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What's in a Name???

GOOD - authentic, honest, just, kind, pleasant, skillful, valid

NEIGHBOR - friend, near

ALLIANCE - affiliation, association, marriage, relationship

CORPORATION - company, business establishment

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Commentaries

IRBs and the Private Office

One of the biggest changes I experienced when I moved from a salaried position in a teaching hospital to private practice was the loss of the hospital **Institutional Review Board (IRB)**. If I want to do research now that requires an IRB approval, and almost anything you can think of requires it, I have to pay for the review.

For pharmaceutical-sponsored trials the “independent” IRBs are a blessing. They are much faster, since they meet daily. Also they do this for a living, hence they are responsive to their clients, whereas hospital IRBs usually meet once or twice a month, using “volunteer” hospital staff and community people who are not paid for an oftentimes large amount of time-consuming and boring work. They are not beholden in any way to the investigators. In addition, the independent IRBs can approve one protocol for a large number of institutions located all over the country, whereas each hospital IRB requires its own approval. Hospital IRBs also seem to enjoy a perverse delight in having their own idiosyncratic forms and requirements that make it impossible to simply submit the same proposal to more than one hospital IRB (for 20 years I’ve heard discussions about having a single IRB template that could be used at all of the Brown hospitals. That would evidently improve efficiency so much that it is impossible to consider, sort of like having the various security branches in the federal government being able to access each other’s data and communicate with each other. The stumbling block, I think, is that lawyers from different corporations would have to agree on something.)

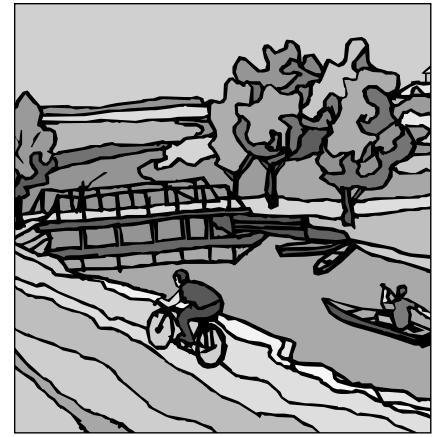
Recently I was charged \$2500 for the review of a protocol in which I simply asked people if they had a runny nose. That is, of course, highway robbery, but a journal insisted that I have an IRB approve the “study” or they wouldn’t review it. If I want to modify the project by ask-

ing if they used a tissue or a handkerchief I would need to amend the protocol, for an additional fee.

Tremendous costs such as these effectively inhibit small, unfunded studies that might shed light on treating untold numbers of ailments. If a doctor gets an insight on how to better treat something, he may want to “prove” his hypothesis by performing a small research study. If he’s not funded then he has to personally shell out the money for the approval. One might think that voluntarily teaching at a medical school would allow use of an IRB, but that isn’t true. Teaching Brown students, or teaching medical housestaff, does not provide entree into the world of a hospital IRB. Brown will not supply an IRB approval for projects that are not absolutely required by the Brown employee’s job description. Since clinical faculty at the medical school are not Brown employees, and the hospital or office locations are not Brown property, Brown has no legal jurisdiction. This is the case around the country, and is not a peculiarity of the Brown system.

IRBs are necessary. I do not dispute that in any way. The problem, as I see it, is that many doctors have abused their patients by confusing M.D., medical degree, or medical doctor, with “medical deity,” and believe that they have the ethical inside track. The number of abuses of patients is probably countless. We always start with the infamous Tuskegee “experiment” on the civilian side, and the numerous radiation exposures the department of defense subjected American soldiers to in order to learn about radiation toxicity. Without an IRB system we don’t treat syphilis and we cause cancer. With IRBs we have handcuffs on small-scale research.

I think there are solutions. Common sense can be used. That would eliminate a small but substantial percentage of useless IRB work. Asking an IRB to review a project in which people are asked simple, non-threatening questions, where all re-



sults are to be published in a format that precludes identification of any subject, wastes time and money, and, more importantly, impedes progress. This role has been forced on IRBs by journals and hospitals, and is anti-intellectual and anti-patient. Some IRBs have assumed that by virtue of their being in a position to judge, that they are Solons, with an ethical compass, able to pass judgment on ethical issues as well. This is, of course, untrue, although an independent review of a proposed research is always a good thing.

There is an important role for IRBs. It is to protect patients, make sure they are not subjected to needlessly dangerous treatments, and that they are adequately informed of their risks and rights. When a researcher cannot afford to pay an IRB to review a protocol, that researcher should have the right, via some quid pro quo, to have a local hospital’s IRB supervise the protocol. It seems to me that a payment in lieu of money would be a commitment to serve on the IRB, or other hospital committee, above and beyond what is normally expected of a hospital staff member. Research should be encouraged, and if clinicians want to volunteer their time, without pay, to advance their clinical arts and science, they should be encouraged, not stopped.

— JOSEPH H. FRIEDMAN, MD

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The Bagdad Boil Deploys To the United States

Nineteenth Century physicians in India's Bengal region encountered a terrorizing new disease depopulating entire villages. The disease was first brought to the attention of Europe, in 1824, when Western physicians in Jessore, India, described an ailment locally called black fever. The disease, also known as Burwan fever, killed an estimated 250,000 in the year 1854. The epidemic advanced steadily to the north of India finally burdening the Brahmaputra and Assam Valley regions where uncontained fear of the epidemic compelled the indigenous population to burn the huts of the afflicted, with the afflicted also consigned to the flames. Many mistakenly thought that it was a malignant form of malaria.

By the end of the 19th Century the disease became endemic to virtually all of eastern India and parts of southern China. Because the skin of the victims darkened, the disease was now called *kala azar*, a Hindi term meaning dark skin. Kala azar is now endemic to much of Asia [especially the Bengal, Bihar, Madras, Sikkim and Assam regions], eastern and northern Africa, the Middle East, much of Latin America and, occasionally, nations touching upon the Mediterranean Sea. It is firmly established in 88 countries with the great majority of the cases in Bangladesh, India, Nepal, Brazil and Sudan. About two million new cases are estimated annually. The World Health Organization regards it as a major cause of parasitic mortality, second only to malaria in the family of protozoan tropical ailments.

As an acute disease, kala azar begins quietly. In contrast with so many of the tropical fevers, it encroaches gradually, causing only pallor [anemia] and fatigue to announce its debilitating presence. Within months, however, a cyclic, low-grade fever develops now associated with weight loss, muscle wasting, utter lassitude, exhaustion and notable enlargement of the spleen and liver.

In 1901, William Boog Leishman [1865 – 1926], a Scottish pathologist-physician assigned to the Army Medical Services of India, studied the autopsy-derived tissues of an army recruit dying of kala azar. He observed large numbers of oval bodies within the cells of the spleen and concluded that these represented some microscopic form of an as yet unidentified parasite. The pathogenesis of the disease was gradually clarified indicting the female sand fly [*Phlebotomus papatasi*] as the blood-sucking carrier of the parasite from one human to another. The disease has since been called leishmaniasis although in certain precincts it is variously called Bagdad boil, Aleppo boil, espundia or dumtum fever [named after a town in India].

The genus name of the vector, *Phlebotomus*, is appropriate. Translated from the Greek it means, literally, vein cutting [thus describing the blood-sucking habit of the fly] and it is almost identical to the technical word describing the blood-letting procedure [phlebotomy] employed by 18th Century physicians.

Sandflies don't fly. Rather, these minute insects can only hop. They tend to bite at night, attacking people when asleep and only those sleeping on or close to the ground [such as soldiers in the field, the homeless and the extremely poor.] The close relationship of kala azar to the very poor of India is so striking that it is identified as a disease solely of the impoverished. The greatest incidence in India is overwhelmingly among the Dalit population [the lowest Hindu caste, sometimes called 'The Untouchables.']

The protozoan parasite, called *Leishmania donovani*, embraces over 30 sub-species, some causing the fatal disease [now called visceral leishmaniasis] while other sub-species cause only a disfiguring infection of the skin [cutaneous leishmaniasis], the latter manifestation of kala azar particularly prevalent in South America.

There now are effective preventive measures such as bed nets treated with the insect repellant, permethrin, and DEET applied to the skin. Pentavalent antimonial agents such as pentostam and the newly synthesized miltefosine are effective for therapy of the active infection.

In recent years there have been three atypical outbreaks. An epidemic of kala azar emerged in Sudan, in 1984, coincident with the onset of that nation's bloody civil war. As vast numbers of refugees fled their villages, the frequency of the disease accelerated. Few beyond Sudan expressed much concern although *Medicins Sans Frontieres* volunteered to work in the congested refugee encampments. In the region near Duar, in 1995, over 100,000 deaths were ascribed to kala azar. Jill Seaman, a physician who led the local medical efforts, was quoted as saying: "Where else in the world could 50% of a population die without anyone knowing?" The Sudanese government expelled the volunteer physicians and has denied the existence of any epidemic.

In 2004 large numbers of Colombian troops were sent to the south of their country to suppress local insurrections. An estimated 3,400 soldiers became ill with kala azar, particularly in the Meta and Guaviare districts.

And the third notable outbreak was in troops from the United States deployed to Afghanistan and Iraq. Kala Azar has thus joined malaria, dengue fever and chikungunya fever as insect-borne threats to the health of American men and women in uniform. Over 2,500 military [and civilian contract workers] have been diagnosed with the parasitic infection.

Since the early manifestations of this disease are quite non-specific, civilian physicians in temperate climate United States are urged to restudy their dust-covered texts on tropical disease.

– STANLEY M. ARONSON, MD

Disclosure of Financial Interests

Stanley M. Aronson, MD, has no financial interests to disclose.

Pediatric Gastroenterology

Neal S. LeLeiko MD, PhD

RESEARCH

Laboratory Research

The laboratory of the Division of Pediatric Gastroenterology focuses on understanding how diet influences gene expression in the intestine as well as other organs. We believe that dietary inhibitors of **histone deacetylase (HDAC)** modify gene expression through histone modification of intestine specific enhancer elements. Dietary HDACIs, derivatives of naturally occurring substances in the diet such as diallyl disulfide (garlic), sulforapane (broccoli) and butyrate (fatty acid) appear to act as cancer chemopreventive agents through their HDACI activity. They are of lower potency and with potentially lower toxicity, than other HDACIs such as TSA and synthetic HDACIs. Targeted and chronic treatment such as that achieved with dietary supplementation has potential for delivering effective HDAC inhibitory doses with low toxicity to the gastrointestinal tract. For example, targeting intestinal cells directly with dietary doses of butyrate, which serves as the principal oxidative fuel for the colonocytes, could achieve adequate levels for efficacy. Combining dietary HDACI treatment with histone methylation agents also holds promise of more targeted and potent treatments, but will only be possible once the precise mechanisms of action of HDACs and HDACIs on intestinal gene expression can be elucidated. This remains a relatively unexplored area for treating colon diseases such as ulcerative colitis.

We are using a gene that we have previously studied, Cystic Fibrosis Transmembrane Regulator, as a model. Our results will have far reaching implications for healing of intestinal diseases such as Inflammatory Bowel Disease as well as treating and preventing the intestinal manifestations of Cystic Fibrosis and altering the natural history of systemic as well other gastrointestinal diseases.

We believe that dietary HDAC inhibitors upregulate *CFTR* in intestinal tissues and specifically that HDAC inhibition augments *hnf1*, and *cdx2* mediated upregulation of *CFTR* in the GI

tract. Because there is little correlation between particular *CFTR* gene mutations and intestinal disease phenotype epigenetic factors are likely modifying the effects of mutations to produce specific patterns of organ involvement.

We have previously shown that specific epigenetic factors modulate histone acetylation at the 1st intron to upregulate *CFTR* expression in intestinal cells. Gene expression can be modulated by acetylation and deacetylation of nucleosomal core histones H-3 and H-4. Acetylation generally increases gene activation by neutralizing the positive charge on N-terminal histone lysine residues, inducing relaxation of chromatin structure and accessibility of regulatory factors to DNA. Deacetylation of histone lysine side-chain amino groups promotes chromatin condensation. Deacetylation is mediated by histones deacetylases (HDACs) and generally induces transcriptional repression. We have demonstrated that histone acetylation at an inverted CCAAT (Y box) element in the proximal promoter is required for accurate initiation of *CFTR* transcription. We have also demonstrated that histone deacetylase1 (HDAC1) activity is associated with transcriptional repression of *CFTR* at this element. Inhibition of HDAC activity therefore has the potential for derepression and upregulation of target gene expression.

The capacity to therapeutically upregulate *CFTR* gene expression by dietary intervention could have a major impact on disease course. For example, a minor increase in wild type *CFTR* expression of up to 10% has been shown to correct the intestinal phenotype in CF null mice. Our studies have already shown that TSA a potent HDAC inhibitor (HDACI) can upregulate *CFTR* expression through histone acetylation. The therapeutic potential of HDACIs are already under investigation in clinical trials for treatment of cancer and hemoglobinopathies. Their mechanisms of action and exact targets however remain largely undefined. This is partly due to the number and complexity of HDAC interactions in mammalian cells which are also

in the process of being more fully characterized. In mammalian cells there are at least 11 different HDACs, which function as part of multiprotein complexes, interacting with each other and with other transcriptional modifiers. HDAC targets also include non-histone proteins, including those involved in cellular trafficking pathways. HDACI treatment to improve defective DF508 *CFTR* protein cellular trafficking is currently under investigation. However HDACI treatment to upregulate *CFTR* expression, as well as other genes expressed in the gastrointestinal tract with potentially greater therapeutic potential, has not been explored.

Our lab also collaborates with adult GI lab workers assessing how Platelet Activating Factor (PAF) affects sigmoid smooth muscle contraction in ulcerative colitis¹ and work on engineering mucosal RNA interference for eventual luminal therapy of inflammatory bowel disease.²

Clinical Research

Active clinical research studies include: a study of the effects of obesity education on health care providers' perceived ability to intervene with their patients' weight problems; a study on predicting the occurrence and significance of gastroesophageal reflux disease in premature infants; and a population-based study of the natural history of Hepatitis C in newborns and children in the State of Rhode Island. We maintain an active collaboration with colleagues in the Department of Psychiatry studying the effects of sibling support and knowledge on the course of children with IBD and we are studying emotional factors in children with recurrent abdominal pain. Collaborative studies on the role of stress in children with IBD and studies of medication adherence in IBD are awaiting funding.

IBD Registry

The Pediatric Collaborative IBD Registry is a critical multi-center research effort involving 18 major pediatric centers in the United States and Canada. In addition to the many scientific presentations and publications described in the

section on our IBD center (see below), we along with about 5 other centers are about to begin a study of predictors of outcome in children admitted to hospital for steroid treatment of acute ulcerative colitis. The members of the Registry consortium are planning collaborating on other studies of factors associated with outcomes in IBD in general.

Clinical Trials

The Division's Clinical Trials program offers patients an opportunity to participate in clinical trials of new medications. These studies are primarily designed to determine the optimal pediatric dose of medicines in widespread use among children that have never been tested. The Division's participation has already resulted in the determination and publication of appropriate dosing for a commonly used proton-pump inhibitor.³

SPECIAL CENTERS HELPING PATIENTS WITH SPECIAL NEEDS **Pediatric IBD Center**

Inflammatory bowel disease afflicts 250,000 children in this country. Work of our own faculty¹³ suggests that there may be a distinct phenotype associated with the onset of inflammatory bowel disease in children under the age of 5. The increasing recognition of this group of very young children serves to call attention to the importance of providing care and support for the entire family unit. The care of these patients requires a multidisciplinary effort organized by the pediatric gastroenterologist and managed with the primary care physician. Our center provides the full array of professionals to guide children and their families toward leading normal lives.

The IBD center at Hasbro is a multidisciplinary unit that is one of 18 centers participating in a North American registry of new patients designed to elucidate the natural history of IBD. The centers involved are premier pediatric centers throughout the US and Canada. Our Center was recently cited as the outstanding new center.

Liver Diseases Center and Infectious Hepatitis Clinic

Children with the entire spectrum of liver diseases including cholestatic syndromes, biliary tract abnormalities, metabolic disease and those with end-stage dis-

ease awaiting transplantation and those who have already undergone liver transplant are cared for at the Liver Diseases Center. The Division faculty who attend the Center's clinic have evaluated and treated over 500 pediatric liver transplant patients.

The Center includes an infectious hepatitis clinic which represents a collaborative effort with our Division of Infectious Disease. One goal of this program is to establish a state-wide and region-wide registry to study the natural history of hepatitis C in infants and children.

The Division's new web site provides up-to-date information about the division and its activities as well as a means for new and old patients to expedite the process of making appointments.

Nutrition Support Service

A pediatric nutrition support service provides consultative assistance for patients in need of nutritional/metabolic support. Some of these children are critically ill in the PICU; others face chronic malnutrition as result of devastating illness or malformation.

Feeding Team

Once children no longer need the help of our nutrition support service they often require assistance to learn how to nourish themselves. These children may have received special nutritional regimens requiring prolonged **parenteral nutrition** (TPN) or prolonged tube feeding or a combination of both. Some infants must learn for the first time to use their mouths to feed. This can be a slow, tedious process with many pitfalls. Our approach, which includes every member of our feeding team, focuses on the individual needs of each child, whether the problem is primarily physical, primarily emotional or a combination of the two. Chil-

dren with other medical and social issues, especially those who are under weight or under grown, may be referred for evaluation and treatment.

Failure to Thrive Program

Because of the success of many of our initiatives in treating small or sick patients, the Division has begun a special program for evaluating children who do not appear to be gaining weight or growing adequately.

Weight Control - "Kids on the Move"

Children who are significantly overweight face the medical problems associated with metabolic syndrome. They also risk the long-term complications of steatohepatitis. Recent evidence suggests that fatty liver may seriously threaten the well-being of children and young adults and lead to hepatic fibrosis and cirrhosis.

Because of the lack of available venues for treating overweight children, the Division has begun its own program. We have established "Kids on the Move" a joint program with our colleagues in child psychology. The program was initially aimed at younger and middle aged children who are moderately overweight, with a focus on prevention. The demand for care for older adolescents has been so great that we have expanded to include all adolescents.

Celiac and Food Allergy

Gluten sensitive enteropathy or celiac disease appears to have an incidence in our patients of 1 in 2-300.⁴ This is markedly greater than was thought to occur just a few years ago. Celiac disease has commonly been thought of as a food allergy but it is now generally recognized to be an autoimmune disease with varied manifestations. The Division has a nutritionist dedicated to our celiac patients.

Intestinal Failure/Rehabilitation

Short gut syndrome and intestinal failure require the meticulous application of rigorous treatment regimes. Infants recovering from surgical intervention or in need of rehabilitation can be treated by a team experienced in the medical rehabilitation of failing intestines.

Severe GERD

Severe gastroesophageal reflux disease is being noted more frequently, sometimes attributed to overweight, other times to food allergy. The increase in frequency is also reflected in aggressive treatment in the neonatal intensive care unit.

Pancreatic Disease (including Cystic Fibrosis)

Children with pancreatic disease and cystic fibrosis represent a continuing challenge and are regularly seen and evaluated in our clinic. The division provides a faculty member to the Cystic Fibrosis Clinic and shares a nutritionist with the CF clinic.

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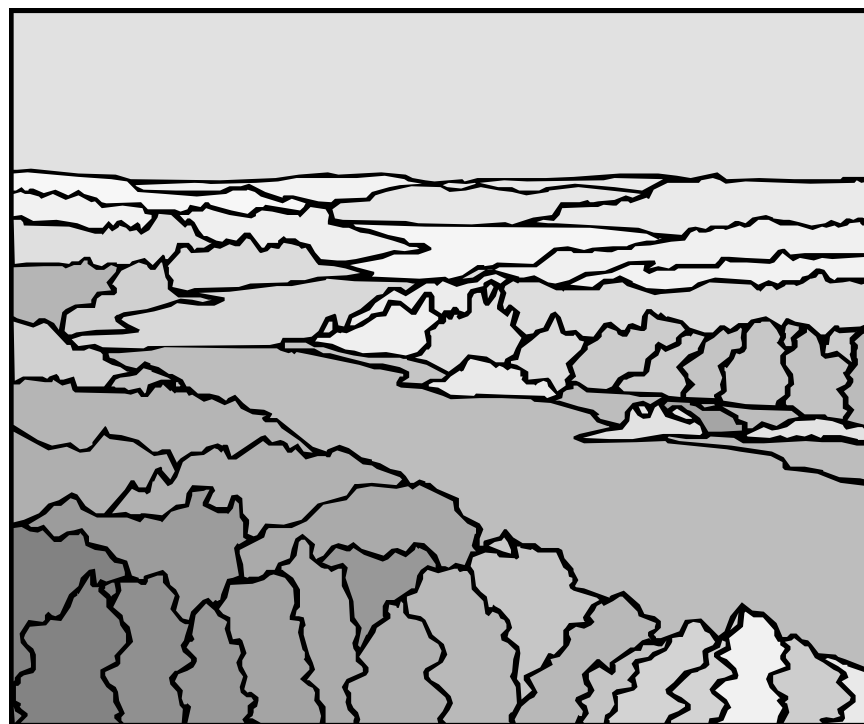
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We surveyed 18-55 year-old female patients in the Rhode Island Hospital ED about whether they would like the ED to provide, make referrals for, or give educational materials about Pap smears, **breast self-examinations (BSEs)**, mammograms, condoms, **birth control**

We surveyed 18-55-year-old female Rhode Island Hospital ED patients using a self-administered, written, anonymous, multiple choice questionnaire drafted by the study authors. Women were excluded if they could not read or write in English; or were being evaluated in the critical care, psychiatric section, or substance abuse holding areas of the ED. Research assistants administered the survey to patients between July 2002 and May 2003. The hospital institutional review board approved the study. The study methods have been described in detail elsewhere previously; this study involves an analysis of a different section of the survey.³ The data analyses included tabulation of the percentage of responses by patient age, race/ethnicity and insurance status and current, recent, or ever usage (for EC) of the preventive health measures. Pearson's χ^2 test, two-sample tests

Table 1 depicts the percentage of women who wanted the ED to provide, make referrals, or give educational materials on the three women's cancer screening tests and three contraceptive measures. Women were equally interested in educational materials and referrals for each of the services (p -values > 0.05 for all comparisons), although there was a trend of favoring educational materials over referrals for four of the measures: BSEs, condoms, BCPs, and EC. Women favored receiving educational information or referrals over having the ED provide the services in the ED ($p = 0.05$ for all comparisons, except for condoms, $p \leq 0.07$).

Table 1. Patient Preferences on Cancer Screening and Contraceptive Preventive Health Services

	<i>n</i>	Yes %	No %	p-value	RR (95% CI)
Pap smears				0.07	1.15 (0.99-1.32)
Within past year	381	57.5	42.5		
Not within past year	158	65.8	34.2		
Breast self-exams				0.38	0.95 (0.83-1.07)
Within past month	257	66.5	33.5		
Not within past month	283	62.9	37.1		
Mammograms				0.40	1.02 (0.89-1.17)
Within past year	122	61.5	38.5		
Not within past year	402	65.7	34.3		
Condom use				0.29	0.92 (0.80-1.07)
Always use	89	61.8	38.2		
Do not always use	404	55.7	44.3		
Birth control pills				0.27	0.90 (0.76-1.07)
Currently use	95	64.2	35.8		
Do not currently use	446	58.1	41.9		
Emergency contraception				0.05	0.79 (0.63-0.98)
Ever used	40	70.0	30.0		
Never used	498	54.2	45.8		

n.b. : Reference groups for risk ratios: current, recent or ever usage of the preventive health measure

Table 2. Patient Preferences for Educational Materials by Current, Recent, or Ever Usage of Preventive Health Measures

Table 1 compares the women who wanted the ED to give educational materials about the preventive health measures by age, race, and insurance status and Table 2 by usage of the preventive health measures. Although not all comparisons reached statistical significance, younger women, non-white women, and women without private health care insurance were generally more interested in receiving educational materials. Women less than age 35 were more likely to want the ED to provide educational material about contraceptive measures. Non-white women were more likely than white women to want educational materials on cancer screening tests and condoms. Women without private health care insurance were more likely than those with private health care insurance to want educational materials on all preventive health measures.

In regards to usage of the preventive health measures, women who had ever used EC were more likely than those who had never used it to want educational materials on EC. There were no significant differences by usage of the other preventive health measures. There was a trend towards wanting educational materials for Pap smears and mammograms among those who had not had them within the past year. For BSEs, condoms, and BCPs, there was a trend favoring

educational materials among those who were current or recent users of these measures.

DISCUSSION

There was not an overwhelming desire by these women for any of these preventive health services from the ED. This finding suggests that despite the advocacy for these services in the ED setting (and the need for them), only a slight majority of women are interested in getting these services while obtaining emergency medical care. The study also shows that when the form of these services is considered, the women surveyed preferred that the ED make referrals or give educational materials rather than provide these services in the ED. They also appear to slightly prefer educational materials more than referrals. Further, women who typically have reduced access to these services (non-white women and those without insurance) and those more likely to use contraceptive measures (younger women) were generally more apt to want educational materials. Except for EC, there were no clear differences in preference by current or recent usage of these measures.

A few ED-based studies have examined selected preventive health services women might want from the ED and have shown similar findings. Rodriguez, et al. surveyed English-speaking female

patients in Los Angeles over age 40 about their receipt of mammograms within the past two years.⁴ Women who did not have a usual source of medical care and who did not have a recent mammogram were more likely to want a referral and were marginally more likely to want information about mammograms. Llovera, et al. surveyed ED patients in the ED waiting area and found that only 40% of the women wanted information about breast cancer screening and 23% wanted to have information about obtaining a Pap smear while having a pelvic examination in the ED.⁵ A study by Berger, et al. found that even when educational materials on Pap smears are provided in the ED, few patients report undergoing Pap smears two months after being in the ED.⁶ These studies suggest that the optimal way of stimulating interest in the ED for these services and motivating women to obtain them is not yet known.

LIMITATIONS

This study was from a single ED and involved women able to read English who were predominately younger, white, and had private health care insurance, so the study findings may not be applicable to other settings and populations. Also, the study did not ask about the underlying reasons for patient preferences. Future studies could investigate why certain groups of women were not interested in these services or in educational materials about them and what might motivate them to obtain these services.

CONCLUSIONS

Women attending the Rhode Island Hospital ED were more likely to want the ED to make referrals or give educational materials about women's cancer screening tests and contraceptive measures rather than for the ED to provide these services. Younger women, non-white women, and women without private health care insurance were generally more interested than other women in receiving educational materials. Women who had ever used EC were more apt to want educational materials on this topic. Patient preferences should be addressed when choosing preventive health care services for the ED.

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Bach, Botox, and Butterflies: Toward an Awareness of Musician's Dystonia

Michael A. Passero, MD

A recent piano rendition of J.S. Bach's "Jesu Joy of Man's Desiring" is a performance of great passion and beauty. The pianist is Leon Fleisher, and the Bach recording is on a Vanguard Classics compact disc with an unusual name: "Two Hands."¹

LEON FLEISHER AND MUSICIAN'S DYSTONIA

Leon Fleisher is one of the world's greatest pianists and a pupil of Arthur Schnabel. Fleisher made his debut with the New York Philharmonic in 1944 at the age of 16 and made regular appearances with orchestras around the world. However, at age 35, he began to lose the use of his right hand to an unexplained ailment. The fourth and fifth fingers of his right hand began to involuntarily curl in his palm and he was unable to play the piano with two hands. He fell into a state of despair and depression that lasted about 2 years, but then he began to teach, conduct, and play one-handed repertoires. Several pieces for the left hand on piano were composed for him and he achieved international acclaim as a left-handed pianist.^{1,2}

Around 1991, Fleisher was properly diagnosed with focal hand dystonia. This disorder afflicts about 10 thousand musicians worldwide and can strike anyone who uses their hands to perform repetitive tasks. Dystonias are the 3rd most common neurological movement disorder after Parkinson's disease and Essential Tremor and afflict approximately 300,000 people in North America alone. Dystonia is characterized by sustained involuntary muscle contraction resulting in abnormal movements, tremor and twisting postures. Focal dystonia, the most common form, is sometimes called **focal task specific dystonia (FTSD)**. Learned motor tasks such as writing or playing a musical instrument will trigger muscle spasms and interfere with the performance while other actions are unaffected. Musicians seem especially prone to FTSD.^{1,3}

Fleisher was referred to the **National Institutes of Health (NIH)**, where he entered a clinical trial led by Dr. Mark Hallett, Dr. Barbara Karp and Dr. Zoltan Mari. They tried botulinum toxin injections and found that Fleisher was slowly able to uncurl his hand and open it up enough to stretch and exercise the fingers. Fleisher began to try playing the piano with both hands, and with time he was able to play more and more. Since receiving treatment, Fleisher has played with numerous orchestras and created the album called "Two Hands" to celebrate his return to the full keyboard.^{1,2} This is a miraculous recovery that enriches all of us.

ROBERT SCHUMANN'S HAND DISABILITY

Robert Schumann (1810-1856) became a pupil of piano teacher Friedrich Wieck in October 1830. Around that time, he noticed a mysterious change in his right hand and his career as a pianist came to an early end. The tendons and fingers, especially the middle finger of his right hand, seemed permanently injured. Many explanations have been given. One thought is Schumann invented a mechanical device designed to keep one finger out of the way while the others were being exercised, and the results were injury to his hand. Another explanation is that he was injured by a stretching device. Eric Sams⁴ has claimed that Schumann's accident never occurred, but that instead he undertook a course of mercury as a prescription for treatment of syphilis. The mercury is thought to have caused a neuropathy. However, there is no evidence that Schumann had syphilis early in life or any evidence that he was treated with mercurials. J. Garcia deYebenes has done a careful analysis of the evidence from Schumann's writings and others and hypothesizes that Schumann's abnormality was musician's dystonia involving the right upper extremity and that this was the cause of his inability to perform as a pianist.⁵ deYebenes points out that Schumann's

correspondence suggests he had a dystonic task-specific hand cramp rather than an uncomplicated entrapment neuropathy. Schumann's problem began as an intermittent stress-related task-specific disturbance of the second and third fingers of his right hand that later in life involved other activities such as writing. This problem was described as twisting of the muscles and by overflow to other muscles, highly characteristic of dystonia. Moreover, a picture of Schumann hiding his right extremity behind his back suggests that late in his life he had upper extremity dystonia at rest. When conducting, he tied his baton to his right wrist to avoid dropping it.

Schumann offered to play one of his brilliant early idiosyncratic piano works, his Papillons ("Butterflies") Variations, Opus 2, at a welcome party in Vienna to be held in May of 1832. He started to rehearse, but with the stress of increasing preparation 6 days before the party, he realized that he would be unable to play because of the hand problem. Clara Wieck (who eventually became Mrs. Schumann) played the music in his place. However, after the party he was able to play and could perform reasonably well when he was not stressed, a common feature of dystonia.⁵ After a long, failed search for a cure, Schumann courageously turned his energies toward music criticism and composition. His creativity and frustration over the hand problem are jointly expressed in his Toccata, Opus 7. In the virtuoso passages of this work, the fingers of the right hand must move independently, without the use of the middle finger. This parallels the special compositions written for Leon Fleisher.

PATHOGENESIS OF MUSICIAN'S DYSTONIA

What causes focal task specific dystonia in musicians? Tarsy and Simon,⁶ in a comprehensive review of dystonia, indicate that, for focal dystonia, the genetic basis is poorly understood. Pullman and

Hristova,³ writing an editorial on musician's dystonia, comment: "FTSD may be caused by an exaggeration of normal mechanisms of brain plasticity. The postulated basis of task driven changes in dystonia relates to the dynamic synapse concept of Hebb in which neuronal connectivity is modulated by activation. Plastic reorganization of the cortex has been demonstrated by augmentation of the finger projection areas after repetitive tasks, or with practice. While this may improve performance, it may also set the stage for dystonia. Musicians with FTSD have greater functional MRI activation of the contralateral primary sensorimotor cortex, suggesting abnormally increased central connections. Transcranial magnetic stimulation thresholds to finger muscles are reduced after practice sessions suggesting improved CNS sensitivity, and mental rehearsing promotes the modulation of neural circuits involved in the early motor learning."^{3,7} Fleisher believes that altered biomechanics of piano playing, such as the repeated forced curving of the fingers, may contribute to the development of dystonia. Altenmuller⁸ writes: "The neurobiological origin is seen in the maladaptive plasticity of neuronal networks with blurring of afferent and efferent receptive fields of adjacent finger representations in the cerebral cortex and the basal ganglia. The general basis of such a blurring may consist of a deficient lateral inhibition of synaptic pathways." The role of genetic predisposition in these processes is unclear.

TREATMENT OF MUSICIAN'S DYSTONIA

The treatment of musicians with FTSD with systemic medications or non-medical approaches are so far not very effective and local injections of botulinum toxin type A may be helpful to some. Schuele et al⁹ report a study of EMG-guided botulinum toxin injections for musicians. There were subjective markers of improvement, but 69% of musicians with FTSD improved, and 36 % had a lasting benefit for a mean of 3 years (range: 9 to 76 months). Schuele's report states that 98% of the patients experienced some weakness, to be expected after botulinum toxin injections. Fleisher himself comments that the prolonged weakness of the injected muscles has be-

come an increasing problem, although he can overcome it with effort. Further studies are needed to determine what percentage of musicians are able to continue playing professionally after treatment with botulinum toxin.

CONCLUSIONS

Musicians and physicians should become aware of musician's dystonia and recognize that it is not a psychogenic disorder. Hand dystonia and embouchure dystonia, which affects the mouth, cheeks, jaw and tongue, are the most common types in musicians. Musician's dystonia is almost always focal. Playing the instrument triggers the muscle spasms. The spasms are usually not present at rest. Stress tends to make them worse. Musicians may perceive the early symptoms of dystonia as faulty technique or lack of practice.¹⁰ Musicians should be referred to appropriate neurologists for possible botulinum toxin therapy. Further research into the pathogenesis is the best hope for prevention.

A portion of the proceeds from Leon Fleisher's album "Two Hands" will be donated to the Dystonia Medical Research Foundation. Maestro Fleisher has vowed to increase awareness of musician's dystonia. "Musicians with Dystonia," founded in 2000, is dedicated to serving special needs of musicians affected by task specific focal dystonia, particularly hand and embouchure dystonias.

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Discussion of product not labeled for use under discussion: botox-botulinum toxin type A



Exercise-Limiting Symptoms in Children

James W. Ziegler, MD

Young children often seem to be in a state of perpetual motion with continued bursts of activity as they rush from one endeavor to another. Even the short distance from the bedroom to the kitchen to the bathtub is often traversed by a short, vigorous sprint. Intense, intermittent activity is taken for granted as a normal characteristic of early childhood, and this somewhat disordered activity ultimately becomes more purposeful as children grow and become involved in organized activities and for some, athletic competition. Because activity and exercise seem so normal for children, it is distressing to the child, parents, and caretakers when exercise-limiting symptoms such as chest complaints, excessive dyspnea, decreased exercise tolerance, easy fatigability, palpitations, or dizziness occur. Such symptoms raise even greater concern in the competitive athlete. Exercise-related symptoms in children and especially adolescents are a common reason for presentation to primary caretakers and referral to the pediatric cardiologist.

Several questions arise when a pediatric patient presents with exercise-limiting complaints. Foremost is whether such symptoms might be a sign of underlying cardiac disease and specifically a cardiac condition that could result in cardiac arrest and sudden death. Though underlying cardiac conditions predisposing to such events are very rare in children, reports in the press are frequent enough that the population at large is very aware of the potential. Another concern is the frustration experienced by the young athlete who is suddenly and unexpectedly having difficulty keeping up with teammates. Is it normal to experience temporary setbacks in exercise capacity during different phases of growth and development? Is it just a diminished fitness level? Or is this a sign of cardiac limitation or exercise-induced asthma? The level of concern varies depending on the severity of symptoms and the motivation and anxiety level of the young athlete and family members. Often exercise-limiting symptoms are blamed on exercise-induced bronchospasm, and bronchodilators administered via metered dose inhalers are prescribed.

This review will address some of the above concerns, drawing on the experience and knowledge gained from studying hundreds of young athletes in the cardiopulmonary laboratory at Hasbro Children's Hospital over the past 7 years. The following sections will address a review of normal exercise physiology as it pertains to the growing child, causes of sudden, unexpected death in young athletes, and the role of exercise-induced bronchospasm as a cause of exercise limitation.

NORMAL EXERCISE PHYSIOLOGY

Exercise requires efficient coupling of external respiration to support the increased metabolic needs of cellular internal respiration. Total body oxygen con-

sumption (VO_2 ; figure 1) increases approximately 10-fold as healthy individuals go from rest to maximal exercise. To accomplish this, cardiac output must increase approximately 4-fold and oxygen extraction from blood traversing the muscle capillary beds approximately 3-fold. The increase in cardiac output results from a 3 to 4-fold increase in heart rate and 1.5 to 2-fold increase in stroke volume.¹ Figure 2 illustrates how certain disease states impact VO_2 .

There are limits to the body's ability to increase oxygen consumption, and if exercise continues after cardiac output and oxygen extraction are maximized ($\text{VO}_{2\text{max}}$), an oxygen "debt" ensues with conversion within the muscle cell from aerobic to anaerobic metabolism resulting in a rapid build up of muscle and serum lactic acid. Exercise beyond $\text{VO}_{2\text{max}}$ can only continue for a short period of time as the body's compensatory mechanisms for buffering increasing serum lactic acid become overwhelmed.

CO_2 is produced within the muscle cell as an end-product of aerobic cellular respiration and as a by-product of bicarbonate buffering the anaerobic production of lactic acid. To remove excess CO_2 from the body, minute ventilation increases approximately 15-17 fold at maximal exercise over baseline.¹ Although cardiac output is completely maximized at peak exercise, ventilation reaches approximately 65-75% of maximal voluntary ventilation (the minute ventilation achieved if one sits and consciously breathes as hard and fast as possible). There appears to be some "respiratory reserve" built into the system.

Maximal aerobic power reflects the functional integrity of the oxygen delivery chain during exercise and is defined by $\text{VO}_{2\text{max}}$. This parameter, usually indexed to body weight (ml/kg/min), can be easily measured in the stress lab and correlates well with individual capacity and performance in endurance sports. In addition, as one progresses from low to

TABLE 1. Causes of sudden cardiac death in previously healthy athletes.

The first 2 entities account for >65% of cases in this country.

Hypertrophic cardiomyopathy
Congenital coronary artery abnormalities (anomalous origin of the left coronary from the right sinus, anomalous origin of the right coronary from the left sinus, coronary ostial stenosis, anomalous origin of left or right coronary artery from the pulmonary artery)
Myocarditis / dilated cardiomyopathy
Congenital left heart obstruction (valvar aortic stenosis, coarctation)
Arrhythmogenic right ventricular dysplasia
Prolonged QT syndrome and other "channelopathies" (Brugada syndrome, catecholamine sensitive ventricular tachycardia)
Marfan's Syndrome
Atherosclerotic coronary artery disease

$$\dot{V}O_2 = CO \times (CaO_2 - CvO_2)$$

$$CO = HR \times SV$$

$$CaO_2 = 1.34 \times Hg \times \% \text{ arterial saturation}$$

$$CvO_2 = 1.34 \times Hg \times \% \text{ mixed venous saturation}$$

Figure 1. Oxygen consumption ($\dot{V}O_2$) equals the product of cardiac output and oxygen extraction as illustrated by the above equation. CO = cardiac output; CaO_2 = arterial oxygen content; CvO_2 = mixed venous oxygen content; HR = heart rate; SV = stroke volume; Hg = hemoglobin concentration.

Effect of disease on $\dot{V}O_2$

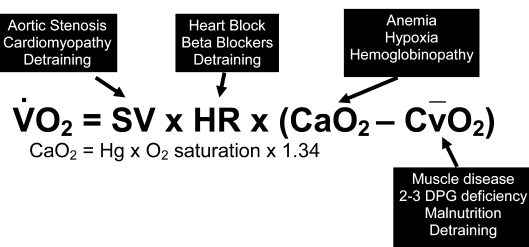


Figure 2. Different disease states will impair different components of oxygen consumption limiting cardiac fitness and exercise capacity. Athletic "detraining" results in a lower stroke volume and higher heart rate for given workload and lessened oxygen extraction by peripheral muscle.

intermediate to high intensity exercise, more and more energy substrate is shunted or overflows to anaerobic pathways. As work intensity reaches approximately 50-60% $\dot{V}O_2$ max, there begins a continuous rise in serum lactate levels as exercise intensity continues to increase. The anaerobic "threshold" (AT) is the exercise intensity or level of $\dot{V}O_2$ where serum lactate levels begin to rise. It can be measured in the stress lab by plotting minute ventilation or CO_2 production against $\dot{V}O_2$. (Figure 3) As illustrated, CO_2 production and thus minute ventilation increase more rapidly after the AT is passed. The concept of AT is important to understand because an individual's fitness level will improve only if that individual trains near the anaerobic threshold (typically 70-90% maximal heart rate). In addition, higher measured AT is associated with superior athletic performance. Several interesting observations from studies assessing $\dot{V}O_2$ max and AT in adults and children explain some (perhaps most) of the perceived "exercise intolerance" which commonly occurs in growing children:

1. Although one's $\dot{V}O_2$ max can be modified by intense training, most studies suggest that it is approximately 60% or more inherent, determined by genetic makeup and other familial factors.² In addition, there is a great deal of variability

in values of $\dot{V}O_2$ max within any normal age-matched or gender-matched population of children. As an example, in 35 healthy and non-obese 15-16 year old males without cardiopulmonary disease studied in our lab, $\dot{V}O_2$ max values vary from 28 to 53 ml/kg/min. This wide range of normal $\dot{V}O_2$ max means that within any group of children, the ability to engage in endurance activities will vary greatly. Obviously as one moves from grade school to middle school to high school competition, selection bias will lessen this variability within members of a competitive team.

2. Indexed $\dot{V}O_2$ max is roughly equivalent in pre-pubertal males and females. In males it remains stable through adolescent and teenage years. In females it begins to fall off with advancing age beyond 12-13 years.³ There is thus gender separation of cardiac fitness level as children progress through adolescence, and this can sometimes be frustrating for females who are accustomed to participating on coed sports teams and begin having trouble keeping up with their male teammates or siblings.
3. The level of aerobic capacity needed to compete in a given sport is not the same for all sports. We frequently evaluate athletes who move from one sport to another and are suddenly not able to keep up. This reflects the specificity of training for individual sports participation. Modifying the individual athlete's fitness training regimen and allowing time usually lead to resolution of this problem.
4. Activity in preadolescent children involves mostly short, burst type activity and is not so dependent on endurance or aerobic power. Sports participation during and after adolescence is more sustained and at an intensity level frequently past the AT. In addition, the AT gradually de-

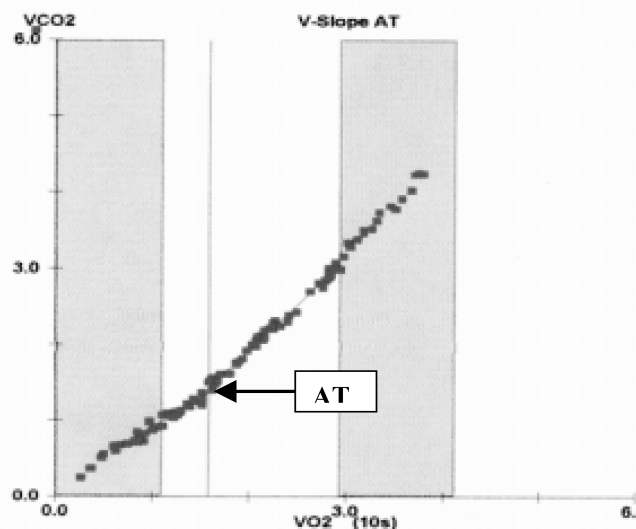


Figure 3. Graphic representation of the ventilatory anaerobic threshold (AT) in a teenage athlete. The change in slope of CO_2 production ($\dot{V}CO_2$) plotted against $\dot{V}O_2$ represents the point where serum lactic acid begins to increase. Minute ventilation plotted against $\dot{V}O_2$ will yield the same curve. As illustrated, this athlete is able to exercise well past his AT, consistent with high "anaerobic reserve," one marker of fitness and performance level.

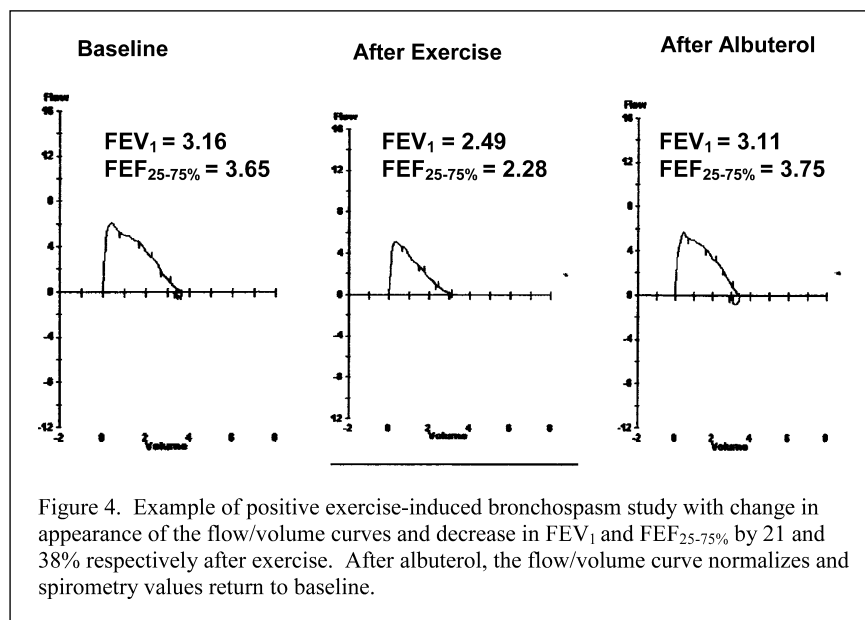


Figure 4. Example of positive exercise-induced bronchospasm study with change in appearance of the flow/volume curves and decrease in FEV₁ and FEF_{25-75%} by 21 and 38% respectively after exercise. After albuterol, the flow/volume curve normalizes and spirometry values return to baseline.

creases during growth again meaning that the teenage athlete will spend more time exercising past his or her AT. Our anecdotal experience suggests that several adolescents have transient difficulty getting accustomed to exertion levels beyond the AT; subjective dyspnea occurs from the increased ventilatory needs as this exercise intensity is passed. Sometimes this dyspnea results in erratic breathing and even hyperventilation that is easily recognized during formal stress testing. We suspect that this is a very common cause of transient exertional dyspnea in young teenage athletes.

It is important to remember that VO₂max is a valid measure of exercise capacity and comparison only for children of similar age and maturity level. Whereas indexed VO₂ levels remain relatively stable from childhood through the teenage years, performance on field tests improves significantly. For example, as males go from 5 to 13 years of age, the time it takes to complete a 1 mile run improves by 100%.⁴ Thus stratifying fitness level based on VO₂max only works for children of similar age, gender, and maturity level. In addition, maximal aerobic power is not the only determinant of athletic prowess. Skill level, motivation, competitiveness, and other factors are also important and more difficult to quantify. We have evaluated more than a few athletes with decreased motivation from depression manifest as a change in athletic performance.

THE RELATIONSHIP OF EXERCISE-LIMITING SYMPTOMS AND SUDDEN CARDIAC DEATH

Approximately 15-20 sudden, unexpected cardiac deaths occur in previously healthy athletes in this country each year. Although this is a small number from a

public health standpoint (an adolescent is more likely to be killed by lightning), such cases are always well publicized and highly profiled. There have been enough such cases in the greater Providence region over the past 10 years that parents of young athletes become very anxious when an exercise-related problem such as dizziness and/or syncope, chest pain, dyspnea, or palpitations occurs. Their first concern is usually the heart.

Table 1 lists conditions most frequently incriminated in cases of sudden cardiac death in children. The potential for one of the conditions listed in Table 1 should always be borne in mind in this setting, although most individuals who suffer sudden cardiac death do not have a history of having had previous problems, and almost all exercise-related

symptoms in children turn out to be unassociated with cardiac disease. The following principles apply:

1. An episode of syncope occurring in the setting of exercise should always be thoroughly investigated. Historical features need to be dissected out, as syncope (and presyncope) while standing after intense aerobic activity is quite common during the teenage years related to post-exertional sympathetic withdrawal (vasodepressor response=low blood pressure) and excessive rebound vagal output (vagal response=bradycardia). Typical features consistent with post-exertional vasovagal syncope include upright position after intense activity with prodromal symptoms of dizziness, visual changes, nausea, feeling sweaty, etc culminating in a short lived episode of syncope with rapid recovery and return to baseline. The key

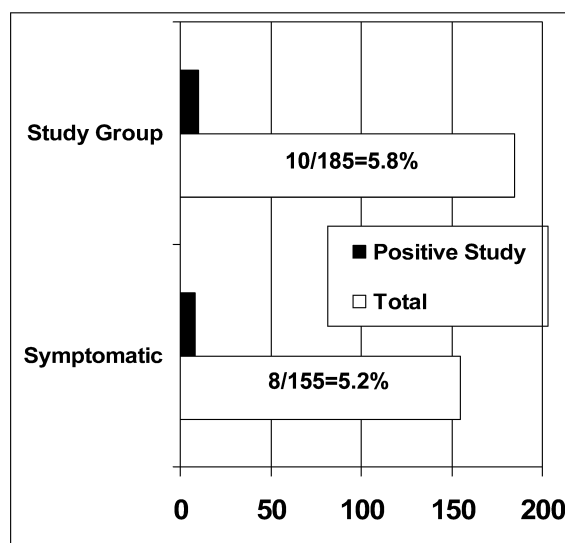


Figure 5. Results of 185 EIB studies done in the pediatric cardiopulmonary laboratory at Hasbro Children's Hospital in the study group as a whole and in those patients whose symptoms were reproduced while in the lab.



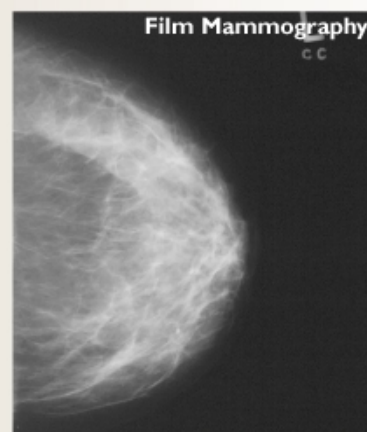
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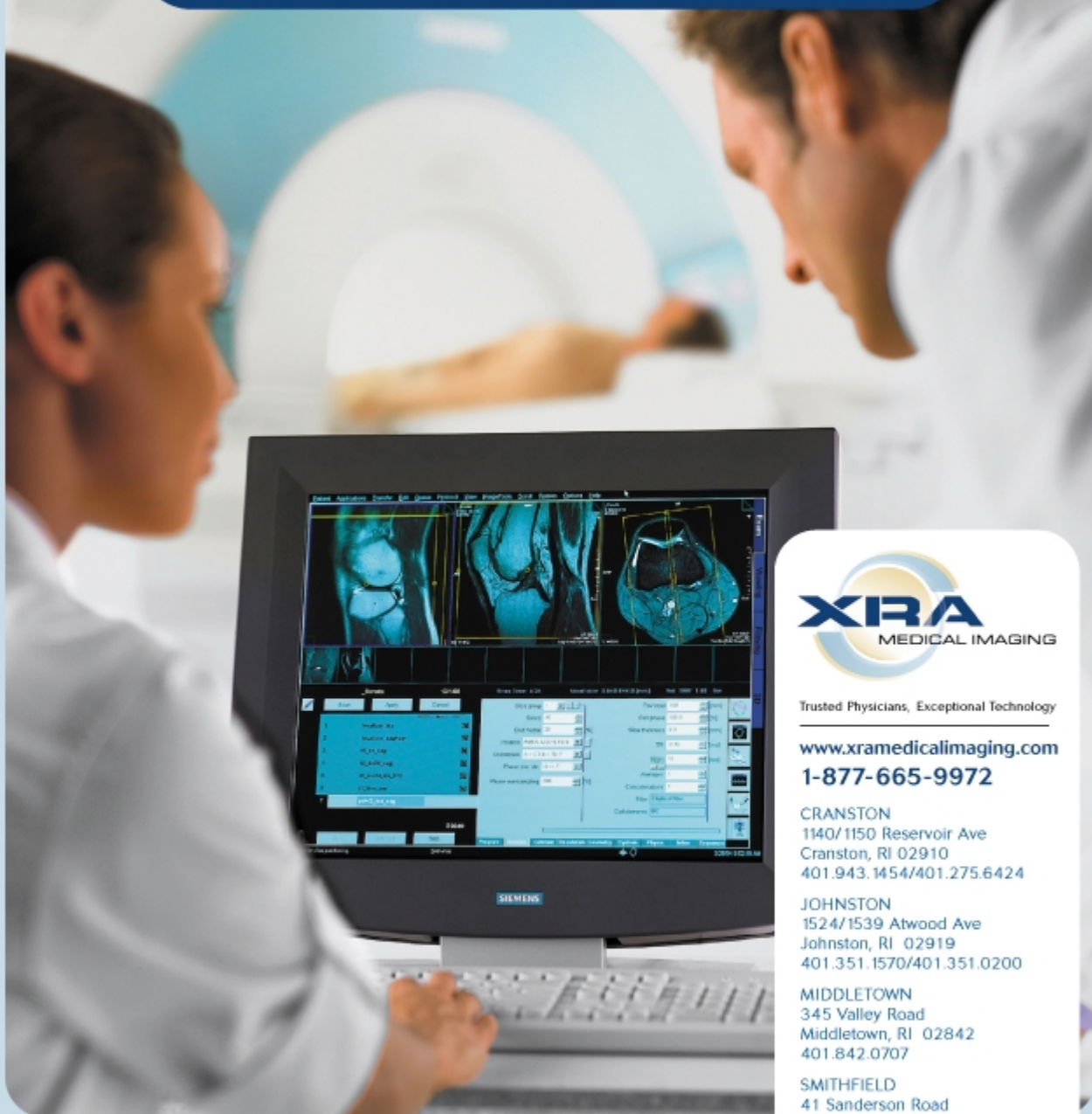
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Etiology of exercise-limiting Symptoms

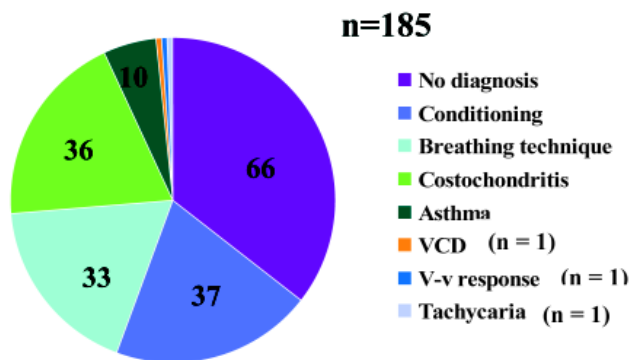





Figure 6. A suspected diagnosis was made in 65% of 185 patients undergoing stress and pulmonary function testing for evaluation of exercise-limiting symptoms. All patients had normal cardiac exams and resting ECGs. Most patients in the "no diagnosis" group were felt to be sensing dyspnea appropriate for the given workload and their exercise intensity at the time. (VCD – vocal cord dysfunction; V-v – vasovagal).

historical feature is that the episode occurs after, and not in the midst of exercise. An electrocardiogram (ECG) should be obtained following any episode of syncope, but if the history is supportive and the cardiac exam and ECG are both normal, the diagnosis of vasovagal syncope can be made. Any episode of sudden syncope occurring in the midst of activity without prodromal warning signs requires a full cardiac evaluation and withdrawal from sports participation until cardiology clearance is obtained.

tion, then referral for cardiology clearance is reasonable. In this setting, echocardiography and exercise stress testing are usually performed, although a cardiac cause is almost never uncovered.

- In the setting of a normal cardiac evaluation (history, physical exam, +/- ECG), exertional dyspnea is very rarely cardiac-related. This symptom along with cough, increased fatigability, and relative exercise intolerance usually raises concern for exercise-induced bronchospasm.
- Symptomatic palpitations during exercise usually reflect a young athlete's sensing appropriate sinus tachycardia, a normal physiologic response reflective of the catecholamine surge and withdrawal of vagal tone that occur during exercise. This symptom tends to be more common in poorly conditioned individuals who begin new activities and are pushing themselves past previous levels of exercise intensity. Rarely, atrial ectopic beats and reentrant **supraventricular tachycardia (SVT)** can be catecholamine-sensitive. Even more infrequent is catecholamine-sensitive ventricular tachycardia. Given the potential for these rare arrhythmias, it is reasonable to obtain a resting ECG in athletes complaining of palpitations. If the history, cardiac exam and ECG are otherwise normal, referral for cardiology clearance should be considered if the palpitations are paroxysmal in onset and offset, if they are associated with dizziness and/or syncope, or if they persist and interfere with sports participation. Exercise stress testing and ambulatory event recording are usually performed to try to evoke symptoms and correlate them with heart rate and rhythm.

- With any symptoms that raise the concern for a possible condition listed in Table 1 (or if performing preparticipatory screening for sports clearance), the following should be included and documented during the medical evaluation:

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- a. Past medical history of atypical syncopal episodes;
- b. Family history of known cardiomyopathy or first degree family members dying suddenly and unexpectedly;
- c. Blood pressure;
- d. Auscultation in supine and upright (sitting or preferably standing) positions.
- e. Assessment of right arm and lower extremity pulses.

A completely normal evaluation does not preclude the presence of potentially life-threatening underlying cardiac disease, and no data suggest that rigid adherence to preparticipatory athletic screening guidelines as developed by the AHA and other advisory bodies will alter the frequency of these uncommon catastrophic events.^{5,6} Unfortunately, doing more thorough pre-participatory screening in athletes with ECG and/or echocardiograms is not practical or cost-effective.

EXERCISE-INDUCED BRONCHOSPASM

During the 1990s and early 2000s, several articles appeared in the medical literature describing an association between exercise related symptoms and underlying exercise-induced changes in airway function.⁷ At the same time, a few cross sectional surveys of defined populations suggested very poor correlation between symptoms and laboratory proven **exercise-induced bronchospasm[EIB]**.⁸ Despite these conflicting data and probably partly due to a growing concern during the 1990s that asthma was being underdiagnosed in children, EIB became accepted within the pediatric community as a common (perhaps the most common) cause of exercise-limiting symptoms, even in individuals who had no other features of underlying asthma. Advisory statements suggested that EIB was a clinical diagnosis and that pulmonary function testing was not necessary to make the diagnosis.⁹ As a result, it became very common to prescribe a therapeutic trial of a beta agonist to children presenting with exercise-limiting dyspnea, chest discomfort, diminished exercise tolerance, and increased fatigability. This remains a recommended and very common practice today, and if symptoms improve with this therapy, the child is considered to have asthma.

Since 1998, we have performed over 750 EIB studies in children and teenagers referred to the cardiopulmonary laboratory in the Pediatric Heart Center at Hasbro Childrens Hospital. In these patients, we use a standard EIB protocol that involves obtaining baseline pulmonary function tests (PFTs; spirometry with flow/volume curves); initiating a rapid ramp protocol on the treadmill aiming to get the study subject to 80% predicted peak HR within 2 minutes; maintaining that work intensity for 5-8 minutes; and then repeating PFTs 2, 5, and 10 minutes after completing exercise. If there is any question of airway obstruction on the pre- or post-exercise PFTs, albuterol is administered, and PFTs are then rechecked. A diagnosis of airway obstruction is made if any of

the following criteria are met: 1. PFTs are abnormal at rest; 2. Forced expiratory volume (FEV₁) and/or mid-expiratory flow (FEF_{25-75%}) decrease ≥ 10 and 20% respectively after exercise; 3. FEV₁ increases by $\geq 10\%$ following the administration of albuterol. Using the above protocol, we have been successful in reproducing the presenting exercise-limiting complaint while in the stress lab in over 80% of patients.

Although we have not analyzed all of our EIB studies to date, our preliminary findings presented in abstract form suggest that EIB is not a common cause of exercise-limiting symptoms in children without other historical features to suggest underlying asthma. In our most recent analysis, we reviewed the results of EIB studies in 185 patients between 6 and 18 years of age. Patients had no historical features of asthma by brief questionnaire (no previous wheezing, chronic cough, recurrent pneumonia/bronchitis, recurrent nighttime symptoms) and were referred for exercise stress testing because of exertional dyspnea (77), chest pain (36), subjective exercise intolerance (9), or a combination of symptoms (63). Only 10/185 (5.8%) were found to meet criteria for airway obstruction as a possible contributor to their presenting symptoms. Of the 10 positive studies, 3 had abnormal PFTs at rest and 7 had a drop in FEV₁ or FEF_{25-75%} after exercise meeting criteria for EIB.

(Figure 4) Results are summarized in Figure 5. Since we presented our findings, several other investigators have shown a very poor correlation between exercise-related symptoms and underlying airway obstruction in otherwise normal children.¹¹⁻¹³ Given our experience and the results of recent published studies, one has to question whether an empiric trial of a beta agonist via MDI is a reasonable practice in the child who has no other historical features to suggest underlying asthma. We have found formal EIB testing to be helpful not only in ruling out airway obstruction but also in establishing a likely cause of symptoms in a high percentage of patients. (Figure 6)

In the patient with known asthma, it may be safer to assume that exercise-limiting symptoms are secondary to worsening airway obstruction, although a recent analysis of 74 children with asthma on maintenance medications presenting to our laboratory with exercise-limiting symptoms revealed airway obstruction as the cause of symptoms in only 15%. The breakdown of suspected diagnoses in this group was almost identical to that demonstrated in Figure 6. Thus, even in children diagnosed with asthma on medical therapy, exercise-limiting symptoms may be unrelated to worsening airway function, and stress testing may be helpful if symptoms are not improving with escalation of asthma therapy.

Certainly several questions persist, and our study populations may be biased and not completely representative of the population of patients presenting to primary caretakers. We hope that detailed analysis of our larger cohort will allow for better definition of who is most likely to have EIB and also serve as pilot data for developing a prospective study to evaluate the most efficient and cost-effective method of approaching this clinical problem.

**This wide range of
normal VO₂ max
means that within
any group of
children, the ability
to engage in
endurance activities
will vary greatly.**

SUMMARY

Transient exercise-related symptoms are common in children and adolescents and only rarely reflect underlying cardiac and pulmonary disease processes. Most symptoms occurring during exercise reflect changes related to normal exercise physiology, changes in level of competition, and musculoskeletal and developmental factors. A rational approach to screening for potentially life-threatening cardiac conditions and exercise-induced bronchospasm is important to minimize the risk of misdiagnosis and to keep the young athlete active.

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Disclosure of Financial Interests

James W. Ziegler, MD, has no financial interests to disclose.

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Use of Neuroimaging In the Workup of Headache

Michelle L. Mellon, MD, and Mahesh V. Jayaraman, MD

The lifetime prevalence of headache is approximately 99% in woman and 94% in men.¹ Headache accounts for sixteen million physician visits in the United States. Almost 95% of those headaches are classified as situational or benign, with little potential for physical disability.² The remaining 5% of patients most likely have a primary headache disorder such as migraine, cluster, or tension-type headaches. The prevalence of each in the general population is 6-17%, 0.4% and 38.3% respectively.³

Nevertheless, many physicians feel uncomfortable or are unsure of criteria for primary headache disorders. As a result, physicians rely on neuroimaging to rule out the possibility of relatively rare secondary headache disorders such as tumor, arteriovenous malformation, aneurysm, and hemorrhages. The population prevalence is 1%, 0.8% and 2-5% respectively.⁴ Not only can neuroimaging rule out the possibility of a secondary headache disorder, but it may also relieve patient's anxiety about having a pathologic condition, quell litigation, and alleviate family concerns about the patient.⁵ Neuroimaging, however, has its consequences.

Only a few studies have analyzed the effectiveness of CT or MRI in detecting clinically significant lesions. In the general population, focusing on those persons without headache or other cranial symptomatology, the chances of finding a significant abnormality with CT or MRI is approximately 0.5 to 1%. In patients with headache and a NORMAL neurological examination, the chance of finding an abnormality is 0.4 to 0.9% - essentially the same as the general population without significant complaint.^{7, 8, 9, 10} Several studies which analyzed the value of brain CTs showed that headache alone as an indication for the imaging study demonstrated the lowest diagnostic yield (0.5%) and the highest case-finding cost. Patients with an abnormal finding on neurological examination or suspicious symptomatology were approximately 30% more likely to demonstrate abnormal findings.² One later study

found that in patients with a normal neurological examination, whose only complaint was headache, a significant change in medical management occurred in 1.4% of patients based on abnormal findings with CT. The researchers concluded that even though this number is a small minority of patients that it is significant and cost-effective to perform screening non-contrast CT in all patients with complaints of headache. Other studies such as contrast-enhanced CT and MRI were not recommended unless there was a significant lesion on the screening CT.⁶ No studies to date have examined the appropriateness of follow-up imaging on a monthly or yearly basis.

Neuroimaging is most appropriate when a patient presents with suspicious symptomatology and/or an abnormality on physical examination.

One study found that the chance of an incidental finding on MRI, unrelated to the HA, such as a pineal cyst, lipoma, subarachnoid cyst, was 75%.⁷ These findings were highest among those with "indeterminate headache," meaning those that could not be classified via International Headache Society criteria as one of the primary headache disorders, than in those with migraine and tension-type headache. Such findings can sometimes lead to further unnecessary testing, exposure to contrast materials and worry and concern on the part of the patient and their family. Another recent study reviewed the results of MR imaging in patients with chronic or recurrent headache without any focal neurologic deficits, and found normal scans in 55.2%,

minor (non-clinically significant) abnormalities in 44.1% and clinically significant abnormalities in 0.7%, similar to the non-headache population.¹¹ The yield of MR imaging for headache is highest in patients with atypical headache, compared with those with migraine, tension, mixed or other types.¹²

White matter abnormalities (WMA) can also be an incidental finding, especially in migraineurs, that can lead to further unnecessary testing and worry. For the most part these WMAs are thought to be benign. However, a radiologist may characterize the WMA as possibly being consistent with more serious diseases such as vasculitis, multiple sclerosis or stroke. Again, this conclusion can lead to unnecessary and invasive testing and worry on the part of the patient and their family. One study found in a cohort of 63 patients with migraine and tension-type headache that WMA occur with a significantly higher frequency than in age-matched controls (33.3% vs. 7.4%, $P=.001$).¹³ There has been a lot of speculation about why these abnormalities occur, but the underlying pathophysiology is unknown.

Very few studies have directly compared the use of CT vs. MRI. One study found that the diagnosis was the same whether the patient was imaged with either technology, but MRI was more sensitive than CT for identifying clinically insignificant abnormalities such as devel-

Table 1. Red Flags

Focal signs
Papilloedema
Sudden Onset ("Thunderclap")
Associated Neck Pain
Drowsiness
Confusion
Memory Impairment
Loss of Consciousness
Weight Loss
Tinnitus
Tender Temporal Arteries
Recurrent Lymphadenopathy
Known HIV+
Fever

opmental abnormalities and WMA. For older patients presenting with chronic headaches, MRI was better at detecting unrelated old strokes and gliosis. The authors concluded MRI was no better than CT at detecting clinically significant lesions, but more studies need to be completed.¹⁴ In general, while CT is better for identifying hemorrhage, MRI is superior at characterizing the underlying brain parenchyma and is more reliably able to exclude structural abnormalities such as tumor. Routine use of contrast is not necessary, because it does not add to the diagnostic yield.¹¹

While neuroimaging may play an important role in evaluating a patient with headache, the most important evaluation is the history and physical examination. Neuroimaging is most appropriate when a patient presents with suspicious symptomatology and/or an abnormality on physical examination. Several studies have defined "red flags" that can act as screening tools to aid in the identification of patients in whom neuroimaging is appropriate.⁴ (Table 1) The most significant red flags include those headaches associated with neurological or physical symptoms or signs. Neuroimaging is definitely indicated when a headache is new or different, the worst headache ever experienced, if it occurs with exertion, sexual activity or coughing or if any of the "red flags" are present.

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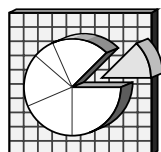
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The Performance of Rhode Island's Commercial Health Plans, 2005

Bruce Cryan, MBA, MS

Comparative information on health plan performance is useful to plan members, purchasers, regulators, and policy-makers. To meet the needs of all users, the comparative measures must cover the general areas of cost, quality, and access to care. In response to this need for information, the Rhode Island General Assembly passed the Health Care Accessibility and Quality Assurance Act in 1996 (Rhode Island General Laws 23-17.13).¹ The Act instituted health plan performance reporting in the state, which is summarized annually, most recently in *Rhode Island Health Plans' Performance Report (2005)*.² The information presented here is derived primarily from that report.

METHODS

The Rhode Island Department of Health's Center for Health Data and Analysis uses an annual survey to collect health plan data from three primary audited sources: Statutory Filings to the state's Department of Business Regulation, **Health Plan Employer Data and Information Set (HEDIS)** reports, and **Consumer Assessment of Healthcare Providers and Systems (CAHPS)** reports.

Twenty-seven measures are evaluated, comprising seven dimensions of performance (enrollment, utilization, prevention, screening, treatment, access, and satisfaction). The measures are both trended over time and compared to average New England values. To supplement this information, financial data on premiums were extracted from the National Association of Insurance Commissioners' health database.

RESULTS

Rhode Island's commercial health insurance market is concentrated in two carriers, Blue Cross and Blue Shield of RI (Blue Cross) with a market share of 65%, and United Healthcare of New England (United) with a share of 17%. The remainder of the market (18%) consists of a number of smaller plans, none of which are domiciled in Rhode Island.

To assess whether the purchasers of these plans' products are receiving 'value' one must necessarily examine its two components, cost and quality. On average, commercial health insurance

costs less in Rhode Island (RI) than in New England (NE). (Figure 1) Blue Cross monthly premiums were 6% lower than regional premiums (\$302 vs. \$321) and United premiums were 10% lower (\$288 vs. \$321). In addition, RI plans spent less on medical services (4% less for Blue Cross and 17% less for United), and they were less profitable than their NE peers (49% lower for Blue Cross, and 10% lower for United).

With few exceptions, both RI health plans performed relatively well on clinical quality measures. (Table 1) Blue Cross' and United's quality results were remarkably similar when compared to the regional experience. Each plan fell unfavorably below the NE values on four of the 15 measures (27%) and matched NE values on all the remaining measures but one, for which United exceeded the NE value. Given that health plans in New England, taken as a group, consistently post the highest quality (and satisfaction) scores in the country, the regional comparison provides a rigorous benchmark for local plans. However, no matter how acceptable an individual plan's relative performance, the absolute values on some clinical measures are concerning. For example, the low *Chlamydia Screen-*

Table 1.
Health Plan Clinical Performance Measures, Blue Cross of Rhode Island, United Healthcare of New England, and New England Region, 2005

Dimension/Measure	New England Region	Relative to New England Region	
		Blue Cross	United
Prevention			
Childhood Immunization	81.2%	=	=
Adolescent Immunization	77.4%	-10%	-9%
Advising Smokers to Quit	76.6%	=	+7%
Screening			
Colorectal Cancer Screening	63.6%	=	=
Breast Cancer Screening	79.0%	=	=
Cervical Cancer Screening	86.4%	-5%	=
Chlamydia Screening	39.5%	=	=
Diabetes: Eye Exam Screening	68.0%	=	-11%
Diabetes: HbA1c Tested	91.0%	=	=
Treatment			
Diabetes: HbA1c Controlled	74.0%	-10%	-9%
Beta Blocker Treatment	98.1%	=	=
Antidepressant Medication Management	29.6%	=	-14%
Access			
Follow-up for Mental Illness	83.4%	-12%	=
Well Child Visits	83.2%	=	=
Adolescent Well-Care Visits	57.8%	=	=

Note: "=" indicates that the relative difference from the New England rate is no more than +/- 5%.

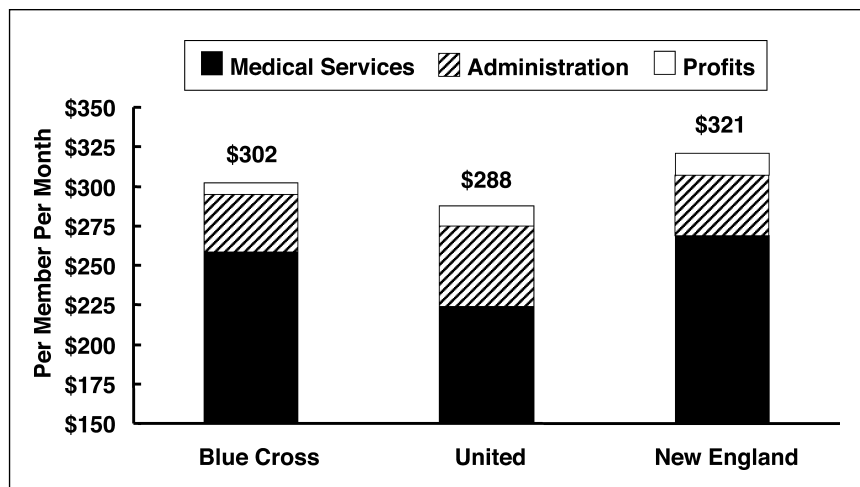


Figure 1. Average health plan premium per member per month, by component, Blue Cross of Rhode Island, United Healthcare of New England, and New England Region, 2005.

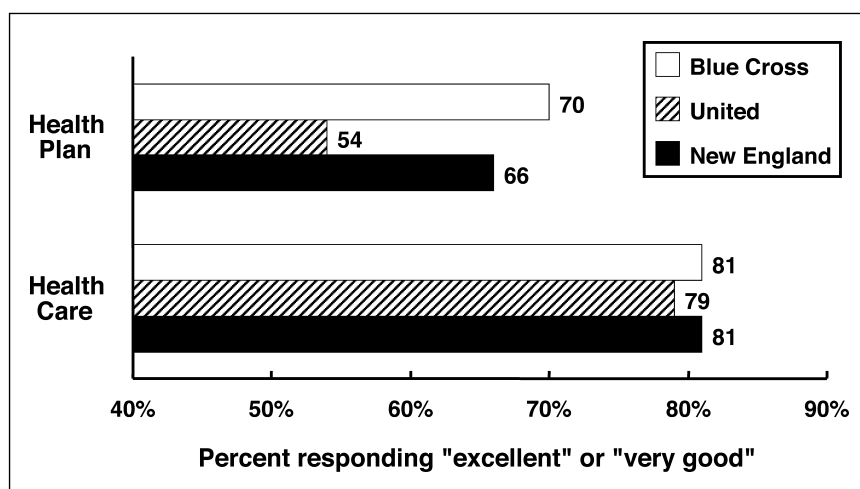


Figure 2. Health plan member satisfaction with health plan and health care, Blue Cross of Rhode Island, United Healthcare of New England, and New England Region, 2005.

ing values (Blue Cross: 37.6%; United: 39.2%) and *Antidepressant Medication Management* values (Blue Cross: 31.9%; United: 25.3%) highlight the need for further improvement in these areas.

The nexus between low cost and high quality is 'value,' and it appears that both Blue Cross and United are providing good 'value' to their commercial customers. Whether or not that 'value' is perceived by the members of those plans is another matter. (Figure 2) Member satisfaction with Blue Cross was 4 percentage points higher than the regional rate (70% versus 66%), and member satisfaction with United was 12 percentage points lower than that comparable (54% versus 66%). Therefore, there appears to be a "disconnect" between the favorable performance measures for United and its low member satisfaction rate.

There was no significant difference in member satisfaction with healthcare services between the plans and the New England rate. This is significant in that members must believe they are receiving quality services for them to be effectively provided. Interestingly, regardless of geographic area or health insurer, more members were satisfied with their healthcare services than with their health plans.

DISCUSSION

Increasingly, the public, purchasers, providers, and policy makers are requiring meaningful information about health plans. Since 1998, the Department of Health has tracked the performance of this industry and produced annual reports on the subject.

With the small number of health plans in the state and the market dominance of Blue Cross, most Rhode Islanders have limited choice of carrier. The lack of widespread selective contracting also means that most plans deliver services through a similar network of physicians, hospitals, and other providers.

Therefore, the real value in publishing this information is less in aiding consumer choice and more in fostering accountability of the industry. Purchasers deserve to know how well the plans are performing and policy makers need empirical evidence to set effective policy. An added benefit is that the performance of health plans will likely improve if for no other reason than the results are made public.

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Elder Abuse and Mistreatment

Deepak V. Thiagarajan, MD

During an initial geriatric assessment, you are evaluating Mr. A, 79-year-old man. A retired professor for 15 years, he lives with his wife. He has a history of hypertension on hydrochlorothiazide, gastroesophageal reflux disease on ranitidine, takes acetaminophen and an occasional ibuprofen for osteoarthritis. Mr. and Mrs. A have been married for 49 years and have four children. Despite Mr. A's having been verbally and physically abusive to his wife their entire married life, she has stayed with him and has never told anyone of their problems. Over the last five years, Mr. A has become increasingly forgetful and confused. As you begin to examine him closely, you notice a faint odor of urine and feces. He appears unkempt. His shirt collar is torn. His face is remarkable for bi-temporal wasting and left peri-orbital ecchymosis. When asked about the marks on his hands and back Mrs. A insists that her husband has been falling quite frequently. She had meant to bring him to the emergency room last month, but reckoned they were going to see you anyhow.

Over the last 3 decades, there has been a rising awareness about patterns of abusive relationships. Child abuse and domestic violence receive far more press than elder abuse in both public and healthcare domains, but abuse occurs across all ages. When elder abuse first received national attention, there was an over-reliance on the child abuse model in dealing with the problem. However, time and experience have shown that several situations did not fit that model. No single interpretation can cover all aspects of elder abuse to guide collection of data and clinical practice. This is further complicated by other issues relating to institutional abuse and self-neglect.

Elder abuse may occur in a broad range of circumstances and behaviors. It generally consists of repetitive instances of transgression. Definitions of elder abuse vary. The difficulties are partly due to obscurities in clarifying at what point behavior leans toward abuse. For example, well-intentioned caregivers, at times, try to deal with difficult behavior using disproportionate behavior modification techniques, surmising that they are helping the individual. Is that considered abuse?

Laws and terminology can vary from one state to another; however, all states have set up reporting systems. State law charges state and local **Adult Protective Service (APS)** agencies with the responsibility to protect and provide services to vulnerable adults. According to the Rhode Island APS Statute - "Abuse" means the subjection of an elderly person to the willful infliction of physical pain, or willful deprivation of services by a caretaker or other person with a duty of care for the elderly person. Abuse also includes neglect, abandonment, and exploitation.

7 CATEGORIES OF ELDER ABUSE ARE DESCRIBED BY THE NATIONAL CENTER ON ELDER ABUSE (NCEA):

Physical Abuse

The rate of violent crime victimization of persons age 65 or older is about 4 per 1,000 (Bureau of Justice Statistics, 2001). Perpetrators (generally spouses or adult children) are more likely to have a history of psychopathology and to be dependent on the victim for financial resources. Since this type of abuse involves family members who are most intimately and emotionally connected to the elder, the physical violence may be attributed to unhealthy interpersonal relationships that become highly charged due to chronic illness or financial need. Elder physical abuse is the use of physical force that may result in pain or bodily harm; e.g., hitting, pinching, kicking, pushing, or violently shaking the elder.

Victims may present with:

- bruises, black eyes, lacerations, major wounds that are left unattended
- sprains, dislocations
- bone and skull fractures
- untreated injuries in various stages of healing
- disheveled/inappropriate clothing for the climate, broken eyeglasses/frames

Seldom, an elder may report being mistreated; more frequently the caregiver may refuse to allow visitors to see the elder alone.

Sexual Abuse

The prevalence of elder sexual abuse is unknown. Where it is uncovered, it is usually by adult protective services personnel who are called to intervene in other types of mistreatment, such as physical abuse, neglect or financial exploitation. Offenders are usually relatives of the victim.

Elder sexual abuse is defined as coercing an older person, through force, trickery or threats, into sexual contact against his/her will. It often begins with covert activities such as inappropriate remarks and threats, and escalates to more severe types of mistreatment, including: the offender forcing the victim to view pornography or to listen to explicit sexual accounts; sexualized kissing and fondling; oral-genital contact; digital penetration; vaginal rape; anal rape; rape by objects; and sadistic acts.

Signs and symptoms of sexual abuse may include:

- unexplained venereal disease or genital infections
- unexplained vaginal or anal bleeding

Emotional or Psychological Abuse

The infliction of anguish through words and actions will often leave a harrowing scar. Not infrequently, the elder is apprehensive to complain to a doctor; the threat of being “locked up in a Nursing home” by a family member is a numbing one. Psychological abuse usually occurs as intimidation, insults, threats, humiliation, or harassment. Isolating the elder from family, friends, and social activities or giving “the silent treatment” are some examples of non-verbal emotional abuse. The majority of cases of elder physical abuse have a prodrome of psychological torture. Again, perpetrators tend to be spouses or adult children; however, there is also a rising incidence of institutional emotional abuse involving well-intentioned caregivers. Some signs of psychological abuse include the elder being unusually emotionally agitated, or being withdrawn, akinetic or mute.

Neglect

Neglect insinuates the refusal or failure to provide basic life necessities like food, water, clothing, shelter, personal hygiene and other essentials included in an implied responsibility to the elder.

Victims are more likely to be frail, very old, widowed, physically or cognitively impaired with limited social contact. Unlike victims of physical or psychological abuse, cases of neglect seem to correlate more with the frailty, disability and dependency of the elder rather than the financial dependence or psychopathology of the perpetrator. The victim becomes a source of stress to the caregiver, resulting in repeated acts of transgression.

Signs and symptoms of neglect may include:

- unattended chronic health problems
- dehydration, malnutrition, unattended decubitus ulcers,
- hazardous living environment (e.g. living on the upper floor of the house when they are a major fall risk)
- unsanitary living conditions (e.g. fecal/urine smell, soiled bedding, fleas, lice on the elder), poor personal hygiene

Self-neglect

As above, the refusal to provide basic needs to oneself is self-neglect; however, it excludes situations where a cognitively intact, competent elder voluntarily makes such a decision.

Abandonment

The Rhode Island APS statute defines “abandonment” as the desertion of an elderly person by a caretaker or other person with a duty of care, or the withdrawal of necessary assistance owed an elderly person by a caretaker or other person with an obligation to provide services.

Not uncommonly, frail elders have been deserted at a nursing home because they are considered burdensome. On occasion elders

are abandoned at a shopping centers or other public locations, like parks.

FINANCIAL OR MATERIAL EXPLOITATION

Some experts say that elder financial abuse is “the crime of the 21st century” as the rapidly rising numbers of baby boomers become targets. The **National Center on Elder Abuse (NCEA)** estimates that there may be 5 million victims per year.

Elder financial abuse is generally defined as the improper use of an elder’s funds, property or assets. Examples include misuse of powers of attorney/conservatorship, convincing or intimidating an elder to withdraw large sums of money for personal gain, scams and telemarketing fraud. Signs of financial exploitation may include sudden large withdrawals of cash, or transferring the title on a bank account to a new acquaintance, sudden appearance of previously uninvolved relatives claiming their rights to an elder’s affairs and possessions and on some occasions, an elder’s report of financial exploitation.

Victims tend to be unmarried or widowed and have few social contacts. The financial voracity of the perpetrator in combination with the elder’s loneliness is the major risk factor for material exploitation.

In the case of Mr. A, there is a concern for neglect, let alone physical abuse. His progressively declining cognition, in the setting of an already damaged relationship with his wife, were risk factors for mistreatment and abuse. A social worker was assigned to the case: there were several elements of neglect in Mr. A’s living environment, including a lack of heating and running water, destroyed furniture and rodents within the bedding. The case is under investigation with the APS.

There is no official data on the prevalence of elder abuse and mistreatment. Several factors play a role in the underestimation of the number of abused elders. Patient factors include fear, shame, guilt, or ignorance. Healthcare providers underestimate and underreport elder abuse due to decreased recognition of the problem, lack of awareness of reporting requirements, including who to report to, and concerns about physician-patient confidentiality. According to the NCEA, approximately 1 to 2 million Americans over age 65 have been abused or neglected at some point. The majority of the victims

Report Elder Abuse Domestic/Community:

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Report Elder Abuse Nursing Home/Long Term Care Facility:

T: 401-785-3340 F: 401-785-3391

DEA After hours Emergency Response System:

T: 401-235-8028

State of RI DEA website:

http://www.dea.ri.gov/programs/protective_services.php

RI State Law:

<http://www.rilin.state.ri.us/Statutes/TITLE42/42-66/INDEX.HTM>

National Center on Elder Abuse website:

<http://www.elderabusecenter.org>

are female; the majority of the perpetrators, men (either adult sons or spouses of the abused elder). It is regrettable that institutional abuse (in the hospital setting, nursing homes, and assisted living facility) is also a major concern.

The Rhode Island State law mandates that all cases of suspected elder abuse be reported to the Department of Elderly Affairs (DEA) protective services unit; failure to report results in \$1000 fine.

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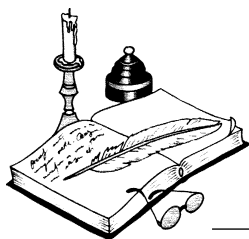
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Physician's Lexicon

A Prefix of Many Meanings

Most Greek prefixes convey a clear and unambiguous meaning. Prefixes such as *mal-* or *supra-* or *hypo-* tend to present a single, explicit sense making those words containing these prefixes easier to understand. But, on the other hand, there are some Greek prefixes which provide a bewildering menu of meanings such that a rudimentary knowledge of Greek word-elements helps little in understanding the currently accepted meaning of the word in question.

Consider, for example, the Greek prefix, *para-*. It may mean 'by the side of' [as in paraphrase, parasymphetic, parallel, parametrium] or 'almost' or 'closely resembling' [as is paramedic or paramorphine], or 'beyond' [as in paranoia, parapsychology or paravertebral], or 'contrary to', or 'going aside' or

'warding off,' or 'that which protects from' or even 'irregular' or 'contrary to.'

A parachute, then, is a device which protects one from falling [conjoined with the Latin, *cadere*, to fall.] And a parasol, similarly, is that apparatus which protects one from the sun [Latin, *sol*, the sun.]

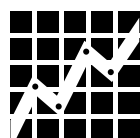
A parasite is, literally, one who eats beside somebody [Greek, *sitos*, food]. The many other medical terms in which the prefix, *para-*, means 'beside of' or 'almost' include paracentesis, paraculis, paragenesis, paraldehyde, paramnesia, paraumbilical, parabiosis, and parathyroid. Paranoia, meaning a derangement of the mind, is literally, 'beside the mind.'

The prefix, *para-*, may sometimes mean 'partial' or 'incomplete' as in a word such as paralysis [Latin, *luere*, to loosen as in lysis.]

A paradox is something which is contrary to expectation or a self-contradiction. The Greek root, *dox-*, means to think or to honor and appears in English words such as doxology and orthodoxy.] A paragon, meaning something of excellence, means, in Greek, beside a whetstone [ie, next to something which sharpens.] A paragraph, then, literally means something written beside something else. And a parameter, currently meaning a constant standard to be emulated, actually means, literally, a variable [an almost] measurable standard.

The prefix, *par-* [from the Latin, *parere*, to bring forth] is incorporated in words related to pregnancy such as primipara, parent and parity.

— STANLEY M. ARONSON, MD



RHODE ISLAND DEPARTMENT OF HEALTH
DAVID GIFFORD, MD, MPH
DIRECTOR OF HEALTH

VITAL STATISTICS

EDITED BY COLLEEN FONTANA, STATE REGISTRAR

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

Underlying Cause of Death	Reporting Period			
	August 2006	12 Months Ending with August 2006		
	Number (a)	Number (a)	Rates (b)	YPLL (c)
Diseases of the Heart	228	2,704	252.8	3,294.0
Malignant Neoplasms	200	2,290	214.1	6,281.5
Cerebrovascular Diseases	23	407	38.0	520.0
Injuries (Accidents/Suicide/Homicide)	50	450	42.1	6,660.5
COPD	31	474	44.3	375.0

Vital Events	Reporting Period		
	February 2007	12 Months Ending with February 2007	
	Number	Number	Rates
Live Births	1,121	13,086	12.3*
Deaths	909	10,141	9.5*
Infant Deaths	(7)	(82)	6.3#
Neonatal Deaths	(6)	(55)	4.2#
Marriages	287	6,968	6.5*
Divorces	229	3,176	3.0*
Induced Terminations	264	4,661	356.2#
Spontaneous Fetal Deaths	76	791	60.4#
Under 20 weeks gestation	(71)	(729)	55.7#
20+ weeks gestation	(5)	(62)	4.7#

(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 1,067,610

(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.

* Rates per 1,000 estimated population

Rates per 1,000 live births

Information for Contributors

Medicine & Health/Rhode Island

Medicine & Health/Rhode Island is a peer-reviewed publication, listed in the *Index Medicus*. We welcome submissions in the following categories.

CONTRIBUTIONS

Contributions report on an issue of interest to clinicians in Rhode Island: new research, treatment options, collaborative interventions, review of controversies. Maximum length: 2500 words. Maximum number of references: 15. Tables, charts and figures should be camera-ready, or as separate files (jpg, tif, pdf). Photographs should be saved as separate files. Powerpoint files and slides are not accepted.

CREATIVE CLINICIAN

Clinicians are invited to describe cases that defy textbook analysis. Maximum length: 1200 words. Maximum number of references: 6. Photographs, charts and figures may accompany the case.

POINT OF VIEW

Readers share their perspective on any issue facing clinicians (e.g., ethics, health care policy, relationships with patients). Maximum length: 1200 words.

ADVANCES IN PHARMACOLOGY

Authors discuss new treatments. Maximum length: 1200 words.

ADVANCES IN LABORATORY MEDICINE

Authors discuss a new laboratory technique. Maximum length: 1200 words.

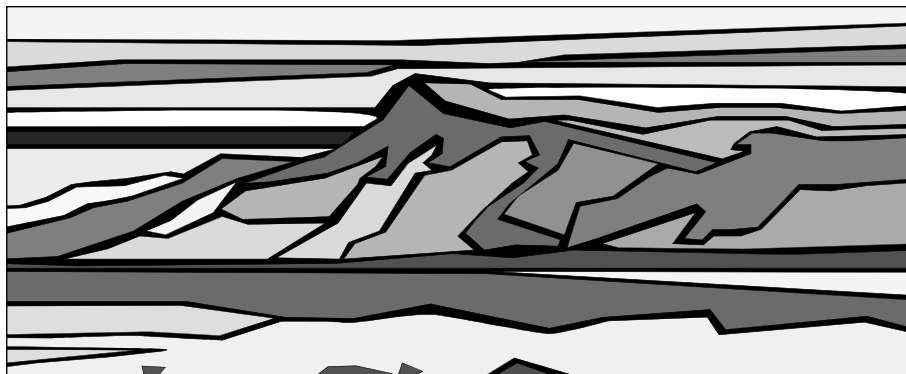
For the above articles: Please submit 4 hard copies and an electronic version (Microsoft Word or Text) with the author's name, mailing address, phone, fax, e-mail address, and clinical and/or academic positions to the managing editor, Joan Retsinas, PhD, 344 Taber Avenue, Providence, RI 02906. phone: (401) 272-0422; fax: (401) 272-4946; e-mail: retsinas@verizon.net

IMAGES IN MEDICINE

We encourage submissions from all medical disciplines. Image(s) should capture the essence of how a diagnosis is established, and include a brief discussion of the disease process. Maximum length: 250 words. The submission should include one reference. Please submit the manuscript and one or two clearly labelled cropped files with the author's name, degree, institution and e-mail address to: John Pezzullo, MD, Department of Radiology, Rhode Island Hospital, 593 Eddy St., Providence, RI 02903. Please send an electronic version of the text and image to: JPezzullo@lifespan.org.

FINANCIAL DISCLOSURE FORMS

All authors must submit a financial disclosure statement of possible conflicts. The form is available from the managing editor, or the Rhode Island Medical Society website (www.rimed.org).





MEDICAL MALPRACTICE TOPICS

INFORMATION FOR RHODE ISLAND PHYSICIANS FROM BABCOCK & HELLIWELL

LEGAL PROCEDURES: PART II

Depositions

John Tickner, CPCU, President, Babcock & Helliwell

This is the second of two discussions on pre-trial legal procedures. If you missed Part 1, you can find it in the Medical Malpractice section of the Babcock & Helliwell Web site. This month, I'll examine depositions.

Your Deposition

A deposition is testimony taken under oath. Although a deposition usually takes place in an informal setting, do not approach it lightly. Most attorneys will tell you that a deposition can be the most critical event in the legal process, since it's a dress rehearsal for the potential trial, and an opportunity for the lawyers to find out in advance what the other party and witnesses will say at trial. Sometimes a disposition can lead a plaintiff attorney to drop the case.

Only confidential discussions and written communications with your attorney or insurance carrier are privileged and not subject to later discovery during your deposition. Any other discussions you had about the case can become a subject of inquiry during your deposition. You may also be questioned about any research about the case or procedure you have undertaken while preparing for your deposition.

Before the deposition, your attorney will tell you what he or she has learned concerning the allegations made against you and the facts upon which those allegations are based. Your attorney will likely discuss questions you may be asked by the plaintiff's attorney, share examination techniques you may expect, and suggest the best approaches available to you in formulating appropriate responses. If the patient is deposed before you, you'll have an opportunity to review that testimony in preparation for your own.

You want to convey the most favorable impression possible during the deposition. This means being well prepared and knowledgeable about all the facts of the patient's care, and responding to all questions in a direct and confident manner. Although you may feel the case is without merit, don't show arrogance or hostility.

Be truthful, and never misstate the facts at a deposition in an effort to enhance your position in the lawsuit. You should also be aware that unless the plaintiff or defense

attorney notes that statements are to be off the record, all comments made during the course of the deposition will appear in the deposition record.

Your responses should be brief, concise, and delivered in a calm and thoughtful manner. Respond only to the question that's asked. Never volunteer information during the deposition, as this only serves to unnecessarily educate opposing attorneys. Avoid guessing in response to any question when you're uncertain of the answer. It's preferable to say, "I don't know" or "I don't recall."

Review Your Testimony

Attorneys have the right to instruct you not to answer any question during a deposition that they feel is an effort to elicit information that is not legally discoverable. Follow your attorney's instruction in this regard. In addition, your attorney may object to a question that he or she feels is ambiguous. Listen to the objection, as it may alert you to a hidden meaning in the question that is not otherwise readily apparent. If you're directed to answer the question, you should take your attorney's objections into consideration when formulating your answer.

After the deposition, you'll receive a copy of your testimony for review. Provide your attorney with any suggested changes or corrections that you feel are necessary to ensure accuracy in the transcript.

The information in this article is intended to provide general information. It is not intended and should not be construed as legal advice.

John Tickner, CPCU, is president of Babcock & Helliwell, a privately held independent insurance agency established in 1892 that provides professional insurance-related services of all kinds. Babcock & Helliwell is an agency for ProMutual Group, New England's largest medical malpractice insurance provider and the second-largest provider in Rhode Island.

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NINETY YEARS AGO, AUGUST 1917

Edward W. Burt, MD, in "Recognition and Treatment of Some Conditions of the Anterior Foot," advised readers who would be soon examining young recruits. "A hungry or dyspeptic soldier may not only march but fight, yet a soldier with painful feet can neither march nor fight, and it is fully as important to keep the fighting man in condition to fight as to repair him after he has been injured by fighting." In particular, Dr. Burt discussed hallux valgus and hallux rigidus, the major causes of disability of the toe joint.

Arthur H. Ruggles, MD, in "Progress of the Year in the Study of Internal Secretions with Report of 5 Cases," avowed: "I do believe that in the study of the activities of the glands of internal secretion, a knowledge of the interactivities and with a checking up of the clinical results of hypo and hyper function we will have a very much clearer idea of many diseases which have heretofore in large measure baffled our efforts of treatment." He traced the symptoms of the five patients, all from Butler Hospital, to glandular secretions.

C.S. Christie, MD, and H.S. Bernstein, MD, contributed "Perforation of the Duodenum due to a retroperitoneal fibro-sarcoma." The 38 year-old man "first sought medical aid on the evening of January 22, after an alcoholic debauch on the day preceding." Three days later, he returned to work, but on January 31 complained of chills and "distressness" in the epigastrium. By February 1, he was comatose, and died. An autopsy performed 24 hours post-mortem showed the tumor.

Lopo de Mello, MD, reported on "Case of a Malignant Pustule." A 44 year-old man came to the accident room, referred by his physician. The patient did not feel sick, but his left arm was swollen. He worked in a factory, handling animal

hairs and hides. The diagnosis was anthrax. Days later, his fever spiked to 103; and eighteen days later, he was discharged, returning 10 days after that for a skin graft. The authors assumed the patient had acquired an immunity. They injected concentrations of his blood into 5 guinea pigs, which died.

FIFTY YEARS AGO, AUGUST 1957

The Journal printed the winner from the 74th Caleb Fiske Essay: "The Present Day Treatment of Infertility," by Fred A. Simmons, MD.

F. Ronchese, MD, in "Pores and Comedones," noted: "Many prurigenous dermatoses are due to...obstruction caused by disease or...dressings."

Paul A. Pamplona, MD, Medical Director, Public Health Service, addressed the 50th anniversary annual meeting of the Rhode Island Tuberculosis and Health Association: "The Unhospitalized Tuberculosis Patient – A Community Responsibility." The TB program of the Public Health Survey had conducted a nationwide survey of known non-hospitalized cases in 37 areas in 24 states. The survey found 3,159 patients at home; 72% were active or probably active; 28% were arrested or inactive with drug therapy prescribed. Dr. Pamplona cautioned: "Of the one-quarter of the active and presumably active cases...nearly half had unknown or undetermined bacteriological status within the 6 months preceding the study date." Twenty-three percent of all the active and probably active cases were under no medical supervision.

TWENTY-FIVE YEARS AGO, AUGUST 1982

The Journal printed an obituary for Rhode Island Medical Society member George W. Waterman, MD (1893-1982), a "a pioneer...in radiation treatment of cervical cancer." Dr. Waterman, with Dr. Herman C. Pitts, established the gynecological tumor clinic at Rhode Island Hospital, the first in the nation.

Howard R. Cohen, MD, Allan M. Deutsch, MD, Michael J. Ryvicker, MD, and Sanford L. Schatz, MD, contributed "Radiographic Case of the Month: Dissection of the Thoracic Aorta," in an 80 year-old woman with a two and a half week history of chest and shoulder pain.

Lois A. Monteiro, PhD, in "Folk Remedies of Rhode Island's Portuguese-American Immigrants," discussed the results of interviews with 20 immigrants associated with the Portuguese Brazilian Studies Center at Brown. The interviewees identified 68 herbal remedies; e.g., savory was useful for pain and for headaches; rosemary for headaches. Folk remedies included a raw potato for headaches, cherry stems for sore throats.

Glenn W. Mitchell, MD, in "Resuscitation in Rhode Island," declared: "Improvement in the resuscitation of severely ill and injured will require a team effort."



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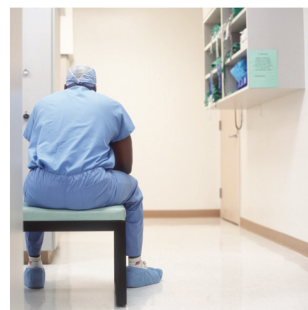
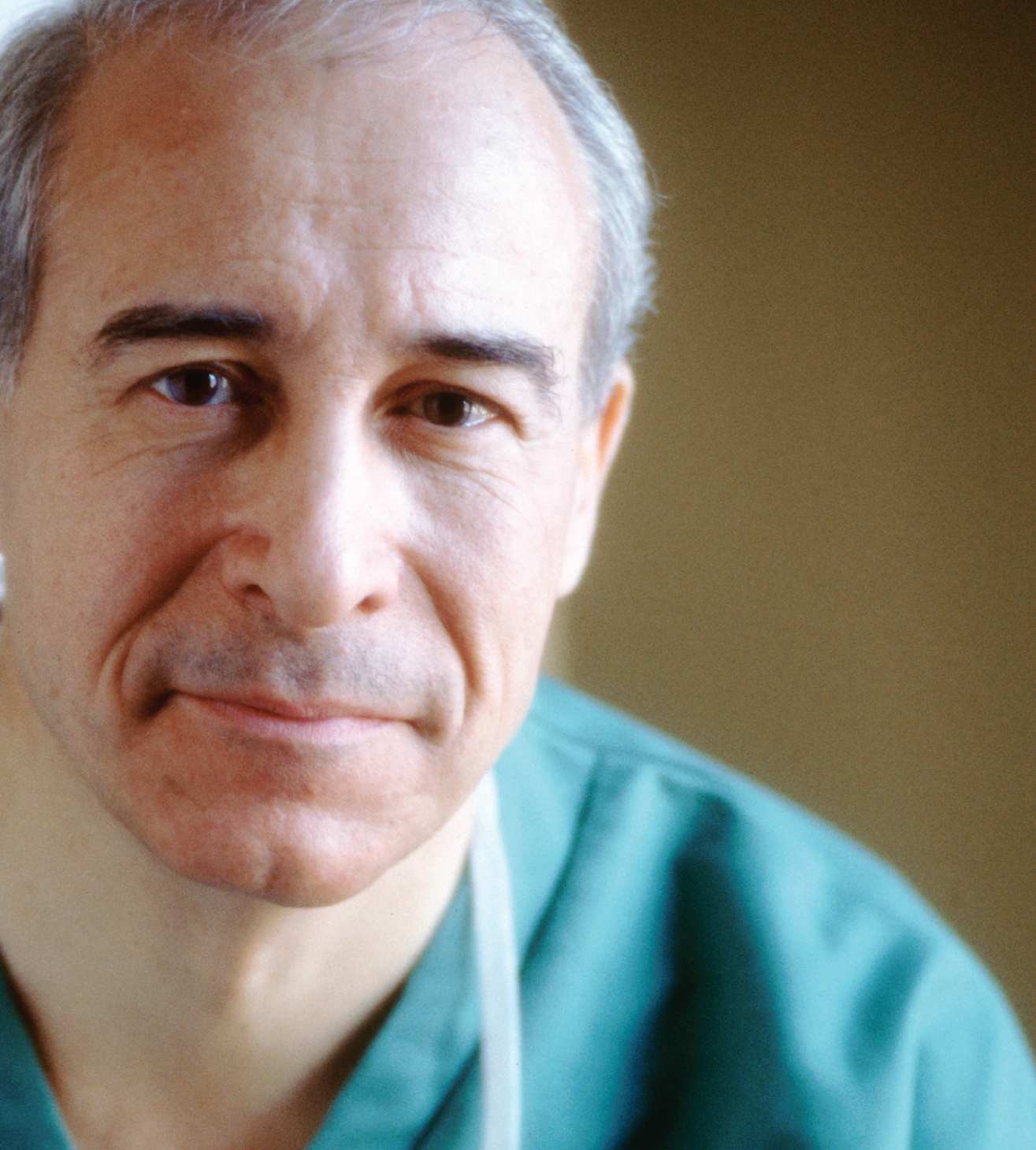
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