The Warren Alpert Medical School of Brown University
Scholarly Concentration Program
Collection of Abstracts

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Volume one

"Tuning Fork" by Laura Mercurio, AMS MD2014, Physician as Communicator Scholarly Concentration
Editor
Teresa L. Schraeder, M.D.
Director, Physician as Communicator Scholarly Concentration
Introduction

Mentorship for Academic Success

My career path to medicine was somewhat circuitous. After graduating from college, I did not go directly to medical school, but entered a doctoral program in experimental pathology at New Jersey Medical School. I had never done research before, so I was not sure what to expect, but I decided to work with George Studzinski who, at the time, was the Chair of the Department of Pathology. George taught me something very important – how to think. You didn’t do experiments to “see what happened,” but first generated a hypothesis followed by designing and implementing a series of experiments to test that hypothesis. Our article, published in the *Journal of Cellular Physiology*, was entitled “Effect of aminonucleoside on transcription, methylation, and maturation of ribosomal RNA in SV40-transformed human lung fibroblasts.” I am obviously very proud of this, my first, publication – even if the topic was a little dry.

Today, as Associate Dean for Medical Education, I am very proud of this Collection of Abstracts from the Scholarly Concentration Program at the Warren Alpert Medical School of Brown University. The abstracts represent a vast amount of time and effort from the students and their faculty mentors. As you read the varied topics and engaging work, you will see the clear evidence of the Scholarly Concentration Program’s success. This innovative program offers an important opportunity for medical students to follow their specific interests, engage in research and scholarship, and work under the guidance of faculty mentors. I feel very strongly that these relationships between medical students and mentors are critically important – and no doubt teach invaluable lessons and foster excellent professional skills for the next generation of physicians.

Perhaps we have planted the seeds for many of them to follow a path of academic clinical research and someday also mentor a medical student or two along the way.

Allan R. Tunkel, MD, PhD, MACP
Professor of Medicine and Medical Science
Associate Dean for Medical Education
The Scholarly Concentration Program

When Dr. Philip Gruppuso, former Dean of Medical Education, first established the Scholarly Concentration Program at the Warren Alpert Medical School of Brown University in 2007, we were excited to join other medical school faculty and administrators in developing and implementing a major curriculum innovation. Our unique program was the first interdisciplinary concentration program in the nation. The Alpert Medical School also promoted the creation of new concentration programs at other major medical schools by taking the lead in creating the Scholarly Concentration Program Consortium now consisting of over 50 medical schools including Harvard Medical School, Yale School of Medicine and College of Physicians and Surgeons at Columbia University.

The Scholarly Concentration Program has been a great success in helping prepare the next generation of physician leaders to develop and deepen their research skills, and to reflect on healthcare problems from multiple perspectives and different analytical frameworks. Overall, our students in the 12 scholarly concentrations including Aging, Global Health, Women’s Reproductive Health, Medical Education, and Physician as Communicator have produced significant scholarly work: research articles, abstracts, posters, educational portfolios and conference presentations.

This collection of abstracts initiated and funded by Dr. Allan Tunkel, Associate Dean for Medical Education, and compiled and edited by Dr. Teresa L. Schraeder, Director of the Physician as Communicator Concentration is an important first step in recognizing the scholarly accomplishments of our students and their individual talent and hard work. In future years, it is our hope to create the first Scholarly Concentration Journal, a peer reviewed publication that highlights the exemplary interdisciplinary scholarship of our students and acknowledges the many contributions of their faculty mentors.

Thais Mather, Ph.D., Scholarly Concentration Program Director
Lynn McNicoll, M.D., Chair, Scholarly Concentration Program Sub-Committee
Richard Dollase, Ed.D., Director, Office of Medical Education
From the Editor

As editor of this first edition of the *Alpert Medical School Collection of Abstracts*, I was fortunate to work with students in the Scholarly Concentration Program of Brown University and their work represented within these pages.

Their abstracts include a broad range of interesting medical and scientific topics, rigorous research, effective analysis, and impressive writing. The unique scholarly concentration program provides students with the tools and skills they will need as nascent physicians and clinical researchers in their future careers.

I applaud their efforts and work. I have been honored to edit this project.

Teresa L. Schraeder, M.D.
Alpert Medical School of Brown University
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Scholarly Concentration in Medical Education

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Annie M Wu; Kathryn Park; Declan Bell; Mary Flynn

Scholarly Concentration in Medical Education

History of the Scholarly Concentration Program

Philip A. Gruppuso, MD; Jeffrey Borkin, MD, PhD; and Emily Green, MA
Abstracts from Students in Class of 2015
Motivations and Subjective Experiences of Pregnant Women Using Acupuncture at a Community Acupuncture Clinic

Grace Chow, BS; Robert C. Heffron, MD; Catherine E. Kerr, PhD

Scholarly Concentration: Integrative Medicine

Background
Acupuncture use rates in the United States, especially among women, have grown over the past decade. As a result, so have the number of research studies examining the efficacy of acupuncture as a treatment modality for various medical problems. However, little research has been done to examine the subjective experiences of subpopulations of patients using acupuncture. This study aims to understand the motivations and subjective experiences of obstetric acupuncture patients at a community acupuncture clinic in Providence, Rhode Island. The clinic's unique model of group treatment and sliding scale fees aims to improve access to acupuncture for a broader patient population.

Methods
Participants included antepartum and postpartum patients who were treated with acupuncture for obstetric-related complaints. Patients were recruited from a community acupuncture clinic to represent a broader patient population. From June to September 2012, 8 patients underwent in-depth interviews with the primary researcher. Interview questions were open-ended and focused on each patient's motivations, expectations, and subjective experiences in receiving acupuncture at the clinic. Interviews were recorded, transcribed, and analyzed using a qualitative analysis approach.

Results
Of the 8 patients using acupuncture treatments, 5 patients were motivated to use acupuncture, for obstetric and non-obstetric reasons, because they were “not satisfied with what conventional medicine offered.” Obstetric-related complaints included induction of labor, turning a breech fetus, nausea, pruritis, back and hip pain, depression, and anxiety. Most of the patients, 6 out of the total 8 interviewed, had used acupuncture before pregnancy, and because of their prior positive experiences with acupuncture, they were motivated to use it again when obstetric-related complaints arose. The other 2 patients started using acupuncture during pregnancy for the first time. These 2 patients were motivated to use acupuncture because pregnancy had changed their views toward health and increased their worry about the potential risks of conventional interventions such as pharmaceutical medication and surgery. All patients described acupuncture as either a low risk or more natural intervention compared to conventional options. However, the patients did not view acupuncture as a replacement for conventional care, and they were aware of the risks of declining or delaying conventional interventions. Rather, they considered acupuncture as an adjunct. Out of the 8 patients in the study, 6 informed their midwife or obstetrician about their use of acupuncture during pregnancy while 2 did not because their doctor “did not ask” or “it has not come up.” All 8 patients described positive benefits in receiving acupuncture during pregnancy, regardless of whether or not their chief complaint was resolved. Positive benefits reported include feelings of relaxation, decreased anxiety, achievement of a smooth delivery, improvement in self care, and feelings of empowerment. Patients chose the community acupuncture clinic over other acupuncture clinics because of affordability, flexibility in scheduling appointments, and patient control over length of treatment time. The clinic’s group treatment model allowed patients to pay on a sliding scale (between $15.00 to $35.00 per session), to choose from multiple appointment slots (7 days a week including evening hours), and to stay for as short or as long as they wanted. One patient stated that the clinic’s low costs compelled her to try acupuncture for the first time. Others felt that the low costs not only made acupuncture accessible but also encouraged them to receive more frequent treatments, which may have contributed to improved health outcomes.
Conclusion
This study provides a deeper understanding of the motivations and subjective experiences of 8 obstetric patients at a community acupuncture clinic. Results of this study indicate that women who were already using acupuncture prior to pregnancy are likely to continue using acupuncture during pregnancy and the postpartum period for obstetric-related complaints. Based on this small study indicating positive benefits of acupuncture experienced by 8 study participants, acupuncture appears to be a possible adjunct to conventional therapy for some prenatal and postpartum care. Due to the community acupuncture clinic’s low costs and scheduling flexibility, the model may be well-suited for pregnant women who are interested in trying acupuncture for the first time. Healthcare providers need to remember to ask their patients about the use of acupuncture. Limitations of the study include small sample size and self-selection of the subjects. Further studies with a larger sample size are needed in order to draw more definitive conclusions about the benefits, risks, and potential role of acupuncture in obstetric care.
Retinal Implants: The News Media Perspective
Alice T. Chuang, BS; Allison J. Chen, BA; Jimmy J. Chan, BS; Curtis Margo, MD MPH; Paul B. Greenberg, MD

Scholarly Concentration: Medical Education

Background
Retinal implants offer innovative approaches to restoring sight. Numerous news media sources often report on these approaches and potentially promising results to the public. This study analyzes report reliability from the top three news sources in the United States: television (broadcast and cable), newspapers, and the internet.

Methods
Media reports were identified from June 24, 1999 to July 26, 2012 from the top circulating news sources with pre-determined search terms: retinal implant, retina implant, retinal prosthesis, retina prosthesis, eye implant, and bionic eye. Three readers (medical student authors ATC, AJC, JJC) independently graded the media reports in comparison to peer-reviewed literature. A standardized grading scale was used, with categories of scientific accuracy, tone neutrality, and realistic outlook. In each of the three categories, reports were assigned subscores on a scale of 1 to 5, with 5 being the highest score, and total scores ranging from 3 to 15. Inter-observer reliability was assessed using the intraclass correlation coefficient.

Results
Mean media scores were: internet 10.3, broadcast television 10.3, cable television 11.1, newspapers, 12.4. Internet news was the most emotion-based and optimistic. Television reports were moderately neutral and informative. Newspaper articles were the most factually correct and emotionally neutral. Overall, subscores were: realistic outlook 3.5, scientific accuracy 3.7, tone neutrality 3.8. Unrealistic expectations were more common than factual inaccuracies.

Conclusion
Media reports tend to overstate clinical progress of retinal implants, with internet and broadcast television news being the least reliable. Further research is needed to determine how patient exposure to these reports impact interactions between patients and clinicians.

Table 1. References from Peer-reviewed Literature

<table>
<thead>
<tr>
<th>Research group/Implant name</th>
<th>Research stage</th>
<th>Results</th>
<th>Technical features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Second Sight/Argus II</td>
<td>Clinical trials: Phase II (U.S.), Phase IV (Europe)</td>
<td>20/1262</td>
<td>External camera 60 electrodes</td>
</tr>
<tr>
<td>Retina Implant AG</td>
<td>Clinical trials: safety/efficacy (Europe, Hong Kong)</td>
<td>20/1000</td>
<td>Multiphotodiode array 1500 pixels Fully intraocular</td>
</tr>
<tr>
<td>Boston Retinal Implant Project</td>
<td>Animal trials, 3-5 months</td>
<td>Electric stimulation</td>
<td>External camera 100 electrodes Hermetic casing</td>
</tr>
<tr>
<td>Stanford University</td>
<td>Animal trials, immediate testing</td>
<td>Electric stimulation OCT imaging</td>
<td>External camera Infrared data transfer</td>
</tr>
<tr>
<td>Bio-retina/Nano Retina</td>
<td>Unreported</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>
Table 2. Media Report Grades

<table>
<thead>
<tr>
<th>Source</th>
<th>Number of reports</th>
<th>Total score, mean (95% CI), range 3-15</th>
<th>Scientific accuracy, mean (95% CI), range 1-5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Newspapers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NY Times</td>
<td>7</td>
<td>12.7</td>
<td>4.2 (3.9 - 4.5)</td>
</tr>
<tr>
<td>USA Today</td>
<td>4</td>
<td>12.2</td>
<td>4.2 (4.0 - 4.5)</td>
</tr>
<tr>
<td>LA Times</td>
<td>2</td>
<td>12.0</td>
<td>4.0 (3.8 - 4.2)</td>
</tr>
<tr>
<td>NY Daily</td>
<td>2</td>
<td>12.5</td>
<td></td>
</tr>
<tr>
<td><strong>Cable news</strong></td>
<td>22</td>
<td>11.1 (10.5 - 11.8)</td>
<td>3.8 (3.5 - 4.0)</td>
</tr>
<tr>
<td>Fox News</td>
<td>5</td>
<td>12.3</td>
<td>3.8 (3.6 - 4.1)</td>
</tr>
<tr>
<td>MSNBC</td>
<td>5</td>
<td>11.1</td>
<td>3.5 (3.4 - 3.7)</td>
</tr>
<tr>
<td>CNN</td>
<td>12</td>
<td>10.6</td>
<td></td>
</tr>
<tr>
<td><strong>Broadcast news</strong></td>
<td>27</td>
<td>10.3 (9.6 - 10.9)</td>
<td>3.6 (3.4 - 3.9)</td>
</tr>
<tr>
<td>NBC</td>
<td>8</td>
<td>10.2</td>
<td>3.5 (3.2 - 3.7)</td>
</tr>
<tr>
<td>ABC</td>
<td>11</td>
<td>10.4</td>
<td>3.3 (3.0 - 3.4)</td>
</tr>
<tr>
<td>CBS</td>
<td>8</td>
<td>10.2</td>
<td></td>
</tr>
<tr>
<td><strong>Internet news</strong></td>
<td>29</td>
<td>10.3 (9.6 - 11.0)</td>
<td>3.3 (2.9 - 3.6)</td>
</tr>
<tr>
<td>Yahoo News</td>
<td>1</td>
<td>7.3</td>
<td>3.7 (3.5 - 3.9)</td>
</tr>
<tr>
<td>Huffington Post</td>
<td>10</td>
<td>11.1</td>
<td>3.3 (3.1 - 3.6)</td>
</tr>
<tr>
<td>Google News</td>
<td>18</td>
<td>10.0</td>
<td></td>
</tr>
</tbody>
</table>
Retinal implants: a systematic literature review

Alice T. Chuang, BS; Curtis E. Margo, MD MPH; Paul B. Greenberg, MD

Scholarly Concentration: Medical Education

Retinal implants present an innovative way of restoring sight in degenerative retinal diseases. Previous reviews of research progress were written by groups developing their own devices. This systematic literature review objectively compares selected models by examining publications describing five representative retinal prostheses: Argus II, Boston Retinal Implant Project, Epi-Ret 3, Intelligent Medical Implants (IMI) and Alpha-IMS (Retina Implant AG). Publications were analyzed using three criteria for interim success: clinical availability, vision restoration potential and long-term biocompatibility. Clinical availability: Argus II is the only device with FDA approval. Argus II and Alpha-IMS have both received the European CE marking approval. All others are in human clinical trials, except the Boston Retinal Implant, which is in animal studies. Vision restoration: resolution theoretically correlates with the number of electrodes. Among devices with external cameras, the Boston Retinal Implant leads with 100 electrodes, followed by Argus II with 60 electrodes and visual acuity of 20/1262. Instead of an external camera, Alpha-IMS uses a photodiode system dependent on natural eye movements and can deliver visual acuity up to 20/546. Long-term biocompatibility: IMI offers iterative learning, Epi-Ret 3 is a fully intraocular device, and Alpha-IMS uses intraocular photosensitive elements. Merging the results of these three criteria, Alpha-IMS is the most likely to achieve long-term success decades later, beyond current clinical availability.

Table 1 Summary of retinal implants

<table>
<thead>
<tr>
<th>Name</th>
<th>Clinical trial availability</th>
<th>Tests</th>
<th>Intraocular dimensions</th>
<th>Extracellular dimensions</th>
<th>Long-term biocompatibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argus II (Second Sight)</td>
<td>FDA approved (phase 4). Europe CE mark. 30 humans total. 9 SAE's</td>
<td>Visual testing: Object/motion Mobility 20/1262</td>
<td>60 electrodes, 200 µm diameter</td>
<td>Glasses frame and hand-held video processor</td>
<td>Cables may increase infection. Hypotony, conjunctival erosion, dehiscence, endophthalmitis, retinal detachments reported.</td>
</tr>
<tr>
<td>Boston Retinal Implant Project</td>
<td>2 minipigs, 3-5 months. Wore through conjunctiva. No SAE's reported.</td>
<td>Electric stimulation</td>
<td>5 mm diameter x 10 µm</td>
<td>Primary metal coil: 19 mm radius. Hermetic case: 11x11x2 mm</td>
<td>Hermetic casing eroded conjunctiva</td>
</tr>
<tr>
<td>Epi-Ret</td>
<td>6 humans, 28 days. No SAE’s reported.</td>
<td>Electric stimulation</td>
<td>40 mm x 3 mm x 10 µm</td>
<td>N/A</td>
<td>Fully intraocular. Loose tacks, epiretinal gliosis, increased IOP reported.</td>
</tr>
<tr>
<td>Intelligent Medical Implants (IMI)</td>
<td>3 humans, 30 months. No SAE's reported.</td>
<td>Electric stimulation</td>
<td>60 mm x 1 mm x 10 µm</td>
<td>Glasses frame</td>
<td>Iterative (&lt;100) learning implant. Retinal detachment reported.</td>
</tr>
<tr>
<td>Alpha-IMS (Retina Implant AG)</td>
<td>Europe CE mark. Current trial: 19 humans, 3-9 months. 1 SAE</td>
<td>Visual testing: Object/motion Localization 20/546</td>
<td>1500 photodiodes, 15 x 30 µm</td>
<td>22 mm cable to power control unit. Hand-held controller</td>
<td>Intraocular image detection. Decreased retinal perfusion, hemorrhage, increased IOP reported.</td>
</tr>
</tbody>
</table>
Assessment of the Disease Burden in a Rural Haitian Village

Gregory Elia, BA
Scholarly Concentration: Disaster Medicine and International Response

Background
In July of 2012, a multidisciplinary team of healthcare professionals traveled to Lafond, Haiti, a rural mountain village of approximately 1500 people. This community has limited access to primary healthcare services and the local disease burden was largely unknown.

Objectives
The objectives for this study were: (1) Provide primary medical care to the local community; (2) Identify common diseases in the area; (3) Engage in public health interventions focused on reducing gastrointestinal infections; (4) Assist in the strengthening of the local healthcare infrastructure through medical equipment donation and provider training.

Methods
During one week the team saw more than 500 adult and pediatric patients at a mobile clinic set up in the local school. The patients self-selected to be seen, and were pre-registered by a local community leader. Clinical diagnoses were made by emergency medicine physicians, pediatricians, and infectious disease specialists. Diagnoses were coded in electronic medical records.

Results
Peptic ulcer/gastroesophageal reflux disease (GERD) was the most common illness identified in all age groups. Hypertension (HTN) was the second most common diagnosis made overall, and the most common diagnosis in adult patients. Musculoskeletal disease, predominantly osteoarthritis, was the second most common diagnosis in adult patients. In pediatric patients, malnutrition, worm infestation, and anemia often co-existed.

Public Health Interventions
Each patient that presented to the clinic was empirically dewormed with weight-based albendazole. One hundred drinking water filtration units were strategically distributed. Medical clinic equipment, including a diagnostic ultrasound unit, was given to a regional health center in a nearby village. Local health care providers attended an “Introduction to Ultrasound” mini-course translated to Haitian Creole with a hands-on training component.
Discussion & Future Directions
This medical mission highlights several of the community health issues that should be addressed in Haiti. (1) H. pylori is prevalent in Haiti (50% in the entire population, 63% in symptomatic individuals.) Consideration should be given to non-invasive testing for H. pylori versus empiric treatment in symptomatic individuals. (2) The community in Lafond was recognized to be remarkably fit and physically active. Members of all ages would walk several miles per day over steep and precarious mountain roads. Thus the high prevalence of joint disease was expected, but the high prevalence of hypertension was alarming. A list of patients identified with HTN was given to the local community health workers to facilitate ongoing monitoring of HTN and distribution of medications. (3) The problem of worm infestation needs to be addressed at a community level. During this visit, a school chef was identified as a nidus of worm infestation in Lafond. We propose that school teachers be used as conduits for community wide identification and periodic deworming of students and their families.

<table>
<thead>
<tr>
<th>Condition</th>
<th># Diagnoses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peptic Ulcer/GERD</td>
<td>80</td>
</tr>
<tr>
<td>Hypertension</td>
<td>70</td>
</tr>
<tr>
<td>Osteoarthritis</td>
<td>60</td>
</tr>
<tr>
<td>Malnutrition</td>
<td>50</td>
</tr>
<tr>
<td>Worm Infestation</td>
<td>40</td>
</tr>
<tr>
<td>Tinea Capitis/Corporus</td>
<td>30</td>
</tr>
<tr>
<td>Pelvic Infection</td>
<td>20</td>
</tr>
<tr>
<td>Anemia</td>
<td>10</td>
</tr>
<tr>
<td>Dehydration</td>
<td>5</td>
</tr>
<tr>
<td>Yeast Vaginalis</td>
<td>5</td>
</tr>
</tbody>
</table>

*Figure 1: Most Common Diagnoses in Lafond, Haiti*
Technology in Teaching: Pioneering Learner-Led Faculty Development

Ryan Heney, BS; Rahul Banerjee, MD; Emily Green, MA; Paul George, MD, MHPE
Warren Alpert Medical School of Brown University
Scholarly Concentration: Medical Education

Introduction
The technological tool kit available to medical educators is rapidly evolving.[1] However, our faculty represent a wide range of user proficiencies and many do not receive formal training with any of the educational technologies currently available to them. Faculty are often unfamiliar with how students use technology to view lectures, study material, and access information. To address this knowledge gap, we created the novel concept of a learner-led faculty development (LLFD) session that provided faculty with training on educational technologies and crucial insight into learners’ experience of the technology.

Methods
To develop and teach the session, the Program in Educational Faculty Development partnered with a uniquely trained group of students. The Information Technology Fellows (ITFs) program consists of 4 or 5 students per medical school class with interest in educational information technology. They are trained to assist lecturers with technical issues and are familiar with educational technology tools currently in use. Most importantly, ITFs are immersed in medical school culture as students and are therefore acutely aware of educational technology best practices and common pitfalls. The LLFD session featured a brief didactic introduction followed by five simultaneous 40-minute practical workshops led by ITFs. Each workshop was repeated to allow enrolled faculty to attend two of the five student-led workshops. The five workshops addressed high impact technologies including lecture hall technology, PowerPoint and Cloud-Sharing, iPad use in medical school, clinical iPhone apps, and online course material management. We used pre- and post-test surveys, and a session evaluation to investigate the potential impact of the program. The same post-test survey was administered again 10 months later to investigate durability of any potential gains.

Outcomes
Faculty were very receptive to being taught by students. When asked if the knowledge and experience of ITFs enhanced the experience, over 90% responded with “Strongly Agree” or “Agree” (N = 49; 92% response rate). Representative comments celebrated the creation of a “true learning community” and stated that “the idea of having students teach us is fantastic.” Faculty were clear about the need for this type of program, with several expressing regret they could only attend 2 of the 5 workshops. Many requested repeat offerings, access to all session materials, or creation of full lectures by ITFs for distribution. Attendees obtained meaningful knowledge and skills. Of the participants, 80% reported that the course would impact their teaching. Post-test survey results indicated significantly increased comfort level with specific technological skills such as audience-polling, inserting video clips into slides and designing course materials conducive to iPad annotation. The 10-month post-test data indicated no statistically significant deterioration of these self-reported gains.

The course was also a valuable teaching and curriculum development experience for the medical students in the ITF program. One of the biggest challenges identified by the ITFs was teaching up to 15 users of varying proficiencies simultaneously.

Conclusion
Our experience demonstrates that LLFD is a viable means of conveying knowledge and educational technology skills to medical educators and deserves further investigation as a means of educational faculty development.

References
Introducing Health Disparities to First-Year Pre-Clinical Medical Students through a Student-Peer Facilitated Curriculum

Shakir McLean, BA; Paul George, MD

Scholarly Concentration: Medical Education

Social determinants impact patient care and health outcomes; therefore, it is crucial that future physicians are exposed to these topics early in their medical education. Medical schools seek to prepare students by influencing their knowledge and attitudes towards health disparities through medical education. Most medical schools focus their curriculum on elective service learning and exposure to health disparities during the clinical years. In November 2012, at the Warren Alpert Medical School of Brown University, a student-led initiative implemented a two-day preclinical health disparities course required for all first-year students. The course focused on issues of race, ethnicity, and social environment as causes for disparities in health outcomes, and aimed to improve students' attitudes towards patients from various backgrounds. A unique aspect of the curriculum involved second-year medical students facilitating discussion in 13 small groups consisting of first-year medical students. Each small-group session included a short documentary screening followed by a 90-minute discussion. Different teaching mediums were used to facilitate students' learning of health disparities such as websites, articles and videos. The course included reading about key concepts in health disparities such as racism, socioeconomic issues and cultural factors. The course culminated in providing a basic framework to understand causes of health disparities.
Factors Associated with Mortality in Patients with Extrapulmonary Tuberculosis at a Teaching Hospital in Ghana

Nicholas Nassikas, BA1; Hongmei Yang, PhD, MS, BS2; Audrey Forson, MD3, 4; Ernest Kwarteng4; Awewura Kwara, MD, MPH, TM1

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Scholarly Concentration: Global Health

Objectives
To investigate the clinical manifestations and factors associated with mortality in patients with extrapulmonary tuberculosis (EPTB) at the Korle-Bu Teaching Hospital Chest Clinic in Accra, Ghana.

Design
We conducted a retrospective chart review of patients treated for EPTB at the chest clinic between January 1, 2009 and December 31, 2011. We identified 375 patients diagnosed with EPTB who were eligible for participation in the study. Exclusion criteria included age less than 18 years old, patients transferred to other Directly Observed Therapy (DOTS) centers, and patients receiving Category II treatment. A total of 342 of the 375 (91%) patients completed the study. The factors associated with mortality were examined using bivariate and multivariate analysis.

Results
Of the 342 patients, the mean age was 40.0 years (standard deviation, SD 13.9); body weight 56.1 kilograms (SD 13.2); 206 (59.2%) patients were male; and 143 (52%) out of 275 patients whose medical record indicated being tested for HIV, tested positive for HIV. Overall, 109 of the 342 (33%) patients died during EPTB treatment. Mortality was associated with increasing age (odds ratio, OR, 1.04; 95% CI, 1.02-1.07); TB meningitis (OR, 12.45; 95% CI, 5.57-27.85); disseminated TB (OR, 11.20; 95% CI, 5.54-22.67); miliary TB (OR, 19.62; 95% CI, 3.32-115.74); and absence of concomitant pulmonary TB (OR, 1.96; 95% CI, 1.10-3.48). Among HIV co-infected patients, early initiation of antiretroviral therapy (ART) reduced the mortality rate.

Conclusion
The location of extrapulmonary tuberculosis (EPTB) infection was a key determinant of mortality. Given that death occurs soon after diagnosis, patients with suspected TB meningitis, disseminated TB and miliary TB should be targeted for early diagnosis of EPTB and treatment to reduce the high EPTB mortality in our setting. Of note, miliary TB was radiographically diagnosed based on a chest film whereas disseminated TB was diagnosed based on clinical exam and lab tests taken from the disease site. This distinction between miliary TB and disseminated TB is generally not used now in most settings, however, in the chest clinic at Korle-Bu, the medical records distinguish between the two. Also, given the significant burden of HIV co-infection, HIV testing and ART treatment appear essential in reducing the mortality rate.
Artful Observation: An Exercise in Using Visual Art Training for Dermatology Residents

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i. Department of Dermatology, The Warren Alpert Medical School at Brown University, Providence, RI, USA. ii. Gallery Interpretation. RISD Museum, Providence, RI, USA

Scholarly Concentration: Medical Education

Introduction
Clinical observation and the interpretation of visual data play an integral role in medical decision making, and thus have long been emphasized in medical education. Museum art-based interventions, in particular, have been utilized as pedagogical tools by medical educators as means to enhance observational skills. A number of existing studies have demonstrated that the examination of fine art can be used to effectively hone medical students’ observational and pattern-recognition skills 1-4. While there is strong evidence of the benefits for using visual art exercises in medical education, a paucity of literature exists on its application to graduate medical education training. Most programs that have adopted art-based training into their residency curricula tend to use art to address competencies in empathy and humanistic values rather than to develop technical skills such as diagnostic observations. In the field of dermatology, in particular, where visual literacy is considered a fundamental part of a physician’s skill set, there is a need to develop the skill of looking and to perfect the identification of skin pathology. Previous reports indicate that dermatology residents dramatically improve their descriptions of patients after just one session of studying and describing narrative artwork in a museum. 7

Methods
We designed and implemented a session in visual training exercises at the Rhode Island School of Design Museum (RISD) with a group of dermatology residents from the Alpert Medical School of Brown University. This two-hour workshop at the RISD museum involved exercises in describing both representational and non-representational artwork. In the first hour, the residents viewed a painting entitled, Fragment of a Wall with Harbor Scene (Figure 1) and learned to utilize terms of formal analysis such as shape, texture, depth, and color. Then they considered objective descriptions versus subjective interpretations and discussed how the purely visual information could help inform the meaning of the art. During the second hour, residents observed a contemporary art project, Self Portrait VIII (Figure 2) and used discussion as well as drawing and writing to interpret the work.

Results
The residents completed pre- and post-tests, each showing a unique clinical photograph of a patient with skin pathology, and were asked to describe their findings and develop possible diagnoses. Though the quality and quantity of the descriptions between the pre- and post-tests did not change significantly for this session, perhaps a larger group of learners and a numerical scoring system with points for fixed descriptors such as color, texture, and shape would be a more sensitive study and might prove an improvement in clinical observation after art-based educational intervention.

Conclusion
After our session, the residents’ evaluations and narrative responses were overwhelmingly positive and all agreed that it would be beneficial to design further sessions. We are planning to implement a series of sessions to accurately evaluate art-based interventions in graduate medical education and the impact they may have in improving descriptive skills among dermatology residents. Our goals include expanding the descriptive language for textures, colors, and shapes as they relate to underlying cutaneous processes and to determine how best to use art to improve identification and diagnoses of skin pathology. We also plan to explore the emotional and affective responses to artwork and use our personal responses to art as a lens to discuss how we process our emotional reactions to patients.
References

2. Dolev JC, Krohner L, Braverman IM. Using fine art to enhance visual diagnostic skills. *JAMA* 2001; 286:1020-1


7. Braverman IM. To see or not to see: how visual training can improve observational skills. *Clin Dermatol.* 2011;29(3):343-6.

Figure 1.
Unknown Artist, Roman. *Fragment of a Wall with Harbor Scene*. CE 30-70. Fresco and lime painting. Ancient Greek and Roman Galleries/RISD Museum, Providence RI.

Figure 2.
Evaluation of Electronic Anatomy Applications to Supplement Medical School Curriculum

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The Warren Alpert Medical School of Brown University
Scholarly Concentration: Medical Education

Introduction
Medical students are provided with a wide array of study materials. With a large number of resources available, it can be challenging for students to decide which are most effective to use. Recently, electronic applications (apps) have emerged as a portable and easy-to-access resource on mobile devices. As medical schools transition to electronic resources, students may look to apps as helpful study aids. With more than 30,000 medical apps available, students may be hesitant to invest the time, money, and energy it may take to find the appropriate app. This project aimed to evaluate commonly used anatomy apps for use in the preclinical curriculum at the medical school.

Methods
A list of 6 anatomy apps was created based on feedback from senior medical students as well as a search of the Apple App Store for “anatomy” apps. From this initial list, three human gross anatomy medical apps, Visible Body, NOVA Series, and Pocket Anatomy were selected based on content, convenience and cost. App content was evaluated for the target audience as well as the level of detail of anatomical information required in the anatomy course. Convenience was defined by ability to multitask and allow intuitive user interface. Finally, acceptable cost was set as $50.00 or less. We developed a 14-question survey assessing medical student attitudes towards the three apps. This survey was administered to two classes of first year students (MD2016 and MD2017) at the Warren Alpert Medical School of Brown University. Data was analyzed using Microsoft Excel 2013.

Results
Two hundred seventeen (90.8%) students responded to the survey and 121 (55.8%) students used at least one of the three suggested anatomy apps. Students relied on the anatomy apps for different reasons: 63.9% for studying at home; 25.3% for pre-lab dissection preparation; and 9.8% for use during active lab dissection. Of the student respondents using apps, 85.2% strongly agreed or agreed that “anatomy apps were useful” and 82.0% strongly agreed or agreed that “they would recommend them to next year’s class.” The students who did not use anatomy apps gave various reasons for not doing so; 36.1% were dissuaded by cost; 30.3% indicated it was not conducive to their learning style; and 20.5% did not own an iPad.

Conclusion
Apps appear to be useful adjuncts in the gross anatomy curriculum for a variety of reasons including studying, dissection preparation and active dissection. Of the three anatomy apps recommended to students, Visible Body was used most frequently. Future surveys are needed to assess student attitudes and experiences with electronic anatomy apps within each dissection module of the gross anatomy curriculum as well as to analyze a broader array of educational apps for use in the preclinical and clinical medical school curriculum. Ultimately, these data could be compared with exam results and other performance metrics to see if there is a correlation between educational apps and test performance, learning enhancement or knowledge retention.
Figure 1: Anatomy app survey results of 217 first year students. (A) Students were surveyed on why they did not use anatomy apps. (B) Students using apps were surveyed on which app, (C) which lab, and (D) how they used anatomy apps. All data are shown as percentages.

Figure 2: Likert scale data showing student responses to four questions regarding their attitudes towards anatomy apps.
Table 1: Summary of three recommended anatomy apps for first year students to use in the gross anatomy curriculum.

<table>
<thead>
<tr>
<th>Developer</th>
<th>Visible Body</th>
<th>NOVA Series</th>
<th>Pocket Anatomy</th>
</tr>
</thead>
<tbody>
<tr>
<td>3D4 Medical</td>
<td></td>
<td></td>
<td>eMedia Interactive Ltd</td>
</tr>
<tr>
<td># of System Apps</td>
<td>11</td>
<td>19</td>
<td>3</td>
</tr>
</tbody>
</table>

### Pros
- **Visible Body**
  1. Full 360° rotation
  2. Preset views of difficult structures
  3. User friendly
- **NOVA Series**
  1. Most detailed
  2. Animations
  3. Customizable quizzes
  4. User friendly
- **Pocket Anatomy**
  1. Great brain detail
  2. Mini-chapters
  3. Customizable quizzes
  4. User friendly

### Cons
- **Visible Body**
  1. App loading time
  2. Simplistic animations
  3. Poor cross sectional anatomy
- **NOVA Series**
  1. App loading time
  2. No preset views of difficult structures
  3. Not all systems can be displayed at once
  4. Different app interfaces
- **Pocket Anatomy**
  1. Lacks all body organs in one app
  2. Overwhelming pin displays
  3. Lacks full 360° rotation

### Gender
- **Visible Body**: Male & Female
- **NOVA Series**: Male and Female
- **Pocket Anatomy**: Male & Female

### Use
- **Visible Body**: First time learners
- **NOVA Series**: Specialists
- **Pocket Anatomy**: Refreshing knowledge
A brief mindfulness intervention to improve physician stress: a feasibility study

Terra D Schaetzel-Hill, MS4, and Catherine E Kerr, PhD

Scholarly Concentration: Contemplative Studies

Background
Stress is a significant problem for medical residents, with potential implications for their health as well as the patient care they provide. Mindfulness is a well-known and well-validated stress reduction tool that may not initially appear accessible or practical for the busy resident. The lack of use by residents of such programs in the past may be largely due to the time-intensive nature of traditional stress reduction methods. To fulfill the objectives of this study, the authors designed and implemented a brief mindfulness intervention for family medicine residents in order to test the feasibility of using such an intervention in this population.

Methods
The brief mindfulness intervention consisted of sitting meditation, daily mindfulness cues, and stress-awareness. The authors enlisted family medicine residents to use the intervention over a 5-day period. Utilization and perception of the intervention were documented and measured with daily surveys. A follow-up focus group was used to determine any benefits, harms, obstacles, and future directions of the intervention.

Results
Of 40 residents given information about the study, 8 (20%) expressed interest in participating, and 3 (7.5%) ultimately participated and completed the program. Participating residents each used and found benefit in a part of the intervention, though none of them used the full intervention as originally designed. One resident regularly used the sitting meditation, while the other two did not. Each resident used a different mindfulness cue, including opening a door, drinking water, and taking the elevator, but the use ranged from rarely to 50% of the time. All of the residents used stress awareness. Qualitative data demonstrated the need for an intervention that is brief and able to be individualized.

Conclusion
Residents have an interest in using mindfulness as a stress reduction tool. A brief and individualized intervention has the potential to provide benefits for residents and merits further study.
Identifying barriers to HIV care at a resource-limited Ghanaian hospital

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*These authors contributed equally to this work

Scholarly Concentration: Global Health

Abstract

In 2008, the Ghana Health Services began funding free and voluntary HIV testing at all hospitals in an effort to reduce the HIV burden in Ghana. However, scant research has been conducted regarding the efficacy of this new protocol in increasing HIV testing rates throughout the country, especially in resource-limited areas with low population density. To better understand the barriers that resource-limited Ghanaian hospitals might face in attempting to test for HIV, we conducted a qualitative study using confidential interviews with 25 hospital staff and 10 patients with HIV at Apam Catholic Hospital (ACH) in Ghana. Our goal was to identify significant barriers that could be addressed by adjusting standard-of-care protocols and gain insight into methods that would better facilitate sustainable efforts regarding caring for patients with HIV by healthcare providers. Our results suggested that the primary barriers to HIV testing in this setting are lack of knowledge about the disease course; patient and hospital resource limitations; stigma associated with HIV; and difficulty obtaining informed consent for HIV testing. Based on these findings, we recommend reevaluation of standard-of-care practices at ACH and emphasize the need for routine HIV testing in order to increase HIV education and awareness, provide earlier intervention, and normalize testing behavior.

Acknowledgements

We would like to thank all of the staff at Apam Catholic Hospital, specifically Sister Mary Magdaleine and Dr. Ebenezer Amekah, without whom this project would not have been possible. We would also like to thank the Global Health Concentration at the Warren Alpert Medical School for their continued mentorship and guidance, as well as the Summer Assistantship Grant Program for providing funding.
Abstracts from Students in Class of 2017
Acupuncturists’ Referral and Communication Patterns with Mainstream Medical Professionals

Brianna R. Bakow, BA1,2; Catherine Kerr, PhD1,2; Robert Heffron, MD1,3, and Jason Machan, PhD4

1. Warren Alpert Medical School at Brown University, Providence, RI; 2. Miriam Hospital, Providence, RI; 3. Memorial Hospital, Pawtucket, RI; 4. Lifespan Biostatistic Core, Lifespan Hospital System, RI

Scholarly Concentration: Integrative Medicine

Background
As access to a variety of different types of medical information expands, patients in the United States, either in addition to or in lieu of Western mainstream medical treatments, are increasingly using complementary and alternative medicine (CAM). Findings in 2008 conducted by the National Center for Complementary and Integrative Health and the National Center for Health Statistics showed that in 2007, 38.3% of U.S. adults were using CAM. Research into how provider interaction between these two groups affects treatment decisions is extremely limited.

Methods
The current study investigated the frequency and source of initiation of communication between acupuncturists and mainstream medical doctors as reported by acupuncturists. Specifically, how communication between providers influenced the referral pattern of acupuncturists to medical doctors when acupuncture treatment was unsuccessful. Participants included 303 licensed acupuncturists who treat depression and chronic pain; 26 of the 303 acupuncturists reported having medical training (2 with MD, 1 PA, 18 RNs, 3 NPs and 2 LPNs). Data for the current study was collected via an anonymous online survey administered to members of 25 state acupuncture associations.

Results
The results of this study showed three related findings. First, the likelihood of acupuncturists contacting mainstream medical doctors was similar to the acupuncturists reporting mainstream medical doctors contacting them (p < .0001). This relationship was found to be similar for acupuncturists with no mainstream medical training (p = 0.001). Out of 277 acupuncturists without medical training, 168 (61%) acupuncturists never or rarely contact medical doctors and 259 (93.5%) acupuncturists never or rarely were contacted by the medical doctors. For the 94 that said they sometimes contacted medical doctors, 40 (42.6%) said they also sometimes hear from them. Lastly, for the 15 that always/mostly contact medical doctors, 33.3% said that they always/mostly hear from the doctors as well. However, among the 26 acupuncturists with medical training the numbers were very different. Out of the 11 who rarely contacted medical doctors, 63.6% said that the medical doctor never or rarely contacted them. For the 11 that sometimes contacted medical doctors, 45.5% reported sometimes being contacted by the medical doctor. Lastly, out of the 4 that reported always or mostly contacting medical doctors, none reported themselves being contacted always/mostly by the medical doctors. Second, acupuncturists without mainstream medical training who have more communication with Western medical providers were more likely to recommend a consultation with a medical doctor as the next step when a patient’s chronic pain symptoms do not remit (acupuncturists approach mainstream doctors p = 0.0040; mainstream doctors approach acupuncturists adj. p = 0.0056). This was true for a subset of acupuncturists with mainstream medical training (adj.p = 0.0249). Lastly, data showed that acupuncturists without mainstream medical training who have more communication with Western providers were more likely to recommend a consultation with a medical doctor as the next step when a patient’s depression symptoms do not remit (acupuncturists approach mainstream doctors p = 0.0283; medical doctors approach acupuncturists adj.p = 0.0211). This was not true for those with Western medical training (p = .09735) who were less likely to contact a mainstream doctor when acupuncture treatment was unsuccessful.

Conclusion
The results show that the perception of acupuncturists as to how often mainstream medical providers contacted them was similar to their perception of how often they initiated contact with mainstream providers. In addition, acupuncturists that had more contact with mainstream providers, regardless of the source of initiation, were more likely to recommend a consultation with a medical doctor as a possible treatment management plan when a patient’s chronic pain or depression symptoms do not remit. Therefore, it can be postulated that regular communication between providers could help foster greater collaboration and increase treatment options in patient care.
Assessment and Implementation of Emergency Triage in a Rural Ghanaian Hospital

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David Bouslough, MD

Scholarly Concentration: Global Health

Background
Triage is the process by which incoming patients are sorted and prioritized for care, most often in an emergency department (ED). Triage provides a systematic method to properly distribute healthcare resources in a timely manner, which is especially important in critical care in resource poor settings. In recent years, many guidelines have been developed with the goal of assisting ED staff in their triage decisions. Most notably, the modified Early Warning Score (mEWS) is a triage instrument that promises to predict patient disposition and clinical outcome in EDs, including predictive values for hospital admission, cardiac arrest, and death.

Methods
Apam Catholic Hospital (ACH) is a 105-bed rural community hospital, which serves a population of 204,000 people from surrounding communities in Ghana’s Central Region. In collaboration with the ACH administration and clinical staff, a three-phase project is underway to evaluate the current status of the ED triage practice, integrate the established mEWS triage guidelines into daily practice and reevaluate the ED after triage intervention. The overall goal is to implement a well-structured and detailed triage scoring system in the ED at ACH in order to provide better emergency care.

Results
In order to assess overall ED functionality, ACH triage practices were observed and patient outcomes recorded over a 30-day period from July 1, 2014 to July 30, 2014. All patients presenting to the ED were triaged based on blood pressure, heart rate, temperature, and general appearance; respiratory rate and pulse oximetry were recorded when appropriate. Medical records for 1789 patients presenting to the ED during a 90-day period from May 1, 2014 to July 31, 2014, were reviewed. Among these patients, 888 (49.6%) patients were admitted to the hospital and 25 (1.4%) patients expired in the ED. The diagnosis and cause of death of every patient presenting to the ED were documented over this time period. Diagnoses included enteric fever (112 cases), asthma exacerbation (39), trauma (34), sepsis (26), urinary tract infections (45), and other problems (figure 2). By far the most common diagnoses was malaria (719 cases), which accounted for 47.6% of all diagnoses and accounted for 36% of deaths in the ED during this time period. Overall, ACH, albeit a rural healthcare center, was well-supplied with antimalarial medications and trained staff to administer the treatment for this community. However, possible barriers to effective care include issues regarding insurance, transportation, socioeconomic problems, healthcare perception, or simply the endemic nature of malaria in this part of the world. Further inquiry and analysis are needed in order to delineate the exact reason for such a high malaria burden.

Conclusion
The ED at ACH has a well-developed triage protocol; however, emergency medical care is severely limited due to the lack of essential life support devices, such as defibrillators, ventilators, etc. Because of this, severe trauma cases, especially road traffic accidents, are triaged to the nearby trauma center in Winneba, Ghana. However, infectious cases, especially malaria, lack the appropriate resources for the most severely affected patients. Ongoing challenges include maintaining a continuous dialogue with ACH in the fragmented healthcare network throughout Ghana and overcoming obstacles such as insurance suspensions and unforeseen fluctuations in healthcare availability. Although insurance issues deterred some patients from seeking care at ACH, the percentage of patients admitted and the severity at presentation increased in July 2014. Moving forward, our clinical research team from the Warren Alpert Medical School of Brown University will continue to develop a professional relationship with ACH in Ghana in order to implement subjective triage guidelines based on the mEWS system followed by re-evaluation of ED triage outcomes.
Figure 1. Percentage of patients presenting to ED who were admitted to Apam Catholic Hospital (APH) in Ghana.

Table 1. Comparison of the number of patients seen in the ED for the same three-month period in 2013 and 2014.

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<thead>
<tr>
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</tr>
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<tr>
<td>June</td>
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</tr>
<tr>
<td>Total</td>
<td>1943</td>
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</table>

Table 1. Comparison of the number of patients seen in the ED for the same three-month period in 2013 and 2014.

Figure 2. Top 14 diagnoses made in the ED at Apam Catholic Hospital (APH) in Ghana.
Barriers to Accessing HIV Care in Kumasi, Ghana

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2Komfo Anokye Teaching Hospital (Kumasi, Ghana)

Scholarly Concentration: Global Health

Background
One of the greatest facilitators in curbing the HIV epidemic has been administration of antiretroviral therapy (ART). In order for ART to slow the progression of the disease and avoid the development of resistant virus, patients must remain in treatment and adhere to the prescribed regimen. This poses a problem in resource-limited settings where patients may drop out of care for financial, social, or other reasons related to the local system of health care delivery. Therefore, the goal of this project was to identify significant barriers to care for the adult HIV clinic population at Komfo Anokye Teaching Hospital (KATH) in Kumasi, Ghana in order to improve access and retention to care.

Materials and Methods
We conducted a cross-sectional survey of the adult HIV clinic patient population at KATH. Over the course of six weeks, 390 patients attending the clinic for care were surveyed. The surveys were administered verbally in English or Twi with the help of clinic staff who served as translators. Each day, some patients attending clinic were approached in the waiting room and asked if they would be willing to participate in the study. Information collected included patient demographics, whether and to whom the patient had disclosed their HIV status, and ‘yes’ or ‘no’ answers to 20 possible barriers.

Results
Among the 390 patients surveyed, the average age was 43.6 years; 289 (74%) were female and 101 (26%) were male; and 355 (91%) were taking ART. Approximately half of participants (199) reported disclosing their HIV status to a partner (68% of males compared with 46% of females). Significant social barriers included confidentiality concerns (55%), not disclosing HIV status to others (51%), and fear of discrimination (36%). Significant economic and health systems barriers included cost of transportation (57%), cost of labs and medication (56%), clinic distance (42%), clinic wait time (35%), and medication stockouts (31%). Barriers for males and females were similar with the exception of HIV non-disclosure status, which 38% of males reported as being a barrier compared with 56% of females.

Conclusion
Most significant barriers are financial or health systems based, with many patients traveling long distances and paying a fee to receive medication and labs. In addition, medication stockouts are a significant problem due to the risk of viral resistance with treatment interruption. The issues of transportation and cost of care warrant further investigation because they most likely have a negative impact on individual care in the form of missed appointments, increased viral loads, and overall negative health consequences. Though fewer social and interpersonal barriers were identified, they may be contributing to financial barriers. Many patients who fear discrimination travel farther than necessary to receive care, adding to the cost of transportation. Finally, with regard to gender differences, a future study could investigate why women are less likely to disclose their HIV status; the reasons may be numerous and may include stigma against HIV, fear of abandonment, and loss of economic support.
The Development of a Children’s Literacy-Based Health Education Program Based on Needs and Interest Assessment

Emily S. Davis, MD’17 and Paul George, MD, MHPE

Scholarly Concentration: Medical Education

Objectives
Health education and the promotion of health literacy should be patient-centered, designed with the unique needs and interests of the targeted population.1 Particularly for children, promoting general literacy skills improves their health literacy and chance of effectively understanding and managing their own health.2 Nearly 17% of children 2 to 19 years of age are obese in the United States, and thus there is a clear need to address this public health concern.3 The objectives of this project include identifying children’s conceptions of health, creating a literacy-based health education program, promoting development of children’s healthy habits, and improving literacy among children.

Methods
In June and July 2014, eight children from 4 to 8 years of age were interviewed at the Family Care Center at Memorial Hospital in Pawtucket, Rhode Island. The following questions were asked as part of the semi-structured interviews by one of the authors of this study (ESD). The questions were created based on a literature review of prior studies.4 Questions included: (1) “What does being healthy mean to you?”; (2) “What types of things do you do to stay healthy?”; (3) “Who usually teaches you about ways to stay healthy?”; (4) “Do you ever read books that teach you about your health, and if so, which ones?”

The interviews were tape-recorded, transcribed and coded for key themes. Examples of themes include identification of healthy behaviors, recognition of the benefits of being healthy, and an interest in understanding human anatomy and physiologic function.

Results
Based on the information collected in the interviews, one of the authors of this study (ESD) wrote and illustrated an educational children’s book, Sneak Peek: Vivi’s Soda Tour, (Figure 1). The book’s text and illustrations depict a story about choosing healthy beverages and provide age-appropriate explanations how sugary drinks affect one’s body, as illustrated in this excerpt.

“What is absorption?” Vivi asked.

“During absorption, digested foods and drinks bring presents to your body, like nutrients such as vitamins and minerals. … These presents – the nutrients – help keep your body working” [said Hakeem the Health Genie].

“Oooh, I love getting presents!”

“Your body does too! Except, sometimes some foods or drinks show up without presents…”

“Really?”

“Yes, that’s right. Drinks like soda show up with no presents! While it has lots of tasty sugar, soda does not give your body any vitamins or minerals.”

An interactive lesson plan was designed to reinforce the book’s main messages. For example, one activity involves creating a homemade smoothie using just three ingredients with no added sugar.

Conclusion
The book and lesson plan were introduced in January 2015 in a third-grade classroom at Elizabeth Baldwin Elementary School in Pawtucket, Rhode Island. Each of the 24 students in the class received the book. Pre- and post-tests were administered to assess children’s gain of knowledge. In addition, for a week prior to and a week following the lesson, the students recorded the beverages they consumed in a daily “drink log.” Future directions of the project include encouragement and incorporation of parental involvement, translation of the book into Spanish and other languages, development of a full series of health-related children’s books, and exploration of different settings in which such literacy-based health education interventions can be applied, including pediatric health clinics.
Figure 1:

References


The Changing Face of Women Living with HIV in Lviv, Ukraine

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Scholarly Concentration: Global Health

Background
According to UNAIDS, Ukraine has one of the fastest growing HIV epidemics in Europe. Given the shift in predominating route of transmission from intravenous drug use (IDU) to heterosexual sex, the proportion of infected women has increased considerably. In 2012, UNAIDS estimated 95,000 Ukrainian women were living with HIV. Although the majority of women with HIV are infected sexually, a significant number are infected through IDU. Women face many barriers to HIV prevention and treatment, including stigma, criminalization of drug use, economic and geographic barriers, and bureaucratic constraints. Past research has focused on high-risk women (including commercial sex workers and intravenous drug users) from Eastern Ukraine, and on barriers to diagnosis rather than barriers to treatment. Additionally, no past research has looked at longitudinal changes in risk factors and demographics. Our aim was to examine the demographic and HIV risk factor profiles, clinical presentation, and time to treatment in women with HIV in the Lviv province of Ukraine, from late 2008 through 2013.

Methods
A retrospective chart review was conducted of 622 HIV-infected women aged 18 years and older, registered at the Lviv AIDS Centre, a governmental HIV/AIDS care centre in Ukraine, from December 19, 2008 to December 25, 2013. Data was collected from the epidemiology registry at the AIDS Centre. Institutional review board (IRB) approval was received from the Brown University Research Protections Office. Variables recorded included age, residence, date of first blood draw, date of registration, mode of transmission, reason for testing, presence of AIDS, symptoms or opportunistic infections at initial presentation, and HIV risk factors such as IDU status. Data was analyzed with SPSS v.22. Statistical differences were assessed using chi-squared, t-test, and ANOVA where appropriate.

Results
We compared characteristics of 119 female patients with HIV reported to be infected through IDU to 502 female patients with HIV reported to be infected through heterosexual transmission. Women with reported IDU transmission of HIV were more likely to be in the older age group of 26 to 50 years (86.72%, p<0.001), live in an urban residence (62.83%, p=0.015), present initially with AIDS (46.9%, p<0.001), and present with symptoms (55.75%, p<0.001) than those with suspected sexually transmitted HIV infection. Women who were initially tested for HIV because of IDU exposure delayed seeking care on average 124 days longer than women tested for other reasons, including pregnancy or high-risk sexual contact (F(4,546)=3.48, p=0.008). However, from 2009 to 2013, there seems to be an overall decrease in the delay to seek care for women infected both sexually and through IDU. Women with a history of IDU were more likely to present with AIDS (p<0.001) or with other concurrent symptoms (p<0.001).

Conclusion
We found that trends in transmission route, reason for testing, and time to seeking care have shifted among women with HIV in western Ukraine. Women with HIV infection from reported or suspected intravenous drug use transmission presented later to care and at more advanced stages than those believed to be infected from heterosexual transmission. This demonstrates the need for interventions to target women with IDU history for possible HIV infection, and to further decrease their interval to registration, diagnosis, treatment and care.
Addressing Health Disparities in the Preclinical Medical School Curriculum

Prashanthi Divakar, BS

Scholarly Concentration: Medical Education

With the increasing awareness of public health and recent government changes to healthcare, it is important to demonstrate to students that the medical field is a profession that is not simply limited to the basic sciences and the clinical practice of medicine. The Warren Alpert Medical School of Brown University has now incorporated the Health Disparities curriculum into the first year of medical school education. The current curriculum includes lectures, a community-based field trip entitled "Shades of Providence," and small group discussions about socioeconomic, environmental, geographic and other disadvantages some patients experience.

Based on medical student evaluations, we have identified that students want to better understand the concepts behind health disparities in the population and learn about solutions they can utilize as future physicians. With this feedback in mind, this project will continue to supplement the first-year medical school curriculum to illustrate and show how to implement active and practical steps to address disparities in health and healthcare.

Figure 1: Clinic Process Map

What are some possible decision point questions?
1. Does the Patient have any new complaints? What is their chief complaint?
2. Does the Patient need any diagnostic tests/screening/immunizations?
3. Does the Patient need medications/refills/med management?
4. Does the Patient need a service not provided by the clinic?
Figure 2: Fishbone/Ishikawa Diagram (Tool for Root-Cause Analysis)

Figure 3: Swim-Lane Flowchart (Outline Responsibilities in a Process)
Increase in metabolic diseases following the Fukushima triple disaster: a retrospective study of Kawauchi Village with long-term follow-up.

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Scholarly Concentration: Global Health

Background
In March of 2011, the earthquake, tsunami, and nuclear accident in northeastern Japan caused widespread destruction and contamination, with the subsequent Fukushima Daiichi nuclear power plant accident requiring the evacuation of over 200,000 people. Residents of Kawauchi Village in Fukushima Prefecture escaped significant damage from the tsunami but were forced to evacuate due to threat of nuclear contamination to government-erected shelters and temporary housing. In April 2012, residents were allowed to return and, by April 2014, approximately 50% of residents had returned. We performed a retrospective chart review with the aim of evaluating the change in health status of the members of the village after the evacuation, primarily focusing on metabolic disease.

Methods
Residents of Japan undergo comprehensive health screenings yearly under the National Health Insurance system. We were granted access to the records from 2008 to 2013. Data for 777 residents in 2008, 797 (2009), 779 (2010), 431 (2012), and 477 (2013) were available. Data for 2011 were not collected because there were no records due to the disaster. In 2012, 233 residents of the 431 total residents with health screening records remained evacuated (“evacuees”) while 198 residents had returned to their homes (“returnees”). In 2013, 99 residents of the 477 residents with health records remaining evacuated. Data were analyzed by ANOVA using Statistica, with p < 0.05 considered significant.

Results
As there was no data available between 2011, the change in population health indicators between 2008-2010 was compared to the change between 2010-2012, with 2008-2010 forming a baseline of average change so as to allow evaluation of the changes over the 2011 disaster period. Significant increases were seen in weight, body mass index (BMI), blood glucose, high density lipoprotein (HDL), low density lipoprotein (LDL), aspartate transferase (AST), alanine transferase (ALT), gamma-glutamyl transpeptidase (γ-GT), and uric acid over the disaster period, compared to the control period of 2008 to 2010. Significant decreases were seen for systolic blood pressure.

Separately, residents who remained evacuated were compared to their returnee counterparts in both 2012 and 2013. Evacuees in 2012 had significantly increased systolic and diastolic blood pressure, triglyceride count, and blood creatinine, and significantly decreased estimated glomerular filtration rate (eGFR) and HDL, compared to village returnees. In 2013, there was significantly increased LDL and decreased ALT in evacuees, but other differences had normalized compared to the returnee population.

Conclusion
Significant differences in metabolic health status were seen between the pre-disaster and post-disaster periods and between evacuees and returnees. By 2013, the majority of evacuee differences appear to have normalized, suggesting population adjustment to the evacuation city. This represents the first time recovery from an earthquake and tsunami has been complicated by a nuclear accident, and an ongoing longitudinal study is needed to assess long-term impact on not only measures of radiological contamination and exposure, but also metabolic disease measures and other health parameters, so as to inform response to future disasters.
Integrating Arts and Movement into Elementary Level Nutrition and Physical Activity Curriculum

Meeka Gandhi, BA; Fadya El Rayess, MD, MPH

Scholarly Concentration: Caring for Underserved Communities

Background
Childhood obesity continues to be an increasingly prevalent issue, particularly in under-resourced, underserved communities. In 2009, 23.5% of children in Pawtucket, Rhode Island were living below the poverty line. Last year, Pawtucket was one of six cities in the state cited for having populations at highest risk of being overweight or obese. This study, Kaleidoscopic and Kinesthetic Classroom Care, sought to take an existing nutrition and physical activity program at Elizabeth Baldwin Elementary School in Pawtucket and adapt the curriculum to a wider range of learning styles. The goals were to evaluate the children's response to material taught with an emphasis on art and movement as well as to compare the efficacy of the program to past curriculum.

Methods
Visual art and movement-based learning activities were incorporated into twelve lessons, piloted in a 5-week summer course in 2014. Lessons were enriched with activities in which students would create visual representations of healthy eating habits that they could bring home to share with their families. This included creating their own balanced meals with paper plates and construction paper, drawing healthy desserts made of only fruit, and other projects. The new curriculum also made an effort to integrate a multicultural approach to food. For example, a separate lesson on beans and grains was added in order to recognize the importance of these foods as staples in many of the cultures represented in the class. This lesson, which included physical samples, both dried and canned, gave students an opportunity to see and feel different kinds of grains as well as to explore the different ways they could prepare them at home. In addition to emphasizing a broader range of learning styles by appealing to visual and tactile senses, each lesson involved an outdoor activity. These activities reinforced the importance of daily exercise, accommodated the incorporation of class material through games, and provided a platform for discussing healthy ways to cope with stress.

Results
A substantial goal in the new curriculum was to define health as being physical, mental, and emotional. Students were able to practice yoga, learn about meditation, and brainstorm about ways in which they could work on being healthy. In order to assess changes in health knowledge and behaviors, pre-course and post-course surveys were administered to 24 students. Throughout the course, quizzes helped to qualitatively assess student retention of content from the previous lesson. Results of the surveys showed that after the summer course, more children answered nutrition knowledge questions correctly and reported positive health behaviors in all categories. Also, a statistically significant change of greater than 50% (p<0.05) was seen in self-reports of increased exercise, increased fruit and vegetable consumption, and decreased soda intake. The new curriculum yielded more positive change than the past curriculum. In the fall of 2012, the children in the previous nutrition and physical activity program reported a decline in healthy exercise and eating habits.

Conclusion
This study demonstrated that a new curriculum that incorporates art and movement yielded a greater improvement in health and knowledge behaviors. Limitations of this study included self-reported data as well as the longer lessons that were possible during the summer course. While it continues to be difficult to measure the long-term impact of lessons, future interviews of study participants could provide qualitative data on the long-term impacts of the pilot curriculum. Future studies on childhood obesity are needed to evaluate the impact of family involvement in elementary school-based nutrition curriculum.
Summer 2014 Pilot

![Graph showing data pre and post intervention.](image)

![Images of student art projects related to wellness.](image)
Barriers to Influenza Vaccination: An Exploration of Reasons and Beliefs in Spanish-Speaking Hispanic Adults Who Have Not Been Vaccinated

Sara J. Guevara, BS; Joseph Diaz, MD; Jennifer Clarke, MD; Roberta Goldman, PhD

Scholarly Concentration: Caring for the Underserved

Background
Since February 24, 2010, the Centers for Disease Control and Prevention (CDC) has recommended annual influenza vaccination for everyone over 6 months of age. Although socioeconomic factors are known to contribute to lower rates of vaccination, the disparities in vaccination rates between Hispanic and non-Hispanic individuals persist even after adjusting for health status and socioeconomic factors. During the 2012-13 influenza season, coverage for non-Hispanic whites (44.6%) was higher than coverage for non-Hispanic blacks (35.6%) and Hispanics (33.8%). The goal of this study is to better understand the cultural context regarding vaccination rates in order to identify barriers and help design interventions that will overcome these barriers.

Methods
We conducted a series of in-depth qualitative interviews among a diverse group of 13 Spanish-speaking Hispanic adults to explore potential reasons for low rates of annual influenza vaccinations. Participants were recruited during the summer of 2014 from social service agencies, businesses, and medical offices in Providence, Rhode Island. Individuals were eligible if they were age 18 years or older, had not received annual flu vaccines since 2010, and were Spanish-speaking Hispanics. Qualitative interviews were conducted using an interview guide of core questions supplemented by spontaneous follow-up questions. The interviews were recorded and transcribed. Interview transcripts were analyzed using the immersion/crystallization method of qualitative analysis.

Results
Among the 13 individuals interviewed, the average age was 40 years old; 69% were female; 46.1% identified as Puerto Rican, 38.5% Dominican, 7.7% Colombian, and 7.7% Cuban. Reasons for Hispanics not getting the flu vaccine included, belief that the vaccine causes influenza (70%); an information gap (30%) such as not being aware of the annual vaccine or not knowing the vaccine can prevent the flu; and having felt sick after the receiving the vaccine in the past (23%).

Conclusion
Based on the findings of this study, Hispanics have a variety of reasons for not receiving flu vaccination mostly based on a lack of knowledge or misinformation regarding the influenza vaccine. In the next phase of the study we will interview Spanish-speaking Hispanics who do receive annual flu vaccines (positive deviants or successful peers). We will incorporate findings from this first phase of the project into the interview script with individuals who do receive an annual flu vaccine to explore the differences and possible strategies they used to overcome the identified barriers. Ultimately, we hope to use the responses and themes to create a more effective intervention tailored to the specific concerns and misconceptions in this community.

Barriers to Vaccines

- Information
  - Past experiences with flu
  - Knowledge
  - Beliefs and Opinions
  - Where to receive vaccine
  - Cost of vaccine

- Access
  - Self
  - Family and Friends
Evaluating the Effects of Antenatal Depression on Infant Behavior at 6 Months Postpartum

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Scholarly Concentration: Women’s Reproductive Health

Background
Up to 20% of women meet criteria for major depressive disorder (MDD) during pregnancy, and even more report depressive symptomology. Maternal depression has been associated with poor health outcomes including pre-eclampsia, pre-term labor, and low infant birth weight. To date there are few studies looking at effects of antenatal depression on infant behavior after the neonatal period. Previous studies have shown that maternal depression during pregnancy (antenatal depression) is associated with increased fetal activity and less optimal scores on infant behavioral assessments within the first week of life. Given the paucity of literature on the topic, the current aims were to examine the effects of antenatal depression on infant motor activity and toy manipulation both at 6 months of age.

Question/Hypothesis
What are the effects, if any, of antenatal depression on infant behavior at 6 months?

Methods
Participants included 87 mothers and their offspring. Maternal psychological assessments included the Structured Clinical Interview for DSM Disorders (SCID) and the Quick Inventory of Depressive Symptomatology—Clinician Rated (QIDS-C). Infants were assessed at 6 months postpartum using the Laboratory Temperament Assessment Battery (Lab-TAB). After an object-oriented 7 minute free-play period referred to as “Basket of Toys,” a 2nd year medical student coded infant activity level and toy manipulation in 10-second intervals.

Results
Using correlations and T-tests, the researchers tested various socioeconomic and demographic factors for covariates. Single parenthood, infection, and race (Caucasian compared with non-Caucasian) predicted activity score. Therefore, we controlled for these variables in our analysis. No significant associations were found between infant motor activity or toy manipulation and antenatal depression. Upon further analysis, race (Caucasian compared with non-Caucasian) did not significantly affect activity score when controlling for single parenthood but single parenthood significantly affected activity score when controlling for race and infection (Figure 1). Infection during pregnancy significantly increased total activity score even when controlling for race and single parenthood.

Conclusion
Although there is no association between antenatal depression and infant behavior at 6 months, single parenthood and infection predict higher activity scores. A possible explanation is that single mothers may have more stressors resulting in higher cortisol levels to which the infant is exposed. Single mothers who have chronically elevated cortisol levels due to stress may also be more vulnerable to infection due to possible weakening of the immune system via glucocorticoids. Our sample had mild-moderate depression scores, which might explain why maternal depression did not significantly affect infant behavior in our population.

Figure 1: Single Parenthood Predicts Higher Infant Activity Scores at 6 Months Postpartum
A Cross-sectional Study on the Prevalence of Sedating Medication Use in Older Patients Attending the Emergency Department

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Scholarly Concentration: Aging

Background
Compared with younger drivers, individuals 65 years of age and older, drive fewer miles but get in more motor vehicle collisions (MVCs).1 Older adults often take medications that have a sedating effect. Previous studies have shown that sedating medications can impair driving ability.2 The objective of this study was to determine the prevalence of sedating medication use in older patients seen in the emergency department (ED), their patterns of driving, self report of MVCs in the past 12 months while using these medications, and any advice given by prescribers about the potential for these medications to cause driving impairment.

Methods
This was a cross-sectional study of 76 older adults (65 years of age and older) presenting to the emergency department at Rhode Island Hospital for any illness or injury in the spring of 2014. Participants had to have driven in the past 30 days to be eligible. Structured interviews of the subjects were used to quantitatively assess study variables. Data collected during interviews were transcribed.

Results
Of the 76 subjects, 34 (45%) were taking sedating medications. Participants taking sedating medications averaged 38.3 miles driven per week, while those not taking sedating medications averaged 38.6 miles. Opioids and selective serotonin reuptake inhibitors (SSRIs) combined, accounted for almost 50% of all sedating medications prescribed. Those taking sedating medications reported a rate of MVCs in the past 12 months of 17% (95% confidence interval, CI: 0% to 34%) compared to those not taking sedating medications, who reported a rate of 10% (95% CI: 1% to 19%). Substantial numbers of participants were taking prescription medications that cause sedation including: sleep aids (16%), depression/anxiety drugs (28%), and opioid pain relievers (23%). None of the participants taking prescription sedating medications reported being advised by their prescriber about the potential for these medications to cause driving impairment.

Conclusion
Almost half the older adults presenting to the ED participating in this study were taking sedating medications. Despite this, participants taking sedating medications still drove the same number of miles per week, on average, as those not taking sedating medications. A greater percentage of the group taking sedating medications had MVCs in the past 12 months as compared with those not taking sedating medications. Given the fact that none of the participants with prescriptions for sedating medications reported being given advice about the potential for these medications to cause driving impairment, more efforts to warn this at-risk group about the adverse effects of sedating medications are warranted.

References
Understanding the sexual behaviors of women that may put them at risk for HPV-related neoplasias: Are we asking the right questions?

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Scholarly Concentration: Women's Reproductive Health

Background
The human papilloma virus (HPV) is a multifocal infection that can involve the cervix, vagina, vulva, anus, and oropharynx. HPV infection is related to 90% of anal cancers and has been linked to the recent rise in oropharyngeal cancers. Standard sexual history questions may not fully capture the sexual behaviors of women that might put them at increased risk for HPV-related neoplasias.

Methods
We conducted a cross-sectional survey study at the Colposcopy Clinic at Women and Infants Hospital in Providence, Rhode Island beginning in July 2014. Women who presented with HPV-related cervical, vulvar, or vaginal abnormalities were eligible. All eligible women were offered enrollment. Once enrolled, each signed an informed consent and completed a self-administered sexual history questionnaire. Additional demographic information was obtained from chart reviews. The study is ongoing with a recruitment goal of 125 women.

Results
As of November 2014, 34 eligible women were approached and 29 women (85.3%), 22 to 64 years of age, gave consent and enrolled in the study. Of these, 66.0% had cervical, vulvar, or vaginal dysplasia. With regards to sexual history, 69.0% reported receiving oral penetration into the vagina, 79.3% reported receiving vaginal fingering, and 100% reported participating in vaginal intercourse. The results also showed 51.7% reported participating in some type of anal-related sexual practice, including anal fingering, oral penetration on the anus, or anal intercourse. Of those participating in anal-related practices, 10.3% reported anal fingering or oral-anal penetration. And 41.4% of respondents said they used sex toys. Of the respondents, 100% indicated they used sex toys vaginally and 16% used the sex toys anally.

Conclusion
Preliminary study findings show that patients are willing to report their participation in a wide range of vaginal, oral and anal sexual practices when asked. Initial results suggest that 10.3% of individuals in this study report participation in some type of sexual activity involving the anus, which might not be identified by the standard sexual history questions or a general question about anal intercourse alone. This study should begin to inform clinicians about how to better understand their patients' sexual practices, how to counsel their patients on risky sexual behaviors, and offer effective information and education about how to best help protect against HPV and other sexually transmitted infections.
Description and verification of viral hepatitis B co-infection in pediatric HIV cohort in Siem Reap, Cambodia

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Scholarly Concentration: Global Health

Background
Liver disease is accelerated in the HIV-Hepatitis B (HBV) co-infected population and is a leading cause of death. UNAIDS estimates there were approximately 210,000 HIV infected children living in Southeast Asia and the Pacific in 2012. Of the HIV infected population living in low-income and HIV endemic regions of Asia, an estimated 5 to 20% are HBV positive. To prevent HBV in children, hepatitis B vaccination for infants begins with an initial birth dose vaccine. (Three doses of HBV vaccine are needed for children for full protection; one given at birth, the second given at one to two months, and the third dose given at six months.) For infants born to HBV positive mothers, HBV immunoglobulin is given when available. Studies have shown that HBV antiviral therapy given to the mother during pregnancy reduces transmission of hepatitis B to the infant. However, neither HBV immunoglobulin nor targeted HBV antiviral therapy are routinely available in settings such as Cambodia. In 2004, Cambodia implemented an expanded HBV vaccination program including birth dose vaccine and by 2011, it achieved an estimated coverage of 94%. Children born to HIV-infected mothers may remain at higher risk due to higher HBV viral loads in the mother and increased risk of in utero transmission. Infants with HBV positive status are at higher risk of developing chronic hepatitis B infection than adults. The impact of the expanded immunization program on the prevalence of hepatitis B infection among HIV infected children is not known.

Objectives
Our research sought to examine correlates of HBV infection among HIV infected children with specific focus on distance from site of care as a marker of likelihood of uptake to immunization, treatment, and receipt of birth dose vaccine.

Methods
We performed a retrospective chart review of electronic and paper records for all active HIV pediatric patients at Angkor Hospital for Children (AHC) in Siem Reap, Cambodia. Chi square and Fischer's exact tests were used to evaluate associations between demographic factors and HBV status.

Results
Of the medical records reviewed of pediatric patients with HIV seen at AHC, 74.4% of the patients had documented screening for HBV and 5% of the patients were positive for HBV surface antigen (HBsAg). There was no significant difference in prevalence of HBsAg positivity based on distance of residence from AHC or receipt of birth dose HBV vaccine. In this study, 47% of patients of the HIV pediatric cohort lived more than 60 kilometers from AHC; 4.4% of patients had documented birth dose vaccines and were HBsAg positive as compared to 5.2% of patients without documented HBV birth dose vaccine. In total, birth dose vaccine was recorded for 19% of children who underwent HBsAg screening.

Conclusion
HIV infected children at AHC in Siem Reap, Cambodia have a rate of HBV infection equal to or lower than the estimated average of 5 to 20% in the region. Given the apparent low uptake to birth dose vaccine in this cohort, other factors including the treatment status of the mother may account for this difference. No significant differences in HBV positivity were found by distance from site of care. Receipt of birth dose vaccine does not appear to correlate with risk of HBV infection in this cohort. In utero transmission remains a potential concern in this cohort and a more detailed review of Preventing Mother-to-Child Transmission of HIV (PMTCT) uptake and regimens may be useful to better explain the persistence of transmission among some children of HIV infected mothers.
Five-Element Approach to Self Care

Katie Pivarnik, BA
Scholarly Concentration: Integrative Medicine

Background
As complementary and alternative medicine become increasingly integrated into Western medicine, medical students, physicians, and healthcare professionals may realize the benefits integrative modalities can have in their personal and professional lives. Qigong and acupuncture offer unique practices that attune the participant to their internal energy and the energy around them, as well as the interrelatedness of the mind, the body, and the spirit. Imbalance in one area necessarily impacts the others and can lead to physical and emotional distress. Medical students and healthcare professionals are at risk for crippling levels of stress and high rates of burnout, and these practices can be used to recognize and address imbalances before they impact negatively on personal health and professional duties. Following in-depth training with classical and traditional Chinese medicine practitioners and acupuncturists in the United States and China, I developed the Five-Element Approach to Self Care workshop.

Methods
In November 2014, 14 first- and second-year medical students and 1 clinical psychology resident participated in a one-hour meditation workshop at Alpert Medical School of Brown University. Participants were led through two meditations aimed at centering and grounding. The first uses Dantien breathing, which builds energy in the lower abdomen, where energy may be generated and stored. The second promotes grounding by channeling energy out through the soles of the feet at the Yongchuan acupuncture point. The third meditation incorporates visualizations of each organ system and encourages the recognition and diffusion of excess emotional stress.

The meditations incorporate components of qigong and acupuncture, including breathing, visualization, and sensory perceptions that connect mind and body within the context of the Five Element Theory. The Five Element Theory connects the elements (wood, fire, earth, metal, and water) with the organs (liver, heart, spleen, and lungs), and the emotions (anger, stress, worry, rumination, sadness and fear). Incorporating the idea that mind, body, and spirit are one, the meditations help participants learn to be mindful of their emotions while maintaining resiliency in the face of a stressful educational system and challenging profession.

Results
Survey feedback from all 14 first- and second-year medical students and 1 clinical psychology resident who attended the initial workshop in November 2014, showed the material in the workshop was relevant to their needs. Of those in the group, 4 (27%) participants felt incorporating Dantien, Yongchuan, and Five-Element meditations into personal and professional life was extremely feasible (5/5), and 8 (53%) study subjects felt incorporation was very feasible (4/5). In terms of personal wellbeing, 2 (13%) participants felt the meditations had a significant impact, and 11 (73%) participants rated the impact 4/5. All 15 participants felt the meditations would improve patient care, 9 (60%) felt it would improve professionalism, 4 (27%) felt it would improve medical knowledge, and 9 (60%) felt it would improve communication skills.

A second-year medical student commented, "We’re overworked, consumed by our daily worries and perceived inferiority and stress…and yet we…hardly ever pursue self-inquiry. Usually, the excuse is that there isn’t enough time. But there is enough time, and making our minds stop for a minute and imagine physically ridding our bodies of those things that haunt us works wonders. Your session reminds us…that we know of self-care, but may not practice it, and serves as a reminder that it is possible to stop, even if just temporarily."

Conclusion
Evidence from this study indicates that meditation may provide a tool for medical students and other healthcare professionals to bring awareness to their physical and emotional stress. By tuning in to and diffusing personal stressors, medical students and healthcare professionals may be more present in their interactions with patients, colleagues, and even family. Broadening healthcare professionals’ knowledge in this area may also offer tools to use with patients who similarly face significant physical or emotional stressors. The one-hour Five-Element Approach to Self Care workshop equips participants with easily accessible skills to take care of themselves by recognizing physical and emotional stress and experiencing a new way to diffuse it.
In the spring of 2015, I will gather follow-up feedback to determine how participants have benefitted personally and professionally after implementing the meditation practices during the academic year six months post-workshop. I will present the workshop again in 2015 and 2016 and continue to conduct follow-up surveys, for this preliminary feedback suggests these mediation practices may benefit practitioners and improve patient interactions.
**An Algorithm in the Aftermath: A Tool for Ethical Resource Allocation in a Crisis**

Caitlin Ryus, MPH and Jay Baruch, MD

Scholarly Concentration: Health Policy

**Introduction**

Catastrophic events in the United States, while generally considered rare, collectively occur with some degree of regularity. In the past decade, the country has faced hurricanes Katrina in 2005, Irene in 2011, and Sandy in 2012; H1N1 pandemics of 2009 and 2013; and the Boston Marathon bombing in 2013. Rhode Island is a coastal state with a population of 1.05 million located near a major metropolitan city, Boston, Massachusetts, and is exceptionally vulnerable to events that can cause capacity surges in hospitals.

Rhode Island Hospital is the state’s only Level 1 Trauma Center and yet, there is no triage or resource allocation protocol currently in place at the hospital. This project began the development of an allocation protocol for ventilators and an ethical framework for providers to use in the event of a crisis at Rhode Island Hospital.

In a time of crisis, life saving resources may become scarce. Physicians can face heartbreaking patient care decisions amidst the chaos, but must function under the stress of their own physical exhaustion. Medical decisions made ad hoc and under duress are less likely to be as consistent and equitable as those based on pre-considered policies regarding standards of care and resource allocation. Other high profile disasters have shown that a lack of planning can lead to disastrous outcomes. Inconsistent decisions regarding use of resources can produce the perception of injustice by vulnerable populations, lead to a loss of trust in healthcare providers and the health care system by patients, and expose providers and institutions to medical legal liability.

**Methods**

A literature review was conducted to investigate existing disaster ventilator protocols and policies in other states and cities. Twenty-seven books, articles, and protocols from the emergency preparedness or disaster medicine literature published from 2001 to 2014 were included in the review. Additionally, the review included bioethics literature on resource allocation and disasters. Key informant interviews were conducted to help shape and inform the protocol and multiple meetings with the Rhode Island Hospital emergency preparedness committee were attended. The draft protocol was presented to both the bioethics and the emergency preparedness committees at Rhode Island Hospital. A protocol was drafted based on the literature review, best practices, and interviews with experts and committee members.

**Results**

A prioritization tool was developed utilizing an ethical framework centered on distributive justice, duty to care, duty to steward resources, and transparency. The prioritization is based on prognostic measures, the goal being to minimize mortality by prioritizing patients most likely to benefit from receiving a ventilator. The Sequential Organ Failure Assessment (figure 1) score for each patient is calculated and then prioritization categories and action plans assigned according to SOFA scores (figure 2). The prioritization tool is dynamic and coincides with changes in patient conditions; each patient is reassessed and re-prioritized at 48 and 120 hours.

**Conclusion**

As the state’s Level 1 trauma center, Rhode Island Hospital would benefit from protocols for situations requiring triage of ventilators, including an ethical framework to assist physicians making clinical decisions in a crisis. This project is intended to address this need by developing an ethical framework and an allocation tool for the distribution of ventilators during a crisis. The hope is that this work will serve as a starting point for local leaders and hospital administrators to formalize a policy to help Rhode Island physicians best serve their patients when they need them most.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Score</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PaO₂/PO₂, mm Hg</td>
<td>0</td>
<td>≥400</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>≤400</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>≤300</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>≤200</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>≤100</td>
</tr>
<tr>
<td>Platelet count, x 10⁹/L</td>
<td>0</td>
<td>&gt;150</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>≤150</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>≤100</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>≤50</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>≤20</td>
</tr>
<tr>
<td>Bilirubin level, mg/dl (µ mol/l)</td>
<td>0</td>
<td>&lt;1.2</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>1.2-1.9 (20-32)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>2.0-5.9 (33-100)</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>6.0-11.9 (101-203)</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>&gt; 12 (&gt; 203)</td>
</tr>
<tr>
<td>Hypotension</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Mean Arterial Blood Pressure &lt;70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dopamine doses ≤ 5 µg/kg per min</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dopamine &gt; 5 µg/kg per min</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Epinephrine ≤ 0.1 µg/kg per min</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Epinephrine &gt; 0.1 µg/kg per min</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Norepinephrine ≤ 0.1 µg/kg per min</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Norepinephrine &gt; 0.1 µg/kg per min</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glasgow Coma score</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13-14</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10-12</td>
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<td></td>
<td>6-9</td>
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<td></td>
<td>&lt;6</td>
<td></td>
</tr>
<tr>
<td>Creatinine level, mg/dl (µ mol/l)</td>
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<tr>
<td></td>
<td>1</td>
<td>1.2-1.9 (106-168)</td>
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<tr>
<td></td>
<td>2</td>
<td>2.0-3.4 (169-300)</td>
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<tr>
<td></td>
<td>3</td>
<td>3.5-4.9 (301-433)</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>&gt;5 (&gt;434)</td>
</tr>
</tbody>
</table>

**Total**

### Initial assessment

<table>
<thead>
<tr>
<th>Triage code</th>
<th>Criteria</th>
<th>Action or priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue</td>
<td>Exclusion criteria met or SOFA score &gt;11</td>
<td>• Manage medically</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Provide palliative care as needed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Discharge from critical care</td>
</tr>
<tr>
<td>Red</td>
<td>SOFA Score ≤ 7 or single organ failure</td>
<td>Highest priority</td>
</tr>
<tr>
<td>Yellow</td>
<td>SOFA score 8-11</td>
<td>Intermediate priority</td>
</tr>
<tr>
<td>Green</td>
<td>No significant organ failure</td>
<td>• Defer or discharge</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Reassess as needed</td>
</tr>
</tbody>
</table>

If an exclusion criterion is met or the SOFA score is > 11 anytime from the initial assessment to 48 hours afterward, change the triage code to Blue and proceed as indicated.

### 48 hours

<table>
<thead>
<tr>
<th>Triage code</th>
<th>Criteria</th>
<th>Action or priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue</td>
<td>Exclusion criteria met or SOFA score &gt; 11 or</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SOFA score stable at 8-11 with no change</td>
<td>• Provide palliative care</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Discharge from critical care</td>
</tr>
<tr>
<td>Red</td>
<td>SOFA score &lt; 11 and decreasing</td>
<td>Highest priority</td>
</tr>
<tr>
<td>Yellow</td>
<td>SOFA score stable at &lt; 8 with no change</td>
<td>Intermediate priority</td>
</tr>
<tr>
<td>Green</td>
<td>No longer dependent on ventilator</td>
<td>Discharge from critical care</td>
</tr>
</tbody>
</table>

If an exclusion criterion is met or the SOFA score is >11 anytime from 48 to 120 hours afterward, change the triage code to Blue and proceed as indicated.

### 120 hours

<table>
<thead>
<tr>
<th>Triage code</th>
<th>Criteria</th>
<th>Action or priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue</td>
<td>Exclusion criteria met of SOFA score &gt; 11 or</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SOFA score &lt;8 with no change</td>
<td>• Provide palliative care</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Discharge from critical care</td>
</tr>
<tr>
<td>Red</td>
<td>SOFA &lt;11 and decreasing progressively</td>
<td>Highest priority</td>
</tr>
<tr>
<td>Yellow</td>
<td>SOFA &lt; 8 with minimal decrease (&lt;3 point</td>
<td>Intermediate priority</td>
</tr>
<tr>
<td></td>
<td>decrease in past 72 hours)</td>
<td></td>
</tr>
<tr>
<td>Green</td>
<td>No longer dependent on ventilator</td>
<td>Discharge from critical care</td>
</tr>
</tbody>
</table>
Assessing local perceptions of the provider-initiated HIV testing and counseling model in a Ghanaian resource-scarce context

Zachary J. Tabb, BS1; Madeleine W. Schrier, BA; Ebenezer Amekah2; Margaret Lartey3; Timothy Flanigan1, MD4
1The Warren Alpert Medical School of Brown University. 2Apam Catholic Hospital, Apam, Ghana. 3Department of Medicine and Therapeutics, University of Ghana Medical School. 4Miriam and Rhode Island Hospitals, Division of Infectious Disease.

Scholarly Concentration: Global Health

Background
HIV voluntary counseling and testing (VCT) often has poor utilization rates thereby challenging health care providers and institutions to address the HIV burden. Provider-initiated testing and counseling (PITC) has been shown to detect greater numbers of HIV-positive patients and offers earlier intervention and often better outcomes for patients. This study sought to understand the dynamics of providing HIV care in order to assess the acceptability and feasibility of implementing the PITC model in a resource-scarce context in Ghana.

Methods
We conducted semi-structured interviews composed of open-ended questions with healthcare providers and adult out-patients at Apam Catholic Hospital (ACH) in Ghana to explore the attitudes regarding benefits and challenges of PITC. Additional questions were aimed at identifying issues about HIV knowledge and stigma as potential components challenging the impact of PITC. All study participants were recruited using convenience sampling.

Results
In this study, 8 healthcare providers and 25 patients from ACH were interviewed. Healthcare providers believed that PITC would lead to earlier diagnosis and intervention facilitating better patient outcomes; however, they expressed concern over increased material costs and staff workload. In addition, providers commonly expressed concern that a notable challenge to providing HIV care was the pervasive stigma toward those patients diagnosed as HIV positive. These attitudes are often present with and perpetuated by individuals with a poor understanding of HIV transmission. Lastly, all providers believed that improving HIV education was the most effective means to reduce stigma.

Of the study participants interviewed, 25 (100%) patients welcomed the PITC model; however, despite an explanation that testing would not be mandatory, 22 patients (84%) expressed that they would not feel comfortable refusing an HIV test if discussion of the test was initiated by the provider. In general, patients demonstrated a poor understanding of HIV: 11 (44%) patients stated incorrect modes of transmission; 9 (36%) patients reported that they would not purchase food from an HIV-positive merchant; 10 (40%) patients would purchase only canned or pre-packaged items from an HIV-positive merchant; and 13 (52%) patients conveyed the belief that HIV had a spiritual cause. Lastly, patient respondents consistently voiced that an impediment to testing is a salient fear of a positive diagnosis of HIV and the consequential psychological distress that rests on the perception that HIV is incurable and fatal.

Conclusion
The providers interviewed at ACH in Ghana were concerned about sufficient health care supplies and adequate numbers of personnel required for PITC; however, these concerns were offset by the acknowledgement of clear benefits to patients and health outcomes. The patients interviewed welcomed the new PITC model; however, a reluctance to opt-out of HIV testing calls into question whether testing within the PITC model would in fact be mandatory in practice. Furthermore, it is unclear whether routine testing as part of PITC would affect the stigma associated with HIV within the community. Based on these findings, a thorough cost-benefit analysis of PITC would help to ascertain the practicality of the model in resource-scarce areas. In addition, as a lack of HIV knowledge emerged as a dominant theme in this study, further research should pursue the potential impact of improving HIV education as it relates to encouraging testing and reducing stigma, transmission, and prevalence of HIV.
Food + Health: A Nutrition and Culinary Arts Pre-clinical Elective

Annie M. Wu†; David Lieberman†; Todd Seyfarth‡; Michael Makuch‡; E. Whitney Evans§; Mary Flynn§; Paul George†

†Warren Alpert Medical School of Brown University, Providence, RI
§Brown University, Providence, RI
‡Johnson and Wales University, Providence, RI

Scholarly Concentration: Medical Education

Objective
Food + Health is a pilot pre-clinical elective course created in collaboration between Johnson & Wales University (JWU) and the Alpert Medical School (AMS) of Brown University. The aims of the elective are to cultivate discussion and inquiry at the intersection of food, nutrition, medicine, and public health while providing an opportunity for AMS and JWU students to collaboratively develop novel approaches and solutions to diet-related health problems.

Need For Innovation
Diet has been identified as the single most significant risk factor governing disability and premature death.1 However, recent studies show that nutrition education in medical training has remained deficient.2 In particular, initiatives addressing the practical culinary and clinical applications of nutritional guidelines have been lacking.3

Methods
Beginning in 2013, faculty and student representatives from AMS and JWU collaboratively developed the course model for medical and culinary students to be implemented in the fall semester of 2014. The course syllabus was composed of five units: (1) Hypertension and salt, (2) Cardiovascular disease and fats, (3) GI diseases and fiber, (4) Diabetes and dietary glycemic control, and (5) Energy balance and weight. Leading scholars were invited to AMS to present lectures on their areas of expertise relevant to each topic. Practical cooking sessions (“cookshops”) at JWU following each lecture allowed for application of recommendations to selected recipes. A final project challenged medical and culinary students to jointly develop a customized menu to address health requirements of assigned patient cases.

Outcomes
A total of 17 first- and second-year AMS students and 19 JWU culinary students were enrolled in the elective. Lectures at AMS were conducted in an interactive format with regular question and answer sessions to facilitate discussions; all lectures were video recorded and linked on the course website for accessibility. At each cookshop, students implemented recipe modifications such as cooking with healthy fats, experimenting with seasonings other than salt, and substituting high fiber foods into popular dishes. Throughout the course, discussions and presentations focused on ways to translate evidence-based recommendations into practical diet modifications for clients and patients. Feedback was gathered through online surveys following each course session. Students provided positive feedback with respect to the unique opportunity to tackle nutrition challenges in interprofessional teams. To further strengthen the food and medicine connection, future iterations could include incorporation of relevant patient cases with each cookshop topic and clinical workshops allowing for discussion of dietary modifications with patients.

Conclusion
Food + Health bridges the gap in nutrition education through intimate discussions with leading scholars and practical application in the kitchen. This unique nutrition and cooking education program garnered enthusiastic interest from medical and culinary students and professionals in its pilot semester in the fall of 2014. There is growing interest and support from faculty and students, the institutions of AMS and JWU, and from the local Providence community that reflects the importance and the potential to expand upon this collaborative model in coming years.
Cookshop final project: Students created entrees aimed at balancing macronutrient content.

References:
The Healing Foods Cooking Program: A Plant-based Olive Oil Diet for Low-Income Adults with Type 2 Diabetes

Annie M Wu; Kathryn Park; Declan Bell; Mary Flynn

1 Warren Alpert Medical School of Brown University, Providence, Rhode Island Brown University
2 Brown University, Providence, Rhode Island

Scholarly Concentration: Medical Education

Purpose
To investigate the effects of a plant-based olive oil diet on health parameters and awareness among adults with type 2 diabetes (T2DM) living in a low-income environment through implementation of a culinary and nutrition education program in collaboration with the staff at a congregate meal site.

Methods
Participants at The McAuley House, a congregate meal site in Providence, Rhode Island were invited to take part in The Healing Foods Cooking Program, a 6-week cooking course using meals prepared from Dr. Mary Flynn’s “Raising the Bar on Nutrition” (RTB) education program consisting of low-cost plant-based olive oil recipes and nutrition information. Eligibility requirements were defined as adults with current T2DM diagnosis, access to a kitchen, body mass index (BMI) < 35kg/m² and ability to be contacted by telephone. At each of the weekly course sessions, study facilitators demonstrated how to cook recipes from the RTB nutrition education program and presented topics relevant to managing diabetes through dietary modifications. Discussions included controlling blood glucose through appropriate portion sizes and incorporating vegetables and olive oil into cooking. At the end of each course session, participants were provided with ingredients to prepare the featured recipe in their own homes. Participants were evaluated immediately after the course and at monthly appointments thereafter for a total of 3 months to monitor changes in diet and awareness, as well as changes in BMI, blood glucose, and blood pressure.

Results
A total of 10 participants completed the 6-week program (3 women and 7 men). Among the participants who completed the program, the average BMI decreased from 29.0±4.6 at baseline to 28.9±4.6 post-course (p=0.57, n=10). Fasting blood sugar decreased from 151.7±58.0 at baseline to 125.1±36.9 post-course (p=0.058, n=7). (Test indicates diabetes if fasting blood glucose = 126 or greater). Systolic blood pressure decreased from 152.7±25.7 at baseline to 143.7±12.2 post-course (p=0.33, n=6); diastolic blood pressure decreased from 89.7±8.9 at baseline to 86.7±4.8 post-course (p=0.46, n=6). Number of vegetarian meals reported per week increased from 1.1±1.4 at baseline to 2.8±1.2 post-course (p = 0.004, n=10); number of main meals per week containing vegetables increased from 5.4±2.3 at baseline to 6.4±1.07 post-course (p=0.08, n=10). In this study, 6 of 10 participants reported buying more vegetables; 8 of 10 reported eating more vegetables post-course; 10 of 10 stated they plan to continue to use the recipes.

Conclusion
The Healing Foods Cooking Program demonstrated beneficial physiologic effects with respect to decreased fasting blood glucose, BMI, and systolic and diastolic blood pressure, and beneficial nutrition habits such as increased vegetable consumption and dietary awareness in a low-income T2DM population. However, due to limitations in recording complete data for all participants, some parameters did not reflect all potentially available data. Future steps include expanding the study to a larger population with more structured evaluation and data collection and implementing the program at additional community centers.


History of the Scholarly Concentration Program

When I was recruited by Eli Adashi to be Associate Dean of Medical Education, I was charged with developing a new, innovative medical school curriculum. Thinking about what was missing from standard medical school curricula, I was struck by the lack of emphasis placed on scholarship in areas that relate to the humanistic aspects of medicine. While our school had an effective infrastructure for students to pursue clinical and basic research, an infrastructure to assure mentorship and resources for students interested in non-traditional research and scholarship was lacking.

My hope was that students would be inspired by the intellectual culture at Brown to undertake interdisciplinary, non-traditional scholarship while in medical school. The goal was to encourage serious scholarship among students who were not focused on traditional biomedical research. We knew that if we accomplished this goal, then the aggregate scholarly accomplishments of our student body would be greatly enhanced.

The publication rate among students who participate seems to be about twice that of the non-concentrators. In addition, it appears that they publish in higher impact journals than non-concentrators. I did not expect that profound an impact on scholarly productivity.

My belief is that emphasizing the humanities, fine arts and social sciences in a medical school has an effect on the culture of the school. It certainly has been a powerful recruiting tool. The Scholarly Concentration event at graduation has been an extraordinary celebration of students’ accomplishments.

Philip A. Gruppuso, M.D.
Founder of the Scholarly Concentration Program
Professor of Pediatrics, Professor of Molecular Biology, Cell Biology and Biochemistry (Research) and former Associate Dean for Medical Education at the Warren Alpert Medical School of Brown University.

Nearly a decade ago we began the process of planning a “something” that would facilitate students utilizing their energy, intellect, and passion in the pursuit of a scholarly area of focus. The first meeting, occurred on April 6, 2006 and was labeled the Curriculum Redesign Working Group on the Development of Scholarly Areas of Emphasis.

Phil Gruppuso, then Associate Dean for Education, had tasked me to assemble a group of interested faculty and come up with a plan that would provide a structure for the ideas and activities that would encourage scholarship in interdisciplinary areas among selected students. The feeling was that the usual medical school curriculum, though rigorous, did not suffice. We observed the amazing projects that medical students were capable of undertaking and wondered if we could tap into this and take it to the next level. From these discussions, the Scholarly Concentration Program was born!

Jeffrey Borkan, MD, PhD
Chair & Professor
Department of Family Medicine
Alpert Medical School of Brown University
Assistant Dean for Primary Care-Population Health Program Planning
When I took on the role of manager of the Scholarly Concentrations Program at the Alpert Medical School of Brown University in 2007, there was a clear and compelling rationale for establishing the new program. Medical students were involved in a large number of service, humanities and international projects, but they needed a structured means by which to identify mentors and produce scholarly work. Somewhere on the continuum between unstructured volunteerism and a combined advanced degree program, the Scholarly Concentrations Program was designed to allow medical students to delve deeply into an area which they were passionate about.

The SC Program is unique in that it recognizes the varied skills and interests students come to medical school with, and rather than allowing those skills and interests to be pushed aside by the demands of the core curriculum, the program seeks to maximize and develop them. In fact, one of the primary forces behind the development of the program was the initiative of the student body. Medical students were asking the administration for an increased focus on the work they were doing outside of the classroom. And, because these were Alpert Medical School of Brown University students, much of that work was creative and cross-disciplinary in nature. Students pursuing traditional research projects already benefited from structured mentorship and the opportunity to publish, so why couldn't students involved in service or humanities work also enjoy those same opportunities?

The establishment of the SC Program took place at the same time as a reorganization of the preclinical curriculum. The architects of the new curriculum made a decision to reserve the vast majority of Wednesdays in the second year of medical school for “self-directed learning”. This decision created a schedule that encouraged scholarly pursuits in a tangible way. The medical school also increased its funding for summer projects, and created opportunities for students to build scholarly skills such as poster creation, oral presentation of scholarly work, and critical reading of the literature.

Eight years after its inception, the Scholarly Concentrations Program at AMS remains an elective program with a strong commitment to cross-disciplinary work. The students who enter the program are passionate, energetic and engaged. The faculty who mentor them are dedicated to student development. I believe that the program has been successful because it meets a set of real needs; for our students to remain the well-rounded individuals we accepted to medical school, for our faculty to experience the rejuvenation that accompanies work with enthusiastic mentees, and for the next generation of physicians to contribute new and exciting knowledge to the world of medicine, clinical research, and beyond.

Emily Green, MA
Director of Student and Faculty Development
Directors of the Scholarly Concentrations

Advocacy and Activism
Esther J. Entin, MD
Elizabeth Tobin-Tyler, JD, MA

Aging
Lynn McNicoll, MD
Renee Shield, PhD

Caring for Underserved Communities
Joseph Anthony Diaz, MD, MPH
Fadya El Rayess, MD, MPH

Contemplative Studies
Ellen Flynn, MD
Catherine Kerr, PhD

Disaster Medicine
Selim Suner, MD, MS

Global Health
Timothy Empkie, MD, MPH
Jennifer Friedman, MD, MPH, PhD
Delma-Jean Watts, MD

Health Policy
Eli Adashi, MD, MS
Michael Lee, MD, MS

Integrative Medicine
Robert Heffron, MD
Catherine Kerr, PhD

Medical Education
Richard Dollase, EdD

Medical Humanities and Ethics
Jay Baruch, MD
Michael Felder, DO, MA

Medical Technology and Innovation
Selim Suner, MD, MS
Gregory D. Jay, MD, PhD

Physician as Communicator
Teresa L. Schraeder, MD

Women's Reproductive Health
Melissa Nothnagle, MD, MSc
Rebecca Allen, MD, MPH