in the analysis agreed to distribute the survey link to parents of children in pre-school and generated at least one completed survey. We restricted the sample further and excluded schools with fewer than 50 students; many of the smaller schools were skilled nursing facilities with pre-school-like components.

The survey links were distributed to the Brown/Fox Point Early Childhood Education Center, Federal Hill House Early Learning Center, French-American School of Rhode Island, The Groden Center, Inc., Montessori Children's House, Moses Brown School, Mt. Hope Child Care Center, and Providence Hebrew Day School. Follow-up communication from some schools indicated that the data collection periods ranged from five days to two weeks.

RESULTS

The sampling frame was composed of 26 schools; eight agreed to participate, and five generated at least one complete response to the survey. After excluding observations due to lack of consent (n=10), ineligibility (n=4) and incomplete surveys (n=5), 51 remained in the sample. Respondents' mean age was 37 years, with a range of 25 to 45 years. Female respondents composed 82% (n=42) of the group, and 84% (n=43) of respondents identified their race/ethnicity as White. In terms of education, 90% (n=46) reported having graduated from college, and 76% (n=39) were employed full-time when they took the survey. Most respondents (76%, n=39) earned an income of more than $75,000 per year. Twenty-six respondents were affiliated with the Brown/Fox Point Early Childhood Education Center; 11 with the Moses Brown School; 9 with the Montessori Children's House; 4 with the Providence Hebrew Day School; and 1 with the Federal Hill House Early Learning Center. (Refer to **Table 1** for more details on the respondents' characteristics.)

Most health-related decisions pertaining to selecting a doctor for the child, taking the child to appointments, and ensuring the child receives recommended care were made jointly between the respondent and his/her partner. While 71% (n=36) recalled discussing the pros and cons of vaccines with their child's health care provider, 29% (n=15) did not. In total, three respondents (6%) indicated that their child had been exempted from a vaccine. With regard to beliefs about vaccines, 94% (n=48) agreed or completely agreed that the benefits of childhood vaccinations outweigh their risks. Respondents were equally divided between agreeing or not knowing (20%, n=10) about whether too many vaccines could overwhelm a child's immune system. Six percent (n=3) agreed or completely agreed that vaccines cause autism; 16% (n=8) agreed or completely agreed that vaccines are given at too young an age; and 8% (n=4) agreed or completely agreed that it is better for children to get diseases naturally. (Refer to **Table 2** for more details on the respondents' vaccine behaviors and beliefs.)

Among those respondents who sought exemptions, all three sought exemptions from the influenza vaccine; two each from hepatitis B, rotavirus, and measles, mumps, and rubella, and varicella vaccines; and one each from pneumococcal and inactivated poliovirus vaccines.

Table 1. Respondent characteristics (N=51)

	n	%
Age		
Mean age	37	--
Gender		
Female	42	82
Male	9	18
Race/ethnicity		
White	43	84
Asian	6	12
Other	2	4
Education		
Grades 12 through GED (High school)	2	4
College 1-3 years (Some college or technical school)	2	4
College 4 years or more (College graduate)	46	90
Grades 9 through 11 (Some high school)	1	2
Employment		
Employed full-time	39	76
Homemaker	8	16
Self-employed or student	4	8
Annual income		
Less than $25,000	1	2
$25,000-$49,999	3	6
$50,000-$74,999	4	8
More than $75,000	39	76
Prefer not to say	4	0
School		
Brown/Fox Point Early Childhood Education Center	26	50
Moses Brown School	11	22
Montessori Children's House	9	18
Hebrew Day School	4	8
Federal Hill House Early Learning Center	1	2

Table 2. Respondent vaccine experiences, attitudes, and beliefs (N=51)

	n	%
Who makes most of the decisions related to your child's health care when it comes to…		
Selecting a doctor		
Me	20	39
My partner/spouse	3	6
Joint decision between me and my partner/ spouse	28	55
Taking the child to a doctor's appointment		
Me	21	41
My partner/spouse	2	4
Joint decision between me and my partner/ spouse	28	55
Ensuring the child obtains recommended care		
Me	11	21
My partner/spouse	2	4
Joint decision between me and my partner/ spouse	38	75
Memory of discussing the pros and cons of vaccines with your child's health care provider		
No	15	29
Yes	36	71
Children received a vaccine exemption		
No	48	94
Yes	3	6

Table 2. Continued

	n	%
Respondents were asked to state the extent to which they agree or disagree with the following statements:		
The benefits of childhood vaccinations outweigh their risks		
Completely agree	35	69
Agree	13	25
Disagree	3	6
I don't know	0	0
It is important for children to get all doctor-recommended vaccinations		
Completely agree	32	63
Agree	13	25
Disagree	5	10
Completely disagree	1	2
I don't know	0	0
Too many vaccines could overwhelm a child's immune system		
Completely agree	5	10
Agree	5	10
Disagree	20	39
Completely disagree	11	21
I don't know	10	20
Immunizations sometimes cause autism		
Completely agree	1	2
Agree	2	4
Disagree	14	27
Completely disagree	24	47
I don't know	10	20
Vaccines are given at too young an age		
Completely agree	3	6
Agree	5	10
Disagree	24	47
Completely disagree	15	29
I don't know	4	8
It is better for children to get diseases naturally		
Completely agree	2	4
Agree	2	4
Disagree	20	39
Completely disagree	25	49
I don't know	2	4

	n	%
Respondents were asked to rate the quality of each of the following vaccine information sources.		
Child's primary care physician		
Excellent	36	70
Very good	10	20
Good	4	8
Poor	1	2
I don't know	0	0
Alternative health care providers		
Excellent	6	10
Very good	10	20
Good	10	20
Fair	10	20
Poor	10	20
I don't know	5	9
Other parents		
Excellent	2	4
Very good	4	8
Good	10	20
Fair	20	39
Poor	11	21
I don't know	4	8
Magazines		
Excellent	1	2
Very good	4	8
Good	12	24
Fair	20	39
Poor	13	25
I don't know	1	2
Internet		
Excellent	2	4
Very good	3	6
Good	10	20
Fair	20	39
Poor	16	31
I don't know	0	0
Governmental organizations (for example, the Centers for Disease Control [CDC])		
Excellent	22	43
Very good	14	27
Good	9	18
Fair	4	8
Poor	2	4

CONCLUSIONS

In spite of this study's limitations, the analysis reveals some valuable findings that may be used to inform future vaccine initiatives. The role of misinformation in the decision process to have a child vaccinated is a well-documented concern.[9,10,11] Our study supports the hypothesis that misinformation and vaccine hesitancy are present among parents of pre-school aged children. This study also aligns with prior research that has shown that parents generally believe that the benefits of childhood vaccinations outweigh their risks, and that it is important for children to get all recommended childhood vaccinations.[10,11]

There are several limitations that underlie this study's findings. In addition to the study's small sample size (n=51), the characteristics of schools listed on www.privateschoolreview.com may not be representative of all private preschools in Providence, RI. The content of the survey was limited in that it did not ask about the health status of the children, nor did the questions probe deeper into the specific reason for the vaccine exemption. That two of the three exemptions were temporary may suggest that timing, an acute illness, or cost – some circumstance unrelated to beliefs – gave rise to the exemption.

Given the importance of understanding the unvaccinated child population, future iterations of this study could include more schools and involve cooperation from public school officials. Results from larger studies could be used as the foundation for broader research into attitudes toward childhood vaccination, interventions tailored for parents with specific vaccine beliefs, and education to prepare health care providers for conversations with concerned parents.

References

1. US Department of Health and Human Services (DHHS) National Institutes of Health (NIH) National Institute of Allergy and Infectious Diseases (NIAID). *Community Immunity ("Herd" Immunity).* Available at http://www.niaid.nih.gov/topics/pages/ communityimmunity.aspx. Accessed May 10, 2013.
2. US Department of Health and Human Services (DHHS) Centers for Disease Control and Prevention (CDC). Measles transmission associated with international air travel – Massachusetts and New York, July-August 2010. *MMWR*. 2010; 59:1073.
3. US Department of Health and Human Services (DHHS) Centers for Disease Control and Prevention (CDC). Update: mumps outbreak – New York and New Jersey, June 2009–January 2010. *MMWR*. 2010; 59:125–129.
4. Nguyen MD, Perella D, Watson B, et al. Incremental effectiveness of second dose varicella vaccination for outbreak control at an elementary school in Philadelphia, Pennsylvania, 2006. *Pediatr Infect Dis J.* 2010; 29:685–689.
5. US Department of Health and Human Services (DHHS) Centers for Disease Control and Prevention (CDC). Vaccination Coverage and Surveillance. Washington, DC. Available at http://www.cdc.gov/vaccines/stats-surv/default.htm. Accessed February 23, 2013.
6. Rhode Island Department of Health, Immunization Program. Summary of Immunization Requirements For Daycare, Preschools and Schools, and Recommendations For Granting Exemptions. Available at http://www.health.ri.gov/publications/requirements/SummaryDaycarePreschoolAndSchoolAndRecommendationsForGrantingExemptions.pdf. Accessed April 10, 2013.
7. Rhode Island Department of Health, Office of Immunization. Immunize for Life. Available at http://www.health.ri.gov/programs/immunizeforlife/index.php. Accessed April 10, 2013.
8. Fowler, FJ. Improving Survey Questions. Sage Publications. Thousand Oaks, CA. 1995.
9. Larson HJ, Cooper LZ, Eskola J, Katz SL, Ratzan S. Addressing the vaccine confidence gap. *The Lancet.* August 6-12, 2011;378(9790):526-535.
10. Salmon DA, Moulton LH, Omer SB, deHart M, Stokley S, Halsey NA. Factors associated with refusal of childhood vaccines among parents of school-age children: A case-control Study. *Arch Pediatr Adolesc Med*. 2005;159(5):470-476.
11. Gaudino JA, Robison S. Risk factors associated with parents claiming personal-belief exemptions to school immunization requirements: Community and other influences on more skeptical parents in Oregon, 2006. *Vaccine*. 2012;30:1132-42.

Author

Catherine Rogers is a second-year MPH student at Brown University's School of Public Health.

Correspondence

Catherine Rogers
121 South Main Street, Second Floor
Providence, RI 02903
catherine_rogers@brown.edu

Quality of Internet Health Information on Thumb Carpometacarpal Joint Arthritis

ROBIN N. KAMAL, MD; GABRIELLE M. PACI, MD; ALAN H. DANIELS, MD; MICHELLE GOSSELIN, MD; MICHAEL J. RAINBOW, PhD; ARNOLD-PETER C. WEISS, MD

ABSTRACT

INTRODUCTION: The Internet has become a heavily used source of health information. No data currently exists on the quality and characteristics of Internet information regarding carpometacarpal (CMC) arthritis.

METHODS: The search terms "cmc arthritis," "basal joint arthritis," and "thumb arthritis" were searched using Google and Bing. Search results were evaluated independently by four reviewers. Classification and content specific review was performed utilizing a weighted 100-point information quality scale.

RESULTS: Of the 60 websites reviewed, 27 were unique pages with 6 categorized as academic and 21 as non-academic. Average score on content specific review of academic websites was 56.8 and for non-academic was 42.7 (p=0.054). Average Flesch-Kincaid Grade Level for academic websites was 12.4, and for non-academic was 9.9 (p=0.015).

CONCLUSION: Internet health information regarding thumb CMC arthritis is primarily non-academic in nature, of generally poor quality, and at a reading level far above the U.S. average reading level of 6th grade. Higher-quality websites with more complete content and appropriate readability are needed.

CLINICAL RELEVANCE: The quality of Internet health information regarding thumb CMC arthritis is suboptimal.

KEYWORDS: basal joint arthritis, CMC arthritis, Internet health information, thumb arthritis

INTRODUCTION

The Internet is a widely used source of information for the general public with over 75% of households accessing the Internet.[1] It is well known that the Internet has become a heavily used source of health information, with reports of 74% of all adults accessing health information online at some time, and 58% to 64% of Internet users searching for health information in the past 12 months.[2-4] In fact, due to its accessibility and convenience,[5] nearly half of all patients report going to the Internet first as their primary source for health-specific information.[3]

In a 2011 telephone survey, 90% of patients who reported searching for health information online believed that the information acquired in this fashion was very reliable.[4] However, there is little regulation over health information that is posted on the Internet. Prior studies have looked at the quality of Internet health information on orthopaedic problems such as carpal tunnel syndrome,[6] distal radius fracture,[7] spinal disorders,[8,9] and common sports medicine diagnoses.[10] No data currently exists on the quality and characteristics of health information regarding the most common arthritis of the upper extremity requiring surgery, carpometacarpal (CMC) arthritis of the thumb.

This study aims to evaluate current Internet health information on CMC arthritis of the thumb. We hypothesized that the quality and readability of such information would be poor and correlated with website category.

MATERIALS AND METHODS

The terms "cmc arthritis," "basal joint arthritis," and "thumb arthritis" were searched on both Google.com and Bing.com. The webpage results were critically analyzed for quality of content, readability, and accountability.[11] We conducted a website interface and categorization review, content specific review, and evaluation based on the Health on the Net (HON) Foundation Code for Responsible Websites and objective readability indices.[12] **(Table 1)**

All outcome measures were independently collected by four investigators. Two of these were senior orthopaedic surgery residents and two were senior medical students. Because it has been shown that users often do not look beyond the first page of search results on a given search engine,[13] we recorded the first ten webpages that resulted for each search term on each search engine. **(Table 2)** Webpages that appeared in the first ten results of more than one search were evaluated only once, resulting in 27 unique webpage evaluations. **(Figure 1)** Separate web addresses that were part of the same website (i.e., part of the same website and connected to one another via a webpage link) were considered to be equivalent and evaluated only once. Webpages that provided only links to secondary webpages, defined as those containing a different homepage URL, were excluded from analysis. Webpages that provided both primary information and links to other webpages were evaluated solely on the primary information that they provided.

Table 1. Website Review Methodology[11,12]

Author (select one):	
Academic	Affiliated with a university or private educational research institution
Commercial	Marketing of specific healthcare products
News	Use of Internet, newspaper, and television media logos and webpage addresses
Personal	Non-physician websites not representing an institution
Physician	Individual physician practice groups not affiliated with an academic institution, biomedical group, commercial company or news organization
Unidentified	Expired, outdated or otherwise unidentifiable
Contents (select one):	
Conventional Therapy	Standard evaluation and treatment management strategies that are outlined in current textbooks and journals
Unconventional Recommendations	Advocating experimental therapy as the sole mode of treatment and failed to mention any of the more conventional therapeutic options
Misleading Therapeutic Recommendations	Emphasized experimental therapy and did not give equal attention to, or downplayed, more conventional therapeutic methods
Unrelated	Information that does not enhance patient knowledge or understanding of the disease process
Information Source (select one):	
Conventional Reference	Cited literature that could be examined and validated
Anecdotal Reference	Presented by authors who cited their experiences or beliefs regarding diagnosis and treatment
No Referenced Source of Information	Cited data or results but did not state the source of their information
Unable to be referenced	Presented information that is not customarily referenced
Disclosure (circle all that apply):	
Copyright notice	
Disclosure of authorship	
Disclosure of author credentials	
Presence of advertising	
Website contact information	
Images/video present	
Further suggested reading identified	
Presence of HON certification	
Informational Value (Total 100 points):	
Disease Summary (3 points each) Base of thumb pain at rest Weakness Stiffness Pain with activities Adduction/web space contracture Anatomy of CMC joint Pain with CMC grind test Pain at CMC joint on physical exam Diagnosis with x-rays Eaton classification of stage	**Operative Management (2 points each)** Only after failed nonsurgical management Varies with disease stage and patient factors Partial or complete trapeziectomy Ligament reconstruction or suspension Fusion Implant Arthroscopy with or without interposition Postoperative immobilization Outpatient surgery Postoperative physical therapy
Nonsurgical Treatment Options (5 points each) Splinting Nonsteroidal Anti-Inflammatory Drugs Corticosteroid injection Therapy	**Complications (3 points each)** Continued pain Incisional scar Weakness/decreased pinch strength Post-operative numbness Wound infection
Results (5 points each) Decreased pain Improved thumb function/pinch strength Increased range of motion	
HON Assessment (Total 16 points):	
Transparency and Honesty (1 point each) Name of provider on site Physical/electronic address of person or organization responsible for site Transparency of purpose and objective of the site Target audience clearly defined Transparency of all sources of funding for site	
Authority Clear statement of sources for all information (0=none; 1=some; 2=all) Names and credentials of authors (0=none; 1=some; 2=all) Date of publication of source (1 point)	
Privacy and data protection policy and system (1 point)	
Clear and regular updating of the site with dates (1 point)	
Accountability (1 point each) User feedback/appropriate oversight responsibility Responsible partnering to links provided Editorial policy to describe content selection	
Accessibility, general findability, searchability, readability and usability (1 point)	

I. Content Specific Review

Websites were categorized as described by Soot et al., based on authorship, content, source, and disclosures.[11] **(Table 1)** Disclosure of authorship was defined as a webpage and/or website that identified one or more individuals who were responsible for the information provided. Author credentials were determined to be "complete" if they included post-graduate training and/or institutional affiliation, and were evaluated as partial if only the degrees were provided. Information was considered to have references only if it provided the citation of a book, peer-reviewed article, or review article regarding the topic. Reference to other websites or organizations were not considered adequate for citation of the information provided.

II. Readability

To evaluate readability of webpages, each URL was typed into an online readability calculator (http://www.onlineutility.org/english/readability_test_and_improve.jsp).[14] Each website was scored for Flesch-Kincaid Grade Level and Flesch-Kincaid Reading Ease.[15]

III. Statistical Analysis

Reliability among observers was evaluated using the intra-class correlation coefficient [ICC(2,1)].[16] Based on established criteria, ICC(2,1) values graded agreement among observers as excellent (0.8 to 1.0), good (0.6 to 0.8), moderate (0.4 to 0.6), or poor (less than 0.4).[15] All outcome variables were reported as the mean ± standard deviation and compared using a Student's t-test. Statistical significance was set at $p<0.05$.

Source of Funding

There was no external funding for this study.

Table 2. Search Results: Unique Top Ten Results for Each Search Term.
*Indicates information score >75 out of possible 100 points.

Search Engine/ Search Term	Results
GOOGLE	
CMC Arthritis	
1.	www.hsrnj.com/MedicalProblems/ThumbArthritis.asp
2.	www.wheelessonline.com/ortho/cmc_joint_cmc_arthritis
3.	www.coretherapy.com/.../articles_occupational_cmc_arthritis.html
4.	www.eatonhand.com/hw/hw003.htm
5.	https://docs.google.com/viewer?a=v&q=cache:xxTcOoaeP9oJ:www.tcomn.com/images/wmimages/providerforms/thumb%2520carpometacarpal%2520arthritis.pdf+CMC+arthritis&hl=en&gl=us&pid=bl&srcid=ADGEESju5LG5r6aWIS2MfUPYCZ3ewlhmykbZ6T8Bxhcmx9cQ5T9rfFlS8uaLFXf0wT55P5Ec6cic3ub0HcQq8GYkRTXiUahtWXMwiXMrInwzAihzFuLlzHfdkmOir7TL8cz9lLR8HX4l&sig=AHIEtbSCal4dRhb1R-ydaIqVUlXm3kkYLA&safe=active&pli=1
6.	www.permanente.net/kaiser/pdf/46743.pdf
7.	www.3pointproducts.com/basal-joint-arthritis-CMC-arthritis/
8.	www.assh.org › ASSH › Information for Public & Patients
9.	www.raleighhand.com/patient.../basilar-thumb-arthritis-cmc-arthritis
10.*	www.mayoclinic.com/health/thumb-arthritis/DS00703
Basal Joint Arthritis	
11.	www.hss.edu/conditions_basal-joint-arthritis-therapy.asp
12.	orthoinfo.aaos.org/topic.cfm?topic=A00210
13.	www.deansmithmd.com/Basal_Joint_Arthritis_Thumb_Arthritis.html
14.	arthritis.about.com/od/basal/
15.	orthopedicspecialistsofseattle.com/education.../basal-joint-arthritis/
16.	www.arthritis-treatment-and-relief.com/basal-joint-arthritis.html
Thumb Arthritis	
17.	www.handsurgery.com/arthritis.html
18.	orthopedics.about.com/od/handwrist/a/thumbarthritis.htm
19.	www.scoi.com/thumba.htm
20.	www.newswise.com/articles/orthopedic-surgeons-see-an-epidemic-of-thumb-arthritis
BING	
CMC Arthritis	
21.	www.kleisertherapy.com/index.php?option=com_content&view=article&id=71
22.*	www.eorthopod.com/content/arthritis-thumb
23.	ezinearticles.com/?CMC-Arthritis---How-I-Restored-Mobility-in-My-Hands&id=5055258
Basal Joint Arthritis	
24.	www.ehow.com/way_5459121_relief-basal-joint-arthritis.html
25.	www.cedarhand.com/basaljoint.html
26.	www.livestrong.com/article/254899-basal-joint-arthritis-causes
Thumb Arthritis	
27.	http://uwmedicine.washington.edu/Patient-Care/Our-Services/Medical-Services/Hand-and-Wrist/Pages/ArticleView.aspx?subId=133

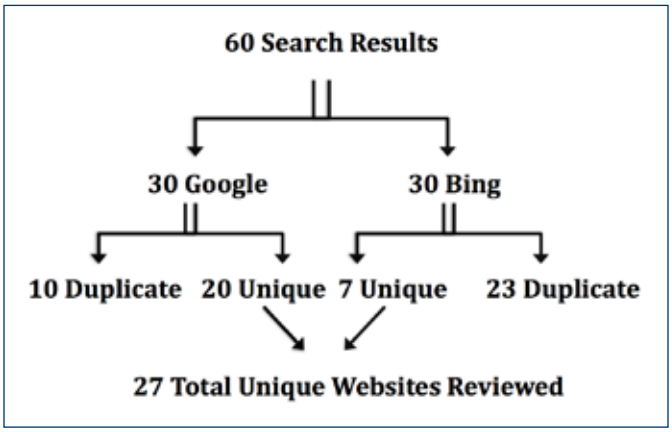
RESULTS

Our search resulted in 60 webpages for analysis. Of those, 33 were either repeat webpages or were excluded due to lack of any primary information, leaving 27 unique webpages for analysis. **(Figure 1)** The ICC(2,1) among the four raters' scores for all outcome measures ranged between 0.90 and 0.98, which is considered "excellent."

Physician author classification was the most common (40.7%, n=11) classification of webpage authorship. Commercial and academic authorship were the second and third most common categories, respectively (25.9%, n=7 and 22.2%, n=6). Personal and news-oriented webpage authors were the least frequently encountered (7.4%, n=2 and 3.7%, n=1). Overall, six (22.2%) of the websites were categorized as academic, and 21 (77.8%) as non-academic (commercial, news-oriented, personal, and physician).

Content classification revealed that nearly all webpages made recommendations for conventional therapy (85.2%,

Figure 1. Top ten results for three search terms on Google and Bing yield 60 results, 33 of which were duplicates and 27 of which were unique.



n=23). Two webpages (7.4%) made misleading recommendations and another two (7.4%) made unrelated recommendations. We identified no (n=0) websites that made unconventional recommendations.

Information sources were predominantly absent, with two-thirds of webpages listing no references (67%, n=18). Five (18.5%) listed conventional references and four (14.8%) listed anecdotal references.

Copyright notice was present in the majority of webpages reviewed, delineating rights to original work in 81.5% (n=22). Webpage contact information was commonly available, with 70.4% (n=19) having details available either on the page reviewed or via a linked webpage within the same site. Authorship disclosure was present on 51.9% (n=14) of webpages, while disclosure of author credentials was present in 44.4% (n=12). Media was present on a number of webpages, including images and/or video in 63.0% (n=17). Advertising was present in 37.0% of webpages (n=10), and 11.1% (n=3) of webpages identified further suggested reading for viewers.

Overall informational value scores averaged 45.9±18.9 points out of a possible 100. Average informational value score for academic websites was 56.8±12.5 and for non-academic was 42.7±19.5 (p=0.054). Mean disease summary score was 14.2±6.5 out of a possible 30 points. Nonsurgical treatment options averaged 14.5±5.2, while surgical treatment options averaged 9.8 ± 5.8 out of a possible 20 points. Mean complication score was 2.1±3.5 out of a possible 15 points. Mean results score was 5.3 ± 4.8 out of 15 possible points. The two websites with informational value scores above 75 were: www.mayoclinic.com/health/thumb-arthritis/DS00703 and http://www.eorthopod.com/content/arthritis-thumb.

A HON certification was present in three webpages (11.1%). HON ratings averaged 4.8 ± 3.1 points out of a possible 16. While three websites (arthritis.about.com, mayoclinic.com, orthopedics.about.com) had HON certification, only mayoclinic.com and wheelessonline.com approached a HON score of 16 upon our review, receiving scores of 15 and 14, respectively.

Average Flesch-Kincaid Grade Level was significantly higher among academic websites when compared to non-academic sites (12.4±3.7 vs 9.9±1.4, p=0.015). Average Flesch Reading Ease was 34.6±15.2 for academic websites, and 44.9±9.4 for non-academic websites (p=0.050).

DISCUSSION

We found that the majority of Internet health information on CMC arthritis of the thumb is posted by physician authors and is non-academic in nature. While most webpages recommended conventional treatment options and used copyright notice, authorship disclosure and qualification were much less common.

Informational value scores were highly variable across webpages and rarely outlined all possible complications associated with treatment of this common pathology. This may, in part, be due to the predominance of physician authors who, for marketing purposes, may have chosen not to emphasize the possibility of complications on their sites. Academic sites had a higher average content score compared to non-academic sites. However, this difference was not statistically significant (p=0.054), which may be explained by the small number of academic sites in our review. These findings affirm our hypothesis that Internet health information on CMC arthritis is predominantly non-academic and of variable, generally poor quality.

The mean information score in this study was <50 out of a possible 100 points. This finding confirms the inconsistent quality of information found in previous investigations regarding the quality of Internet information on orthopaedic ailments.[6-10] This study also identified two websites with information scores greater than 75: www.mayoclinic.com/health/thumb-arthritis/DS00703 and http://www.eorthopod.com/content/arthritis-thumb. This information may be useful for practitioners who wish to recommend a website to their patients. Caution should be used, however, due to the dynamic nature of the Internet, and websites should be reviewed periodically to ensure high quality and that the site is updated with recent information.

Public health concerns about the potential for inaccurate, misleading and erroneous health information on the Internet date back to its inception.[17] Since that time, numerous studies have shown Internet information to be inconsistent, at best, with regards to reliability.[6,7,9-11,18,19] One study demonstrated that 70% of reports on quality of Internet information identified a failure to meet individual quality criteria.[20] Furthermore, it remains difficult for readers to fairly assess the quality of Internet sites that provide health information.[21]

The Flesch-Kincaid readability index for the webpage studies were consistently far above the sixth grade recommended reading level for patient health information established by the National Institutes of Health.[22] The results suggest that the average reader may be unable to appropriately process

information on the Internet regarding CMC arthritis.

Limitations to our study include the inherent subjectivity of any content quality review. We aimed to minimize this limitation by using four reviewers and ensuring inter-rater reliability. Additionally, the search terms utilized in our searches were arbitrarily chosen, leaving open the possibility that we did not account for all of the most commonly viewed webpages on CMC arthritis of the thumb, and the term "carpometacarpal arthritis" was not searched. Finally, our study is limited by the dynamic nature of the Internet itself, as we reviewed only the information available at one moment in time and cannot account for changes to available information over time.

We found that Internet health information on CMC arthritis of the thumb was of variable quality, primarily non-academic in nature, and rarely certified by any overseeing body for quality assurance. It is also consistently above the recommended reading level for use by the general public. Our study is consistent with previous reviews of Internet health information, suggesting that further measures should be taken to evaluate and regulate quality in order to ensure patient access and safety in utilizing this commonly used information source.

References

1. United States Census Bureau (2009). Current Population Survey: Reported Internet Usage for Households, by Selected Householder Characteristics. http://www.census.gov/hhes/computer/publications/2009.html. February 2010. Accessed August 27, 2012.
2. Atkinson NL, Saperstein SL, Pleis J. Using the internet for health-related activities: findings from a national probability sample. *J Med Internet Res.* 2009;11(1):e4.
3. Hesse BW, Nelson DE, Kreps GL, et al. Trust and sources of health information: the impact of the Internet and its implications for health care providers: findings from the first Health Information National Trends Survey. *Arch Intern Med.* Dec 12-26 2005;165(22):2618-2624.
4. Taylor H. The Growing Influence and Use of Health Care Information Obtained Online. http://www.harrisinteractive.com/vault/HI-Harris-Poll-Cyberchondriacs-2011-09-15.pdf. The Harris Poll #98. September 15, 2011. Accessed September 7, 2012.
5. McMullan M. Patients using the Internet to obtain health information: how this affects the patient-health professional relationship. *Patient Educ Couns.* Oct 2006;63(1-2):24-28.
6. Beredjiklian PK, Bozentka DJ, Steinberg DR, Bernstein J. Evaluating the source and content of orthopaedic information on the Internet. The case of carpal tunnel syndrome. *J Bone Joint Surg Am.* Nov 2000;82-A(11):1540-1543.
7. Dy CJ, Taylor SA, Patel RM, Kitay A, Roberts TR, Daluiski A. The effect of search term on the quality and accuracy of online information regarding distal radius fractures. *J Hand Surg Am.* Sep 2012;37(9):1881-1887.
8. Greene DL, Appel AJ, Reinert SE, Palumbo MA. Lumbar disc herniation: evaluation of information on the internet. *Spine (Phila Pa 1976).* Apr 1 2005;30(7):826-829.
9. Feller RJ, Cohen A, Palumbo MA, Daniels AH. Lumbar spinal stenosis: evaluation of information on the Internet. *Med Health R.I.* 2012;95(11):342-4.
10. Starman JS, Gettys FK, Capo JA, Fleischli JE, Norton HJ, Karunakar MA. Quality and content of Internet-based information for ten common orthopaedic sports medicine diagnoses. *J Bone Joint Surg Am.* Jul 7 2010;92(7):1612-1618.
11. Soot LC, Moneta GL, Edwards JM. Vascular surgery and the Internet: a poor source of patient-oriented information. *J Vasc Surg.* Jul 1999;30(1):84-91.
12. Health on the Net Foundation. http://www.hon.ch/index.html. 2012. Accessed September 7, 2012.
13. Adamovic M. Online Readability Calculator. http://www.online-utility.org/english/readability_test_and_improve.jsp. April 2006. Updated December 2009. Accessed August 27, 2012.
14. Kincaid JP, Fishburne RP, Rogers RL, Chissom BS. Derivation of New Readability Formulas (Automated Readability Index, Fog Count, and Flesch Reading Ease Formula) for Navy Enlisted Personnel. Research Branch Report; 1975:8-75.
15. Grootscholten C, Bajema IM, Florquin S, et al. Interobserver agreement of scoring of histopathological characteristics and classification of lupus nephritis. *Nephrol Dial Transplant.* Jan 2008;23(1):223-230.
16. Shrout PE, Fleiss JL. Intraclass correlations: uses in assessing rater reliability. *Psychol Bull.* Mar 1979;86(2):420-428.
17. McLeod SD. The quality of medical information on the Internet. A new public health concern. *Arch Ophthalmol.* Dec 1998;116(12):1663-1665.
18. Bailey MA, Coughlin PA, Sohrabi S, et al. Quality and readability of online patient information for abdominal aortic aneurysms. *J Vasc Surg.* Jul 2012;56(1):21-26.
19. Rozental TD, Lonner JH, Parekh SG. The Internet as a communication tool for academic orthopaedic surgery departments in the United States. *J Bone Joint Surg Am.* Jul 2001;83-A(7):987-991.
20. Eysenbach G, Powell J, Kuss O, Sa ER. Empirical studies assessing the quality of health information for consumers on the world wide web: a systematic review. *JAMA.* May 22-29 2002;287(20):2691-2700.
21. Bernstam EV, Shelton DM, Walji M, Meric-Bernstam F. Instruments to assess the quality of health information on the World Wide Web: what can our patients actually use? *Int J Med Inform.* Jan 2005;74(1):13-19.
22. National Institutes of Health. How to write easy-to-read health materials. http://www.nlm.nih.gov/medlineplus/etr.html. Accessed September 7, 2012.
23. Zickuhr K, Smith A. Digital Differences. http://pewinternet.org/Reports/2012/Digital-differences.aspx. Pew Research Center. April 13, 2012. Accessed September 7, 2012.

Authors

Robin N. Kamal, MD, Department of Orthopaedic Surgery, The Warren Alpert Medical School of Brown University

Gabrielle M. Paci, MD, Department of Orthopaedic Surgery, The Warren Alpert Medical School of Brown University

Alan H. Daniels, MD, Department of Orthopaedic Surgery, The Warren Alpert Medical School of Brown University

Michelle Gosselin, MD, Department of Orthopaedic Surgery, The Warren Alpert Medical School of Brown University

Michael J. Rainbow, PhD, Department of Physical Medicine and Rehabilitation, Harvard Medical School, Spaulding Rehabilitation Hospital, 125 Nashua St., Boston, MA

Arnold-Peter C. Weiss, MD, Department of Orthopaedic Surgery, The Warren Alpert Medical School of Brown University

Correspondence

Alan H. Daniels, MD
Warren Alpert Medical School of Brown University
Rhode Island Hospital
Department of Orthopaedics
593 Eddy Street
Providence, RI 02903
401-444-3591
Fax 401-444-3609

Health Risk Profile of Rhode Island's Working Poor

TARA COOPER, MPH; YONGWEN JIANG, PhD; BRUCE CRYAN, MBA, MS; SAMARA VINER-BROWN, MS

Rhode Island (RI) has been the slowest state to rebound from the 2008 economic recession. As of December 2012, its unemployment rate was 9.9%, the highest in the nation.[1] Many who are reentering the work force are doing so in lower-wage jobs. Often these jobs don't offer health benefits or, if so, they may be unaffordable to those on limited budgets.

Several recent reports[2,3] have provided demographic characteristics of a vulnerable population termed the "working poor," but few have reported on the health status of this special group. This report compares health data on the working poor and working non-poor. Measures of health status, health risks, chronic conditions, and access to care are examined.

METHODS

The Behavioral Risk Factor Surveillance System (BRFSS) is a national telephone survey of randomly selected adults (ages 18 and older). Included in the survey are questions on health risk behaviors, health insurance coverage, access to care, health screenings, and chronic conditions. All 50 states conduct the BRFSS with funding and technical support from the Centers for Disease Control and Prevention.[4] Rhode Island has participated in the BRFSS since 1984; a professional survey firm conducts the annual survey. Beginning in 2011, BRFSS data changed its weighting methodology (raking) and added cell phone respondents to its traditional landline sample. Results for Rhode Island are reported annually.[5] Two years of survey data (2011 and 2012) were combined to yield responses of sufficient size to be statistically valid.

The working poor are defined as adults who are employed (not self-employed), with household incomes less than $25,000 per annum; working non-poor are employed with household incomes greater than or equal to $25,000 per annum. Demographic characteristics, the prevalence of several health risks, health status, and measures of health care access were compared (See **Table 1** for definitions). The presence of self-reported conditions was assessed. Self-reported conditions included history of diabetes, current asthma, being diagnosed with arthritis, history of cardiovascular disease (ever had a heart attack, stroke or told you had coronary heart disease) and current depression. Current depression was derived by combining responses to 2 mental health questions according to the Patient Health Questionnaire Depression Screener guidelines, using the CDC provided Depression and Help seeking module.

To account for the complex sampling design, data were analyzed using SAS version 9.1.[6]

Table 1. Definitions of health risk, and access to care indicators

Indicator	Definition
Poor or Fair Health	Self-rated general health is fair or poor
Physically unhealthy	14+ days poor physical health (past 30 days)
Mentally unhealthy	14+ days poor mental health (past 30 days)
Current Smoker	Smokes cigarettes regularly or occasionally
Sedentary Lifestyle	No leisure time physical activity in past month
Binge drinking	5+ drinks on at least one occasion in past month
Obese	Body mass index (BMI) $\geq$ 30.0 kg/m^2
Not always wearing a seatbelt	Does not always use a seatbelt while driving or riding in a car
Uninsured	Has no health care coverage (ages 18-64 years only)
No annual checkup	Did not visit a doctor for a routine check-up in past year
No regular provider	Did not have anyone that they thought of as their personal doctor or health care provider
No medical care due to cost	Needed to see a doctor but could not due to cost in past 12 mos.

RESULTS

The total unweighted sample size for 2011 was 6,533 respondents and there were 5,480 respondents in 2012. Between 2011 and 2012, 6.5% of RI adults, approximately 54,000 people, were considered working poor. More women than men were working poor (55.5% vs. 44.5%) and young workers (age 18-24) are more likely to be poor (25.1% versus 6.4%).

Working poor adults are disproportionately racial/ethnic minorities; they are more likely to be Black (9.6% versus 3.8%) or Hispanic (31.8% versus 6.3%). The working poor are less likely to hold high school and college degrees. Only 9.8% of the working poor hold college degrees, compared to 41.4% of all non-poor workers, and working poor were more likely to be unmarried (**Table 2**).

Among working poor adults, a greater proportion reported overall fair or poor health (16.5% vs. 5.7%), and poor mental health in the prior month (15.5% vs.7.8%) compared

to working non-poor adults. Working poor Rhode Islanders were also more likely to participate in certain risky behaviors than other working non-poor adults. For example, working poor adults were 1.7 times more likely to be current smokers (26.6% vs. 15.5%) and physically inactive (28.7% vs. 17.2%) than working non-poor adults. The two groups were comparable with respect to the prevalence of binge drinking (working poor was slightly lower), being obese, and always wearing a seatbelt (**Figure 1**).

No disparities existed with respect to the prevalence of chronic conditions; working poor adults had similar prevalence rates to working non-poor for diabetes, asthma, arthritis, and cardiovascular disease. However working poor adults were twice as likely to report being currently depressed compared to working non-poor adults (Table 3).

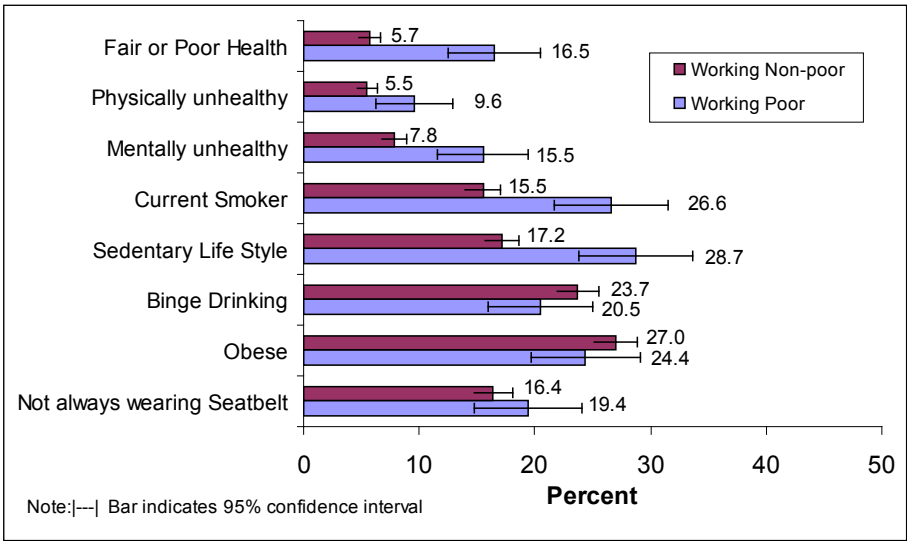
Of all measures examined, the most notable differences were related to access to care and health care coverage. More than four in ten (42.6%) poor adults were without health insurance, a rate more than seven times the rate for those who were working non-poor (6.5%). Over one third of the working poor (36%) did not have a routine check-up in the past year compared to nearly one in four of the working non-poor (23.7%). Three in ten working poor adults did not have a personal doctor in contrast to one in ten working non-poor adults. Similarly, almost one third of working poor adults (32%) reported cost as a barrier to access health care services, a rate that was four times higher that of the working non-poor (8.1%) (**Figure 2**).

Table 2. Demographic Characteristics among Working Poor and Working non-Poor, Rhode Island adults, 2011-2012

Demographic characteristics	Weighted percent Working poor	95% CI [a]	Weighted percent Working non-poor	95% CI [a]
Age group (years)				
18-24	25.1	19.7-30.5	6.4	5.0-7.8
25-44	46.7	41.2-52.2	43.5	41.5-45.5
45-64	24.1	20.2-28.1	45.8	43.9-47.7
65+	4.0	2.3-5.6	4.4	3.8-4.9
Gender				
Male	44.5	38.9-50.0	52.5	50.5-54.4
Female	55.5	50.0-61.1	47.5	45.6-49.5
Race/Ethnicity				
White Non-Hispanic	52.2	46.8-57.6	85.3	83.7-86.8
Black, Non-Hispanic	9.6	6.3-12.9	3.8	2.9-4.6
Latino/Hispanic	31.8	26.6-37.0	6.3	5.2-7.4
Other	6.3†	3.7-9.0	4.7	3.7-5.7
Education				
High School or less	62.5	57.4-67.7	27.5	25.6-29.4
Some college	27.7	23.1-32.4	31.0	29.1-33.0
College graduate	9.7	7.1-12.3	41.4	39.6-43.3
Marital Status				
Married	31.5	26.4-36.6	69.1	67.3-71.0
Unmarried	68.5	63.4-73.7	30.9	29.9-32.8

[a] 95% confidence interval (CI) reflects the "stability" of an estimate of prevalence. If the 95% CI do not overlap between working poor and working non-poor, there is a statistically significant difference between the two groups.
† Estimates may be unreliable. Cell sizes are less than 50 and estimates should be interpreted with caution.

Figure 1. Differences in health status and health risks for Working Rhode Island adults, 2011-2012



DISCUSSION

Rhode Island's working poor were more likely to be female, minority, younger, lack higher education and be unmarried. They were also more likely to be smokers and physically inactive. Rates for diabetes, asthma, arthritis and cardiovascular disease were similar. A recent study that compared uninsured low-income adults with persons enrolled in Medicaid also found lower prevalence for chronic conditions.[7] This finding could be a result of a lack of access to care to be screened for these conditions, or the fact that the Rhode Island working poor is young, so many chronic conditions did not have time to manifest.

Mental health issues and depression were significantly more prevalent among Rhode Island's working poor.

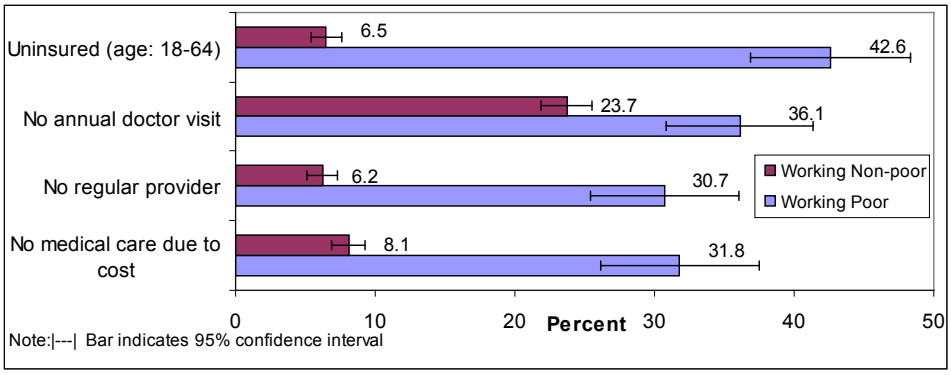
Simmons et al study[8] showed that job insecurity among working poor adults was significantly associated with current depression. Low-wage jobs tend to be hourly, seasonal, or contract work, which provide very little job security. Compared to the working non-poor, working poor adults are less likely to be offered health insurance and paid sick time, which may result in job and financial insecurity, and stress. Current depression has been associated with cigarette smoking, sleep problems, chronic fatigue, absenteeism, and work productivity.[8] Our findings have the potential to inform policies aimed at improving the well-being of the working poor in Rhode Island. Employers of working poor adults may consider interventions to increase access to depression treatment.

Table 3. Prevalence of chronic conditions among Working Poor and Working non-Poor, Rhode Island adults, 2011-2012

Prevalence of chronic conditions	Percent-Working poor	95% CI[a]	Percent-Working non-poor	95% CI[a]
Ever had diabetes	5.2 †	3.0-7.4	5.9	5.0-6.8
Currently has asthma[1]	10.3	7.3-13.3	9.7	8.6-10.8
Diagnosed with arthritis	15.1	11.7-18.5	17.8	16.5-19.2
Any cardiovascular disease (CVD)[2]	3.0 †	1.6-4.5	3.5	2.9-4.1
Current depression[3]	11.3	7.6-14.9	5.8	4.7-6.9

[a] 95% confidence interval (CI) reflects the "stability" of an estimate of prevalence. If the 95% CI do not overlap between working poor and working non-poor, there is a statistically significant difference between the two groups.
† Estimates may be unreliable. Cell sizes are less than 50 and estimates should be interpreted with caution.
[1] Ever told by doctor has asthma and has asthma now.
[2] Reported ever having a heart attack or stroke or being diagnosed with coronary heart disease or angina.
[3] Calculated depression score is based on 2 questions, severity score ≥3.

Figure 2. Differences in health care access for Rhode Island adults, 2011-2012



Most concerning was the compromised access to healthcare by the working poor (over 30% had no provider and did without regular check-ups). A regular provider is critical to maintaining one's health through detection and control of potentially serious health problems. It is difficult to acquire a regular source of ongoing healthcare without insurance, especially when out-of-pocket costs are a factor.

Access to care is expectedly compromised when one does not have healthcare insurance. Implementation of the Affordable Care Act and Medicaid expansion should alleviate this situation as coverage (subsidized or otherwise) is extended to more individuals. Having access to services like preventive care, wellness services and chronic-disease management could have significant consequences on the health status of struggling low-income employed adults.

There are some limitations with this study. Up until 2011, the BRFSS was only administered via landlines. During 2003 to 2009, the proportion of U.S. adults who lived in cell phone-only households increased by more than 700%, and the trend is continuing.[9,10] Younger adults are more likely to live in a cell phone-only household. Because of differences in the characteristics of people living in households with and without landlines, all telephone surveys in the United States, including the BRFSS, have had to adapt their methods to this relentless increase in cell phone-only households.[9,11] Adding cell phone users to the sample and adjusting for more socio-demographic factors through a new weighting methodology[12] helps Rhode Island better account for the under-representation of males, adults with less formal education, lower-income households, young adults, and racial/ethnic minorities. Even with the addition of cell phone users, there is a possibility that people without any phone service cannot be reached and are not represented. A second consideration is that the BRFSS relies on self-reported data, and the potential for bias must be kept in mind for behaviors that are socially unacceptable. Survey response rates may also affect the potential for bias in the data. The literature shows that most questions on the core CDC BRFSS instrument are reliable and valid.[13] The BRFSS is a cross-sectional survey. Our findings cannot infer causal conclusions. All that can be determined is the likelihood of an association between health-risk behaviors, health conditions, and health access, among working poor versus working non-poor Rhode Island adults. A fifth consideration is that the BRFSS is a telephone survey and the working poor may be under-represented due to difficulties with a busy schedule. Another consideration is that current depression was calculated based on only two questions, therefore the prevalence of current depression among working poor adults may not be an accurate reflection and might be under-represented in this population.

Despite these limitations, the BRFSS is the only available source of timely, accurate data on health-related behaviors.

Our results identify a vulnerable population that has a significant need for routine access to health care, and would benefit from increased diagnosis and treatment for mental health issues. Ongoing data collection and dissemination using the BRFSS will help in monitoring access to care, health status, and health risks in efforts to improve the health and well-being of Rhode Island's working poor.

Acknowledgements

The Rhode Island BRFSS is conducted through a cooperative agreement between the Centers for Disease Control and Prevention and the Rhode Island Department of Health. This publication was supported by CDC Cooperative Agreement #5U58/58SO0004401 and 02. We acknowledge Donald Perry, RI BRFSS Coordinator from 2010-2011, for his contribution on survey planning and administration oversight. We are grateful for the efforts of the Rhode Island residents who took the time to respond to the telephone interviews conducted for this surveillance system.

References

1. US Bureau of Labor Statistics.
2. *A Profile of the Working Poor, 2011*, BLS Reports, Report 1041 (U.S. Bureau of Labor Statistics, April 2013), at http://www.bls.gov/cps/cpswp2011.pdf
3. Roberts B, Povich D, Mather M. Low Income Working Families: The Growing Economic Gap. The Working Poor Families Project. Available at http://www.workingpoorfamilies.org/wp-content/uploads/2013/01/Winter-2012_2013-WPFP-Data-Brief.pdf.
4. CDC's BRFSS website: www.cdc.gov/brfss
5. RI Department of Health BRFSS website: http://www.health.ri.gov/data/behaviorriskfactorsurvey/
6. SAS Institute, Inc. SAS version 9.1. Cary, NY: SAS Institute.
7. Decker SL, Kostova D, Kenney GM, Long SK. Health status, risk factors, and medical conditions among persons enrolled in Medicaid vs. uninsured low-income adults potentially eligible for Medicaid under the Affordable Care Act. *JAMA*. 2013;309(24):2579-2586.
8. Simmons LA, Swanberg JE. Psychosocial work environment and depressive symptoms among US workers: comparing working poor and working non-poor. *Soc Psychiatry Psychiatr Epidemiol*. 2009 Aug;44(8):628-35.
9. Blumberg SJ, Luke JV, Ganesh N, et al. Wireless substitution: State-level estimates from the National Health Interview Survey, January 2007–June 2010. National health statistics reports; No. 39. Hyattsville, MD: National Center for Health Statistics. 2011.
10. Blumberg SJ, Luke JV. Wireless substitution: Early release estimates from the National Health Interview Survey, January- June 2011. Available at http://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless201112. pdf Accessed April 30, 2012.
11. Link MW, Battaglia MP, Frankel MR, Osborn L, Mokdad AH. Reaching the US cell phone generation: comparison of cell phone survey results with an ongoing landline telephone survey. *Public Opinion Quarterly*. 2007;71(5):814-839.
12. Pierannunzi C, Town M, Garvin W, Shaw FE, Balluz L. CDC. *MMWR* / June 8, 2012;61(22) http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6122a3.htmls_ cid=mm6122a3_w Accessed June 8, 2012.
13. Nelson DE, Holtzman D, Bolen J, et al. Reliability and validity of BRFSS measures. *Soz Praventivmed*. 2001;46:suppl.1.

Authors

Tara Cooper, MPH, is the Health Surveys Manager in the Center for Health Data and Analysis at the Rhode Island Department of Health.

Yongwen Jiang, PhD, is a Senior Public Health Epidemiologist in the Center for Health Data and Analysis at the Rhode Island Department of Health, and Clinical Assistant Professor in the Department of Epidemiology, School of Public Health, Brown University.

Bruce Cryan, MBA, MS, is a Health Policy Analyst and YRBS Coordinator in the Center for Health Data and Analysis at the Rhode Island Department of Health.

Samara Viner-Brown, MS, is the Chief of the Center for Health Data and Analysis at the Rhode Island Department of Health.

VITAL STATISTICS
MICHAEL FINE, MD
DIRECTOR, RHODE ISLAND DEPARTMENT OF HEALTH
COMPILED BY COLLEEN A. FONTANA, STATE REGISTRAR

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

	REPORTING PERIOD		
VITAL EVENTS	SEPTEMBER 2013	12 MONTHS ENDING WITH SEPTEMBER 2013	
	Number	Number	Rates
Live Births	927	11,534	11.0*
Deaths	761	9,879	9.4*
Infant Deaths	7	83	7.2#
Neonatal Deaths	5	59	5.1#
Marriages	953	6,286	6.0*
Divorces	341	3,373	3.2*
Induced Terminations	No data available		
Spontaneous Fetal Deaths	No data available		
Under 20 weeks gestation	No data available		
20+ weeks gestation	No data available		

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

	REPORTING PERIOD			
Underlying Cause of Death Category	MARCH 2013	12 MONTHS ENDING WITH MARCH 2013		
	Number (a)	Number (a)	Rates (b)	YPLL (c)
Diseases of the Heart	233	2,437	231.4	3,367.0
Malignant Neoplasms	209	2,200	208.9	5,795.0
Cerebrovascular Disease	32	455	43.2	734.5
Injuries (Accident/Suicide/Homicide)	64	642	61.0	9,136.5
COPD	39	513	48.7	502.5

(a) Cause of death statistics were derived from the underlying cause of death reported by physicians on death certificates.
(b) Rates per 100,000 estimated population of 1,052,567 (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.

CME EVENT

Eleventh Hour Education Event

May 17, 2014, 7:00 am
Crowne Plaza Hotel
801 Greenwich Avenue, Warwick RI 02886

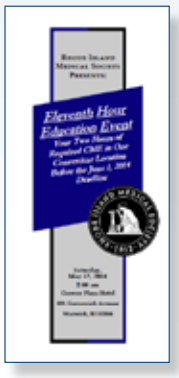
The RI Medical Society has organized your opportunity to obtain required Continuing Medical Education (CME) on Saturday, May 17, 2014.

The required topics to be covered are **Pain Management** and **Risk Management**, while we will also cover important education on a non-required topic.

The Rhode Island Department of Health states that "unless you were in training or became Board Certified or Re-Certified within the past two years, (physicians) need to complete 40 hours of Continuing Medical Education (CME) during each two-year license cycle. The current license renewal cycle requires that you obtain and submit your credits no later than **June 1, 2014**. At least two hours of this education must be related to one of the following topics:

- Risk management
- Opioid pain management/chronic pain management
- End of life/palliative care
- Ethics"

Registration



Program and Registration form

The program agenda and registration details for this event can also be found at www.rimed.org. RIMS members may log onto the Member Portal to register or complete the form and return as noted.

If you are not a RIMS member but would like to join, please complete the online membership application. The member rate will be offered to applicants upon receipt of your membership application.

Please email Megan E. Turcotte with questions, or call 401-331-3207.

NOTICE

The Rhode Island Medical Society no longer endorses the collection agency **IC System** and is currently seeking a high-quality, professional collection agency that will provide superior service to RIMS members at favorable rates.

RIMS director of government and public affairs Steven R. DeToy, US Congressman David Cicilline, RIMS president-elect Peter Karczmar, MD

RIMS leaders attend AMA national advocacy conference

Repeal of SGR, regulatory burdens top agenda

WASHINGTON, D.C. – Hundreds of physicians and advocates attended the AMA's National Advocacy Conference with a unified mission: Sharpen their message on the top health policy issues and drive it home to Congress. Among them were Dr. Peter Karczmar, president-elect of the Rhode Island Medical Society and Steven R. DeToy, director of government and public affairs at RIMS.

During the conference, they met with Rhode Island Congressmen and their staffs, and called for immediate action to eliminate the sustainable growth rate (SGR) formula by March 31 and revitalize the Medicare system. A 24 percent payment cut is scheduled to take place April 1.

"If I had to sum up the goal of the National Advocacy Conference in a word, it would be 'action,'" AMA President Ardis Dee Hoven, MD, said as she welcomed conferees.

"At the end of the day – when the conversations have ceased and the board rooms have closed – we're the ones sitting in the exam room with the patient. We're the ones who feel the full weight of health care decisions."

At the conference, the Centers for Medicare & Medicaid Services (CMS) Administrator Marilyn Tavenner told doctors that the agency is working toward easing their burden and finding resources to help them transition to new care delivery and payment models.

Tavenner highlighted several regulations the agency is re-evaluating for effectiveness in reaching their original objectives. These rules include:

- The "two-midnight" hospital observation rule, which Tavenner said "was never meant to replace medical judgment; it's kind of gone in a way that it was never intended."
- Medicare recovery audit contractors (RAC), which have been suspended as the agency considers what these contractors should audit. Tavenner said when the program resumes, RACs will not be paid right away, and physicians will have more time to produce records. In the meantime, a cross-agency task force is working to address the backlog of appeals.
- Meaningful use of electronic health records, which Tavenner said the agency is trying to align with ePrescribing. She also confirmed that a hardship exemption would be available for some practices that are "legitimately struggling" to meet the requirements.

Why You Should Join the Rhode Island Medical Society

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

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

Above: State House press conference on health care, Brown MSS at the AMA, CPT update seminar, bike helmet distribution, medical student volunteers; Upper right: Meeting of RIMS membership committee

APPLY FOR MEMBERSHIP ONLINE

RIMS MEMBERSHIP BENEFITS INCLUDE:

Career management resources
Insurance, medical banking, document shredding, and independent practice association

Powerful advocacy at every level
Advantages include representation, advocacy, leadership opportunities, and referrals

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

Member Portal on www.rimed.org
Password access to pay dues, access contact information for colleagues and RIMS leadership, RSVP to RIMS events, and share your thoughts with colleagues and RIMS

SPECIAL NOTICE: 2014 AMA DUES PAYMENTS

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

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

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of New England, Inc.

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335 Centerville Rd • Warwick
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101 Airport Rd • Westerly
T 315-0095 F 315-0092

Butler Hospital announces The Aronson Chair for Neurodegenerative Disorders

Dr. Joseph H. Friedman first recipient of Chair

Stanley M. Aronson, MD

Joseph H. Friedman, MD

PROVIDENCE – Butler Hospital has announced the creation of its first endowed chair, The Aronson Chair for Neurodegenerative Disorders. Named for **STANLEY M. ARONSON, MD**, The Chair honors Dr. Aronson for a career and life dedicated to the research, diagnosis, and treatment of neurological disorders.

An honorary member of the Butler Hospital medical staff since 1970 and a member of Butler's Board of Trustees and Foundation Board for more than 20 total years, Dr. Aronson has played a crucial role in some of the most important institutions in the state, including serving as the founding Dean of the Alpert Medical School of Brown University and the creation of Home & Hospice Care of Rhode Island.

Dr. Aronson is considered a pioneer in his field for his contributions to understanding and treating disorders, including eradicating Tay Sachs disease and being the first to identify Lewy Body Dementia. Dr. Aronson's legacy continues to live on in the contributions he made to science and medicine and through the multiple generations of physicians that Dr. Aronson has mentored, encouraged, and inspired over decades.

"It's so fitting that Butler, an institution with a strong focus and commitment to neurology and brain sciences, honors a national leader with a storied career in the neurology field with its first endowed chair," said **PATRICIA RECUPERO, JD, MD**, Butler Hospital's president and CEO.

The first recipient of The Aronson Chair is **JOSEPH H. FRIEDMAN, MD**, chief of the Movement Disorders Program at Butler, chief of the Division of Movement Disorders in the Department of Neurology at the Alpert Medical School of Brown University, and adjunct professor in the School of Pharmacy at the University of Rhode Island. Dr. Friedman is a nationally recognized clinician, researcher, and educator in the treatment and study of Parkinson's disease and related movement disorders. He is an active member of the Parkinson's disease and Huntington's disease study groups, and participates in multicenter trials sponsored by the National Institutes of Health, Michael J. Fox Foundation, pharmaceutical companies, and single-center unfunded studies. A fellow of the American Academy of Neurology, Dr. Friedman serves on the editorial board of Parkinsonism and Related Disorders and is editor-in-chief of the *Rhode Island Medical Journal*, taking over the position following the retirement of Dr. Aronson.

For more information or to make a contribution to The Aronson Chair for Neurodegenerative Disorders, call the Butler Hospital Foundation at (401) 455-6237 or visit Butler.org/AronsonChairCampaign. ❖

CVI introduces implantable cardiac defibrillator to state

PROVIDENCE – The Cardiovascular Institute at Rhode Island, The Miriam and Newport hospitals is the first in the state to implant a new leadless implantable cardiac defibrillator (ICD). The device, the S-ICD System by Boston Scientific, is the first subcutaneous ICD for the treatment of patients at risk for sudden cardiac arrest and is the only ICD that does not require electrical wires to be placed in the heart.

"More than a half-million people in the United States are treated each year for sudden cardiac arrest," said **MICHAEL KIM, MD**, director of the arrhythmia service at Rhode Island Hospital, where the ICD was implanted. "This new defibrillator provides patients with an alternative option to single and double-lead defibrillators, and may be safer for many patients. It is a less invasive procedure, which often means a reduced risk of complications and faster recovery. Additionally, many patients may be able to have the S-ICD implanted on an outpatient basis, allowing them to return home immediately following the procedure."

The first patient received the new ICD in late January.

Magaziner on healthcare reform: lower administrative costs, empower physicians, providers

MARY KORR
RIMJ MANAGING EDITOR

PHOTOS BY MARY KORR

Brown Provost Mark Schlissel, MD; Dean Fox Wetle of the Brown School of Public Health and Alpert Medical School Dean Jack Elias, MD, listen to Ira C. Magaziner speak on the economics of healthcare at a medical school forum.

PROVIDENCE – Brown alumnus '69 **IRA C. MAGAZINER**, CEO of the Clinton Health Access Initiative, and former senior adviser to President Clinton for policy development, spoke on healthcare reform March 20th at Brown's annual Paul Levinger lecture on the economics of healthcare.

He addressed the status and future of healthcare in the United States in the context of the Affordable Care Act (ACA) of 2010. "This is the first time I've spoken on healthcare reform in almost 20 years," he said, at one point referring humorously back to 'Hillarycare.'

"One of the things that got me into this area was my experience running a small business consulting firm in Providence before I went to Washington. I had about 40 people working for me. When one secretary was diagnosed with cancer, health insurance officials came to me and said, 'fire her or we're going to double your rates for every employee.'"

That pre-existing condition problem has been erased with the ACA, he said, and described the ACA as a "good start that creates a framework that can be modified over time."

Major obstacle: Administrative costs

He said the critical problem in the U.S. healthcare system today is "the $248 billion dollars per year in administrative complexity. Not only is that costly, it undermines good healthcare. How much time are doctors and nurses spending filling out paperwork, finding out what the new rules and regulations are, or worrying if they will be sued? That's the problem and one other countries don't have."

He continued, "We learned a long time ago in business that you don't get quality by setting up systems that are bureaucratic with a checklist here and a checklist there and requiring people to fill out more forms. Those systems are easy to game and you create more administrative costs.

"The way to get good quality is to set the goals for outcomes and empower frontline workers to achieve those goals as a group and if they don't, you work with them to find out why not. Get input and try to set better goals. We've known that for a long time but the healthcare system doesn't know that. The healthcare system is operating a very outmoded system.

"That's where we have to focus our attention. It's going to be tough to do these things but if America can't become efficient and get rid of overhead costs in its healthcare system and bureaucracy then we don't deserve to be a world leader. I think we can do it, we just have to set our minds to it."

He expressed some reservation of the concept of pay-for-performance. "I get the conceptual idea, but it can still create the wrong incentives because it causes finger-pointing at a group level."

Magaziner said the same could be said of issues with malpractice. "People will make mistakes. The check on that should be the professional societies, the peer groups for

whom there is pride in their profession." He suggested a collective compensation fund instead of "a litigious system that goes after the individual in cases for years. I would rather have a compensation fund throughout the whole system and a serious policing by peers."

Principles going forward

Magaziner enumerated several principles going forward:

1. Continued focus on prevention and wellness
2. Seamless coordination of care that begins with primary care providers.
3. Evidence-based treatment protocols based on quality outcomes which are constantly revised as society advances.
4. End the burdens of those using the healthcare system, particularly older people, and the scenario of patients being handed around from specialist to subspecialist and hospital to hospital to nursing home, which Magaziner described as "a nightmare – particularly for older people; we need to focus on the higher users of medical care, the 1 percent who use 30 percent of the resources in the system."

At the conclusion of his talk, Magaziner peered into the future 100 years from now. "The medicine that we are practicing today will be close to when they were putting leeches on patients' bodies. That's not to denigrate what you are doing. But what I see coming are tremendous advances in science and technology. What scientists are discovering in genomics and bionomics is going to have huge potential. Improvements on the cellular level and ways to process big data that will inform the protocols – it's a very exciting time in medicine."

He also noted that the smaller entrepreneurial biotechnology companies are coming to the fore and leading the way, particularly in biotech and vaccines.

The lecture was endowed by the late Ruth N. Levinger to honor the memory of her husband, and by his daughter Bette Levinger Cohen, and son-in-law, John M. Cohen, MD, '59. ❖

RIMJ: Around the World

Dr. Kenneth S. Korr received the March issue of the *Rhode Island Medical Journal* while visiting the Valley of the Temples on the windward coast of Oahu, Hawaii. Serendipitously, the issue focused on spirituality and the practice of medicine.

Send your photos of RIMJ Around the World to Mary Korr, Managing Editor: mkorr@rimed.org

Rhode Island Hospital launches country's first Google Glass study in emergency department

Study to explore efficacy of real-time dermatology consults using streaming mobile technology

PROVIDENCE – Rhode Island Hospital is bringing Google Glass into the emergency department. Using a stripped-down version of the wearable mobile video communications technology, researchers will test the efficacy of using Google Glass for real-time audio-visual consults for consented patients who require a dermatology consultation. Rhode Island Hospital is the first hospital in the U.S. to use Google Glass in an emergency department setting.

PAUL PORTER, MD, explains a feasibility study using a stripped-down, HIPAA-compliant version of Google Glass to provide patients with an audio-visual dermatological consultation in real time. "We live in a world of instant gratification, and in many ways, we're testing that mindset by using Google Glass to enhance telemedicine in the emergency department," said principal investigator Dr. Porter, a physician in the emergency departments of Rhode Island, Hasbro Children's and The Miriam hospitals. "In this study, we will use Google Glass to stream live images of a patient's dermatological condition to the consulting dermatologist. As the emergency medicine physician observes the patient's skin condition, the consulting dermatologist will be able to see identical images on a tablet in real time, giving the dermatologist the ability to offer appropriate advice, diagnosis and treatment options."

VIDEO: Paul Porter, MD

Dr. Porter and researchers **PETER CHAI, MD**, and **ROGER WU, MD**, worked with experts at Pristine, a health care technology communications company, which has developed the only form of Google Glass that meets strict federal patient privacy laws.

"While the initial study is limited to emergency department patients who require a dermatology consult, we recognize that the opportunities for Google Glass in a medical setting are very broad," Dr. Porter said. "Ultimately, the use of this technology could result in better coordinated care, faster interventions, better outcomes, fewer follow-up office visits, fewer readmissions, and lower costs – for a wide range of disciplines, not just dermatology.

"We also envision this technology eventually being used by first responders and nursing homes as a tool to communicate with emergency medicine physicians," Porter said.

The six-month feasibility study will be limited to patients in the Rhode Island Hospital emergency department who require a dermatology consult, and who consent to taking part in the study. ❖

Lifespan creates Clinical Research Center

PROVIDENCE – Lifespan has launched a new Clinical Research Center to provide additional institutional resources to support investigators who are conducting clinical research across departments and medical specialties.

As this new center grows, its goals are aimed to make it easier for investigators to manage the multiple aspects of any clinical research study, such as study design and analysis, research nursing support, specimen processing and storage, medical oversight, project management and regulatory affairs support.

"I'm thrilled that we are able to take our research enterprise to the next level by launching the Clinical Research Center," said **PETER J. SNYDER, PhD**, Lifespan's senior vice president and chief research officer. "By bringing together this outstanding collection of resources we intend to significantly increase the capacity of our faculty to engage in important clinical research that will improve the clinical care and lives of our patients."

The creation of the center ties together many of the organization's existing resources, but also establishes a formal structure and setting to assist investigators.

The main part of the center will be located in the Coro Building a 270,000-square-foot building complex located adjacent to the Rhode Island Hospital campus. Coro is home to the majority of research laboratories in the Lifespan system. In addition to the center's administrative offices, the Coro Building also includes an outpatient clinical research unit that includes five examination rooms, in a close partnership with the Division of Adolescent Medicine at Hasbro Children's Hospital. A second outpatient unit is located in the RISE Building near The Miriam Hospital campus. This unit includes three examination rooms and immediate access to a central specimen processing lab. The new CRC will work closely with the unit at The Miriam, especially with respect to specimen processing and long-term storage.

"The new outpatient center expands Lifespan's support for clinical research," said **CATHERINE GORDON, MD, MSc**, medical director of the Clinical Research Center. "It provides a dedicated location for investigators to meet with study participants, and these additional resources will now enable many Lifespan clinical research teams to participate in multi-center trials and launch important research initiatives."

The Lifespan Clinical Research Center is available to investigators throughout the Lifespan health system, as well as to those investigators affiliated with any of Lifespan's collaborative partner institutions.

For more information, contact Nana Ofei-Tenkorang, clinical research assistant, by email at nofeitenkorang@lifespan.org or by phone at 401-793-8585.

RI healthcare providers reach Direct Messaging milestone

Integration with CurrentCare leads to one million secure messages sent via national standards-based method for exchanging protected health information

PROVIDENCE – The Rhode Island Quality Institute (RIQI) recently announced that healthcare providers in Rhode Island have exchanged more than one million messages using Direct, a secure cost-effective way to send protected health information (PHI) to known, trusted recipients over the Internet.

Direct – started in 2010 by the Department of Health and Human Services' Office of the National Coordinator for Health Information Technology (ONC) – makes it possible for healthcare providers to securely email information to other trusted providers, such as hospitals, specialists, pharmacies, and laboratories.

RIQI has integrated the use of Direct messaging into CurrentCare, Rhode Island's statewide health information exchange (HIE). Direct is used by CurrentCare's Hospital Alerts service to notify providers when one of their patients is admitted, discharged or transferred from any hospital in the state. Direct is also used to transfer continuity of care documents (CCD) from providers' practice-based electronic health records (EHRs) into CurrentCare. This feed of clinical information, with patient consent, from practice-based EHRs to CurrentCare, is improving quality by detecting gaps in care and making sure the full record is available to all care providers.

"Very early on, we recognized the valuable role Direct could play in helping CurrentCare securely collect and exchange patient information among authenticated healthcare providers throughout the state," said **LAURA ADAMS**, president and CEO, RIQI. "With more than one million messages sent, Direct has clearly proven to be an important addition to our statewide health information exchange strategy."

Regular email is not appropriate for sending PHI. Messages could be intercepted and read during transmission, and there is no way of ensuring that the message will be delivered only to the intended recipient.

Direct messaging is both secure and validated, making it appropriate for sending PHI. Message encryption ensures that the message is not compromised during transmission. An electronic credentialing system – using electronic certificates – identifies the sender and recipient to ensure that the mail is routed only to intended and trusted recipients. A Direct message can be delivered only if both the sender and recipient are using Direct accounts and have established a trust relationship.

"Direct messaging has helped facilitate improved communication between primary care providers, specialists, hospitals, and labs," said **AL PUERINI, MD**, president and CEO, RI Primary Care Physicians Corporation (RIPCPC). "Direct has allowed us to exchange EHR data with other providers through CurrentCare and to receive an Alert when our patients receive hospital care. These are two very important functions that allow us to better coordinate treatment and provide follow-up care with our patients."

RIPCPC and RIQI successfully collaborated in 2010 to develop the technical mapping of Direct messaging through a request from CMS in Washington, D.C. Dr. Puerini sent the first-ever provider-to-provider Direct message in the U.S. in January 2011.

RIQI's program to facilitate adoption of Direct by providers and practices in Rhode Island launched in September 2011 and is managed by the RI Regional Extension Center (RI REC). The program offers educational materials and webinars and free membership in the Southern New England Trust Community, a community of verified providers who have a legitimate need to use Direct messaging to exchange patients' protected health information (PHI). In addition, the program provides a selection of three qualified Health Information Service Providers (HISPs) in an online vendor marketplace. RIQI's HISPs are Inpriva, MaxMD, and Secure Exchange Solutions.

Currently, 162 provider sites throughout Rhode Island, representing more than 600 providers, are using Direct with 135 sites receiving Hospital Alerts and seven major EHR platforms participating in CCD integration.

As a part of qualifying for incentive payments under the Meaningful Use Stage 2 criteria issued by the Office of the National Coordinator for Health IT (ONC), healthcare organizations and providers must meet data transfer requirements using Direct Messaging. These requirements can be demonstrated with EHRs that comply with the ONC's 2014 Edition EHR Certification Criteria which specifies electronic exchange of transition of care records with Direct Messaging.

For more information, visit www.riqi.org. ❖

DOH issues emergency regulations on expanding use of Narcan to prevent opioid overdose deaths

PROVIDENCE – Director of Health, **MICHAEL FINE, MD**, has issued emergency regulations aimed at preventing opioid overdose deaths by expanding access to the overdose antidote, naloxone (also known as Narcan), and establishing procedures for its administration to a person experiencing an overdose.

Rhode Island is in the midst of a severe drug overdose crisis, as evidenced by the 55 opioid-related deaths HEALTH has investigated since the beginning of the year. In addition to drug-abuse prevention and treatment strategies, getting Narcan into the hands of more people has become an immediate priority in the fight to save lives.

Dating back to at least 1988, Emergency Medical Technicians (EMTs) have carried Narcan as a standing-order medication that can be administered to individuals for whom it is not specifically prescribed.

Under the new regulations:

- Any licensed prescriber can now issue a non-patient-specific order to certain organizations, such as police departments and treatment facilities;
- Narcan can be prescribed to a family member or friend of an individual at risk of experiencing an opioid-related overdose;
- Any licensed prescriber may now dispense Narcan to family members or others on site, during an office or emergency department visit.

These changes enable Narcan to be in the hands of those most likely to discover an overdose victim. This could potentially save a life that could otherwise be lost if the victim had to wait for an EMT to administer the antidote.

Last month, the State Police announced plans to carry Narcan. Several local police departments are considering the same. The new regulations will allow all departments to easily obtain it.

When administered in a timely way, Narcan counteracts the life-threatening depression of the central nervous and respiratory systems caused by an overdose. Narcan has reportedly reversed more than 10,000 overdoses nationwide. Since January 1, 2014, EMTs have administered 273 doses of Narcan to Rhode Island patients. Narcan is still available without a prescription at all Walgreens pharmacies in Rhode Island.

The full version of the new Rules and Regulations Pertaining to Opioid Overdose Prevention can be found at: http://sos.ri.gov/documents/archives/regdocs/released/pdf/DOH/7687.pdf ❖

NIH renews Miriam grant for AIDS clinical trials group

PROVIDENCE – A $2.4 million grant renewal will support The Miriam Hospital's continued efforts in research and new treatments for HIV and AIDS.

KAREN TASHIMA, MD, the lead researcher at The Miriam, received the National Institutes of Health grant renewal. Dr. Tashima leads the ACTG's Providence site, which operates under the program's Harvard/Boston/Providence Clinical Trials Unit.

The ACTG is a global network of 60 research sites with its operations and laboratory center based at Brigham and Women's Hospital in Boston. The ACTG conducts clinical trials in HIV-infected adults to test novel therapeutic interventions focused on HIV-associated inflammation and resulting end-organ disease, tuberculosis, viral hepatitis and HIV cure.

Dr. Tashima said, "We are thrilled with the results that have come from the ACTG Network. The Miriam Hospital has been part of the Network since 2000. Our work has allowed us to foster new investigations and treatments for treating HIV and AIDS."

She added, "The ACTG is an important HIV clinical studies network that, for example, proved that mother to child transmission could be dramatically reduced by having the pregnant woman take the anti-HIV medication AZT. Results of other ACTG studies have changed how we treat HIV infection, and have resulted in Department of Health and Human Services HIV guideline changes leading to improvements nationally in the standard of care for HIV treatment."

Dr. Tashima was the lead investigator and study chair for the OPTIONS trial that was conducted at 64 sites across the continental U.S. and in Puerto Rico. The OPTIONS trial was a multisite study that showed patients with drug-resistant HIV can safely achieve viral suppression – the primary goal of HIV therapy – without incorporating the traditional class of HIV medications into their treatment regimen. The ACTG trial showed for the first time that treatment-experienced patients can leave out this class of medication, known as nucleoside reverse transcriptase inhibitors (NRTI), as part of the regimen. Treatment-experienced patients already need to take three active medications in order to achieve viral suppression, so eliminating NRTI medications can lessen pill burden and side effects.

The Miriam Hospital treats more than 1,500 patients with HIV who are under ongoing care. The grant renewal will allow The Miriam to continue to serve as an ACTG clinical research site for the 2014-2020 time period. ❖

RWMC certified by Joint Commission for hip, knee replacements

PROVIDENCE – Roger Williams Medical Center has received The Joint Commission's Gold Seal of Approval for its total hip and knee replacement programs. To achieve certification, Roger Williams total joint replacement program hosted an onsite evaluation in December 2013 by a Joint Commission reviewer.

The evaluation looked at the program's compliance with The Joint Commission's rigorous standards of care including providing efficient care and preventing the spread of infections as much as possible.

"By adhering to The Joint Commission's strict clinical guidelines, our team continuously provides the highest level of orthopedic care to our patients," said **LOUIS J. MARIORENZI, MD**, director of the Division of Orthopedics at Roger Williams. ❖

Bryant University announces its new School of Health Sciences

and its first Clinical Program: Physician Assistant Studies

Architectural rendering courtesy of LLB Architects

MASTER OF SCIENCE IN PHYSICIAN ASSISTANT STUDIES

accepting applications in April 2014

- Strong teams and a supportive learning environment, experienced educators, small group learning opportunities for students, and a low student-faculty ratio.
- A newly-constructed state-of-the-art facility on Bryant's Smithfield campus, including new classrooms, a high-fidelity simulation laboratory, and a physical exam laboratory, with training in the anatomy lab and access to the medical library at The Warren Alpert Medical School of Brown University.
- A distinctive focus on the business of health care, with an introduction to the management principles of medical practice — from quality management to organizational governance — in the program's second year.
- Rich and rigorous clinical experiences, with 13 specialty rotations — more than any other regional program. Students will be teamed with preeminent doctors affiliated with The Warren Alpert Medical School of Brown University, Care New England, Southcoast Health System, and the Lifespan health system as well as distinguished independent clinical providers throughout southern New England.

Future programs will include Health Care Management and Health Care Policy.

Visit www.bryant.edu/WearTheWhiteCoat to learn more.

Bryant University has applied for provisional accreditation from the Accreditation Review Commission on Education for the Physician Assistant (ARC-PA). The University anticipates matriculating its first class in January 2015, pending provisional accreditation in September 2014. Provisional accreditation is an accreditation status for a new PA program that has not yet enrolled students, but at the time of its comprehensive accreditation review, has demonstrated its preparedness to initiate a program in accordance with the accreditation standards. The program will not commence in the event that this provisional accreditation is not received.

Bryant University | Smithfield, RI

Dr. Padbury receives March Of Dimes prematurity research initiative grant

PROVIDENCE – With the help of funding from the March of Dimes, **JAMES F. PADBURY, MD**, pediatrician-in-chief and chief of Neonatal/Perinatal Medicine at Women & Infants Hospital, is one of five scientists whose work toward discovering the causes of and reducing the rates of prematurity will be supported by March of Dimes Prematurity Research Initiative (PRI) grants in 2014.

WOMEN & INFANTS

James F. Padbury, MD

With prior support from the March of Dimes, Dr. Padbury's laboratory at has been studying the genetic basis of preterm birth for the past five years. This new, $400,000, three-year Prematurity Research Initiative Program grant will enable Dr. Padbury and his colleagues to continue their work in bioinformatics and targeted sequencing in preterm birth.

"We are so grateful to the March of Dimes for supporting this important work," said Dr. Padbury. "We are using the resources of this grant to sequence the genes we identified in women who delivered preterm, who were preterm themselves, and who have a family history of preterm birth in their relatives. We are sequencing up to 300 women, including 150 we have identified with a strong family history of prematurity at Women & Infants Hospital."

Dr. Padbury and his team have used bioinformatics techniques and "big data" approaches to collect all of the genes known to be involved in preterm birth, reading more than 1,000 scientific articles and pulling data from hundreds of public genetic databases. Their database is now hosted on the Center for Disease Control and Prevention's Genomics in Health Impact website, the University of Florida's Library of Genetic Resources, and Stanford University's Great Placenta Disorders and Preeclampsia Single Nucleotide Resources.

Dr. Padbury continued, "The Human Genome Project revealed that each of us have minor genetic variations, which may, in part, cause preterm birth. In order to identify these minor genetic variations, we will use new DNA sequencing technologies. We will look for minor genetic variations in families with a strong family history of preterm birth and compare genetic sequence to patients of similar background but who delivered full-term children. We hope that, with insights into the cause of prematurity, we can begin to address possible treatment, prevention methods and prediction." ❖

Drs. Allen, Gottlieb publish research on prevalence of reproductive coercion

PROVIDENCE – Researchers from Women & Infants Hospital of Rhode Island were part of a team that published "Reproductive coercion and co-occurring intimate partner violence in obstetrics and gynecology patients" in a recent issue of the *American Journal of Obstetrics and Gynecology.*

"Reproductive coercion, co-occurring with intimate partner violence, is prevalent among women seeking general obstetrics and gynecology care," notes **REBECCA H. ALLEN, MD**, of Women & Infants. She and **AMY S. GOTTLIEB, MD**, of the hospital's Women's Primary Care Center, participated in the study of 641 women ages 18 to 44, along with **CHRIS RAKER, ScD**, a statistician in the hospital's Division of Research.

Study participants completed anonymous surveys. The survey defined reproductive coercion as:

Pregnancy coercion, such as a male partner threatening to harm the woman physically or psychologically (with infidelity or abandonment) if she did not become pregnant

Birth control sabotage, such as flushing oral contraceptive pills down the toilet, intentionally breaking or removing condoms, or inhibiting a woman's ability to obtain contraception

"This is a far too common problem in this country. A study of 9,000 women by the National Center for Injury Prevention and the Centers for Disease Control and Prevention indicated that at least 9% of adult females in the United States have experienced reproductive coercion," Dr. Gottlieb explains. "Such coercion could have tremendous impact on a woman's ability to plan pregnancies or control her own fertility."

In addition, reproductive coercion has been associated with intimate partner violence, including threats, physical injury, or sexual abuse. This study is the first to examine both measurements – reproductive coercion and intimate partner violence – in the same relationship.

"We wanted to investigate the co-occurrence of these two types of male behavior toward female intimate partners," Dr. Gottlieb says.

Among the women who reported reproductive coercion, 32% experienced intimate partner violence in the same relationship. Nearly half of the women who experienced birth control sabotage also reported intimate partner violence, as did more than one third of the women who experienced pregnancy coercion.

"This is helpful information for health care providers who should tailor the reproductive care they deliver to each patient's particular situation," Dr. Allen says. "Asking questions about reproductive coercion and intimate partner violence is key to giving a woman the family planning counseling she needs." ❖

Article by Dr. Anderson focuses on Group A Strep infection in pregnancy

PROVIDENCE – **BRENNA ANDERSON, MD**, director of the Women's Infectious Diseases Consultative Service at Women & Infants Hospital has published an article as part of a Clinical Expert Series in the April 2014 edition of *Obstetrics & Gynecology*, entitled "Puerperal Group A Streptococcal (GAS) Infection: Beyond Semmelweiss," which offers a description of the recommended approach to diagnosing and treating GAS in pregnant and postpartum women.

WOMEN & INFANTS

Brenna Anderson, MD

"Basically, GAS is the same organism that causes strep throat. But when the infection occurs in the uterus, it can be life threatening," said Dr. Anderson. "This is a very unusual but serious infection, and recognition of it is often a stumbling block to treatment."

Group A streptococcus (GAS) can cause invasive infections in the form of endometritis, necrotizing fasciitis, or streptococcal toxic shock syndrome. These infections, when associated with sepsis, have associated mortality rates of 30 to 50 percent. When a pregnant woman presents with GAS infection, her symptoms are often atypical, with extremes of temperature, unusual and vague pain, and pain in the extremities. Imaging may appear normal, but removing a small sample from the uterus along with a blood culture may be a useful, rapid diagnostic tool.

"When suspected, invasive GAS infections need to be treated quickly. Very specific antibiotics are often helpful, although the infection may require surgery, which can be lifesaving," Dr. Anderson explained. ❖

Dr. Dudley's research investigates cancer drug to lower risk of sudden cardiac death

PROVIDENCE – **SAMUEL C. DUDLEY, MD, PhD**, a researcher at the Cardiovascular Institute (CVI) at Rhode Island, The Miriam and Newport hospitals has found that a new class of drugs, originally developed to treat cancer, reduces sudden cardiac death risk after a heart attack. The findings were published online in advance of print in the *Journal of the American College of Cardiology*.

LIFESPAN

"Currently, there are limited options to reduce sudden cardiac death following a heart attack," said Dr. Dudley, principal investigator and chief of cardiology at the CVI. "The benefit of most drugs is limited, and they have additional side effects. Defibrillators are an option, but they cannot be safely implanted for 40 days following a heart attack.

This finding gives us hope for a new treatment model, and if approved, will provide physicians with new options to lower patients' risk of death from cardiac arrest."

In this study, researchers evaluated mice that had sustained a heart attack and also had abnormal heartbeats. The study found that inhibition of a protein signal known as c-Src decreased the risk of abnormal heartbeats and sudden cardiac death. This suggests usefulness of c-Src inhibition in preventing arrhythmias associated with heart failure. This use of Src inhibitors for treatment of sudden cardiac death risk has been submitted for a patent.

"More research is needed to evaluate the efficacy of this use of a cancer medication to alleviate risk of sudden cardiac death, but we are hopeful that what we observed in mice will translate effectively to humans, providing patients and clinicians with a new paradigm for treating this common and life-threatening illness," Dr. Dudley said. ❖

Bradley Hasbro Children's Research Center receives $3.4M grant to study risk behaviors of juvenile offenders

PROVIDENCE – **MARINA TOLOU-SHAMS, PHD**, a psychologist from the Bradley Hasbro Children's Research Center, has received a $3.4 million grant to study the behavioral health and associated risk factors of adolescent offenders in the Rhode Island Family Court system. The study, funded by the National Institute on Drug Abuse, will focus on non-incarcerated, court-involved youth, and will monitor what risk behaviors the teens may develop, as well as the underlying causes.

The study will follow 400 Rhode Island Family Court-involved youth between the ages of 13 to 17, and their caregivers. Tolou-Shams' team will monitor the development of drug use, HIV/STD risk behaviors, psychiatric symptoms and recidivism in the adolescent offender population in the two years after the initial arrest or court contact.

The likelihood of acquiring HIV/STDs is also substantially increased among court-involved youth. Studies of juvenile detainees with both substance use and psychiatric concerns show that most are sexually active and more than half have had multiple partners and unprotected sex.

"There has been an emphasis on moving away from juvenile confinement and instead developing prevention and treatment programs for juvenile offenders in the community. Yet, only a handful of studies have examined these behaviors among non-detained juvenile offenders, who represent 80 percent of all legally involved youth," said Tolou-Shams.

Tolou-Shams, who is also director of the Rhode Island Family Court Mental Health Clinic, hopes that the findings from this study will help to develop recommendations on how the court system can better support first-time young offenders to keep more teens from repeating offenses.

Dr. Rouse, maternal-fetal medicine specialist, co-authors Obstetric Care Consensus


WOMEN & INFANTS

Dwight J. Rouse, MD

PROVIDENCE – **DWIGHT J. ROUSE, MD, MSPH**, a specialist in the Division of Maternal-Fetal Medicine at Women & Infants Hospital, has co-authored the first in a new, joint series called "Obstetric Care Consensus" that is being introduced by the American College of Obstetricians and Gynecologists (ACOG) and the Society for Maternal-Fetal Medicine (SMFM).

This inaugural issue, "Safe Prevention of the Primary Cesarean Delivery," addresses the rapid increase in cesarean birth rates and outlines a multifaceted approach that addresses indications for primary cesarean delivery.

"There is no doubt that there is a time and a place for a cesarean delivery. But we need to be sure that, as part of general obstetric practice, we are not overusing this tool for fear or convenience, particularly primary cesarean delivery," said Dr. Rouse. "It is important for health care providers to understand the short-term and long-term risks and benefits of cesarean and vaginal delivery, as well as safe and appropriate opportunities to prevent overuse of cesarean delivery."

This consensus outlines a multifaceted approach that addresses indications for primary cesarean delivery, including labor dystocia, abnormal or indeterminate fetal heart rate tracing, fetal malpresentation, multiple gestation, and suspected fetal macrosomia. ❖

Hasbro study finds text-messaging program good option for keeping teen girls healthy

Study highlights resource for physicians to provide counseling and preventative services to under-served teens

PROVIDENCE – **MEGAN RANNEY, MD, MPH**, an emergency medicine attending physician at Hasbro Children's Hospital, recently led a study that found a text-message program may be an effective violence prevention tool for at-risk teen girls. The study has been published online in the *Journal of Adolescent Health*.

"Mobile health, or 'mHealth,' is increasingly being used as a way to improve people's health, via text-messaging or phone-based applications," said Dr. Ranney. "However, few people have studied whether teens are interested in mHealth, especially for prevention-type messages, even though the vast majority of teens who come to the emergency department (ED) use mobile phones and more than 95 percent of those patients report that they use text messaging."

Dr. Ranney's team interviewed girls between the ages of 13 and 17 who reported past-year peer violence and depressive symptoms during emergency department visits for any medical issue. Overwhelmingly, the interviews showed that at-risk teen girls coming to the ED for care are very interested in receiving a text-message violence prevention intervention. The teens felt that a text-message program would enhance their existing coping strategies, and that they would not only use it themselves, but also refer their friends to it.

"The ED is the primary source of care for many teens with high-risk behaviors, such as peer violence, and it provides an important opportunity to initiate preventive interventions. However, there can be many limitations to providing such interventions in real time, including lack of time and resources on the part of ED staff, poor accessibility and availability of community resources, and low rates of follow-through with treatment referrals, leaving this group of teens largely under-served," said Dr. Ranney. "For these high-risk populations, who have high rates of mobile phone ownership but low accessibility to traditional health care, mHealth may be a particularly promising format for delivering preventive care."

In the future, Dr. Ranney hopes to also study teen boys and non-English speaking patients as possible participants in the delivery of counseling and behavioral skills text messaging. "By developing evidence-based text-message interventions, clinicians may be able to have a big influence on these teens' coping skills, involvement in fights and life choices," she said. ❖

Jordan Sack, MD'14: His early struggles with deafness and those who inspired him to help others

MARY KORR
RIMJ MANAGING EDITOR

PROVIDENCE – A cochlear implant has made all the difference in the life of PLME Alpert Medical School student and Brown '10 alumnus **JORDAN SACK, MD'14** – that and the tenacity of his mom, who first realized when he was 13 months old that there was a problem.

An East Greenwich, RI, native, Jordan is the oldest of the three sons of Drs. Steven Sack and Lisa Sack – his dad is an orthodontist and his mom is a dentist. When Jordan was born, infants were not screened for hearing as they are today. His parents sought medical help and tests revealed Jordan had a severe to profound hearing loss. His parents decided on an oral approach to therapy and before his second birthday, he was using hearing aids and working with speech therapists and audiologists several times a week.

When the FDA approved the use of cochlear implants in children, his parents took him at age 10 to New York University's Tisch Hospital, one of a handful of places where the procedure was done at that time.

Today, at age 26, Jordan plans a career in internal medicine. He has served on many organizations in the deaf and hard-of-hearing community and is now chair of the Rhode Island Commission on the Deaf and Hard of Hearing, an organization he began volunteering with in high school. Because of this involvement, one of his last projects at Alpert was designing an online survey to physicians for a community health clerkship project.

"There are about 9% of Rhode Islanders with a congenital or acquired hearing loss, or about 90,000 people of all ages," he said. His research on physician interactions with hard of hearing and deaf patients and their knowledge of resources available to these patients turned up scant information in the literature. With the assistance of the Department of Health, he sent out the survey and was gratified by the 400-plus responses he received as of March 6; he is now compiling the results.

Just prior to Match Day, Jordan sat down with RIMJ and spoke of the struggles of growing up oral deaf (does not use sign language) and the strength of those around him, who advocated for him and inspired him on his path to help others.

PHOTOS BY MARY KORR

Born deaf, Jordan Sack, MD'14, is an advocate for the deaf and hard-of-hearing community in Rhode Island. He recently designed an online physician survey to research the interactions of doctors and these patients, which he is currently compiling.

Without your hearing aid and cochlear implant, what is your level of hearing?

Severe to profound – when I take off my hearing devices, the quietest thing I can hear is the roar of a jet plane or the clapping of thunder.

What was your life like before the implant?

I couldn't hear the TV or radio, just static. There was no closed captioning then. I used to make up the plots for all the TV shows. Now that I can hear them, I can tell you my plots were better.

It was difficult to hear what people were saying, or to talk to friends, especially in noisy situations. That made it difficult to participate. In school, I was falling behind. I focused on trying to hear the words the teachers spoke, rather than understand what they meant. In fifth grade, my vocabulary was at a third-grade level. I couldn't speak well, and I sounded nasal. I couldn't articulate clearly – that was a big limitation with using a hearing aid. In fact, I couldn't hear the sound of my own voice.

The external Nucleus Freedom Cochlear Implant Jordan wears on his ear, which communicates with an implanted receiver.

Can you explain to me how the cochlear implant works?
A hearing aid takes sound and amplifies sound waves. We suspect my hearing loss stems from damage to the hair cells in the cochlear. But no matter how much you amplify the sounds, I am still not going to hear it.

The implant is basically an internal device – an electrode array – placed inside the cochlear in an effort to replace the function of the hair cells. The microphone on the external device transmits sounds, which are then converted into computer-coded signals that get relayed to the internal implanted receiver. These activate electrodes to stimulate the auditory nerve to send signals to the brain, which recognizes the signals as sounds.

What are your initial recollections of hearing with the implant for the first time?
I remember when it was first turned on. I could immediately hear voices and tell my parents' voices apart. The sound of their voices was surprising. Imagine you believed a certain color was blue only to find out it was not blue, it was orange, or to hear things in a certain way and then everything sounds different than the way you heard it yesterday.

I remember when we first left the NYU hospital and went out onto First Avenue. The noise of rush hour traffic was so intense I wanted to take off the implant. It was overwhelming.

How long did it take to adjust to the implant?
It took me a year to get used to it. The fact that I stimulated my brain with sounds for so long, from 13 months on, allowed me to transition smoothly to the cochlear implant. You can't wait 10 years and not hear anything and expect the implant to work right away. Today they do the implants at a much younger age and follow up with intensive speech and listening therapies.

What kind of work do you do as chair of the Rhode Island Commission on the Deaf and Hard of Hearing?
We work to empower deaf and hard-of-hearing individuals by providing services, educating the community, and advocate on a range of issues, including accessibility and communication adaptive technologies, the latter a rapidly advancing field. With the staff of three and 11 Commissioners, we meet with legislators, subcommittees, and work on upcoming bills in the legislature.

Currently we have six legislative bills in the Rhode Island House or Senate. As an example, House Bill 7577 proposes increasing insurance coverage of hearing aids from the current $1,500 per ear every 3 years, to full coverage, for those under 19 years of age. For those 19 and older, we hope to increase coverage from the current $700 per ear every 3 years to $1,500. Any support we receive would be greatly appreciated.

How have your experiences influenced you in your choice of becoming a doctor?
My experiences and encounters in the hard-of-hearing and deaf communities, along with the support I have received from my parents, speech therapists, and audiologists have all been very inspirational and make me to want to give hope and support to others. I was honored to have given both my high school valedictory address and Brown's Phi Beta Kappa speech, especially since my parents were told that I would never be able to hear or to speak. I plan to continue my passion for patient advocacy and care while pursuing my residency in internal medicine. I am very thankful for the opportunities I have been afforded and for the wonderful support and guidance I have received at Brown. ❖

Appointments

MEMORIAL HOSPITAL

Dino Messina, MD, PhD

Dr. Messina joins Memorial as assoc. program director for medicine residency program

PAWTUCKET – Memorial Hospital of Rhode Island recently appointed **DINO MESSINA, MD, PhD, FACP**, to its medical staff as the new associate program director for the Internal Medicine Residency Program and physician in the Internal Medicine Center. Dr. Messina is a member of Affinity Physicians and will work out of Memorial Hospital. He earned his medical degree and a doctorate in cellular biology from the State University of New York at Syracuse, Health Science Center. He completed his primary care residency at the University of Pittsburgh Medical Center, PA.

Dr. Messina is board certified in internal medicine. He is a fellow of the American College of Physicians and a member of both the Association of Program Directors in Internal Medicine and the Society of General Internal Medicine.

Previously, Dr. Messina worked at Danbury Hospital in Connecticut where he was the Internal Medicine Residency Primary Care Track Program director. During his tenure at Danbury, Dr. Messina helped develop a patient centered medical home outpatient experience and a curriculum that included special training in primary care orthopedics, geriatrics, behavioral medicine and women's health.

Dr. Messina's areas of clinical interest include: improving health outcomes for vulnerable patient populations; the impact of health literacy on chronic disease management; improving the continuity clinic experience for medical trainees through the use of the Patient Centered Medical Home model and safe opioid prescribing. ❖

KENT HOSPITAL

George Valentin Cristescu, MD

Dr. Cristescu, general surgeon joins Kent Hospital

WARWICK – Kent Hospital and Affinity Physicians, an affiliate of Care New England, recently welcomed **GEORGE VALENTIN CRISTESCU, MD**, to its medical staff. Dr. Cristescu is a board-certified general surgeon and comes to Kent Hospital from Whitesburg ARH (Appalachian Regional Healthcare) Hospital in Whitesburg, Kentucky, where he worked for two years.

In addition to being part of the surgical program at Kent, Dr. Cristescu has joined the surgical staff at Women & Infants Hospital, also part of the Care New England Health System.

Dr. Cristescu completed a general surgery residency in 2011, at the Cleveland Clinic in Cleveland, Ohio and two general surgery internships prior to residency. He was born in Ploiesti, Romania and attended medical school in Bucharest, where he emigrated from seven years ago. Dr. Cristescu's interests include advanced laparoscopic techniques including complex hernia repair, anti-reflux surgery and intestinal surgery.

Dr. Cristescu will join the practice of Sebastian Trombatore, MD, in Warwick. ❖

Dr. Murphy, colorectal surgeon, joins Kent Hospital

KENT HOSPITAL

Melissa M. Murphy, MD, MPH

WARWICK – Colorectal surgeon, **MELISSA M. MURPHY, MD, MPH**, has joined the Kent Hospital medical staff and Affinity Physicians, an affiliate of Care New England Health System. Dr. Murphy comes to Kent from Brigham and Women's Hospital of Boston, where she completed a colorectal fellowship.

"We are very pleased to welcome Dr. Murphy to Kent Hospital and are greatly looking forward to expanding our surgical services to the patients of our community," said Sandra L. Coletta, COO Care New England, president and CEO of Kent Hospital. "Dr. Murphy's knowledge, expertise and extensive colorectal training will advance the level of care offered locally and will play an important role in further developing Kent and Care New England's colorectal surgery program."

Dr. Murphy is board certified and works with a team of medical and radiation oncologists so patients are offered a multi-disciplinary approach to necessary cancer care. In addition to being part of the surgical program at Kent she has also joined the surgical staff at Women & Infants Hospital and is on staff at Brigham and Women's Hospital in Boston.

Dr. Murphy received her medical degree from George Washington University School of Medicine in Washington, DC. Prior to medical school, she received her Master of Public Health and Master of Medical Science degrees from Boston University. Dr. Murphy completed a research fellowship and her general surgery residency at the University of Massachusetts Medical School and completed her fellowship in colorectal surgery at Brigham and Women's Hospital and Harvard Medical School.

She has published in peer-reviewed journals including *Cancer*, *Journal of Gastrointestinal Surgery*, and *Annals of Surgery*. She has won several awards during her training including H. Brownwell Wheeler Award Outstanding Resident, and awards for her research from the Society for Surgery of the Alimentary Tract and from the New England Society of Colon and Rectal Surgery. Dr. Murphy is an instructor in surgery at Harvard Medical School.

Her clinical interests include colorectal cancer, inflammatory bowel disease, diverticulitis and fecal incontinence. In addition, she is now bringing to Kent advanced laparoscopic colorectal surgery, transanal microscopic surgery and sphincter sparing surgery. ❖

OCT. 1, 2014 COMPLIANCE DEADLINE FOR ICD-10

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

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

- Plan Your Journey – Look at the codes you use, prepare a budget, and build a team
- Train Your Team – Find options and resources to help your team get ready for the transition
- Update Your Processes – Review your policies, procedures, forms, and templates
- Engage Your Partners – Talk to your software vendors, clearinghouses, and billing services
- Test Your Systems and Processes – Test within your practice and with your partners

Now is the time to get ready.

www.cms.gov/ICD10

CMS ICD-10
Official CMS Industry Resources for the ICD-10 Transition
www.cms.gov/ICD10

DEPARTMENT OF HEALTH & HUMAN SERVICES · USA

Appointments

KENT HOSPITAL

Rebecca L. Burke, RN

Kent Hospital appoints Burke Sr. V-P, chief nursing officer

WARWICK – Kent Hospital has appointed **REBECCA L. BURKE, RN, MS, NEA-BC**, to the position of senior vice president of patient care services and chief nursing officer at Kent Hospital. Burke comes to Kent from Saint Francis Hospital and Medical Center in Hartford, CT, where she served as senior vice president of clinical services and chief nursing officer for three years. She replaces Rene Fischer who is retiring.

Prior to moving to Hartford, Burke served as senior vice president, chief nursing officer and chief operating officer at The Miriam Hospital from 2009-2010 and senior vice president of patient care services and chief nursing officer from 1999-2010. Burke served as the director of inpatient and emergency nursing services, and ambulatory services at Lifespan Academic Medical Center for ten years. Burke also served as a nurse manager at Lifespan, where she implemented and managed their cardiovascular telemetry unit. ❖

Brian K. Reed, MD, former combat surgeon, joins Kent medical staff

KENT HOSPITAL

Brian K, Reed, MD

WARWICK – Board certified general surgeon, **BRIAN K. REED, MD**, has joined the Kent Hospital medical staff and Affinity Physicians, an affiliate of Care New England Health System. Dr. Reed comes to Kent from the Naval Hospital Camp Lejeune in Jacksonville, NC, where he served as the department head of general and urologic surgery since 2011. While at Naval Hospital Camp Lejeune, Dr. Reed served as a combat surgeon in support of Operation Enduring Freedom, in Afghanistan. Dr. Reed has served in the U.S. Navy since 2004.

"We are very pleased to welcome Dr. Reed to Kent Hospital and with his extensive experience as a trauma surgeon in the U.S. Navy, we feel privileged to have him on staff," said Sandra L. Coletta, COO Care New England, president and CEO of Kent Hospital.

In addition to being part of the surgical program at Kent, Dr. Reed has joined the surgical staff at Women & Infants Hospital, also part of the Care New England Health System. He is also trained in robotic surgery.

Dr. Reed received his medical degree from the University of Tennessee Health Sciences Center in Memphis, TN, and completed general surgery residency training at the University of Tennessee Medical Center in Knoxville, TN. After completion of residency, Dr. Reed served for five years on active duty in the United States Navy. During his time in military service, Dr. Reed served as staff general surgeon and department head of general surgery at Naval Hospital Camp Lejeune. During 2011, he deployed to Afghanistan with Combat Logistics Regiment 25, serving at a forward surgical hospital in support of Operation Enduring Freedom. His contributions during this deployment earned him the Navy and Marine Corps Achievement Medal. Additionally, his accolades include the Navy and Marine Corps Commendation Medal and the Fleet Marine Forces Officer Qualification.

Dr. Reed's clinical interests include minimally invasive surgical techniques for gastroesophageal reflux disease; paraesophageal, inguinal and ventral hernia disease, and advanced laparoscopic surgery for diseases of the colon, spleen and adrenal glands. ❖

Obituary

ANDRA KATHERINE CYRONAK, MD, 45, of Providence, died peacefully in her home on Feb. 26, 2014. She received her B.A. from Wellesley College in 1990 and her MD from Hahnemann University Medical School in 1994.

She was the beloved wife of Michael J. Wrobleski and devoted mother to Wanda Grace, 11, Joseph Samuel, 9, and Lucy Isabel, 8. Andra was a treasured physician in the Rhode Island community for over 20 years, most recently with Medical Associates of Rhode Island. She loved to laugh and had a wonderful zest for life.

Andra is also survived by her parents, Judith and Charles Cyronak, of Block Island and her grandmother, Grace Jackson, of Providence. Interment and a celebration of Andra's life will be held on Block Island in the spring.

In lieu of flowers, donations can be made to the "Wrobleski Children's Education Fund," Care of St Pius V School, 49 Elmhurst Ave, Providence, RI 02908 or to the children's College Bound Funds by an email to laurel@blockislandproperty.com.

The Manifold Directions of Medicine

STANLEY M. ARONSON, MD

DIRECTIONAL WORDS ARE AN ESSENTIAL COMPONENT IN THE VOCABULARY of a living language; and thus English is made more versatile by words such as front, back, up, down, head and tail. And were we all to speak just one language, such words would be globally functional. But medicine, being a transnational profession and one that operates in a multitude of languages, has decided, rather, to use but a single set of words for its vocabulary, words selected solely from classical Greek and Latin; and so we possess such words as dorsal, ventral, caudate, caudal, caudad and cephalad.

Caudal, an adjective, is derived from the Latin, *cauda*, meaning the tail. When the Latin suffix, *–ad*, is used, it then signifies something akin to the English suffix, -ward, meaning in the direction of. Beyond the realm of medicine, *cauda* forms the basis for words such as coda (a concluding passage of music), codex, codicil (an attachment at the end of a document), queue (the tail of the line, and by extension, the line itself) and even that linear tool for billiards, now called the cue.

Cephalic, also an adjective, (from the Greek meaning head) denotes things pertaining to the brain. Cephalad, on the other hand, becomes the operative word meaning towards the head. The Latin equivalent is *caput* and its diminutive, *capitellum*; and thus charismatic leaders, in Spanish-speaking nations, have called themselves El Caudillo, derived from *capitellum* and not *cauda*.

Dorsal is from the Latin, *dorsum*, (meaning back or posterior). The Belgian anatomist, Andreas Versalius (1514–1564), introduced the word, dorsal, as a defining morphologic adjective. And beyond medicine, dorsum was incorporated in the English verb, endorse (referring to one's signature at the end of a legal document) and dossier (a collection of such legal documents).

Ventral stems from a Latin word, *venter*, variously meaning the abdomen, the body cavities and even the uterus. And so ventral (toward the abdomen) became the oppositional partner of dorsal. The diminutive of *venter* becomes *ventriculus*, the origins of the word, ventricle, whether cardiac or cerebral.

The Latin, *ventus*, remotely cognate to *venter*, defines the wind as in words such as ventilate and vent. Ventose is the alternate name for February – the windy month – coined in France toward the end of the 18th Century. Finally, a performer who says words without moving his lips but who seems to produce sentences as though from his stomach, is called a ventriloquist (*loqui*, Latin for speak, as in words such as colloquial or loquacious).

PAGE FROM *CATOPTRUM MICROSCOPICUM*, JOHANN REMMELIN, 1619 FROM THE RIMS COLLECTION AT THE HAY LIBRARY

Timeless Advice to Doctors: You Must Relax

MARY KORR
RIMJ MANAGING EDITOR

NATIONAL LIBRARY OF MEDICINE

Edmund Jacobson, MD

On April 2, 1939, **ELIHU S. WING, MD**, gave a radio address on WPRO, as a spokesman for the Rhode Island Medical Society. His topic was "Diversion, Relaxation and Sleep."

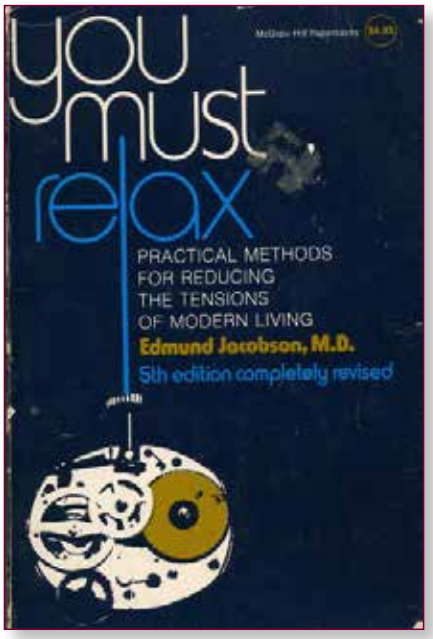
He advised overworked physicians to take better care of their mental and physical health "in these strenuous and anxious times," lest their reserve forces become depleted leading to "difficulties which will impair your effectiveness in work, your own happiness and that of your family." And, he added, this will lead over time to "combine with other factors to produce real organic changes particularly affecting the arteries, the heart and the digestive tract, as well as the endocrine or ductless glands."

After giving examples of physicians angrily confronting their golf game or bridge game, Dr. Wing cautioned that this "excitement and nervous drive, then, in reality, becomes close to a mania…sooner or later you begin to wonder why life is not going smoothly, why you fatigue so easily, cannot relax or sleep well."

In calling for a well-balanced life with the "proper proportions of rest, work and play," he recommended two books to achieve this, written by **EDMUND JACOBSON, MD**: *You Must Relax* and *You Can Sleep Well.* The former, published in 1934 by McGraw-Hill Co., was a bestseller and sold for $1.50. *JAMA* endorsed it, and the *Chicago Daily News* called it "the most important book of our time." The book, available on the Internet, describes exercises and relaxation techniques to relieve tension.

Dr. Jacobson, who worked at the Laboratory for Clinical Physiology in Chicago, became known as the "father of progressive relaxation." In the 1920s, he worked with engineers at Bell Telephone Laboratories to invent the 'integrating neurovoltmeter,' which he describes in his 1934 book, to be used as a diagnostic tool by physicians for their patients. The device measured microvolts from the muscles and nerves.

No doubt Dr. Jacobson practiced what he preached; he lived to age 94 and died in 1983.



When You Relax, Maybe You Don't; Science Puts Finger on 'Nerves'

Adele Lochau, electrodes attached to her lips to catch invisible lip movements as she reads to herself, undergoes a test for nervousness and tenseness at the hands of Dr. Edmund Jacobson, with his "integrating neurovoltmeter."

By NEA Service

Chicago—Dr. Edmund Jacobson of the Laboratory for Clinical Physiology gave a demonstration of his new machine to measure nervousness and tension and came up with a couple of new ones:

When you read to yourself, you are still reading with your lips.

When you think you are relaxed, maybe you aren't.

The machine, a new development which puts the scientific finger on the old-fashioned "case of nerves," disclosed that silent readers make slight lip movements, as if pronouncing the words, which are imperceptible to the eye.

graph, as a diagram of the state of your nerves.

Dr. Jacobson's new machine will give physicians a new and undiluted lowdown on the real state of people's nerves and muscles. The real effect of treatment in nervous cases will be observed, rather than rely on "Oh, doctor, I feel so much better now."

A 1940 newspaper article which reports on Dr. Edmund Jacobson's relaxation measurement machine called an integrating neurovoltmeter.