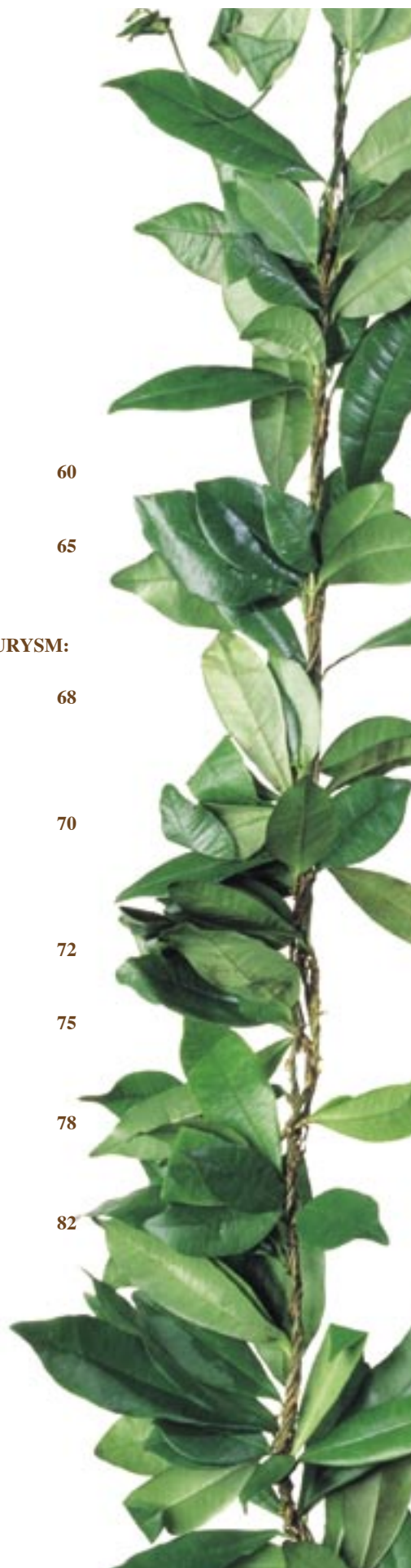


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THE SCHOOL HEALTH EDUCATION PROGRAM (SHEP): MEDICAL STUDENTS AS HEALTH EDUCATORS	60
Victoria S.S. Wong MD and Gwen S. Naguwa MD	
A CASE OF SEPTIC ARTHRITIS FROM RAT-BITE FEVER IN HAWAI'I	65
Jonathan Dworkin MD; Matthew J. Bankowski PhD; Stella M. Wenceslao MD; and Royden Young MD	
A "SILENT CULTURE-NEGATIVE" ABDOMINAL AORTIC MYCOTIC ANEURYSM: RAPID DETECTION OF BARTONELLA SPECIES USING PCR AND HIGH-THROUGHPUT MASS SPECTROMETRY	68
Matthew Koo; Sheri Manalili; Matthew J. Bankowski PhD; Rangarajan Sampath PhD; Steven A. Hofstadler PhD; and Joseph Koo MD	
UNDERSTANDING ENDORPHINS AND THEIR IMPORTANCE IN PAIN MANAGEMENT	70
Adam S. Sprouse-Blum BA; Greg Smith BS; Daniel Sugai BA; and F. Don Parsa MD, FACS	
COMMUNICATION STRATEGIES TO ASSIST COMPREHENSION IN DEMENTIA	72
Randy R. Weirather PhD	
MEDICAL SCHOOL HOTLINE	75
Expanding the Pipeline to Meet the Growing Demand for Physicians	
Roy Magnusson MD, MS	
COMMENTARY	78
Truth in Teaching: Casting Artificial Pearls Before Real Swine	
Robert C. Marvit MD, MSc	
WEATHERVANE	82
Russell T. Stodd MD	



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The School Health Education Program (SHEP): medical students as health educators

Victoria S.S. Wong MD and Gwen S. Naguwa MD

Abstract

Background: The School Health Education Program (SHEP) is a collaboration of the John A. Burns School of Medicine and the State of Hawai'i Department of Education that was founded to improve the health of Hawai'i's youth. This program allows premedical and medical students (collectively referred to as "medical students" from here on) to serve as health educators for high school students in six priority areas of health education.

Objectives: To confirm the efficacy of this community health partnership program and to determine the factors resulting in its success.

Methods: A total of 1714 students from seven of Hawai'i's public high schools were surveyed for improvement in their content knowledge and decision-making confidence after participating in SHEP presentations. A sub-group of 235 high school students were asked about their comfort level and trust in their interactions with medical students as compared to their health teachers.

Results: The knowledge content and confidence in decision making increased significantly after participation in SHEP activities ($p < .0001$). High school students were found to be more comfortable and more trusting in learning about health topics from medical students as compared to health teachers ($p < .0001$). Reasons given included the medical students' content knowledge as well as their presentation methods and positive attitude.

Conclusions: The unique dual role of medical students as future physicians and as students allowed them to retain their credibility as health educators while developing a strong rapport with the high school students. Through SHEP, medical students can gain valuable experience through researching and teaching health topics while high school students receive additional health knowledge through this teaching.

Introduction

The School Health Education Program (SHEP) is a collaboration of the John A. Burns School of Medicine and the State of Hawai'i Department of Education.¹ This program was originally founded in 2002 for premedical and medical students (to be referred to collectively as "medical students" from here on), high school students, and faculty to work together to improve the health of Hawai'i's youth. By allowing medical students to serve as health educators for high school students, both benefit: the medical students gain valuable experience through researching and teaching health topics while high school students receive additional health knowledge through this teaching.

The chosen health topics focus on six priority areas, directly comparable to those cited in the Youth Risk Behavior Surveillance System (YRBSS): "injury and violence prevention; alcohol and drug use prevention; sexual health and responsibility; tobacco use prevention; nutrition and physical activity; and personal and consumer health."² The YRBSS was developed by the Centers for Disease Control and Prevention (CDC) to monitor health risk behaviors of 9th through 12th grade students. These behaviors contribute to deaths of adolescents, most commonly through motor vehicle crashes, other unintentional injury, homicide, and suicide before the age of 25. They also contribute more chronically to the

deaths of adults through cardiovascular disease and cancer at older ages.

The current mainstay of educating public high school students about these health risk behaviors is their health education curriculum. Health education, however, is lacking in both quantity and quality. The High School Transcript Study from 2000 revealed that the amount of time devoted to health and physical education averaged to 2.2 credits for high school graduates in year 2000.³ This number may be compared to the mean total course credits of 26.2 earned by this same group of graduates. These credits are measured in Carnegie units, a standardizing factor that equates one credit to a 40 minute class period that occurs once per day across the entire school year. The High School Transcript Study from 2005 noted that these data from 2000 were not significantly different in 2005.⁴

In addition to the limited quantity of time devoted to health education, the quality of this infrequent health education is questionable. Health teachers who have had no training in the basic sciences may lack confidence in teaching a more complex curriculum. For the 1999-2000 school year, only 74.8% of health education teachers had proper certification to teach health education. Of those certified, only 56.6% possessed an undergraduate or graduate degree in the field of health education.⁵

This current health education system is clearly not sufficient, a fact made apparent by the adolescent health education crisis in the United States. Additional resources are needed. One editorial in *The Lancet* addressed sex education in particular and noted that "the median age at first intercourse increased significantly with educational level."⁶ With the current rates of unwanted pregnancy, it is clear that more education is needed. In the editorial, the question then arose of "how, and who will do the teaching?" One suggestion was the use of medical students who could use their clinical knowledge to take part in an education program as a way of giving back to the community.

Numerous programs with this particular service-learning model of medical students and interns serving as teachers to younger students have been reported in the literature. These programs have proved beneficial to the teachers by increasing their efficacy as communicators,⁷ improving their confidence by dealing with the subject at hand (e.g., sexual health issues),⁸ and allowing them to develop "teaching and relationship-building skills with adolescents."⁹ More importantly, these programs have met their educational goal and proved beneficial to the students. The programs generally involved sensitive topics such as AIDS education,¹⁰⁻¹⁴ sex education,¹⁵⁻¹⁷ breast feeding,¹⁸ and substance abuse.¹⁹

These current data show benefit to both students and teachers who participate in service-learning programs. They create a compelling case for the establishment of additional programs of a similar vein in the context of a national adolescent health crisis.

The efficacy of SHEP has already been established in an earlier study.²⁰ The objectives of this current study are not only to reinforce the efficacy of this service-learning model, but also to determine the

etiology of its success. This study proposes that medical students are in a unique position to teach high school health classes; they have a dual role as both health care providers and as students. Because high school health education typically addresses issues of a more personal nature, a trusting relationship must be established between teacher and student for effective learning to take place. The medical students' role as health care providers enables them to provide trustworthy information to the high school students while their role as students allows them to foster a peer relationship rather than assume an authoritarian role when teaching.

The results suggest that medical students are more highly rated as health education instructors than health teachers among high school students. Such a finding would yield a new effective option in aiding to alleviate the current adolescent health crisis.

Methods

Pre-clinical medical students and undergraduate pre-medical students (collectively referred to as "medical students" in this paper) were divided into three student groups with each group randomly assigned to two high schools. A monthly presentation format was developed, allowing the student group to form a longitudinal relationship with the assigned schools.

Prior to the monthly presentations, each group worked with medical school faculty to develop content expertise and outcome measurements tools. Each group practiced their presentation with clinical faculty members, allowing for direct oral feedback prior to the actual school presentation. Presentation methods were chosen by student groups and included the use of PowerPoint presentations, poster board presentations, small-group discussions, interactive games, and role-playing scenarios. These presentations were created to maximize the interaction and minimize one-sided lecturing.

In creating these presentations, the seven areas of the National Health Education Standards²¹ were kept in mind. Some methods by which these standards were applied to the presentations can be seen in Table 1.

To determine the efficacy of these presentations, a one-group pretest-posttest design with mixed analysis of variance was used, with time and school as additional variables. These pre- and post-tests were used to determine if the high school students gained content knowledge and confidence in decision-making after the presentations. The participating public high schools included: Castle, Nanakuli, McKinley, Kailua, Farrington, Waipahu, and Roosevelt

High Schools. Data collection continued from the school years of 2003-04 and 2004-05. A total of 1714 students participated. IRB exemption was obtained for this study.

Three of these schools were singled out to receive additional questions related to the high school students' attitudes toward being taught by medical students. These schools were chosen due to their accessibility to the primary researcher. These additional questions were directed toward their comfort level in receiving health education from medical students and their trust in the information presented to them. The participating schools included McKinley, Castle, and Kailua High Schools. A total of 235 students participated in this arm of the study.

The test questions used to measure content knowledge consisted of multiple choice questions with four possible answers. The pretest and posttest questions remained the same. During the presentations, the answer to each of the multiple choice questions was included in the health content. In the survey questions used to measure the students' decision-making confidence, comfort, and trust, a 5-point Likert scale was used to measure student opinion.

Students were also asked to comment on why they felt more comfortable learning about health topics from medical students, or why they felt that the medical students' information was more trustworthy if they had marked "Slightly agree" or "Strongly agree" on the Likert scale. After review of all comments in aggregate, six main categories of comment type were created, and each comment was placed into one of the six categories by the lead author of this paper after the categories were well defined. The categories included *Medical Knowledge, Presentation Method, Presentation Attitude, Fellow Students, Medical Experience, and Confidentiality* (further defined in Table 2). Placement of comments into the categories was straight-forward, with comments clearly falling into one of the six categories. Interestingly, no comments were made about the interactive and engaging nature of the presentations themselves.

Results

Over the course of two school years during which the high school students received approximately one SHEP presentation per month, the students scored significantly higher on the posttests as compared to the pretests in content knowledge. When examining all schools combined, (n=1714), it was found that knowledge content increased from pre- to post-test for healthy living, substance abuse, and sexual health, with $p < .0001$ for all three categories. The

Table 1.— National Health Education Standards as Applied to SHEP Presentations

1) Core Concepts: The high school students were taught the basic information about the health topic at hand.
2) Accessing Information: The students were given contact information about local health resources that could answer any further questions they had about the health topic. The students were also informed about situations in which it would be appropriate to talk to an adult, and the appropriate adults to contact within their environment (e.g., school nurses, teachers, and parents).
3) Self Management: In addition to core concepts, the students were taught techniques on how to continuously apply these core concepts to their daily lives, such as in reading nutritional facts labels and condom use.
4) Analyzing Influences: Students were made aware of the media influences on the foods they eat, their body images, smoking and alcohol usage, sexual activity, and violence.
5) Interpersonal Communication: This was addressed in the role-playing activities when students were placed in a position where they had to counsel a friend who was considering suicide or speak with a relative who was thinking about quitting smoking.
6) Decision Making & Goal Setting: Students participated in role-playing activities that offered skills on how to make decisions in scenarios such as peer pressure or sexual advances. They were also given materials that allowed them to keep track of their diet and exercise activities with the goal of achieving a healthy lifestyle.
7) Advocacy: Students were encouraged to teach others about the health content they had learned in the presentations. As in the role-playing exercises mentioned in Interpersonal Communication, students had to counsel others using the concepts they had learned.

Table 2.— Definition of Categories Defined by High School Students

A. Medical Knowledge: This category included comments about medical students having a greater understanding and more accurate knowledge of health topics because they are specializing in that field and studying it at the time of presentation. It also includes comments about how medical students are medical professionals and it is their interest and duty to provide health education.
B. Presentation Method: This category included comments about how medical students tend to give more detailed answers than parents or teachers and explain their ideas more thoroughly, rather than holding back information. It also includes comments about how medical students use facts to back up their arguments rather than relying on opinions.
C. Presentation Attitude: This category included comments about how medical students are less judgmental and more objective than parents and teachers. Comments focused on how, for example, a parent would think that his child smokes if his child asks him a question about smoking, whereas a medical student would not make such an assumption. Also, some comments mentioned that the medical students would treat the high school students with respect, as equals, rather than talking down to them.
D. Fellow Students: This category included comments about how medical students are students in school, just like the high school students. The medical students are closer to their age, more familiar with substance abuse experiences, and have a greater understanding of their high school woes since the medical students experienced it more recently than their health teachers. Also, the medical students were noted to be more "fun" due to their energy and interaction.
E. Medical Experience: This category included comments about how medical students have seen the diseases and issues surrounding substance abuse and unsafe sex in patients, so they are better able to argue against substance abuse and unsafe sex based on their knowledge of the later consequences.
F. Confidentiality: This category included comments about medical students being complete strangers to the high school students and thus, being seen as confidants to whom the high school students could tell their secrets and ask questions.

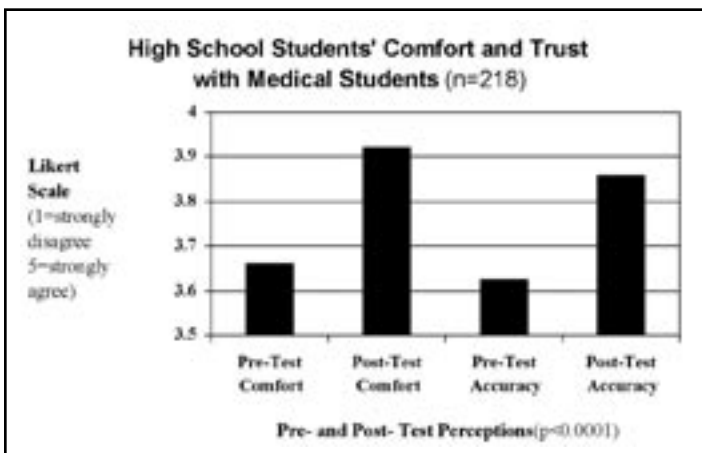


Figure 1.— High School Students' Comfort and Trust with Medical Students

Table 3.— High School Students' Reasons for Comfort: Percentage of Comments by Topic

	A	B	C	D	E	F
Pre-Test	47.2	8.3	22.2	9.72	1.4	11.1
Post-Test	48.1	18.5	12.0	15.7	0.9	4.6

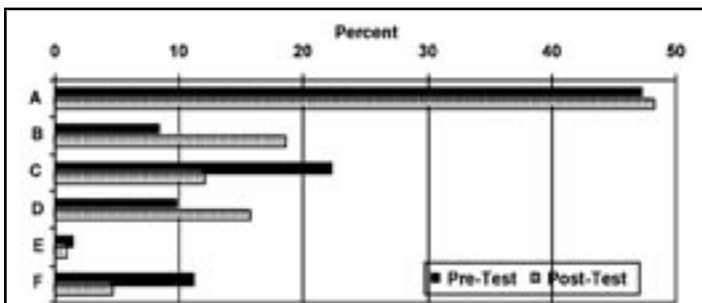
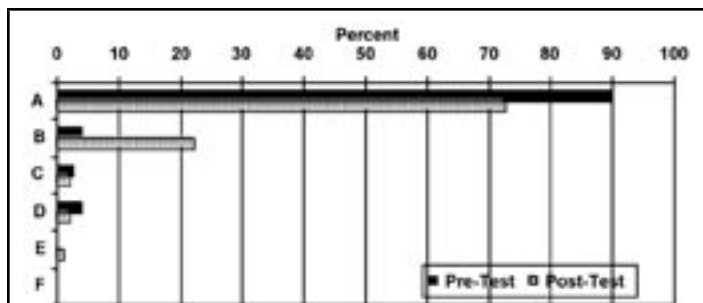


Figure 2.— High School Students' Reasons for Comfort: Percentage of Comments by Topic

Table 4.— High School Students' Reasons for Trust: Percentage of Comments by Topic

	A	B	C	D	E	F
Pre-Test	89.9	3.8	2.5	3.8	0	0
Post-Test	72.7	22.2	2.0	2.0	1.0	0



A. Medical Knowledge; B. Presentation Method; C. Presentation Attitude; D. Fellow Students; E. Medical Experience; F. Confidentiality

Figure 3.— High School Students' Reasons for Trust: Percentage of Comments by Topic

confidence in decision-making was also significantly higher from pretest to posttest for all three categories as well, with $p < .0001$.

In the subgroup study looking at students at McKinley, Castle, and Kailua High Schools, it was determined from an increase in the Likert scale that students are more comfortable learning health education from medical students rather than their health teachers. It was also shown that students trusted the information they received from medical students more than from their health teachers (Figure 1).

After categorizing the students' comments into one of the six categories (see Methods section), it could be seen that nearly half the comments generated by the high school students suggested that they felt more comfortable learning from medical students because of their *Medical Knowledge*. From pretest to posttest, there was also a minor increase in the *Presentation Method* category. The other five comment types also made up approximately half of the comments (Table 3, Figure 2).

The high school students were also asked for their comments about why they trusted the information from medical students more than that from their health teachers, and believed this information to be more accurate (Table 4, Figure 3). The same six categories were used. It is evident that the majority of the comments, both pre- and post-test, fall in the *Medical Knowledge* category.

Discussion

This study confirms that, as discussed in prior literature,²⁰ the School Health Education Program is effective both in increasing health content knowledge of high school students and in increasing their confidence in decision-making skills related to the health content. Such results suggest that the high school students retain the information they are taught in the health presentations and that after the presentations, they feel better prepared to make real world decisions based on this newly-learned knowledge.

More importantly, this study brings some insight into why SHEP has been successful in conveying health information to the high school students. One essential aspect of effective teaching is the rapport between student and teacher, particularly when addressing sensitive health topics. In SHEP, medical students had the opportunity to develop this rapport while teaching high school students about healthy living, substance abuse, sexual health, and teen violence. As evidenced by the current data, the high school students felt more comfortable with the medical students than with their own health teachers.

Another aspect of effective teaching is the information content. There must be an element of trust before the student is willing to accept the teachings of the teacher as fact. At times, this trust can be generated by the aforementioned rapport that the student has with the teacher. An authoritative figure who specializes in the topic at hand may also generate trust that he or she is knowledgeable enough to provide trustworthy teachings. The data in this present study shows that the high school students felt that the information from the medical students was more accurate, and thus, more trustworthy, than that of their own health teachers.

This overall preference for medical students poses many questions. What are the necessary qualities of an effective health educator? Certainly these would be the qualities necessary to develop a rapport with the students, and create an environment of comfort and trust while efficiently communicating accurate information. What qualities do medical students possess that allow them to do this more effectively than health teachers? Could this success in health education be replicated by a nurse or physician who has background knowledge and experience in such health topics? How can a high school health teacher use this information to improve his or her rapport with the students?

The comments generated by the high school students gave some indication as to which qualities they preferred. In those students who felt more comfortable with medical students than with their health teachers, approximately half of their comments focused on the *Medical Knowledge* of the medical students as the reason for their comfort. This focus suggests that it was the functional aspect of the medical students, such as their knowledge and their role as medical authorities that was important to these commenters. The other half of the comments focused more on the subjective aspects of the medical students, such as the presentations they created or their teaching attitudes and methods.

In analyzing the set of comments generated by high school students who felt that the medical students presented more accurate information than their health teachers, the large majority felt that way because of their *Medical Knowledge*. This is not surprising because medical students are specializing in medicine, studying to become physicians, so they are perceived as presenting accurate medical information. However, there is an increase in comments from pretest to posttest that cite the *Presentation Method* as another reason why medical students present accurate information. This suggests that the content of the presentations and the teaching method contributed to the credibility of the medical students.

In essence, it was a combination of their teacher-like role and their student-like demeanor that allowed the medical students to retain their credibility while still developing a rapport with the high school students. The high school students saw the medical students as being almost physicians and this gave them an air of authority that contributed to the trust and rapport. At the same time, the medical students were still students themselves. They saw the medical students as being closer in age to them and presenting these health topics in engaging and interactive ways. This contributed to the comfort and trust levels as well.

Thus, the very unique position of medical students allows them to make excellent health educators to high school students. As well as improving their own teaching and communication skills, as mentioned in the introduction, the use of medical student teachers can benefit the community. The creation of additional such programs nationwide in which medical students educate high school students on health topics is a step in the right direction to address the adolescent health education crisis.

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A Case of Septic Arthritis from Rat-Bite Fever in Hawai'i

Jonathan Dworkin MD; Matthew J. Bankowski PhD; Stella M. Wenceslao MD; and Royden Young MD

Abstract

Background: Infection associated with a rat bite has been known for centuries. *Streptobacillus moniliformis* is a zoonotic organism identified in the 20th century as the causative agent of most cases of rat bite fever outside of mainland Asia. There are no previously published cases of this pathogen in Hawai'i.

Case Presentation: The authors present a case of *Streptobacillus moniliformis* causing septic polyarthritis in a 59-year-old Hawaiian man with a history of alcohol abuse and recurrent exposure to rodents in his apartment. Blood cultures from the patient were negative. The organism was isolated after three days only in thioglycolate broth from a synovial fluid culture. 16S rRNA sequencing of extracted and purified DNA confirmed the organism as *Streptobacillus moniliformis*.

Conclusion: Diagnosis of infection from *Streptobacillus moniliformis* is difficult to make because of the fastidious nature of the organism's growth, as well as inhibitors present in standard blood culture bottles. The use of bacterial 16S rRNA sequencing may aid in an earlier diagnosis for this disease. More research is required to identify host and virulence risk factors for involvement of specific organ systems.

Background

Illness following a rat bite has been known for at least two thousand years.¹ The term rat-bite fever encompasses two distinct disease syndromes, which correspond with the two causative organisms found in the oropharyngeal flora of rodents.² In the United States Wilcox reported the first case of rat bite fever in 1829,³ but it was not until 1914 that Schottmuller described the specific pathogen that became later known as *Streptobacillus moniliformis*.⁴ This organism is responsible for the majority of rat-bite fever cases in the United States, and it can cause a variety of clinical presentations and end-organ complications.¹

In addition to *Streptobacillus moniliformis*, a second organism known as *Spirillum minus* is responsible for a majority of rat-bite fever cases in Asia. This organism is also a chronic colonizer of rodents, but produces a different clinical syndrome known as sodoku. This is characterized by rash and relapsing fever, but unlike *S. moniliformis* there is commonly ulceration at the bite site, and there is far less arthritis than is common in streptobacillary infections.^{1,2} Sodoku is not the subject of this case report, but it should be considered in the differential of febrile illnesses following a rodent bite, particularly if ulceration is present at the wound site.

Case Report

A 59-year-old Hawaiian man with history of hypertension, schizophrenia, depression, and moderate-to-heavy alcohol abuse presented to the emergency room with one month of progressively worsening joint pain. The patient first noticed pain and stiffness in his right knee, but pain and swelling subsequently progressed to involve the ankles, knees, and wrists bilaterally, as well as the right elbow. The symptoms worsened slowly over weeks, and at first the patient did not seek medical attention. On further questioning he reported subjective fevers for several weeks, as well as poor appetite, diarrhea,

malaise, and subjective weight loss. He also reported seeing rats around his apartment, but denied any direct contact with them. He denied rashes, mucocutaneous ulcerations, nausea, vomiting, chest pain, cough, and shortness of breath. He also denied headache, stiff neck, and alterations in consciousness.

On admission the patient had a fever of 39.1 C. His blood pressure was 138/96, heart rate was 88, and he was saturating 95% on room air, with a respiratory rate of 16. On exam the patient was frail-appearing and bed-ridden, but in no acute distress. Joint range of motion was severely limited by pain and stiffness. The left knee, right wrist, and right elbow were warm and tender along the joint lines, with moderate sized effusions. There were no rashes or skin changes over the joints. The abdominal exam was also notable for voluntary guarding and mild tenderness to palpation without rebound over the right upper quadrant. The rest of the physical exam was normal.

The white blood cell count was 12,400 with 79% neutrophils, no bands, 5% lymphocytes, 16% monocytes, and no eosinophils or basophils. The hemoglobin was 14.9, hematocrit was 42.9, and platelets were 144. Chemistry was significant for a sodium of 129, potassium 3.5, chloride 93, bicarb 27, BUN 24, creatinine 1.1, and glucose 128. ESR was 34, uric acid was 3.5, AST was 229, ALT was 166, and alkaline phosphatase was 154. The total bilirubin was 5.7, and direct bilirubin was 2.1. Albumin was 3.2 and lipase was 31. An ultrasound of the RUQ demonstrated no stones, wall thickening, or common bile duct abnormality. There was a 0.71 cm right hepatic lobe lesion that was echogenic and consistent with a hemangioma. The hepatitis C antibody screen was positive, but the HCV RNA viral load and cryoglobulins were undetectable. The patient admitted to moderate-to-heavy alcohol use at home. Over subsequent days his LFTs normalized.

As a result of the initial findings, the clinical team made a preliminary diagnosis of polyarthritis, and they began a further work-up to determine whether the etiology was infectious or collagen vascular in nature. Peripheral blood cultures were collected on hospital day 1, 3, 8, and 12, as well as aspirates of synovial fluid from the left knee on day 3 and day 11. Multiple serologic studies in addition to the cultures were ordered. Anti-nuclear antibody was elevated at 1:160. Rheumatoid factor, complement levels, and ANCA titers were normal range. Serologic markers for dengue, typhus, leptospira, syphilis, and HIV were all normal range. An initial trial of NSAIDs and oral steroids was unsuccessful in alleviating the patient's symptoms, and his functional status continued to deteriorate during the first week of his hospitalization.

Additional imaging consisted of a transesophageal echocardiogram to rule out culture negative endocarditis. This study showed a "whispy" mitral valve abnormality consistent with chordae tendinae, but vegetations could not be excluded. As a result of this finding, as well as the patient's tenuous clinical status, further work-up was initiated to exclude culture negative endocarditis. This included Bartonella and rickettsia serologies, as well as a duodenal biopsy



Figure 1.— Appearance of the left knee of the patient on hospital day 5.

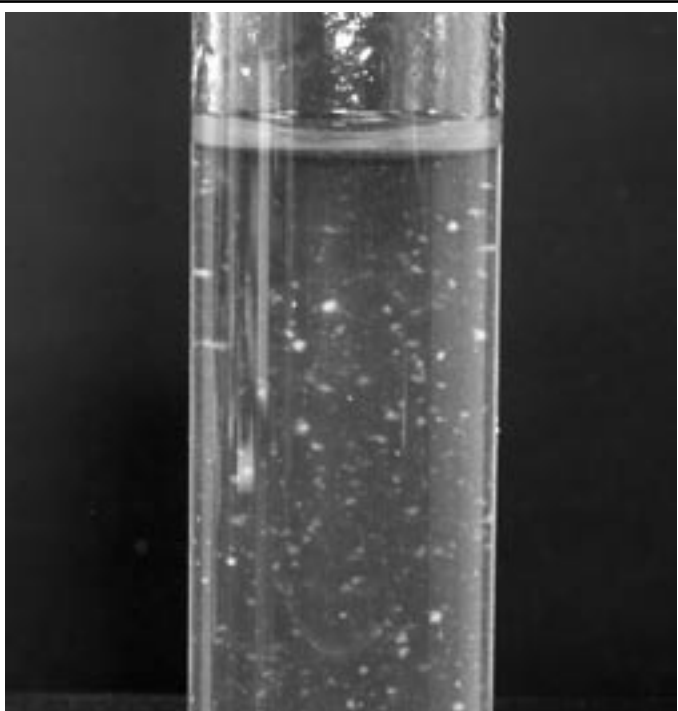


Figure 2.— Thioglycollate broth of the synovial aspirate showing the typical “puffball” growth characteristic of *Streptobacillus moniliformis*.

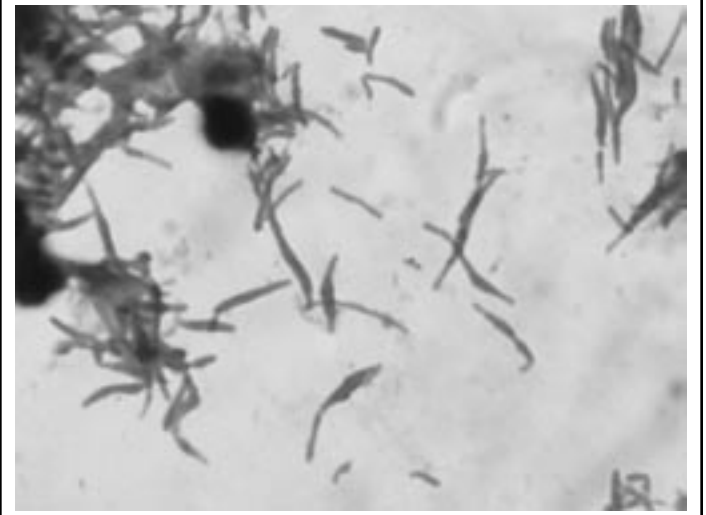


Figure 3.— Gram stain of the thioglycollate broth showing the typical microscopic morphology of gram negative bacilli with filaments, bulbs, and bands characteristic of *Streptobacillus moniliformis* cultured from the synovial aspirate.

for Whipple’s disease. During this initial phase of the work-up, the patient did not receive antibiotic therapy.

Several days following the first synovial fluid culture, a fastidious gram negative rod was identified in the thioglycollate broth (Figure 2 and 3). A gram stain of the growth in the thioglycollate broth showed “pleomorphic” gram negative bacilli, consistent with *Streptobacillus moniliformis*. Growth occurred only in the thioglycollate broth, not on the culture media plates, and culture identification using phenotypic methods (i.e. culture growth characteristics and biochemical testing) was attempted. Phenotyping was unsuccessful due to the fastidious nature of the microorganism. Therefore, a genotyping approach was attempted by use of bacterial sequencing of the 16S

rRNA region. This test was referred to an external laboratory where the sequencing was performed with interpretation and identification by our laboratory. Sequencing consisted of nucleic acid extraction followed by PCR amplification and sequencing of the 16S rRNA region (approximately 1400 bp). Sequencing was performed using two primer sets with a BigDye Terminator cycle sequencing kit (version 3.1) on an ABI 3730XL DNA analyzer (Applied BioSystems, Foster City, CA). The full 16S rRNA gene sequences were then assembled by use of the Seqman program (DNASTar). Sequence analysis was performed using ChromasPro program (version 1.33; Technelysium Pty. Ltd.). A final search with the BLAST program (www.ncbi.nlm.nih.gov/BLAST) identified the bacteria as *Streptobacillus moniliformis*.

Bacterial sequencing revealed a base pair match of 1408/1410 (99%) for *S. moniliformis* compared to *Sneathia sp.* (1119/1198) and *Leptotrichia sp.* (1126/1210), and both of the latter are at a much further distance on the phylogenic scale. The same isolate was also found in the second culture of the aspirated joint fluid. However, it should be noted that all blood cultures were negative. This result was not unexpected due to the known inhibition of *Streptobacillus moniliformis* by the anticoagulant, sodium polyanethol sulfonate (SPS), included as an essential component of the blood culture media (Bactec, BD).

Prior to identification of the organism, the patient’s IgG titer showed a high positive titer for *Bartonella henselae*, the causative organism of cat scratch disease and a known cause of culture-negative endocarditis. Even though the *Bartonella henselae* IgM titer was negative, the patient was started on ceftriaxone, doxycycline, and gentamicin. After *Streptobacillus moniliformis* was identified by gene sequencing, the *Bartonella* titer was treated as prior exposure and not active infection. The patient’s antibiotics were then changed to penicillin, doxycycline, and gentamicin for presumed streptobacillary endocarditis. Although the patient never met formal modified Duke’s criteria for endocarditis, the echocardiographic findings, combined with the high mortality in the known case reports of

streptobacillary endocarditis, prompted the team to treat for a full 6-week course. In addition the patient required orthopedic consultation, with arthroscopy and synovectomy of the left knee.

The patient's response to antibiotic therapy was dramatic and immediate. Within 24 hours the patient reported a subjective improvement in pain symptoms and was able to demonstrate increased range of motion in all joints. Within a week the patient was making notable progress in physical therapy. Prior to discharge from the hospital the patient was ambulatory with a minimal assist device.

Discussion

Streptobacillus moniliformis is a gram negative bacillus that causes a syndrome characterized by fever, rash, and arthralgias, often following a brief incubation period of ten days.¹ Complications include endocarditis,⁵ septic arthritis,⁶ meningitis,⁷ overwhelming sepsis,⁸ amnionitis,⁹ and abscesses in virtually any organ.¹⁰⁻¹² Often symptoms will spontaneously resolve within two weeks. In patients with end-organ complications illness can persist longer, and some patients develop a relapsing and remitting fever of unknown origin.¹ Untreated patients have a mortality rate as high as 13%, and in the pre-antibiotic era cases of endocarditis were often fatal.¹

In addition to sporadic cases from rodent bites, *Streptobacillus moniliformis* has been associated with epidemic outbreaks of rat-bite fever. The first well-described outbreak occurred in Haverhill, MA in 1926.¹³ A second outbreak occurred in an English boarding school in 1987.¹⁴ Clinically the epidemic form of the disease closely resembles the sporadic form, but in the epidemic form the bacteria presumably invades through the GI mucosa following widespread ingestion of contaminated food products.¹⁵ In the English outbreak McEvoy and colleagues reported an independent association between ingestion of both water and milk, and development of subsequent disease.¹⁴

In a recent review of cases of septic arthritis caused by *Streptobacillus moniliformis*, Wang and Wong proposed that streptobacillary septic arthritis is a clinically distinct entity from rat-bite fever.¹⁶ Their assertion was based on a review of 12 cases, of which 10 had polyarticular involvement. All 12 patients had *Streptobacillus moniliformis* isolated from synovial fluid, but only four had dermatologic findings, and only one had a positive blood culture. This limited experience led the authors to suggest that septic arthritis from *Streptobacillus moniliformis* may be the direct result of joint invasion by the infecting organisms. This would be in contrast to rat-bite fever, where patients experience more cutaneous symptoms, more bacteremia, and an autoimmune arthritis.

Given the myriad sites of involvement that have been reported in streptobacillary infections, it may not be necessary to categorize septic arthritis as a separate disease state from rat-bite fever. A simpler solution is to think of the disease as a systemic illness, with the pattern of organ involvement reflecting underlying host risk factors. Wang and Wong are likely correct in suggesting that "underlying joint abnormalities, such as Paget's disease and osteoarthritis, increase the risk of developing localized streptobacillary septic arthritis," though in this case report there were no such identified host risk factors. If we accept this appealing hypothesis, then an early step in recognition of the disease will be to identify host risk factors that may predispose the patient to endocarditis, soft tissue abscesses, septic arthritis, or any of the other known patterns of rat

bite fever. More research will be required to firmly establish the host and virulence mechanisms that determine which pattern of disease a patient experiences after exposure to this ancient pathogen.

The clinical application of bacterial DNA sequencing techniques, such as the one described in the present paper, may also aid in earlier diagnosis and treatment of rat-bite fever. 16S rRNA is a component of the 30S ribosomal subunit found in prokaryotes. It is useful in the molecular diagnosis of bacterial infections because it contains primer binding sites that are conserved across most bacterial species, while in addition containing hypervariable regions that can be identified as the signature of a particular species. One limitation of this technology includes the need for accurate databases containing complete nucleotide sequences, which can be used as references to correctly identify the organism of interest. In addition some bacterial species contain > 99% similarity to each other, limiting the ability of the gene sequencing technology to identify a particular isolate. These problems with DNA sequencing should improve as gene libraries become more complete and accurate, and as experience with sequencing technology in routine clinical practice continues to grow.

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A “Silent Culture-Negative” Abdominal Aortic Mycotic Aneurysm: Rapid Detection of *Bartonella* Species Using PCR and High-Throughput Mass Spectrometry

Matthew Koo; Sheri Manalili; Matthew J. Bankowski PhD; Rangarajan Sampath PhD; Steven A. Hofstadler PhD; and Joseph Koo MD

Abstract

A gram-negative, rod-shaped microorganism was detected in a 69-year-old man suffering from chronic back pain but otherwise exhibiting no signs of infection. The bacterium could not be identified using any routine diagnostic modality. A research use only application utilizing PCR and Mass Spectrometry^{*} was performed on nucleic acid extracted from the tissue sample. These studies resulted in the implication of *Bartonella quintana* as the underlying cause of the infection. *B. quintana* is not a well-known cause of an abdominal aortic mycotic aneurysm. This article will discuss the *B. quintana* infection, its diagnosis and treatment, and reinforce the potential of *B. quintana* as a possible etiology in mycotic aneurysms that show no apparent indications of infection. It will also explore the potential use of polymerase chain reaction detected by electrospray ionization mass spectrometry (PCR/ESI-MS) to help identify *B. quintana* in a situation where other conventional methods prove non-informative.

^{*}This is a “research use only” method and is not approved for use in human clinical or *in vitro* diagnostic procedures.

Introduction

Bartonella quintana is a gram-negative, facultative intracellular parasite generally known for acting as an opportunistic pathogen. It is transmitted primarily through the bite of blood-sucking insects such as the human body louse *Pediculus humanus corporis*.¹ Often infecting homeless individuals,² it can infect immunocompromised patients—especially those afflicted with AIDS. Less frequently, it may infect immune-competent individuals. Recent studies indicate that in addition to lice, *Bartonella* vectors are much more numerous and diverse than previously understood; newly discovered vectors include various arthropods such as lice, fleas, and ticks.^{3,4} *B. quintana* is a well-known cause of diseases such as trench fever, endocarditis, and bacillary angiomatosis. While *B. quintana* has also been shown to be the underlying cause of chronic bacteremia, it is not widely regarded as a causative agent of a mycotic aneurysm. An extensive PubMed search inquiry of “mycotic aneurysm bartonella” did not yield any results. The diagnosis of this infection is usually difficult, even under ideal circumstances.

Case Presentation

A 69-year-old man with a past medical history of asthma, hypertension, and atrial fibrillation underwent an MRI of his spine to evaluate his chronic back pain. Although he does not own any pets, stray cats frequent his backyard and neighborhood, suggesting possible *B. quintana* exposure via an animal host. His MRI revealed a diffuse lumbar spondylosis and some degenerative disk changes with a Grade I anterior spondylolisthesis of L3 and L4. The MRI and sonogram showed a 4.6 cm infra-renal abdominal aortic aneurysm, extending into both common iliac arteries. He did not show any signs of fever, chills, abdominal pain, or any other symptoms of sepsis. He was well except for his chronic back pain. His CBC,

ESR, basic metabolic profile, CRP, echocardiogram and physical examination did not reveal any signs of infection, specifically neither endocarditis nor angiomatosis. He underwent repair of the aneurysm, and the aortic tissue resected during the surgery was inflamed; the Gram stain and Warthin-Starry stains showed some gram-negative, rod-shaped microorganisms. Blood cultures taken after receiving pre-op cefazolin, given one gram intravenously every 8 hours for two days, showed no growth despite a prolonged period of incubation (i.e. two sets of blood cultures at 28 days). Extracted nucleic acid (MagnaPure) from the aortic mycotic aneurysm tissue was first subjected to direct 16S rRNA bacterial sequencing without success. The remaining nucleic acid, de-identified of all patient information, was shipped to a research laboratory in California (Ibis Biosciences) to process on the Ibis T5000™ Biosensor System, a research use only system.¹ The Ibis T5000™ Biosensor System technology employs broad-range primers to amplify genetically conserved regions of known or unknown pathogens. The DNA amplicons are subsequently characterized by electrospray ionization time-of-flight mass spectrometry, which yields molecular weight measurements, from which base compositions (i.e. the number of A, G, C, and T nucleotides) are then derived. The Ibis T5000™ Biosensor System translates the base composition profiles in an automated fashion.⁵

Two primer pairs from an 8-primer pair alpha proteobacter panel were selected for this study. The assay targets information-rich regions of the bacterial genome amplified by PCR through an 8-primer pair panel designed to identify and broadly detect the species of alpha proteobacteria that may be present. The PCR amplicons were electrosprayed and analyzed on the Ibis T5000™ instrument at a rate of one PCR reaction per minute. The internally-calibrated mass spectra were converted to neutral mass measurements from which unique base compositions are assigned for bacterial identification. Amplification using primer pair 3569 targeting the citrate synthase gene resulted in a base composition of [A33, G28, C30, T31]. Primer pair 3575, targeting *rpoB*, the β subunit of the bacterial RNA polymerase, yielded a base composition of [A36 G20 C31 T25]. The base compositions from the two sets of primer pairs identified the organism as *Bartonella quintana*. Negative controls produced no amplicons, and internal calibrants were detected in both water controls and samples.

The patient’s sera was tested for both IgM and IgG *Bartonella quintana* and *Bartonella henselae* antibody and the results remained negative both at the approximate time of surgery and six weeks afterward. Except for the chronic back pain, the patient remained well following the surgery. He was not immunocompromised and tested negative for HIV infection. The patient was treated with three intravenous antibiotics: a 7-day course of gentamicin (80mg every 8 hours), six weeks of ceftriaxone (2g daily), and six weeks of doxycycline (100mg twice a day). Afterwards, the patient was administered oral doxycycline (100mg twice a day) for life.

Discussion

Bartonella quintana is a small, fastidious gram-negative rod well known to cause bacteremia, endocarditis and bacillary angiomatosis. In the presented case, the patient's only manifestation of the infection was the formation of a mycotic aortic aneurysm, supported by the pathologic finding of the aortic tissue resected. As described above, the etiologic agent was later identified using a research use only PCR/ ESI-MS approach. *B. quintana* parasitizes endothelial cells and can induce angiogenesis of blood vessels.⁶ It has not been previously reported as a cause of a mycotic aneurysm formation, but it is strongly implicated as the etiologic agent in this case study. Among HIV-infected patients, *B. quintana* predominantly causes bacillary angiomatosis and endocarditis. In contrast, among immunocompetent hosts, *B. quintana* causes a multitude of symptoms resembling trench fever.⁷ The pattern of fever associated with a *B. quintana* infection can exist in the forms of a single febrile episode that lasts several days, many recurrent febrile episodes that last several days, or a persistent fever. The patient did not recall any form of febrile illness prior to the discovery of the mycotic aneurysm. He may have had a transient bacteremia followed by a "seeding" of the aorta by the *B. quintana*. Such a sequence of events causing infection could have potentially resulted in the formation of the mycotic aneurysm. His back pain decreased initially, but recurred after he recovered from the surgery. His back pain was most likely due to his vertebral degenerative arthritis rather than the dissection of his aortic aneurysm. This essentially caused his mycotic aortic aneurysm to appear "silent."

Isolating the bacteria from a tissue or blood sample can make a definitive diagnosis of a *B. quintana* infection. However, in many cases, the isolation of this bacterium from culture remains difficult. In this particular case, we were unable to perform a culture from the sample because the specimen was placed in formalin prior to transporting it to the laboratory. Since there was no evidence of infection upon presentation, only histopathology was requested. Serology and direct 16S rRNA sequencing⁸ (i.e. PCR-based) was inconclusive. Since the antibody production in response to a *B. quintana* infection can vary, the serological results were not surprising. Patients with chronic *B. quintana* bacteremia (no infectious endocarditis) may present scanty or absent anti-Bartonella antibody response.⁹ In contrast, patients with *B. quintana* endocarditis usually exhibit high antibody titers.¹⁰ In the present case study, the patient exhibited undetectable IgG or IgM titers to *B. quintana* and *B. henselae*, even after six weeks. It should be emphasized that the patient did not have endocarditis clinically. In order to identify the rod shaped bacteria seen on the aortic tissue histopathology, nucleic acid was extracted and purified from the aortic tissue for 16S rRNA sequencing and PCR/ ESI-MS. The Ibis T5000™ Biosensor System has not been approved for clinical use; it is used to identify microorganisms in a research setting and can serve as a powerful tool in forensic analysis.

The drug of choice for a *B. quintana* infection is not fully established. *In vitro* susceptibility data has not correlated well with any specific clinical response. Doxycycline and macrolides can be used to treat this infection.¹¹ Rifampin or gentamicin can also be added to doxycycline or a macrolide for increased efficacy. The optimal length of treatment depends on the type of disease involvement. If the disease involves *B. quintana* endocarditis, the accepted guide-

lines recommend administering both doxycycline 100 mg twice a day orally or intravenously for six weeks and gentamicin 3 mg/kg IV for the first 14 days.^{12, 13} Although *B. quintana* was identified by the research use only PCR/ ESI-MS, complete confidence in the identification could not be supported with approved diagnostic tests. As a result, the patient was administered ceftriaxone and doxycycline intravenously for the first six weeks. Gentamicin was used initially to boost the effectiveness of the former two drugs and to treat other gram-negative rod bacteria. In addition, the doxycycline treatment was extended indefinitely (given by mouth) due to the presence of an aortic graft and the risk for an intra-operative contamination of the graft. The management of this case was challenging because of the atypical presentation of the mycotic aneurysm and the difficulty of implicating a pathogen.

Clinicians and microbiology laboratories should be aware that it appears from our study that *B. quintana* could act as a possible infectious agent in asymptomatic patients who have aneurysms. PCR/ ESI-MS may have the potential to help identify *B. quintana*, as it requires only a small amount of specimen to identify the bacterium. However, the virtues of conventional culture analyses should never be overlooked. Conventional culture analyses remain necessary, and they will usually provide deeper insight with respect to the optimal method of treatment.

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Understanding Endorphins and Their Importance in Pain Management

Adam S. Sprouse-Blum BA; Greg Smith BS; Daniel Sugai BA; and F. Don Parsa MD, FACS

Introduction

The purpose of this article is to briefly review our current understanding of endorphins, specifically beta-endorphins, and how they relate to the field of surgery. Beta-endorphins are neuropeptides involved in pain management, possessing morphine like effects, and are involved in natural reward circuits such as feeding, drinking, sex and maternal behavior.¹ Their application to the field of surgery centers on their role in pain management.

Synthesis, Storage and Secretion of Beta-Endorphins

Beta-endorphins are primarily synthesized and stored in the anterior pituitary gland² from their precursor protein proopiomelanocortin (POMC). However, recent studies suggest cells of the immune system are also capable of beta-endorphin synthesis because immune cells possess mRNA transcripts for POMC³ and T-lymphocytes, B-lymphocytes, monocytes and macrophages have been shown to contain endorphins during inflammation.^{4,6}

POMC is a large protein that is cleaved into smaller proteins such as beta-endorphin, alpha-melanocyte stimulating hormone (MSH), adrenocorticotropin (ACTH), and others. The pituitary gland synthesizes POMC in response to a signal from the hypothalamus; that signal being corticotropin-releasing hormone (CRH). The hypothalamus releases CRH in response to physiologic stressors such as pain, as in the postoperative period. When the protein products of POMC cleavage accumulate in excess, they turn hypothalamic CRH production off – that is, feedback inhibition occurs.⁷

Mechanism of Action

In the peripheral nervous system (PNS), beta-endorphins produce analgesia by binding to opioid receptors (particularly of the mu subtype) at both pre- and post-synaptic nerve terminals, primarily exerting their effect through presynaptic binding. When bound, a cascade of interactions results in inhibition of the release of tachykinins, particularly substance P, a key protein involved in the transmission of pain.^{4,8,9} In the PNS, mu-opioid receptors are present throughout peripheral nerves and have been identified in the central terminals of primary afferent neurons, peripheral sensory nerve fibers and dorsal root ganglia.⁴

In the central nervous system, beta-endorphins similarly bind mu-opioid receptors and exert their primary action at presynaptic nerve terminals. However, instead of inhibiting substance P, they exert their analgesic effect by inhibiting the release of GABA, an inhibitory neurotransmitter, resulting in excess production of dopamine.^{8,9} Dopamine is associated with pleasure. In the CNS, mu-opioid receptors are most abundant in descending pain control circuits including the amygdala, mesencephalic reticular formation, periaqueductal gray matter (PAG) and rostral ventral medulla.⁸

Role of Beta-Endorphins in Surgery

Opioid medications (e.g. Vicodin, Morphine, Fentanyl) are commonly prescribed in the postoperative period. These medications

exert their effect by mimicking natural endorphins, binding to mu-opioid receptors in both the CNS and PNS with variable specificity. This is accomplished by sharing a beta-phenylethylamine group, the moiety that binds the opioid receptor.¹⁰

Acute administration of exogenous opioids inhibits the production of endogenous opiates (e.g. beta-endorphins). Patients undergoing general anesthesia have shown a significant increase in beta-endorphins during surgery. This increase was effectively inhibited by the co-administration of fentanyl.^{11,12} In similar studies, Hargreaves et al. showed that patients who underwent dental surgery and were given local anesthetic (lidocaine) alone had increased plasma beta-endorphin levels during and after surgery. However, when fentanyl was co administered, plasma beta-endorphin levels were significantly reduced. Of note, patients reported less pain during the surgery when the fentanyl was co-administered.^{13,14}

Chronic administration of exogenous opioids inhibits the production of both endogenous opiates and mu-opioid receptors. Multiple studies have demonstrated the down regulation of POMC gene expression and subsequent decrease in endorphin production in rats given chronic morphine.¹⁵⁻¹⁷ And Zhang et al. found that mu-opioid receptors on beta-endorphin containing neurons of the hypothalamus of guinea pigs decreased in density after chronic-morphine treatment.¹⁸ Furthermore, Christie et al. found that exogenous opioids, such as morphine, cause an uncoupling of mu-opioid receptors from their ligand-gated voltage channel with a decrease in both potency and efficacy of the channel.¹⁹

Surgical patients occasionally require treatment for pain over an extended period of time. However, chronic administration of opioid analgesics carries significant risks of opioid induced hyperalgesia (OIH), tolerance and addiction. Reports as early as the 19th century reveal patients who experienced hyperalgesia (increased sensitivity to painful stimuli) and allodynia (pain elicited from a normally nonpainful stimulus) upon the cessation of morphine use.²⁰ While down regulation of both endorphins and mu receptors associated with chronic exogenous opioid use likely play a role in OIH, anti-opioid peptides are also likely involved. The anti-opioid peptides described thus far include cholecystokinin (CCK), neuropeptide FF (NPFF) and orphanin FQ/nociceptin. These anti-opioid peptides are thought to exert their action by binding mu receptors thereby decreasing their affinity for endorphins and similar opioids.²¹ Both the down regulation of endorphins and mu receptors, as well as the production of anti-opioid peptides, are processes that occur over time. As these processes occur, patients require increasing amounts of opioids to induce the same level of analgesia, a process known as tolerance.²² Addiction is described as a brain disease resulting in a loss of control over drug taking or in compulsive drug seeking, despite noxious consequences.²³ While the aforementioned mechanisms associated with OIH and tolerance are likely key contributors to opioid addiction, a discussion of addiction would not be complete without briefly discussing the association between the dopaminergic reward system and opiates. As mentioned previously, opioids in the CNS exert their analgesic effect by increasing dopamine release

by disinhibiting GABA's effect on dopaminergic neurons. The dopaminergic neurons most associated with addiction are those of the "reward center" including the ventral tegmental area, nucleus accumbens system, prefrontal cortex and extended amygdala.¹⁵ To maintain normal dopamine levels, patients who develop tolerance require increased amounts of exogenous opioids. Conversely, when the patient who is reliant on exogenous opioids to maintain dopamine homeostasis attempts to cease opioid use, they frequently suffer severe withdrawal symptoms and may employ drug-seeking behavior.

The degree of pain experienced by the surgical patient during and after a procedure correlates with plasma beta-endorphin level. A study of pre- and postoperative beta-endorphin levels was conducted for various major surgeries. It was found that both pre- and postoperative plasma beta-endorphin levels correlated positively with postoperative pain severity.²⁴ In a similar study comparing plasma beta-endorphin levels between open- and laparoscopic cholecystectomies, an invasive and minimally invasive procedure respectively, Le Blanc et al. concluded that endorphins are most likely excreted in response to postoperative pain.²⁵ Earlier studies have also found a negative correlation between intra-operative plasma beta-endorphin concentration and postoperative pain severity.^{13,26}

Non-opioid medications affect plasma beta-endorphin levels through unknown mechanisms. In a study of osteoarthritis of the knee, both acetaminophen and rofecoxib (a COX-2 inhibitor) were administered to patients with symptomatic osteoarthritis. Rofecoxib produced significantly better analgesia than acetaminophen, reducing pain intensity by 56% and 29%, respectively. However, plasma beta-endorphin levels were unaffected in the rofecoxib group but declined significantly in the acetaminophen group,²⁷ suggesting either rofecoxib supports beta-endorphin synthesis, durability or both or acetaminophen inhibits it. Additionally, Parsa et al. demonstrated decreased postoperative pain severity and opioid requirements following preoperative administration of celecoxib plus gabapentin.²⁸ In the future, more research may reveal the dynamics between beta-endorphins and other non-opioid medications to provide more effective analgesia without the risks associated with opioid medications.

In review, beta-endorphins are proteins that are primarily synthesized by the pituitary gland in response to physiologic stressors such as pain. They function through various mechanisms in both the central and peripheral nervous system to relieve pain when bound to their mu-opioid receptors. Opioid medications function by mimicking natural endorphins, competing for receptor binding. In the acute setting, exogenous opiates inhibit the production of endogenous opiates while in the chronic setting, exogenous opiates inhibit the production of both endogenous opiates and mu-opioid receptors. Risks associated with chronic opiate use include opioid induced hyperalgesia, tolerance and addiction. In the future, we hope to understand the dynamics between beta-endorphins and non-opioid pain medications to offer patients maximal pain management with minimal associated risk.

Disclaimer

The authors have no financial interest in the medications reported in this article.

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Communication Strategies to Assist Comprehension in Dementia

Randy R. Weirather PhD

Abstract

Communication with individuals with dementia requires use of conversational strategies from health care providers. Strategies are provided for issues pertaining to poor comprehension. The strategies promote more successful comprehension and compliance, offset mood disorder, and create ease in the way that health information may be accepted by the patient.

The need for such strategies is pronounced in view of the increasing numbers of individuals with dementia requiring services of health care providers. In 2004, nursing homes of the United States housed 231,900 individuals with Alzheimer's Disease.¹ This number is expected to increase significantly with the advancing age of the US population. For example, the number of individuals of age 65 and over, at 39 million in 2008, will reach 72 million by 2030.² Specifically with respect to Hawai'i, the Honolulu Heart Study³ of Japanese-American men of ages 71-93 found a prevalence of 9.3% for dementia.

While the types of dementia and levels of severity vary, most if not all of these individuals present with a common problem of communication disorder. Poor comprehension skills are typically at the center of this disorder, and relate in part to poor working memory.⁴

Poor comprehension is only one of many communication deficits in the individual with dementia. Commonly noted expressive deficits reflect problems. They included decreased vocabulary,⁵ anomia,⁶ and vague meanings.⁷ Pronouns may be used inappropriately.⁸ The ability to sustain a topic and maintain its coherence is impaired,⁹ both of which affect the ability to have a conversation. Thoughts may be incomplete as seen in aborted phrases,¹⁰ message revisions, and topic shifts that disrupt the flow of conversation.^{5,11} One can only presume that the disruption also affects the ability to understand a message, especially one that is discursive in nature.

Interactants often exacerbate the problem of declining comprehension skills by talking of things not within the sensory field of the patient using lengthy and complex utterances, and speaking too quickly for processing. The issue of comprehension is partly a matter of coordination between the referents (what one talks about) and the words used to talk about them. For a young infant learning language, the best learning scenario is "joint referencing" where the child moves from mutual eye gaze with the parent to looking at an object with the parent at the moment he or she names it. The word and the world to be talked about co-occur. Maturationally, a separation between word and referent then sets in to the point that adults can talk about things outside of their environment. For the person with dementia, this adult form of language simply fills the air with little meaning that they cannot understand. It is insufficient to present the word first, and the world to which it pertains later, if at all. To assist comprehension, the order of presentation must be reversed. Consider these examples:

"Mr. Smith, it is time for your shower" (the patient is in a wheelchair, and no shower is in his room).

"Mr. Smith, I have come to take you to your appointment with Dr. X. Are you ready?"

"Well, let's put on your clothes so you can go to breakfast." (The clothes are hidden in the closet in the patient's room).

In each case, the patient reacts with confusion or hostility and refuses to respond. The nurse is talking about a shower, Dr. X., or clothes, none of which the patient first sees. It is better to wheel the patient to the door of his room and say "Look down the hallway. Do you see that door down there? That's the shower. Now, it's time for your shower. OK?" It is as simple as presenting the world to talk about before one talks about it. Without that contextual support, comprehension falls flat, and agitation is sure to follow.

Poor working memory also impedes the ability to co-reference, that is, the ability to refer one word (such as the pronoun "he") to its actual referent (what "he" refers to). An example is in the sentences "Your husband told me about your problem. He was very concerned," where the two underlined words refer to each other across a sentence boundary. Connecting the two words requires more working memory than many individuals with dementia can offer, especially if they are busy trying to understand other parts of the message at the same time. The price to pay for cognitive overload in information processing is an inability to perform the co-referencing of a pronoun to its referent. The remedial response is simple. Avoid pronouns.⁴ Use the name of the referent instead, even if it leads to a repetition of the word that seems contrived in normal discourse.

Comprehension deficits are sensitive to the stimuli to be understood, and these stimuli can be more or less challenging. On this point, interactants have several ways to assist the individual with dementia. Speech rate is one. Processing speed declines in dementia,¹² and so speech rate must decrease as well without losing its normal rhythm and flow. Some speakers achieve a slower rate of speech as measured in syllables per minute of speaking time by producing each word surrounded by pauses. The result is a contrived, telegraphic, staccato-like melody that reduces an otherwise good sentence into a nonsensical list of separately uttered words. The trick to slower speech is simply to slightly elongate the vowels while maintaining the same intonation.

Cognitive processing for those with dementia is also undermined by the grammatical complexity of the stimuli. Complexity is typically a matter of embedding or conjoining information. These linguistic phenomena involve joining or compressing two sentences into one by a variety of grammatical devices. Two ideas (such as "The nurse will help you" and "She is very skilled") can be combined in any number of ways, such as "The nurse who is skilled will help you" or "The nurse to help you is very skilled" or "Because the nurse is skilled, she will help you." Whatever the device, when two sentences are put together into one, each always leaves some distinguishing residua behind that is some form of a main verb. So a complex sentence simply has more than one main verb. That replication may determine whether comprehension survives or not in an individual with dementia.

Because most health care providers are not linguists, they have difficulty in restraining the use of complex sentences. For example, it is easy to say "Could you tell me what happened to give you headaches?" There are three main verbs (tell, happened, and give)

in the request. The probability that this utterance will be understood is low. An alternate, but not demeaning, way to ask for the same information is to speak in short simple sentences: "I have some questions. I need some information. I need some information about your health. May I ask you a question? Do you have headaches? When? What happened?" Each sentence has one verb. Note the overlapping repetition of some words across sentences. While the above example is easy to read, it is not easy to speak in a spontaneous fashion unless it has been practiced as a short scenario of suitable utterances to use across patients.

The easiest way to achieve an absence of complex sentences is simply to speak in shorter sentences. Four to six word utterances are probably best understood.

Another demand of cognitive resources, even in individuals without dementia, is the passive voice in English. Active and passive renditions of the same sentence are seen in "I saw the boy" versus "The boy was seen by me." Unfortunately, passive voice is everywhere in the speech of health care providers: "Were you seen by Dr. James this morning?" "These pills are to be taken at noontime," "The shot was given by the evening nurse," and so on. In each case, the brain presumably has the linguistic chore of rewinding the contorted sentence back into its simpler active form at which point comprehension occurs: "Did Dr. James see you this morning? Take the pills at noontime. The evening nurse gave the shot." Passive voice is cognitively difficult to understand for individuals with dementia and should be avoided.

In terms of challenging stimuli to understand, there is also a hierarchy of questions that one may strategically pose. They range from most to least difficult for someone with dementia to answer, again for the reason of cognitive demand. The broadest invitation to collect data is the "Tell me about..." command. It is so open ended that the individual with dementia is unlikely to respond productively. Searching for less divergent information may be more successful with "Wh" questions (what, who, where, when, why, how), but they too are demanding, especially the last two. Unfortunately, once again, they commonly occur in language of health care providers: HOW are you feeling, WHY do you think you have xxx, HOW did you hurt yourself?" The question of "What happened?" fares little better. Although "what" is the easiest of the WH question words, this particular construction is simply a synonym for "how." When the WH questions are unsuccessful, an interactant can fall back to easier "Yes/no" questions, those that are designed to elicit a "yes" or "no" response.¹³ Examples: "Did you fall down?" "Does it hurt here?" In the event that there is still no reliable response, binary choice questions are given: "Does it hurt here or here?" Randomly posing questions is not likely to elicit the information that the health care provider seeks. Instead, it requires an adept use of a hierarchy of question types with a rapid fallback to the level at which cognition is able to support an answer. The hierarchy is "Tell me about..." followed by "How" and "why" questions, followed by other WH word questions, followed by Yes/no questions, followed by binary choice questions. After that point, family members may have to act as primary informants.

There are other recommendations in the literature regarding best practices in communicating with someone with dementia.¹⁴ For example, a conversant should always start a conversation by first identifying him or herself in the likely event that the patient does

not remember one's identity. Likewise, if the patient does not understand, the interactant may repeat him or herself, but the repetition should be exact, not a paraphrase, expatiation or reexplanation using other language structures. That additional language is simply more reason for confusion. A poor memory likes to hear the same thing over several times. Normally, the exact repetition of oneself is not an adult habit, and normal conversants typically repair misunderstood utterances by further explanation. However, this lengthens information and increases the complexity.

Slow up the interaction. Be patient and wait for a response. Maintain a comfortable and pleasant intonation pattern and nonlinguistic communicative style via eye contact, smiles and a relaxed state. While these recommendations seems trite, the rationale is not. Up to 60% of a given message may be conveyed by paralinguistic (primarily prosodic) and nonlinguistic (body language) signals as opposed to the words themselves.¹⁵ While comprehension of linguistic stimuli deteriorates with the dementia, that component of the message most readily conveying emotion and mood is still present. The delivery of the words is likely to have more effect on the patient than the words themselves.

Some other suggestions for healthcare workers include closing the door. Extraneous noise is simply more auditory stimuli to confuse the patient. The words are hard enough, let alone having multiple signals to process.

The most direct route to minimize confusion and disorientation is the control exercised by deliberate choice. One can easily provide the patient choices, such as which arm to receive a shot, which liquid (water or cranberry juice) to swallow with medications, and so on.

Be careful when believing that a patient really means "yes" when asked a yes/no question of the sort "Do you want...?" Such questions typically ask the patient to concede to a choice already made by the health care provider. Medical staff frequently ask yes/no questions for things that they want the patient to perform. All questions seek a "yes" response: Do you want your shower now? Do you want to get up now? Shouldn't you get ready for breakfast now? How about sitting up for me now?" We seldom ask a question for which the correct answer is "no." Individuals with dementia frequently adopt a default response strategy of answering "yes" when they are uncertain of the correct answer, which is most of the time. Medical professionals are surprised when the patient nods "yes" to the question of "Do you want your shot now?" and is then agitated and surprised when a needle is produced. One cannot assume that "yes" means "yes." Check for comprehension by repeating or showing/gesturing the action.

Many individuals with dementia are characterized as hostile, cantankerous, noncompliant or moody when these traits were not the case premorbidly. These behaviors emanate from specific deficiencies caused by the dementia. With respect to communication, those deficiencies may arise from poor working memory as well as several challenging parameters of the speech and language presented to them by others. Simple techniques as discussed above can be implemented by the physician, caretakers, and family. Their use can help to manage mood and promote some communication where none would otherwise be found. Communication techniques implemented by others can positively affect the lives of those with dementia.¹⁶

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Expanding the Pipeline to Meet the Growing Demand for Physicians

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In the February JABSOM Hotline, we reviewed initial findings of a JABSOM study commissioned by Hawai'i State Legislature in 2007 to assess trends in physician workforce in our state. Initial results provided to the legislature demonstrate that when compared to national averages, Hawai'i is currently underserved by at least 500 physicians. Of the approximately 2660 FTE practicing, more than 1000 will be reaching common retirement age of 65 in the next 10 years. Those who reach that milestone currently have a greater than 50% probability of retiring from clinical practice in each of the following decades. Growth in both the general and aging populations will add a need for 1000 physicians by 2030. This will adversely affect public access to a physician.

The Council on Graduate Medical Education, authorized by Congress in 1986 to provide an ongoing assessment of physician workforce trends, reported in January of 2005 that there would be significant shortages of physicians by 2020.¹ The Health Resources and Services Administration (HRSA) confirmed this prediction later that same year.² In response to growing evidence of this shortage, the American Association of Medical Colleges (AAMC) convened a Physician Workforce Task Force to assess and recommend actions to be taken to respond to the potential for serious shortages. The AAMC Position Statement on Physician Workforce, approved by the AAMC Executive Council on June 15, 2006, contained twelve recommendations intended to "better assure an appropriate supply of physicians while increasing medical education opportunities for Americans."

The status of seven of these recommendations as they relate to medical education in Hawai'i follows.

Recommendation: Enrollment in LCME-accredited medical schools should be increased by 30% from the 2002 levels over the next decade. (2015)

Last year, the Liaison Committee for Medical Education (LCME) awarded JABSOM full accreditation for 8 years. With this platform, attention can now be given to systematically expand the class size to meet the demand for physicians. JABSOM enrollment has remained unchanged at 62 students per year. This will be expanded to 64 in the incoming class this fall. To achieve the AAMC recommendation above, class size will need to expand to a total of 75 to 80 entering students per year.

The challenges to expand the class size are substantial. Tight state budgets mean that additional financial support will be difficult to find. Problem based learning (PBL) is faculty intensive. Expanding the class will require the recruitment and training of additional preceptors. Clerkships in major specialties will need to be expanded by initiating rotations on neighbor islands. Despite these challenges, the initial stages of planning for a class of 75 students per year have begun.

Recommendation: The aggregate number of graduate medical educations (GME) positions should be expanded to accommodate the additional graduates from medical schools.

Currently, there are 15 residency and fellowship programs in graduate medical education in Hawai'i managed by the Hawai'i Residency Programs, Inc. JABSOM is the Sponsoring Institution. There are 230 to 240 residents and fellows in the JABSOM/HRP residency and fellowship training. About 20 residents are in transitional or preliminary programs (1 year) and will transfer to the mainland for residency. JABSOM/HRP offers programs in the primary specialties of medicine, surgery, psychiatry, pediatrics, pathology, family medicine, geriatrics and obstetrics/ gynecology. However there are major specialties for which there is no GME training in Hawai'i. For example, there are no residencies in anesthesia, emergency medicine, radiology, or dermatology. Medical and surgical subspecialty fellowship programs are quite limited. There are fellowships in surgical ICU, neonatology, maternal fetal medicine, child & adolescent psychiatry, addiction psychiatry, geriatric medicine and geriatric psychiatry. Just this past month, a cardiology fellowship was approved to start in July of 2010.

While the population and medical community of Hawai'i may never be large enough to support residencies and fellowships in all areas, the best chance of keeping JABSOM graduates in Hawai'i is to have them complete their GME training in Hawai'i. Eighty percent of physicians who attend JABSOM and then a JABSOM/HRP residency will end up practicing in this state.

We note that of all residency programs sponsored by JABSOM, the average accreditation length is 4.2 years out of a possible 6. Several of our programs have enjoyed back-to-back- 5 year accreditation, which places them in the top percentiles nationally. Internal Medicine was just awarded an additional 6th year, which is unprecedented.

Even so, there are many barriers to expanding GME. GME funding by the Centers for Medicare & Medicaid Services (CMS) has been frozen since 1996, although a slight adjustment to the CMS GME position cap occurred in 2004. Significant new CMS positions are not expected. All HRP hospitals are functioning at or above current cap levels. Although the JABSOM/HRP GME cap level this year is about 170 residents, there are 233 residents and fellows. Although Hawai'i lacks GME programs in several key specialty areas, there are opportunities. The recent success of the cardiology program application suggests that with proper planning our capacity in GME can grow. This should be done strategically by identifying those programs that will have the greatest impact on anticipated patient care access and outcomes.

Recommendation: Medical Schools expand enrollment in a cost effective manner; assuring appropriate medical education for traditional and non-traditional students; and increasing the number and preparedness of applicants

Recommendation: Medical Schools should increase the enrollment and graduation of racial and ethnic minorities; and promote the education and training of leaders in medical education and health care from racial and ethnic minorities.

These two recommendations are particularly important in the culturally diverse state of Hawai'i. Fortunately, JABSOM has done well in these areas. Much has been written about the Imi Ho'ola program in previous articles. In brief, JABSOM has been on the forefront of preparing local candidates for success in medical school through its post-baccalaureate program (Imi Ho'ola) that provides a year of medical school preparation in study skills, basic science, and cultural knowledge to promising applicants with disadvantaged backgrounds. The "Imi" program is overseen by the school's Department of Native Hawai'ian Health and is funded in part through a grant from the Queens Medical Center. Each year, up to 10 disadvantaged students per year complete the "Imi" program and begin medical school at JABSOM.

While JABSOM routinely receives 1600+ applications each year, only 230 to 240 come from Hawai'i. If we are to grow the class with successful in-state students, we may need to consider growing Imi Ho'ola as well. JABSOM is also working to address the pipeline of future applicants through leadership on the Hawai'i/Pacific Basin Area Health Education Center (AHEC).

Recommendation: The J-1 visa is the most appropriate visa for non-U.S. citizen graduates of foreign (international) medical schools entering GME programs in the U.S. and should be encouraged.

There are many residents in Hawai'i programs who are international medical graduates (IMGs) on J-1 visas. Unfortunately, the J-1 visa requires that they leave the country for 2 years after their training, before they can apply to return. The workforce implications are concerning. It is unclear whether resident positions in short supply should be used to train physicians from abroad.

A few IMGs stay each year on a Conrad 30 waiver, a program that allows IMGs to serve in areas designated as under served for 3 to 5 years in return for a working visa. However, if there is a substantial increase in LCME accredited US graduates, competition for residency positions will become severe. In the short term, Hawai'i has the ability to provide 30 such waivers each year. Currently only a few of these are used. JABSOM is working to identify locations that qualify for such waivers and will be exploring recruitment options.

Recommendation: Ongoing and stable funding should be provided to track the physician workforce, including monitoring the supply of and the demand for, and the distribution of physicians (including IMGs).

The 2007 Hawai'i state legislature funded, through a medical licensing fee, a study of physician supply, demand and distribution. This funding will need to be continued if we are to address shortages systematically.

Recommendation: The AAMC should undertake a study of the geographic distribution of physicians and develop recommendations to address mal-distribution in the US.

Funds appropriated above are being used by faculty at JABSOM to assess supply and to develop models that can identify Hawai'ian island-specific needs. Much more must be done on local and regional shortage estimates. Kelley Withy MD, Director of the AHEC program at JABSOM is currently working on these models.

Conclusion

The AAMC recommendations remain good guidelines. In Hawai'i, we have been proactive in some areas and have been slow to respond in others. The key thing to remember is that it takes several years to educate a physician. Reports are that we will fall further behind over the next 10 years as a result of demographic shifts and physician retirements. Expansion and improvement of the pipeline to practice must start now.

Thoughtful growth now even in these difficult economic times will require the recruitment of key faculty, development of new departments and divisions, expansion of the medical school and our GME programs. It will take decades but our efforts today must be redoubled.

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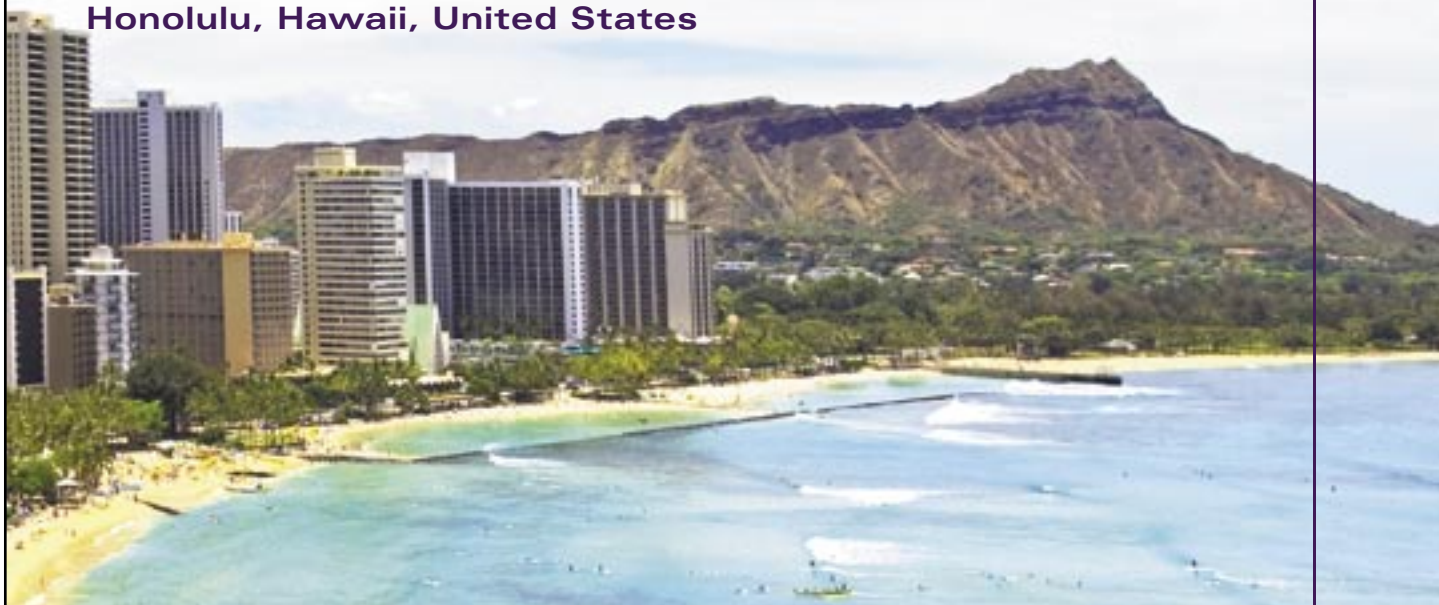
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COMMENTARY

ROBERT C. MARVIT MD, MSC; PRESIDENT, HAWAI'I MEDICAL ASSOCIATION

Truth in Teaching: Casting Artificial Pearls Before Real Swine

The future is obscure, even to those of strong vision, and one would be wiser not to shoot arrows into it. For the arrows will most likely hit targets that were never intended.

Zealous patrons of the public well being have insisted that defective products be corrected and damages arising from these defects, in spite of conscientious efforts of the producer, should be their financial responsibility. Case in point Toyota and Honda.

Arrows of reform coming from the quiver of truth are being pointed at health care. How far off are law suits directed to medical education?

If a patient does not get their desired result, he may sue not just the doctor but the doctor's professors.

The legal theory would be similar to truth in lending. Information imparted to the medical student that had not passed sufficient empirical testing and was subsequently found faulty, represents defective education. If the student later in practice relied on the defective information, he could be sued and then sue the teacher for damages.

After all, if we have automobile recalls for discovered defects, we should also have educational recall for defective teaching.

Universities argue that faculty should not be held liable for honest errors, or all instruction would be brought to a stop. It would also be too costly to disseminate new knowledge to previous students.

This can also lead to journals retracting errata, lazy students be-

ing entitled to blaming others for their failure, and a whole host of health care people fleeing the mine field of litigation.

I posit that a way to deal with this potential impact on the health care system would be like truth in lending. This would be "truth in teaching."

So for those subjects where incorrect knowledge would be costly and demonstrable, such as medicine, the class room would become a much different place.

Students would be forbidden to take notes. Recording devices would be prohibited. The introduction of new ideas would be avoided. Old nonsense would also disappear and courses would be completed in very short time.

All journal articles would carry warnings and disclaimers. Informed consent would be pervasive for each individual student, so that, in so far as possible, the faculty, authors etc. would be immunized from responsibility.

The problem is that it didn't work that well for the cigarette companies or the automobile manufacturers. How will it work for the health care providers?

With changes in consumerism and medicine as a government regulated business, it seems logical that legal guns need to be pointed at new targets.

So for those who teach, write or even care, watch out for the next step in knowledge warranteee.

The purpose of this little ditty is to increase awareness of issues and to rally the readers to a more effective position in their professional commitment.



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Mahalo to Hawaii physicians for providing care to our community, and mahalo to all Hawaii citizens for supporting **HMA's goal of access to quality health care in our state.**

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Date	Specialty	Sponsor	Location	Meeting Topic	Contact
April 2010					
4/4-4/9	IM	University of California San Francisco School of Medicine	Wailea Beach Marriott, Maui	Primary Care Medicine: Update 2010	Tel: (415) 476-4251 Web: www.cme.ucsf.edu/cme
4/4-4/10	EM	Stanford School of Medicine	Grand Hyatt, Poipu Beach, Kaua'i	16th Annual Stanford Symposium for Emergency Medicine	Tel: (650) 497-8554 Web: www.stanfordhospital.org/forPhysiciansOthers/cme/
4/22	Multi	The Queen's Medical Center	Koolau Golf Club	The Queen's Medical Center Conference on Geriatric Medicine "Sex, Drugs & Rocking Chairs"	Tel: (808) 547-4406
May 2010					
5/4-5/7	PD	Pediatric Orthopaedic Society of North America	Hilton Waikoloa Village	POSNA/APOA Annual Meeting	Tel: (847) 698-1692 Web: www.posna.org
5/7-5/8	Multi	Department of Native Hawaiian Health, John A Burns School of Medicine	Waikiki Beach Marriott Resort & Spa	He Huliau -- A Turning Point: Eliminating Health Disparities in Native and Pacific Peoples - Metabolic Syndrome and Health Equity	Tel: (808) 692-1255 Email: native@hawaii.edu
July 2010					
7/3-7/9	DR	Radiology Department, Stanford School of Medicine	Kea Lani Hotel, Maui	18th Annual Diagnostic Imaging Update	Tel: (888) 556-2230 Web: radiologycme.stanford.edu
7/3-7/9	PD	Childrens Hospital Los Angeles Medical Group	Hyatt Regency Maui, Ka'anapali Beach, Maui	Pediatrics in the Islands: Clinical Pearls	Tel: (323) 361-2752 Web: www.childrenshospital.lamedicalgroup.org
7/10-7/15	IG, N	Alzheimer's Association	Hawai'i Convention Center, Honolulu	2010 International Conference on Alzheimer's Disease	Tel: (312) 335-5790 Web: www.alz.org/icad/2010_icad.asp
7/26-7/29	DR	Radiology Department, Stanford School of Medicine	Hyatt Regency, Maui	4th Annual LAVA (Latest Advances in interVentionAI techniques)	Tel: (888) 556-2230 Web: radiologycme.stanford.edu
August 2010					
8/2-8/6	AN	Dannemiller	Sheraton Maui Resort, Maui	Hawai'i Anesthesiology Update 2010	Tel: (800) 328-2308 Web: www.dannemiller.com/live-events
8/10-8/13	EM	University of California, Davis School of Medicine	Grand Wailea, Maui	Emergency Medicine Update: Hot Topics 2010	Tel: (916) 734-5390 Web: cme.ucdavis.edu/conferences
October 2010					
10/17-10/22	Multi	Scripps Conference Services & CME	Kaua'i Marriott Resort & Beach Club, Kaua'i	9th Annual Destination Health: Renewing Mind, Body and Soul Email: med.edu@scrippshealth.org	Tel: (858) 652-5400 Web: www.scripps.org/conferenceservices
10/23-10/29	U	Western Section of the American Urological Association	Hilton Waikoloa Village	86th Annual WSAUA Meeting	Web: http://www.wsaua.org/hawaii2010/2010.htm

November 2010					
11/1-11/5	AN	California Society of Anesthesiologists	Mauna Lani Resort & Spa, Kailua-Kona, Hawai'i	2010 CSA Fall Hawaiian Seminar	Web: www.csahq.org
11/7-11/10	R	Department of Radiology, Duke University	Hyatt Regency Maui, Ka'anapali Beach, Maui	A Comprehensive Review of Musculoskeletal MRI	Web: www.radiology.duke.edu
January 2011					
1/24-1/28	AN	California Society of Anesthesiologists	Mauna Lani Resort & Spa, Kailua-Kona, Hawai'i	2011 CSA Winter Hawaiian Seminar	Web: www.csahq.org
May 2011					
5/14-5/19	P	American Psychiatric Association	Hawai'i Convention Center, Honolulu	164th Annual Meeting	Tel: (703) 907-7300 Web: www.psych.org
October 2011					
10/24-10/28	AN	California Society of Anesthesiologists	Grand Hyatt, Poipu Beach, Kaua'i	2011 CSA Fall Hawaiian Seminar	Web: www.csahq.org
January 2012					
1/23-1/27	AN	California Society of Anesthesiologists	Hyatt Regency Maui, Ka'anapali Beach, Maui	2012 CSA Winter Hawaiian Seminar	Web: www.csahq.org



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❖ TALKING ON THE CELL PHONE IN THE BATHROOM IS CONSIDERED MULTI-TASKING.

Researchers from Denmark, Finland, Norway and Sweden studied the incidence of brain tumors from 1974 (the introduction of wireless devices) until 2003. They targeted a study group of 60,000 in a population with a high prevalence of mobile phone exposure. Reporting in the December 3, 2009 Journal of the National Cancer Institute, they found no cell phone-related increase in brain tumors during that 30-year period. The American Cancer Society chimed in with "Looking at most studies as a whole, no link between cell phones and tumor development has been found." The real threat to bodily injury and death, which is cell phone distraction while operating a motor vehicle or any other activity, was not discussed. See below.

❖ IF YOU WANT TO HEAR ANYTHING KEEP YOUR EYES OPEN.

A very interesting study reported in Live Science came from Western Washington University in Bellingham. A student who was skilled at riding a unicycle dressed in a clown suit and rode around the campus square. Subsequently, about 150 mostly student-age people walking on the square were asked if they had seen a clown riding a unicycle. 71% of people walking in pairs gave affirmative replies, 51% of those walking alone responded that they had seen him, but only 25% of those talking on their cell phones saw the "clown on the unicycle." Obviously, there are factors related to conversing on a cell phone which distracts one's attention while performing some other function, even something as simple as walking.

❖ CARS DON'T KILL PEOPLE. PEOPLE AND DRUGS DO.

For many years the number one cause of injury-related deaths in the United States has been traffic accidents, and it still is. But the interesting point according to the CDC (Center for Disease Control and Prevention) is that now drugs are the leading cause ahead of motor vehicle crashes in sixteen states. In 2003 only eight states listed drug-induced deaths ahead of auto deaths. Using death certificates the CDC researchers counted 45,000 deaths from auto crashes and 39,000 from drug-induced causes in calendar year 2006. Experts are surprised by the shift in numbers and believe driving is becoming safer, but the use of prescription and non-prescription drugs is rising. The drug death rate roughly doubled from the late 1990s to 2006. 90% are listed as sudden death due to drug overdose, and the balance caused by organ damage from long-term drug abuse. It's not about black market stuff, either. Cocaine and heroin continue to be significant, but over half the opiate related deaths are from prescription painkillers, commonly methadone, Oxycontin and Vicodin.

❖ TAXATION WITHOUT REPRESENTATION WAS TYRANNY, BUT IT WAS A LOT CHEAPER.

Always searching for a mechanism to add tax money to our government coffers, Senator Harry Reid, Democrat majority leader, wanted to include a 5% tax on elective cosmetic medical procedures in the Senate's version of the health overhaul bill. Because the definition would include Botox, the anti-wrinkle neuro-toxin, the issue has been named the "Botax." Leading makers of breast implants and other appearance related products lobbied hard against the proposal. Allergan Inc. and Medici's Pharmaceutical Corp. told congressmen that the tax would hurt soccer moms more than it would the upscale Rodeo Drive Beverly Hills clientele. The American Medical Association came out against the tax and stated that it would be the first federal tax on a medical procedure. First federal levy yes, but as we all know in our beloved Hawai'i physicians have been collecting state tax on all forms of medical care for longer than most of us have been alive. This senate proposal would make cosmetic medical care taxed at over 9% here in paradise. Sometimes being lovely isn't worth the money. Anyway, conservative Nevada voters appear ready to dump Harry for several reasons.

❖ YOU'RE NEVER TOO OLD TO LEARN UNLESS YOU'RE A TEENAGER.

For unexplained reasons the teenage "choking game" is increasing in frequency. Various called the pass out game, fainting game and blackout game, the phenomenon produces a euphoric sensation by temporarily depriving the brain of oxygen. Game players from age seven to twenty-one allow another person to apply hands, neckties, belts, ropes or other ligature to pressure the major vessels in the neck and cut off oxygen. Some may engage in self-choking as a solitary activity. It should be emphasized that this practice is intended to produce sexual pleasure although few participants recognize the inherent danger of serious brain injury or death. A study published in the Journal of the American Academy of Pediatrics revealed that about one-third of practicing pediatricians were unaware of the activity. Few physicians reported actually discussing it as health guidance for adolescent children.

❖ HONESTY PAYS, BUT NOT ENOUGH FOR THE DRUG INDUSTRY.

The marketeers in the pharmaceutical industry seem to have no conscience about how they do business. This time it is a 34 page complaint filed in federal court against Johnson and Johnson alleging that J&J illegally paid "tens of millions of dollars in kickbacks" to Omnicare Inc. to buy their medicines and recommend their use to nursing homes. Omnicare acts as a middleman to process prescriptions, distribute medicines and manage insurance coverage. A primary anti-psychotic blockbuster J&J drug, Risperdal, is under scrutiny by the feds for aggressive marketing often for off-label use to children and the elderly. Omnicare's purchase of J&J drugs tripled to \$280 million in a recent five-year period. In the same vein Eli Lilly & Co. agreed to pay the government \$1.4 billion last year for off-label promotion of its anti-psychotic Zyprexa, and AstraZeneca PLC is preparing to pay \$520 million for its similar pushing of Seroquel. If physicians engaged in similar deliberate misbehavior they would get fined, might lose their medical license or even face jail time.

❖ YOU'RE NEVER TOO OLD TO LEARN HOW TO MAKE NEW MISTAKES.

All the foofaraw surrounding proposed health care legislation has gone on the shelf for the nonce because of the surprising election in Massachusetts. The American Medical Association leadership effectively shot itself in the foot by signing on with the administration plan when many rank and file members disagreed. Nationwide, voters are angry about loss of jobs, the administration using humongous amounts of taxpayers money to bail out Wall Street, conniving insurance companies and foolish automakers. President Obama and his advisors apparently failed to recognize that focusing on major health care change is not a big time issue with voters. Many politicians are already planning strategy to avoid being sent back home in the fall election.

❖ IN THE BLUE LAGOON WE SAW MORE THAN HER EYELASHES.

Allergan Inc. wants to sell a cosmetic compound called Latisse to spread on the eyelashes. "Look who's growing longer, fuller, darker lashes," as Brook Shields flashes her eyelids for all to see on television screens. Unfortunately, the compound may also cause unwanted non-eyelash hair to grow on eyelids and skin, and pigmentation may occur to lids and even the iris. Latisse users are at risk for contracting bacterial keratitis as well. The Food and Drug Administration wants Allergan to provide appropriate patient warnings. Since the compound has both cosmetic and drug action, a new term "cosmeceutical" has been coined.

❖ HEY, DOC! THE PRETENDERS ARE HERE AGAIN.

Some common sense still prevails in the California Office of Administrative Law which rejected a proposal that would have expanded the scope of practice of psychologists and potentially all other health care pretenders. The rules could have allowed non-physician practitioners to admit hospital patients, perform medical examinations, place patients in restraints, complete medical records and coordinate care.

❖ MANY PEOPLE DON'T KNOW THEY ARE DRIVING WITH A BOMB UNDER THE SPARE TIRE.

In Longview, Washington, a 17 year-old lad decided to light his cigarette while siphoning gasoline from a car. The resulting conflagration caused burns over 30% of his body. A fire department lieutenant noted, "fumes from the gas and the match decided to catch fire." As Homer Simpson would say -- DUH!

ADDENDA

- ❖ Data collected on athletic injuries from 1982 to 2007 revealed that two-thirds of serious athletic injuries or deaths among young women in sports were suffered by cheerleaders.
- ❖ Thirty-four is the average age of a woman getting breast augmentation. 90% of women wait until after they have borne children. (Is breast-feeding and sagging a factor?)
- ❖ A Polish woman is suing a hotel in Egypt because she claims her teenage daughter became pregnant from a stray sperm in a mixed-sex swimming pool.
- ❖ All men make mistakes, but married men find out about them sooner.
- ❖ Everyone is a pacifist between wars. It's like being a vegetarian between meals.
- ❖ Discourage inbreeding. Ban country music.

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