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The Vanderbilt University School of Medicine is firmly committed to training future leaders and scholars in medicine. This includes the ability to recognize and understand the various challenges facing medicine as well as the vision and skill to address these challenges. That’s why we’ve created the Emphasis Program, an opportunity for our students to acquire specialized knowledge and experience in a focused area of their choosing.

The Emphasis Program is a unique mode of self-directed study which takes place during the first two years of medical school. We match the students’ areas of interest with those of committed faculty mentors, providing them the opportunity to draw from seasoned professionals. Students cultivate knowledge and skill through these mentorship experiences, as well as hands-on research and study in desired areas of focus.

There are nine Emphasis areas in which students can choose projects: Biomedical Informatics, Patient-Oriented Research, Laboratory-Based Biomedical Research, Healthcare and Public Health Research and Management, Law and Policy, Community Health Initiatives and Health Outreach, Global Health, Medical Humanities, and Medical Education. Students choose their areas, mentors, and projects during the fall semester of first year, then use the spring semester to acquire general knowledge and skills within their Emphasis area. During this semester, they also work with mentors to design their studies. All students devote eight weeks to their projects during the summer between first and second year while being supported by an Emphasis stipend. Projects are completed during the second year and, in the spring, students present their work either as posters or oral presentations at our Spring Emphasis Forum.

Students who are part of our Medical School Scientist Training Program are also featured in this publication. By the time they have completed the second year of medical school, these students will have selected the research areas that will lead to their doctoral degrees in biomedical research. The abstracts they have provided will serve as roadmaps for their future full-time doctoral studies.

In this publication, you will find abstracts of all of the projects carried out by the Class of 2010. The broad range of projects reflects the diversity of interests our students bring with them to medical school. We are tremendously proud of their accomplishments and hope that this experience has been a rewarding first step on the path to leadership and scholarship.

In devising the Emphasis Program, Vanderbilt University School of Medicine sought to channel the diverse skills and passions of our students into the pursuit of scholarship and leadership. Believing that this aim is best achieved in the context of a relationship with a mentor, we sought the assistance of faculty in many different disciplines across the medical school, the university, the community, the country and the globe. The response has been extraordinarily generous, both in terms of time and commitment. Each student has been able to work closely with a mentor for the duration of the program, spanning the first two years of medical school and including eight weeks during the intervening summer. As Director of the Emphasis Program, I want to express my thanks to those who so willingly accepted the responsibility of mentoring these students. The quality of the work reported in this volume is evidence of the effectiveness of this collaboration.

These 103 abstracts represent 13 oral presentations and 90 posters that were presented at the Emphasis Forum at Vanderbilt University on April 21st and 22nd, 2008. 97 of these abstracts represent the work of students who entered the Emphasis Program in the fall of 2006; 6 abstracts describe research performed by students in Vanderbilt’s Medical Scientist Training Program. Consistent with the aims of the Emphasis Program, the topics covered in these abstracts are wide ranging. Students explored innovative projects as diverse as medical informatics and healthcare policy. Students carried out complex, cutting-edge laboratory investigations and undertook projects on healthcare delivery in developing countries and among the urban poor. Many of these projects will be reported at scientific meetings and in peer-reviewed publications. Some students plan to continue work on their projects as they move into the next phase of their medical education. Others may hand their projects off to the next class entering the program. Regardless of the future direction these projects take, it is clear that the collaboration between students and mentors has provided significant benefit to students, faculty and the advancement of knowledge. For many, the opportunity to work closely with a faculty mentor over the past 18 months has forged a relationship that will endure in the coming years.

The Emphasis Program is the result of many years of discussion and planning. Once initiated, refinement has continued as we have learned from the experience of students and their mentors. However, if we are to judge from the work presented herein, the overarching goal of nurturing scholarship and leadership in our students has already been successful.
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1) Developing, evaluating and refining in three general areas of biomedical
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care ranging from computer programs that alert physicians about patient problems to tools that process radiologic images or assist basic scien-
tists with bench research.

The student’s educational focus is in three general areas of biomedical informatics:
1) Developing, evaluating and refining the computer tools available to
clinicians caring for patients.
2) Using computer applications and techniques to better enable
clinicians to assemble evidence about specific topics.
3) Managing biologic or genomic information in ways that supports
discovery of new therapies or that
guides basic science research.

“The Emphasis Program allows students to exchange knowledge among themselves, our faculty, and our graduate students, in a way that will sharpen the skills of all three groups.”

Kevin Johnson, MD, is an Associate Professor and
Vice Chair of Biomedical Informatics with a joint
appointment in the Department of Pediatrics. He has
been an active participant in the informatics efforts of
many national organizations including the Institute of
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tion, the American Board of Pediatrics; the American Infor-
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Association (chair); and the American Academy of Pedi-
atrics’ Steering Committee on Clinical Information Tech-
nologies. His research areas are electronic prescription-
writing systems development; the uses of advanced
computer technology, including the World Wide Web, personal digital assistants, and pen-based computers in
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Kevin Johnson, MD

Emphasis Journal 2008

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scientific field that deals with
the storage, retrieval and
optimal use of biomedical informa-
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RESULTS
A convenience sample of 130 VUMC emergency department patient encounters were obtained from July 2007 to January 2008. A communication barrier was reported in 7 instances leaving 123 valid encounters. Of those, 15 (12%) reported an instance of missing information. The most commonly reported missing item were old patient records, with 8 (53%) reported cases. A majority of the encounters (73%) were reported as unlikely to affect the patient's well-being.

CONCLUSIONS
The preliminary data suggests that in the opinion of the treating emergency department physician, most missing information encounters are unlikely to affect patient care.

ACKNOWLEDGEMENTS
Dominik Aronsky, MD, PhD (mentor), Department of Biomedical Informatics, Akshay Shah, and David Chunn.

APPLICATION OF GENETIC SEARCH TO SEQUENCE TAGGING ALGORITHMS IN SHOTGUN PROTEOMICS
DAR MURPHY
Biomedical Informatics

BACKGROUND:
Shotgun proteomics is a technique used to identify polypeptides from complex mixtures. This has a range of useful applications, including the identification of disease proteins from tissue lysates. In order to make these identifications possible, however, a number of steps must be taken that result in compound interpretation and room for error.

OBJECTIVES:
Using datasets from shotgun proteomics, we attempt to maximize the number of polypeptide identifications by applying a search technique called genetic search.

METHODS AND MATERIALS:
Three datasets were used, consisting of ms/ms spectra from three different complex protein samples. The first dataset was obtained from 49 asorted human proteins from Sigma Aldrich (St. Louis, MO), which was analyzed by Amy Ham and Kristin Cheek of the Mass Spectrometry Research Center. Another was a whole yeast cell lysate of S. cerevisiae collected by the students of Dr. Andrew Link in the LC-MS/MS section at the 2006 CSHL Proteinomic course in July of 2006. The final dataset was a hydrogen-potassium ATPase which was an RPLC separation of proteins from gastric vesicles provided by Kathy Murray.

RESULTS:
The results of the genetic search runs showed that each sample (yeast, sigma 49, and H+/K+ ATPase) had different results for an optimal solution, but each experiment ended with the highest possible number of tagged spectra being created.

CONCLUSION:
The analyses of these three datasets show that genetic search is an effective tool to create the highest number of tagged spectra using a spectrum tagging program.

ACKNOWLEDGMENTS:
David L. Tabb, MSRC, and Matthew C. Chambers.

IMPROVING AMINOGYCOSIDE DOSING THROUGH COMPUTERIZED CLINICAL DECISION SUPPORT AND PHARMACY MONITORING SYSTEMS
IRA PHILLIPS
Biomedical Informatics

BACKGROUND/PROBLEM:
Aminoglycosides are broad-spectrum, narrow-therapeutic-range antibiotics used primarily for empiric therapy for severe infections with aerobic, Gram-negative bacteria. Aminoglycosides are attractive due to their low cost and relatively low emergent rate of resistant bacteria. These drugs, however, are difficult to dose. Multiple mathematically complicated dosing strategies exist with each requiring serum concentration monitoring to ensure a therapeutic, non-toxic dose (nephrotoxicity and ototoxicity).

OBJECTIVES:
To reduce the incidence of adverse drug events associated with aminoglycosides use through computational intervention during order entry and pharmacy therapeutic monitoring.

METHODS AND MATERIALS:
Two computational interventions have been developed. 1. A clinical decision support system has been inserted into the computerized physician order entry system at Vanderbilt University Hospital. This system provides guidance by suggesting a drug dose (dosing protocol, dose, and frequency) and frequency of serum level monitoring. 2. A web-based therapeudic drug monitoring application has been developed to assist the pharmacy monitor aminoglycoside utilization. The application consolidates information from multiple sources to permit the pharmacists to rapidly identify patients on aminoglycosides and those who are likely to experience an adverse drug event.

RESULTS/CONCLUSIONS:
A systematic review of the effect of these interventions is currently underway. Analysis will determine if these interventions affect the number of patients with serum aminoglycoside concentrations outside of the therapeutic range and those with declining renal function. Anecdotal evidence suggests that the computational pharmacy monitoring system has successfully identified potential patients with adverse drug events and allowed for intervention before additional adverse events occurred.

ACKNOWLEDGEMENTS:
L. Russell Waitman, PhD, Josh Peterson, MD, Cori Nelsen, PharmD, Mark Sullivan, PharmD, and Joanna Danciu.

COMMUNITY HEALTH INITIATIVES AND HEALTH OUTREACH

The Emphasis Program area of Community Health Initiatives and Health Outreach embraces health issues that disproportionately affect specific populations, especially but not exclusively underserved populations of all ages. Projects and study in this area link academic medical education with community needs. Student projects address one of the following six targeted areas of study:
1) Health risks/diseases - entities that disproportionately affect underserved populations.
2) Obstacles to health and healthcare for the underserved.
3) Socio-cultural, historical and medical aspects of caring for an underserved population.
4) The principles, approaches and skills needed by successful medical provider in an underserved community.
5) Skills and strategies that motivate patients to practice positive health behaviors.
6) Diagnosis of healthcare needs of a community and development of plans to meet those needs.

“The students who selected Community Health were, not surprisingly, advocates by nature. They demanded the support of the school in full measure, so that community people would not be left behind in the excitement over bench research or more glamorous emphasis areas.”

Barbara Clinton, M.S.W., is Director of the Center for Health Services at Vanderbilt University. Ms. Clinton is an Adjunct Assistant Professor in both the medical schools and nursing school at Vanderbilt and has worked as a counselor, a community organizer and a therapist with children. Ms. Clinton helped develop a system of alternative health services for seniors for the state of Georgia and has served as an advisor to former Vice President Al Gore, the Tennessee Commission on Aging, the National Center for Children in Poverty at Columbia University, the Appalachian Rural Science Initiative of the National Science Foundation, and several private foundations.
EVALUATING NASHVILLE COMMUNITY-BASED SUPPORT GROUPS FOR VICTIMS OF INTERPERSONAL VIOLENCE
KRUPA MAHENDRA BHOGAI
Community Health

BACKGROUND
Approximately 25%-28% of women will be abused at some point. Support services include community-based groups, which aim to empower women and help them make healthier choices.

OBJECTIVE
Evaluate Nashville support groups.

MATERIALS AND METHODS
The researcher met individually with 12 group attendees. After they completed the Rogers’ Empowerment Scale, they were interviewed about their experiences, separating responses into three “empowerment” categories: peer support, access to information, or increased self-confidence.

RESULTS
One hundred percent of women said peer support was the most valuable aspect of group. Telling their story in a non-judgmental, validating environment was powerful; many had no-one (8 or 12) or only 1 or 2 people (3 or 12) in whom they could confide. None identified as currently being in an abusive relationship, yet six had been abused in the past month, often as a result of meeting a new partner, despite the fact that they were living in a community-based setting. For 10 of 12 women, creating a safety plan was the most important step in their recovery.

CONCLUSIONS
Groups may cater to a limited but are educated with access to practical information (e.g., fixing credit). One hundred percent of women said it was most valuable to have someone they could confide. None identified as currently being in an abusive relationship, yet six had been abused in the past month, often as a result of meeting a new partner, despite the fact that they were living in a community-based setting. For 10 of 12 women, creating a safety plan was the most important step in their recovery.

METHODS AND MATERIALS
A telephone survey concerning barriers to primary care and reasons for ED use was developed and administered to BCT, uninsured/non-BTC, and insured/ non-BTC patients with prior exposure to BTC. Rates of ACSCs were obtained for Vanderbilt ED patients between 1/1/07 and 3/31/07 on the basis of ICD-9 and CPT codes.

RESULTS
Rates of ACSCs among BTC (10%), n=20) and non-BTC/uninsured (8%, n=24) were similar and less than insured (25%, n=32).

CONCLUSIONS
ACSC rates suggest that surveyed BTC patients either do not have improved access or more effective care than BTC/ uninsured patients.

REFERENCES
Available upon request.

ACKNOWLEDGEMENTS
Dr. James Powers and Mario Davidson, Vanderbilt University School of Medicine, Brandi Alexander, Lisa Brown, Sarah Edmiston, Aldenise Ewing, Elizabeth Nichols, and Barbara Clinton and Barbie Chadwick, Vanderbilt University Center for Health Services, Arnold P. Gold Foundation, YWCA Nashville, Morningstar Organization, Brentwood United, and Sally Rogers, ScD, Boston University.

AMBULATORY-CARE- SENSITIVE EMERGENCY DEPARTMENT USE AMONG LOW-COST MEDICAL HOME PATIENTS
MARIA CARLO
Community Health

BACKGROUND/PROBLEM
Rates of hospitalization for ambulatory care-sensitive conditions (ACSC, non-emergent or primary-care-treatable) are indicators of access to and effectiveness of primary care. The medical home model has been shown to improve health outcomes, decrease emergency department (ED) visits, and decrease the cost of care. An assessment of whether Bridges to Care, a program that links Nashville’s uninsured population to a medical home, minimizes ED visits for ACSCs is needed, as well as an explanation for why patients with medical homes use EDs for ACSCs.

OBJECTIVES
The objectives of this study are: 1) To quantify rates of ACSCs among BTC, non-BTC/uninsured, and insured patients, and 2) To determine why patients presented with a medical home utilize EDs for ACSCs.

METHODS AND MATERIALS
Parents and children were interviewed to find out their opinions on physical fitness. Children at two schools were then recruited to take part in the evaluation of the fitness promotion program. Paired analysis will be used to compare BMI, physical activity outside school, and cardiovascular fitness of the children.

RESULTS
We interviewed 24 parents and 27 children between 4 and 9 years of age. The reported average daily level of moderate to vigorous activity (MVPA) during the weekend exceeded the one hour recommendation for all children. The recommendation of less than two hours of sedentary activity was only met by 3/25 children on the weekend and 16/25 children during the week. The barriers to physical activity reported by most parents were financial constraints, schedule conflicts and lack of programs.

CONCLUSIONS
The program is needed in the community and will eliminate some of the reported barriers to physical activity. The results of the post-intervention physical fitness survey will demonstrate the effectiveness of the program.

REFERENCES
Available upon request.

ACKNOWLEDGEMENTS
Suzanne Phipps, MPH, Privacy Office, and Mark Santiago, BA, Vanderbilt University.

DESIGNING AND ASSESSING THE EFFICACY OF A FITNESS PROMOTION PROGRAM
ROY KIERBERNE
Community Health

BACKGROUND/PROBLEM
Data shows that 18.8% of children between the ages of 6–11 were overweight in 2003–2004, with a comparable amount being at risk for becoming overweight. This high incidence of obesity may be due to increased fat consumption coupled with an increase in sedentary behaviors.

OBJECTIVES
To interview parents and children, then design and evaluate the efficacy of a fitness promotion program.

METHODS AND MATERIALS
A telephone survey concerning barriers to primary care and reasons for ED use was developed and administered to BCT, uninsured/non-BTC, and insured/non-BTC patients with prior exposure to BTC. Rates of ACSCs were obtained for Vanderbilt ED patients between 1/1/07 and 3/31/07 on the basis of ICD-9 and CPT codes.

RESULTS
We interviewed 24 parents and 27 children between 4 and 9 years of age. The reported average daily level of moderate to vigorous activity (MVPA) during the weekend exceeded the one hour recommendation for all children. The recommendation of less than two hours of sedentary activity was only met by 3/25 children on the weekend and 16/25 children during the week. The barriers to physical activity reported by most parents were financial constraints, schedule conflicts and lack of programs.

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The program is needed in the community and will eliminate some of the reported barriers to physical activity. The results of the post-intervention physical fitness survey will demonstrate the effectiveness of the program.

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ACKNOWLEDGEMENTS
Barbara Clinton and Abbey Baird, Vanderbilt University, Natasha Halasa MD, Vanderbilt University School of Medicine, Julie Nuddifer, Fun Company, and Vanderbilt Undergraduate CATCH employees.

UNPLANNED PREGNANCIES AND FUTURE NEEDS OF WOMEN INCARCERATED AT AN URBAN JAIL
KRISTY KUMMEROW
Community Health

BACKGROUND/PROBLEM
Unintended pregnancy is a significant public health problem. Incarcerated women have increased rates of past unintended pregnancy than the general population and their pregnancies are often high-risk due to substance use and inadequate prenatal care.

OBJECTIVES
1) To characterize the past unplanned pregnancies of women incarcerated at a Nashville jail. 2) To identify appropriate jail-based interventions to help women prevent future unplanned pregnancies.

ACKNOWLEDGEMENTS
Tamarah Callahan, Vanderbilt University Medical Center, Jeff Blum, Ruby Joyner, Theresa Scott, Barbara Clinton, Barbie Chadwick, Vanderbilt University, Dr. James Powers and Mario Davidson, for their assistance in this project.

PARENTAL SUPPORT IN- Terventions in the teNnessee JAIL: StRess Persists
ALANNA PATSIOSKAI
Community Health

BACKGROUND
Parents’ experience with preterm births managed in the neonatal intensive care unit is highly stressful. Parents’ emotional reactions may negatively influence parent-infant relationship and infant development.

OBJECTIVES
This study aims to evaluate the short term effectiveness of a parental support intervention in the NICU offered through Parents Reaching Out, a peer support group.

MATERIALS AND METHODS
Parents of NICU patients born at less than 32 weeks gestation or less than 1500gm were recruited to participate. An initial assessment (T1) was made within two weeks of NICU admission (Postnatal Admission Risk Assessment Schedule, PANAS, and Neonatal Unit Parental Stressor Scale, NUPSS). The same assessments were made between four and six weeks after admission, but prior to discharge (T2). After completing the study, participation in PRO was considered the intervention group, participants who did not participate were considered controls.

RESULTS
A convenience sample of 14 parents participated in the study: 10 parents engaged with PRO, 4 parents did not. At T1, parents in the intervention group had greater negative affect (p <0.1, PANAS scores), less positive affect (p<0.05, PANAS scores) and higher stress levels (p <0.001, NUPSS) than controls. Negative affect at T1 was positively correlated with total stress (R2 = 0.713, NUPSS). Stress levels were essentially unchanged in parents participating in PRO and higher stress levels remained on all of their NUPSS subscales (socioc-pal, illness-treatments, role with infant) when compared to controls. There were no significant differences between

REFERENCES
Available upon request.
initial and final NUPSS assessments in both groups. Top stressors for parents included physical separation from their child as well as perceived infant pain.

**Conclusions**
Parents with higher stress, lower positive affect and higher negative affect participate in support groups. Support groups can intervene to help parents especially with regard to the perception of infant pain. PANAS is an easily adaptable tool for use in the NICU and could be used for screening parents who may need extra attention and support.

**References**
Available upon request.

**Acknowledgements**
Dr. Brian Carter, Vanderbilt University Medical Center, Sherry Bennett, Director of Outreach Services, Parents Reaching Out, Barbara Clinton and Barbie Chadwick, Community Health, and The Arnold P. Gold Foundation.

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**Global Health**

The Global Health focus area provides students with the opportunity to expand their knowledge of and have an impact on health issues of international significance through the implementation of research projects in other countries. Potential projects span a broad range of current themes in global health, from medical sciences and clinical investigation to socio-cultural correlates of health and health care delivery. Participation in a Global Health elective and other directed study provides students with the foundation necessary for future work as international clinicians and researchers, particularly in resource limited settings.

“**The primary objective of the Global Health component of the Emphasis program is to nurture a growing number of students interested in global health issues, helping them to assess and understand some of the most pressing public health issues of our time in their socio-economic and culturally specific contexts. This program serves to introduce these students to the fundamental principles of service, research, planning, and management methodology in resource-limited settings.**”

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**Sten Vermund, MD, PhD**
Professor of Pediatrics, Amos Christie Chair in Global Health, Director of the Institute for Global Health at Vanderbilt, and the Principal Investigator for the HIV Prevention Trials Network (HPTN), funded by the National Institutes of Health (NIH) Division of AIDS (DAIDS). Dr. Vermund has been conducting HIV research domestically and internationally since 1985. His research focuses on infectious disease epidemiology and HIV prevention. He founded the Centre for Infectious Disease Research in Zambia (CIDRZ) in 2000, now a $34 million per year research and PEPFAR enterprise. In 2007, he founded Friends in Global Health, LLC, affiliated with Vanderbilt, to spearhead HIV care and treatment in Mozambique. Nature reported in 2008 that Dr. Vermund ranked third for the number of NIH grants given to any principal investigator in 2007.
DECREASED ALLERGIC RESPONSE IN MICE EXPOSED TO RESPIRATORY SYNCTIAL VIRUS DURING THE NEONATAL PERIOD

BRYAN HARTLEY AND STEPHEN SCHLEICHER

BACKGROUND/PROBLEM
Respiratory syncytial virus (RSV) is one of the most common respiratory pathogens in infants and young children. These frequent infections are currently believed to predispose infants to asthma and allergies as adults if the infection is severe enough. However, as illustrated in previous studies, exposure to certain molecular antigens at a young age can actually desensitize the immune system to allergens and thus to allergic asthma (Hygiene Hypothesis). Interestingly, the most commonly accepted antigen to induce this immune modulation is the bacterial lipopolysaccharide (LPS). LPS produces its effect on the immune system through a certain membrane receptor, Toll Like Receptor 4 (TLR4). Like LPS, RSV activates TLR4 through a membrane-bound protein called the F protein. Thus, we hypothesize that RSV infection could also lead to modulation of the immune response against allergic disease later in life.

OBJECTIVES
To assess whether exposure of neonatal mice to RSV can mitigate the response to allergens as an adult.

RESULTS
Ovalbumin-specific serum IgE (Fig 1) and IgG1/ IgG2a (Fig 2) ratios were lower in infants that had been exposed to RSV early in life compared to mice exposed to PBS.

CONCLUSIONS
Contrary to current literature, our data indicate that exposure of neonatal mice to RSV decreases the allergic response later in life—corroborating the Hygiene Hypothesis. Our mice had lower titers of both IgE and IgG1/IgG2a ratios, suggesting that the immune system produced less of a Th2 response and more of a Th1 response.

ACKNOWLEDGMENTS
John V. Williams, Sten Vermund, and Peter Wright, Vanderbilt University School of Medicine, Fernando Polack, Florencia Delgado, Fundación INFANT, Buenos Aires, Argentina, and Johns Hopkins University.

PUBLIC HEALTH INFORMATION FOR THE IMMUNODEFICIENT
RYAN HUTCHINSON

BACKGROUND
In developing countries a large portion of human disease is easily preventable, caused by inadequate resources and lack of education. My project grew out of a want to address these issues in Fort Liberte, Haiti and became generalized to all areas where illiteracy is a barrier to conveyance of information about preventable disease.

METHODS AND MATERIALS
Materials were developed in picture form on these topics: solar water sterilization (SoDis), basic wound care, mosquito prevention, oral rehydration, HIV transmission prevention, the importance of prenatal care, basic sanitation and basic infectious disease prevention. These will then be used in three phases: 1. A proof-of-efficacy experiment using children from the University School Nashville -- Middle-school-aged children at USN will be given the materials and asked to interpret them prior to them being finalized and sent to Haiti. 2. Field testing of the materials with “Friends of Fort Liberte” and “Building Goodness” in Fort Liberte, Haiti – Materials will be distributed to people coming to the free clinic in Fort Liberte and they will be given a health attitudes survey during the annual trip there of the group “Friends of Fort Liberte.” The same process will be repeated the following year, looking for changes in attitudes of patrons of the clinic. 3. The development of an open-source, free web applet for the promotion and distribution of more materials – Using code originally designed to create greeting cards (http://cards.yandex.ru/).html) we will create a free, web-based applet for expanding and sharing the materials will be created.

RESULTS/CONCLUSIONS
Unavailable at this time.
BACKGROUND
It is estimated that 565,000 children die each year in Pakistan, mainly from preventable and treatable diseases. Pakistan, as part of the Millennium Development Goals, has pledged to reduce childhood mortality by two-thirds by 2015. However, progress has been slow. Families of ill children and children continue to underutilize the current healthcare system. Despite incentives designed to improve healthcare access and utilization. 

OBJECTIVES
To identify factors that influence families of sick neonates in the peri-urban slums of Karachi to seek healthcare as well as identify the challenges and barriers to healthcare for these families.

METHODS AND MATERIALS
This study was conducted in three peri-urban slums throughout Karachi. Lady Health Workers interviewed primary caregivers of ill children brought to Agha Khan University (AKU) health clinics within the first 60 days of life. Caregivers were asked questions regarding background and demographic information, general health-seeking behaviors, antenatal care, intra- and post-partum care, and immediate newborn care. In addition, caregivers provided information regarding factors which influenced them to seek care for the current health matter as well as reasons for refusing care earlier in the illness and/or refusing hospital admission despite transport and fees donated. Skin scratch test (SST), caregivers were asked questions regarding their knowledge of existing healthcare facilities and awareness of the programs and incentives offered. Data was entered using FoxPro and is currently being analyzed utilizing SPSS.

RESULTS
Results are pending.

CONCLUSIONS
It is hoped that the findings of this study will aid healthcare providers in reducing childhood mortality, especially in slum communities with the worst health outcomes.

ACKNOWLEDGEMENTS
Dr. Anita Zaide, Department of Pediatrics and Microbiology, the Agha Khan University.

EVALUATION OF NEONATE REFERRAL CHARACTERISTICS AND CAUSES OF IN-HOSPITAL MORTALITY AT A CHILDREN’S HOSPITAL IN COSTA RICA
CAITLYN CHRISTINE MOONEY
Global Health

BACKGROUND/PROBLEM
Costa Rica witnessed a dramatic decline in infant mortality particularly between 1970-1980 (68/1000 to 20/1000 live births) attributed to public health initiatives and increased access to services through the developing social security system. Currently, mortality is 9-12/1000 live births, and an estimated 40% of these are still preventable. El Hospital Nacional de Niños (HNN) in Costa Rica’s major referral center and the only free standing children’s hospital. Because this center does not have a maternity ward, all patients admitted to the NICU are outpatients. Thus, admissions reflect a national pattern for referrals and facilitate the identification of predominant causes of morbidity and mortality.

OBJECTIVES
The study will describe referral characteristics and causes of mortality of neonates admitted to HNN to identify modifiable risk factors for neonatal deaths and to facilitate implementing transport protocols to decrease morbidity and mortality.

METHODS AND MATERIALS
A retrospective review of the records of all neonates admitted to HNN that died during 2005 was performed. The variables were divided into categories including: demographic identifiers; stabilisation measures performed prior to admission to HNN; assessment at HNN; and factors related to mortality. Descriptive data will be analyzed to determine major causes of morbidity and mortality and will be compared to rates in the United States.

RESULTS
It was found that 18.8% of patients transported to HNN died during hospitalization. Of these 36.2% were premature and 5.2% of their mothers reported zero prenatal visits.

CONCLUSIONS
Outpatient mortality rates of infants admitted to the NICU in Costa Rica are high compared to more developed countries, although they have always been higher than infant rates independent of the country’s development. Further analysis needs to be done to characterize neonatal morbidity and mortality in HNN and identify risk factors for mortality.

ACKNOWLEDGEMENTS
Mario Rojas MD, MPH, Vanderbilt Children’s Hospital, Department of Neonatology, Hospital Nacional de Niños, Costa Rica.

IMPROVING MALARIA DIAGNOSIS, TREATMENT AND PREVENTION AT THE LWALA CLINIC, RONGO, WESTERN KENYA
FREDERICK OTIENO OCHIENG’
Global Health

BACKGROUND/PROBLEM
Malaria is the most common diagnosis at the clinic, especially among children below 5 years old who are the majority of the total cases. Because this center does not have a maternity ward, all patients admitted to the NICU are outpatients. Thus, admissions reflect a national pattern for referrals and facilitate the identification of predominant causes of morbidity and mortality.

OBJECTIVES
The study will describe referral characteristics and causes of mortality of neonates admitted to HNN to identify modifiable risk factors for neonatal deaths and to facilitate implementing transport protocols to decrease morbidity and mortality.

METHODS AND MATERIALS
A retrospective review of the records of all neonates admitted to HNN that died during 2005 was performed. The variables were divided into categories including: demographic identifiers; stabilisation measures performed prior to admission to HNN; assessment at HNN; and factors related to mortality. Descriptive data will be analyzed to determine major causes of morbidity and mortality and will be compared to rates in the United States.

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ACKNOWLEDGEMENTS
Mario Rojas MD, MPH, Vanderbilt Children’s Hospital, Department of Neonatology, Hospital Nacional de Niños, Costa Rica.

METHODS AND MATERIALS
Patients suspected of malaria by the clinical officer or nurses were treated as usual and those who consented had a finger-stick performed. Rapid Diagnostics Tests (RDTs) for Plasmodium falciparum were done. Each RDT kit cost $2 and tested for Histidine rich Protein II. Thin and thick peripheral smears were also prepared and were done using 4% Giemsa solution. College and high school friends in the USA raised money to buy mosquito nets for malaria prevention in Lwala.

RESULTS
One hundred twelve slides were pre- pared. 136 RDTs were prepared, 11 of which were from healthy, asymptomatic people. 35 of RDTs were positive (26%). In collaboration with the MoH, the clinic acquired 200 nets each at $0.46 to sell to mothers of children below 5 years old at $0.75 as per guidelines. Retail price per net is $7. With a microscope donated from Vanderbilt Health Center, our laboratory is functioning and the MoH now supplies us with ACT anti- malaria medications.

CONCLUSION
Many patients who were thought to have symptoms due to malaria actually tested negative.

PREVALENCE OF DENGUE AMONG ACUTE FEBRILE PATIENTS IN YURIMAGUAS, PERU
ALAN POWERS
Global Health

BACKGROUND
Dengue virus is one of many etiologies of fever caused by dengue virus and by various bacteria and viruses. It is caused by flavivirus transmitted by Aedes aegypti and is found in tropical areas of the world. Dengue outbreaks in northern regions of Peru have in recent years emerged as a major concern to the local health ministries.

OBJECTIVES
To quantitatively assess the prevalence of Dengue virus among a large population of patients presenting with acute febrile syndrome.

ACKNOWLEDGEMENTS
Sten Vermund, MD, PhD, Director Institute for Global Health; Peter Wright, MD, Director, Pediatric Infectious Disease; Edward Gotuzzo, MD, Director, Instituto de Medicina Tropical “Alexander von Humboldt,” Universidad Peruana Cayetano Heredia; Salim Vialcoremo, MD, Hospital Santa Gema, Yurimaguas, Peru; Sapna Mehta, PhD, Research Fellow, Pediatric Infectious Diseases.

METHODS AND MATERIALS
Patient consent was obtained from participants, and acute and convalescent blood samples were taken from patients presenting with an acute febrile syndrome. Blood samples were tested for over 30 viruses and bacteria by ELISA serology, viral isolation, and PCR. Two forms were used to record demographic data and 61 clinical signs and symptoms upon admission. The addresses of samples with a confirmed diagnosis of Dengue were mapped onto 11 epidemiological zones within the town of Yurimaguas.

RESULTS
A total of 2113 samples were taken from May 2000 to February 2007. Of those samples, 1134 were taken from patients presenting with acute symptoms, and 979 were taken upon convalescence. 234 samples showed infection with Dengue, confirmed via ELISA serology (n=169), viral isolation (n=156), and viral PCR (n=29). 171 samples had identifiable strains of Dengue: Dengue 3 (n=129) and Dengue 1 (n=42). Within the town of Yurimaguas, Zones 5, 6, and 7 showed the highest number of Dengue cases, collectively contributing 53.4% (n=125) of the total cases.

CONCLUSIONS
Monthly fluctuations of confirmed Dengue cases mirror those of total febrile patients - ongoing analysis examines statistical significance and the degree of endemicity.

ACKNOWLEDGEMENTS
Sten Vermund, MD, PhD, Director Institute for Global Health; Peter Wright, MD, Director, Pediatric Infectious Disease; Edward Gotuzzo, MD, Director, Instituto de Medicina Tropical “Alexander von Humboldt,” Universidad Peruana Cayetano Heredia; Salim Vialcoremo, MD, Hospital Santa Gema, Yurimaguas, Peru; Sapna Mehta, PhD, Research Fellow, Pediatric Infectious Diseases.

RESULTS
Seventy-eight percent of the sampled population (n=244) were found to be infected with at least one soil-transmitted helminth. (Ascaris lumbricoides (43%), Hookworm (25%), Trichuris trichiura (6%), and an uncharacterized larva (8%)). Additional results are forthcoming.

CONCLUSIONS
Given the low sensitivity and specificity of the direct smear technique, the prevalence of 78% is likely a gross underestimate. A regular de-worming program at the primary schools is needed. In a

PREVALENCE OF SOIL-TRANSMITTED HELMINTH INFECTION AMONG SCHOOL-AGED CHILDREN IN LWALA, KENYA
JOHANNA RIESEL
Global Health

BACKGROUND/PROBLEM
Parasitic soil-transmitted infections affect two billion people worldwide, taking their greatest toll on undernourished, school-aged children affecting their growth and academic achievements.

OBJECTIVES
We sought to 1. Assess the prevalence of soil-transmitted helminth infection in primary school-aged children in Lwala, Western Kenya and 2. Initiate a default deworming program between the local clinic and the two surrounding primary schools.

METHODS AND MATERIALS
At School A, (n=150), 100 students were selected at random to participate. At School B (n=450), 20 students from each standard, 2-8, were chosen at random for participation. All participants were given a glove, plastic applicator stick, stool sample container, and parental consent form written in Kikuyu. The author viewed each sample twice within 7 hours of the stool passing under a field microscope using the direct smear technique. All participants were measured for height, weight, and arm circumference. All students at both schools (n=600) were dewormed with 500mg mebendazol.

RESULTS
Twenty-five percent (n=14) were found to be infected with at least one soil-transmitted helminth. (Ascaris lumbricoides (43%), Hookworm (25%), Trichuris trichiura (6%), and an uncharacterized larva (8%)). Additional results are forthcoming.

CONCLUSIONS
Given the low sensitivity and specificity of the direct smear technique, the prevalence of 25% is likely a gross underestimate. A regular de-worming program at the primary schools is needed. In a
setting of increased infection rates, the direct technique was economical and adequate to determine helminthic infection as a major burden.

ACKNOWLEDGEMENTS
Dr. Peter Wright (mentor), Dr. Christopher Greetley, Dr. Sten Vermund, the Walter Reed Foci Foundation in Kuyumba, the Ochieni family, and the people of Iswala.

DECREASED RESPONSE TO ALLERGENS IN MICE EXPOSED TO RSV IN THE NEONATAL PERIOD
STEPHEN SCHLEICHER
Global Health

BACKGROUND/PROBLEM
Respiratory syncytial virus (RSV) infects infants and young children more frequently than any other respiratory pathogen. These infections are thought to predispose to allergic asthma later in life. However, exposure to molecular antigens at an early age can actually desensitize the immune system to allergens. The most commonly accepted antigen to induce this immune modulation is the bacterial lipopolysaccharide (LPS), which produces its effect on the immune system through Toll-like Receptor 4 (TLR4). RSV also activates TLR4, so it may have similar effects on immune system development.

OBJECTIVE
To determine whether RSV exposure in neonates can induce the immune response against allergic stimuli later in life.

METHODS AND MATERIALS
One day old BALB/c mice were injected intranasally (IN) on days 1, 3, and 5 with PBS (control), RSV (10^3 pfu), or LPS (1μg). Three weeks later (on day 24) mice were sensitized and subsequently with PBS (control), RSV (10^3 pfu), or LPS (1μg). A two-fold increase in allergen response against allergic stimuli later in life.

RESULTS
Ovalbumin-specific serum IgE and IgG1/IgG2a ratios were lower in mice that had been exposed to RSV early in life compared to mice exposed to PBS.

CONCLUSIONS
The decreased IgE production and low IgG1/IgG2a ratios, evidence of a Th1 response, indicate that mice exposed to RSV had a decreased allergic response to ovalbumin, similar to that observed after exposure to LPS. The potential desensitizing effect of RSV primary infection should be considered for the development of vaccines against the pathogen in the future.

ACKNOWLEDGEMENTS
John Williams, MD, Peter Wright, MD and Sten Vermund, MD, Vanderbilt University Medical Center, Fernando Polack, MD and Florencia Delgado, Fundación INFANT, Buenos Aires, Argentina.

PEDIATRIC HEART DISEASE IN NIGERIA: BARRIERS TO CARE, REASONS FOR HOPE
JOHN W. SCOTT
Global Health

BACKGROUND
Each year an estimated 45,000 children are born with congenital heart disease (CHD) in Nigeria, with a third dying before reaching one year of age. The Bethesda Heart Centre (BHC), a pediatric cardiology clinic run by Save A Child’s Heart Nigeria (SACHIN), evaluates children referred from other Nigerian medical centers and recommends them for surgery at collaborating surgical sites in Israel, India, and Ghana.

OBJECTIVES
To gain a first-hand account of challenges in treating pediatric heart disease in Nigeria.

METHODS AND MATERIALS
Between May and July 2007, the role of the SACHIN in treating CHD was investigated by observing the following clinical and laboratory findings in Iswala, Nigeria: patient examinations, records, electrocardiograms, echocardiograms, and available palliative extra-cardiac surgery.

RESULTS
Generalized barriers to care of CHD in Nigeria include political instability, unreliable infrastructure, prohibitively high costs to available treatment, lack of necessary medical equipment and trained medical personnel, and a perceived inability to effectively overcome such barriers. However, observed progress warrants further hope in the continued efforts of SACHIN. For example, over 400 children are enrolled at BHC, with 200 having undergone corrective surgery. Additionally, collaboration with Israeli medical centers has permitted short and long-term training programs for medical personnel as well as assistance in identifying sources of necessary medical equipment. Site renovations will allow for future surgeries to take place in Iswala.

CONCLUSIONS
Despite numerous barriers to care, such as political instability and lack of reliable infrastructure, SACHIN’s effective collaboration with the international medical community continues to provide many reasons for hope.

ACKNOWLEDGEMENTS
Dr. John L. Tarpley, Department of Surgery, VUMC, Dr. Samuel I. Omokhodion, Dept of Pediatrics, University College Hospital, Ibadan, Nigeria.

EXAMINING AND EVALUATING PALLIATIVE CARE AT UNOP IN GUATEMALA CITY
LORI SUBLIGHTON
Global Health

BACKGROUND
Unidad Nacional de Oncología Pediátrica (UNOP) is the single center in Guatemala providing conventional cancer treatment to children with cancer. In August 2005, Dr. Silvia Rivas started a palliative care program at UNOP. An integrated model is used at the moment of diagnosis in high risk patients. This allows the treatment of suffering from the beginning and throughout the disease. Dr. Rivas would like to evaluate the care being provided, but does not have an evaluation method.

OBJECTIVES
To research pediatric palliative care and examine the program at UNOP. To design a multilayered system of evaluating their current program.

METHODS AND MATERIALS
A literature review of palliative care for pediatric Revisited and of palliative programs in Latin America was performed. Additionally, the researcher spent three weeks in Guatemala working at UNOP with Dr. Rivas. A multilayered evaluation system was created based on the model used at Vanderbilt Children’s Hospital.

RESULTS
Palliative Care at UNOP includes managing pain, providing home visits, and providing support and assistance to the families. The multilayered evaluation system has three components: retrospective, palliative care chart review, end-of-life care staff survey, and family survey.

CONCLUSIONS
The palliative care program serves an integral role at UNOP. Its integrated approach to high risk patients relieves suffering and restores the Mayan belief system (22% of patients are of pure Mayan Indian descendants). Data collected with the evaluation tools designed will allow Dr. Rivas to make sure the needs of the patients and their families are being addressed.

ACKNOWLEDGEMENTS
James Whitlock, MD and Mary J. Gilmer, PhD, MIA, APRN, CNL, Van- derbilt University Medical Center, and Silvia Rivas, MD, Unidad Nacional de Oncología Pediátrica.

EVALUATING EFFICIENCY THROUGH A COMMUNITY NEEDS ASSESSMENT OF A MEDICAL CENTER IN SIERRA LEONE
ASHLEY TAURIAC
Global Health

BACKGROUND
The New Harvest Medical Center in Bo, Sierra Leone is a small primary care and dental clinic currently raising funds for the construction of larger facilities. Before moving, the clinic administra- tors desired to better understand the clinic’s current level of success within the community in order to improve efficiency and quality of care.

METHODS AND MATERIALS
A community needs assessment involving patients and local citizens was proposed as the main method to evaluate the clinic. A fifty-one question tool surveying patient’s attitudes about the clinic’s services, common family health problems, and participant’s attitudes toward other local medical providers was designed. Two hundred adults, both users and non-users of the clinic, were interviewed.

RESULTS
Of the 200 surveyed, eighty-four received treatment from the clinic before (42%). Of these patients, approximately 42% cited a need for more medications, particularly for the most common illness. In addition, 24% suggested that the clinic and staff be enlarged and access to laboratory tests improved. Many approved of the quality of care and positive attitude of the staff. Non-patients generally valued quick, friendly service that adequately addressed their medical concerns. Among the most commonly cited family illnesses in all participants surveyed were malaria and typhoid. Participants were also concerned about fevers and skin infections.

CONCLUSIONS
Community needs assessment revealed a general concern for proper care of the most commonly encountered illnesses by providing adequate laboratory testing and medications for typhoid and malaria. In addition, many patients asked for a large facility that is both well-staffed and better-equipped.

ACKNOWLEDGEMENTS
Dr. Christine Robinson and Dr. Sten Vermund.

MENTAL HEALTH SERVICES WITHIN PRIMARY HEALTHCARE: A DESCRIPTIVE ASSESSMENT IN A POST-WAR SOCIETY
DEMETERSI TAVOLIARES
Global Health

BACKGROUND/PROBLEM
The Democratic Republic of Congo (1992-95) greatly increased the mental health needs of the population, revealing substantial deficiencies in available mental health services. Despite extensive reform of the mental health sector following the war, there has been no study focusing on current mental health needs and services according to local healthcare providers.

OBJECTIVES
To assess the status and utilization of existing mental health services in the primary healthcare sector of Bosnia-Herzegovina.

METHODS AND MATERIALS
This descriptive study utilized a survey targeting primary healthcare providers in the Zenica-Doboj canton of central Bosnia-Herzegovina. Data were collected by 24 direct interviews and 95 independently-completed written surveys. In-person interviews and written survey translation were conducted with the assistance of a local translator.

RESULTS
Forty-nine percent of study participants stated that over 66% of their patients exhibited mental health problems. Seventy-six percent of respondents stated that treatments provided to these patients have changed for the better since the war. The increased use of psychology and psychotherapies, as well as the ongoing development of Family Medicine clinics, were cited as factors contributing to the improvement of available mental health services. Fifteen percent of respondents stated that there are not adequate services available, with 28 citing insufficient facilities, insufficient staff and inadequate education of staff as significant barriers to providing adequate mental health services.
CONCLUSIONS
Currently, mental health issues appear to be prevalent among the local patient population in the Zenica-Doboj canton. While specific improvements have been made, healthcare providers cite significant persistent deficits in mental health services.

ACKNOWLEDGEMENTS
Carol Etherington, MSN (mentor), Sten Vermund, MD, Mario Davidson, PhD, Nina Hadziahmetovic, BA, Halima Hadziahmetovic, MD, and Venira Alihodzic, BA

INTEGRATING CERVICAL CANCER SCREENING IN CARE PROVISION FOR HIV-INFECTED WOMEN IN INDIA
LAURA THEARPE
Global Health

BACKGROUND
HIV-infected women are at high risk for development, progression, and recurrence of HPV-induced cervical cancer. Availability of antiretroviral therapy in developing countries prolongs lives of HIV-infected women long enough for cervical cancer to manifest and progress. India has almost a third of the world’s cervical cancers and deaths every year, and over a million women living with HIV/AIDS.

METHODS AND MATERIALS
This protocol offers a simple screening system for use in a gynecology clinic in Pune, India. Nurses perform Pap smears for women seeking treatment in the adjacent HIV clinic. A visual inspection with acetic acid (VIA) test provides on-the-spot results and allows counseling for follow-up. Colposcopically-directed biopsy, LEEP, and hysterectomy are provided. Algorithms for screening and treatment decisions guide clinical care. A screening program must be adapted to local infrastructure for effective integration into existing services. Multi-level governmental approval is essential for widespread implementation, and can be a rate-limiting step. Demonstration projects may be necessary to validate low-cost, simple approaches and improve acceptability.

RESULTS/CONCLUSIONS
To be determined. This protocol, after approval, will be implemented in STI/HIV clinics in three high-HIV-prevalence states in India. This approach could be used in low-resource areas with high cervical disease burdens. Efforts should be made to increase awareness of the importance of screening and to develop effective implementation methods. Longitudinal data should be collected to describe the program’s impact on health-seeking behaviors and disease incidence. Until HPV vaccines become widely available as primary prevention, the importance of screening and early detection of cervical cancer for high-risk HIV-infected women cannot be underemphasized.

ACKNOWLEDGEMENTS
Vikrant Sahasrabuddhe, MBBS, DrPH and Sten Vermund, MD, PhD, Vanderbilt University Institute for Global Health.

HEALTHCARE AND PUBLIC HEALTH RESEARCH AND MANAGEMENT

The student experience in the area of Healthcare and Public Health Research and Management is designed around two tracks:
1) Healthcare research and management
2) Healthcare management.

The research track is focused on hypothesis-driven investigation in a field of healthcare research, which includes clinical epidemiology and outcomes research, clinical economics and management science, clinical improvement and operations research, chronic disease and molecular epidemiology, health behavior and education, and health policy. The healthcare management track is focused on a healthcare management science internship that includes a quality improvement project. It is expected that the student will become a successful member of an active research program or clinical management team and will have a clearly defined project to be completed in the time allotted.

"The research track is focused on hypothesis-driven investigation in a field of healthcare research."

"In the Healthcare and Public Health Research and Management emphasis area, I was impressed with the students’ abilities to articulate an important question, identify an appropriate study design, implement the study with careful measurement and analyze and interpret the findings. The portfolio of projects represented the broad range of topics characterized by this area. I enjoyed the students’ passion and dedication in their work. From prevention, diagnosis, treatment and prognosis to the organization and management of health services and the health policies affecting care delivery, students’ made meaningful contributions that will improve the quality of health care and I was proud of their accomplishments."
RECURRENT PRETERM BIRTH IN TENNESSEE BETWEEN 1996 AND 2002

MICHELLE BROWN
Healthcare and Public Health Research and Management

BACKGROUND/PROBLEM
Mothers in Tennessee face birth outcomes that are among the worst in the nation. Tennessee ranks 48th for infant mortality, and preterm births can account for up to 70% of infant mortality. An important risk factor for preterm birth is a previous pregnancy that resulted in a preterm birth, and it has not been studied in Tennessee.

OBJECTIVES
To determine the rate of recurrent preterm birth in Tennessee between 1996 and 2002 and the probability of having a subsequent preterm birth for women who have had a previous preterm birth.

METHODS AND MATERIALS
Using Tennessee Birth Records, a dataset was created that included singleton births to mothers between 1996 and 2002 who had at least one prior birth. Using SSPS, the rates of birth at different gestational ages per 1000 live births were calculated for all women with a history of preterm birth. These rates were compared for those without a previous preterm birth and separately for African American and Caucasian women.

RESULTS
African-American mothers who had a previous preterm birth had a 43.6% chance of a subsequent preterm, compared to 29.6% for Caucasian mothers. A mother had a greater chance of a recurrent preterm birth as a teenager (54.1%), and the risk declined with age.

CONCLUSIONS
Mothers with a history of preterm birth have a higher risk for a subsequent preterm birth than those without a similar history. African Americans have a higher risk of recurrent preterm birth than Caucasians, and teenagers have a higher risk than women over twenty.

Acknowledgements
William Walsh, MD and Patricia Temple, MD, Monroe Carell Jr. Children’s Hospital at Vanderbilt, Richard Urban, PhD, and Robert Hodapp, PhD, Vanderbilt Kennedy Center.

EFFECTS OF AGE AND FATIGUE ON THE POST-CALL PERFORMANCES OF ANESTHESIOLOGISTS
SY-VEY CHERN
Healthcare and Public Health Research and Management

BACKGROUND
In 2003, the ACGME instituted a policy to reduce resident duty hours in response to a large body of literature on the consequences of fatigue in interns and residents. However, there is a relative paucity of similar data on older attending physicians, many of whom must work similar 24 hour shifts. From a biological perspective, aging is associated with a progressive decline in mental, physical, and behavioral functions, and lack of sleep compounds this age-related deterioration.

OBJECTIVES
To compare the post-call performance of attending anesthesiologists and younger resident anesthesiologists. We hypothesize that, after a night on-call, attendings will be impaired to a greater degree than residents when compared to baseline performance.

METHODS AND MATERIALS
A battery of previously validated cognitive and psychomotor tests was administered pre-call and post-call to anesthesiologists attending and residents in a random allocation balanced within-subjects design. The battery included tests of short-term memory (Probed Recall Memory Test, Paced Auditory Serial Addition Task) and of sustained vigilance (Psychomotor Vigilance Task), as well as survey tools to assess fatigue, sleepiness, and mood. Participants wore a wrist actigraph (motion detector to measure sleep periods) and kept a sleep log for a period that spanned the two study conditions.

RESULTS
To date, 20 participants (13 residents, 7 attendings) have been studied. The age range of participants is restricted (27–44), and there is overlap in age between the groups. Because we could not control sleep habits or on-call clinical work, there is a high degree of variability within study conditions, for example, in participants’ hours of sleep while on-call. Ultimately, any conclusions drawn will be applicable to real-world situations.

Acknowledgements
Matthew B. Weinger, MD, Thomas Carr, PhD, Steven K. Howard, MD and Dennis Malandro, PhD.

FIRST BIRTH AT AGE 45 PLUS
PAIGE FORTINSKY
Healthcare and Public Health Research and Management

BACKGROUND
Significant medical advances in the field of assisted reproduction techniques including in vitro fertilization and egg donation have enabled women of advanced age to conceive and bear children well into their fifth, sixth, and seventh decades. There is little data on women in this age group. Furthermore, the current literature does not focus on primiparous women of advanced maternal age who have utilized egg donation.

OBJECTIVES
We studied the demographic features and obstetric, delivery, and birth outcomes of 102 contemporaneous women aged 45–65 who delivered at the Chaim Sheba Medical Center between 2004 and 2007. These findings were compared to obstetrical and birth outcomes of a general Israeli population over the same time period.

METHODS AND MATERIALS
The medical files for all primiparous women aged 45 or older were obtained from the Chaim Sheba Medical Center, Tel Hashomer, Israel, Theresa Scott, MS, Department of Biostatistics, and Esther Eisenberg, MD, MPH, Department of Obstetrics and Gynecology, Vanderbilt University Medical Center.

RESULTS
The medical records of 102 women were analyzed. The mean age was 48 years. 64.7% of women were between the ages of 45 and 49 years of age, 26.5% were between the ages of 50 and 54, and 8.8% were between 55 and 65. 59.6% of these women were unmarried. There were 81 singleton, 20 twins, and 1 set of triplets. 46.1% of the women were hospitalized at some point during their pregnancy for an average of 17 days, with the median number of hospitalizations occurring during the 32nd week of pregnancy. Pregnancy complications were also recorded, with 34.3% developing gestational diabetes, 48% high blood pressure, 8.8% required cervical cerclage and 13.7% developed eclampsia or toxemia. 32.5% underwent induction of prematurity labor. And 90.2% of the women underwent Cesarean sections. 42.4% of the babies were low birthweight for their gestational age.

CONCLUSIONS
The rates of pregnancy and birth complications in these very elderly primiparous women was much greater than the corresponding rates in the general Israeli population as reported by the Israeli public health services. In summary, there were increased complications of pregnancy including increases in the rates of gestational diabetes, high blood pressure, hospitalization during pregnancy, Cesarian section, preterm birth and low birth weight babies. This data should be utilized to help primiparous women of advanced maternal age evaluate the risks of delayed childbirth.

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Self-Reported Risk Perception in HIV+ Women: Does Race Matter?
TERA FREDERICK HOWARD
Healthcare and Public Health Research and Management

BACKGROUND
HIV disparities disproportionately affect African-American women, but racial differences in risk perception, as they relate to HIV, have never been examined as potential explanations for the disparity.

OBJECTIVES
1) To evaluate associations between race, education and year of diagnosis with awareness of personal risk with regards to known HIV risk factors, condom use, and discussion of STI’s frequency and reason for being tested.
2) To understand causes of risky behavior among informed women.

METHODS AND MATERIALS
HIV + women recruited from the Comprehensive Care Center were given a 16-item risk perception questionnaire. Based on the survey results, participants were divided into focus groups.

RESULTS
Survey: A total of 129 HIV+ women completed the survey (mean age 39.9; 50 whites, 76 nonwhites; 63 HS education or less). Of the women who slept with who have sex with men, Blacks were significantly less aware of their risk (p<.014). Women college educated or more were more likely to discuss STD risk with their partners (OR = 2.07, 95% CI = (1.09, 3.94)) but no more likely to make their partners wear condoms more often. Participants diagnosed in later years reported more frequent (total*) HIV testing prior to diagnosis (OR=.18/year, 95% CI = (1.03, 1.51)). Focus Groups: Low self esteem was a reason both racial groups participated in risky behavior, despite being aware.

CONCLUSIONS
Although the research community is focused on developing new treatment strategies for HIV, prevention remains the focus of public health policy. Risk perception influences behavior and risk reduction programs should focus efforts on understanding and modifying risk perception in high risk groups.

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THE EFFECT OF SHORT INTER-PREGNANCY INTERVALS IN WOMEN OF DIFFERING AGE AT PRETERM BIRTH
ERNESTINE JIDEAMA
Healthcare and Public Health Research and Management

BACKGROUND/PROBLEM
PTB is the major cause of infant morbidity and mortality and is responsible for 1/3 of all infant deaths. Maternal age and short inter-pregnancy interval (IPI) are two important risk factors for PTB. However, an interaction effect has not yet been elucidated.

OBJECTIVES
1) Determine whether younger women with short IPI are more likely to have PTB than older women with the same intervals.
2) Conduct the same analysis in African-American women alone.

METHODS AND MATERIALS
This retrospective, historical study analyzed birth data for 1/3 of all infant deaths. Maternal age see between 1998 and 2002. Inclusion criteria were women with a prior birth, a subsequent PTB, and those with a short IPI (less than 9 months). Very preterm births and impossibly short IPIs were excluded. A logistic regression analysis was conducted and the same analysis was conducted for African-American women.

RESULTS
There was no evidence of an interaction effect (p>.05). Similar results were obtained for African-American women. Significant observations were noted at the α = .05 level when controlling for certain risk factors (R2 = .32%). Black women were 1.06 times more likely to have PTB versus white women. For every month decrease in IPI, the likelihood of PTB increased 1.5 times. Women with a ruptured placenta were 1.8 times more likely to have a PTB than those without. For every month decrease in IPI, the likelihood of PTB increased 1.5 times. Women with a ruptured placenta were 1.8 times more likely to have a PTB than women who did not. Diabetic women were 1.5 times more likely to...
have a PTB than non-diabetics. Women who had a previous PTB were 4.7 times more likely to have another one versus women who did not.

CONCLUSIONS

There is no evidence to suggest that ma-
ternal age and short IPI have an interac-
tion effect. While previous PTB was un-
able to show that younger women with short IPI are more likely to have a preterm birth than older women with the same IPI. Analysis of other risk factors mimics results of pre-
viously published data.

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INTRA-OPERATIVE COMPLETION ANGIOGRAPHY AFTER CABG

MOHAN K. MALLIPEDDI

Healthcare and Public Health Research and Management

BACKGROUND

Coronary artery bypass graft (CABG) surgery is the standard of care for severe, multi-vessel coronary artery disease. Nevertheless, CABG surgery has a 20-25% early graft failure rate. Since many factors contributing to failure arise during surgery, intra-operative detection and correction can potentially improve outcomes.

OBJECTIVES

To assess the effectiveness of intra-op-
erative completion coronary angiography in identifying graft defects and guiding appropriate revision.

METHODS AND MATERIALS

We conducted a retrospective chart review of 239 consecutive patients who underwent CABG with intra-operative completion angiography in the Van-
derbilt Hybrid OR between April 2005 and July 2006. Operative outcomes were compared.

RESULTS

A total of 517 grafts were performed. Completion angiography revealed that 82 (16%) were defective and in need of major (37, 11%) or minor revision (25, 5%). Approximately 42% of major re-
sions were to the conduit itself. Overall, 54% of all revisions were corrected by percutaneous coronary interven-
tion (PCI). On the whole, CABG with completion angiography produced statistically similar operative outcomes when compared to national averages. Among those who received completion angiography, cardiopulmonary bypass time and length of stay were extended for those who underwent revision, but major outcomes were similar to those who did not.

CONCLUSIONS

Intra-operative completion angiogra-
phy enabled detection and revision of graft defects without adversely impact-
ging perioperative outcomes. However, follow-up on our patients is necessary to determine whether this process im-
proves long-term graft patency.

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SURVEY OF ELDERLY PATIENTS REGARDING THEIR ROLE IN THE ED

LEKEDRA PAM

Healthcare and Public Health Research and Management

BACKGROUND

In recent years, growing emphasis has been placed upon soliciting the active involvement of patients in the medical decision-making process. While previ-
ous studies have investigated this process for elderly patients in nursing homes and the inpatient setting, there have been no attempts to characterize the role of elderly patients in the unique envi-
ronment of the emergency department (ED). We sought to determine whether there is a dissatisfaction among elderly patients concerning their role in the decision to be admitted or discharged from the ED.

METHODS

A survey conducted via one-on-one interviews, enrolling a cross section of patients from two nursing home and rehabilitation facilities. Respondents who were admitted from area hospi-
tals between May 18 and July 16, 2007 were enrolled between June 8 and July 19 2007. Patients were excluded if they were under the age of 65 or if their most recent hospitalization did not involve the ED.

RESULTS

Forty-one patients were enrolled in the study. Median (IQR) age was 79.0 (13.0), 75.6% were females, and 19.5% were non-white. When asked if they agreed with the ED physicians’ decision to admit them or not, 75.6% of respondents said yes, 19.5% said no, and 4.9% did not know. When asked if they were involved in that decision, 34.1% said yes, 53.7% said no, and 12.2% did not know. When asked if the ED physicians could have done a better job at asking them what they wanted to do, 9.8% of respondents said yes, 85.4% said no, and 4.9% said they didn’t know. When asked if ED physicians could have done a better job at giving information about why deci-
sions were made, 7.3% said yes, 85.4% said no, and 7.3% said they didn’t know.

CONCLUSION

In this preliminary study, we found that while many elderly patients report that they were not involved in the ED decision-making process, most were content with a minimal role in the pro-
cess. Further studies should explore this occurrence.

COFFEE AND TOBACCO CONSUMPTION, EFFECTS, AND RELATION TO ALCOHOL ABSTINENCE IN AA

MICHAEL S. REICH

Healthcare and Public Health Research and Management

BACKGROUND

Over one million recovering alcohol-
lics attend Alcoholics Anonymous (AA) meetings in the US. Of particular interest is their widespread coffee and cigarette consumption.

OBJECTIVES

To determine in AA members coffee and cigarette consumption patterns, consumption effects, and relationships between consumption and alcohol abstinence.

METHODS AND MATERIALS

All open-AA meetings in Nashville, TN during the summer of 2007 were sam-
pled for volunteers (n = 289) to com-
plete a questionnaire (completion rate = 94.1%) containing timeline followback for coffee, cigarette, and alcohol con-
sumption, the Alcoholics Anonymous Affiliation Scale, coffee consumption and effects questions, the Fagerstrom Test for Nicotine Dependence, and the Smoking Effects Questionnaire.

RESULTS

Mean (±SD) alcohol consumption onset age was 15±4.2 years. Median declared alcohol abstinence and average AA affilia-
tion score were 2.1 years and 7±1.5, respectively. Most (88.5%) individuals consumed coffee, approximately 33% of consumers drank ≥4 cups / day (M = 3.9±3.9), and coffee consumption was positively correlated with alcohol ab-
stinence duration (r = 0.154, p= 0.009).

CONCLUSIONS

The most common self-reported coffee consumption, the Alcoholics Anonymous Affiliation Scale, and the Smoking Effects Questionnaire could be used to assess coffee and cigarette consumption in AA members.

COST PREDICTION IN LIVER TRANSPLANTATION USING PRE-TRANSPLANT DONOR AND RECIPIENT CHARACTERISTICS

JOSH RUBIN

Healthcare and Public Health Research and Management

BACKGROUND

Liver transplantation is a costly proce-
dure, and its cost is likely driven by both donor and recipient factors. Recently, the recipient MELD score has been cor-
rrelated with increased post-transplant cost, however other factors have not been identified.

OBJECTIVES

To identify if other donor and recipi-
ent factors, besides MELD score, are associated with increased cost of liver transplantation.

METHODS AND MATERIALS

166 liver transplants performed at Van-
derbilt from January 2004 through February 2006 were included in the es-
timation sample and the subsequent 75 transplants were utilized as a validation cohort. To determine whether donor factors influence cost, two latent class linear regression models were created from the estimation sample: one consid-
ering only recipient variables (Model A) and a second incorporating both donor

and recipient factors (Model B). The resultant models were then validated in the validation sample of patients and com-
pared to the best single-segment linear regression models.

RESULTS

Model A predicts inclusion of pre-trans-
plant ICU stay, age > 70, and calculated MELD. In Model B, significant predic-
tors are calculated MELD age, x pre-
transplant ICU stay, and donor age > 40 as significant variables. In validation, only Model A remained highly predic-
tive of cost.

CONCLUSIONS

While marginal donor factors are recog-
nized to influence clinical outcome, they did not factor significantly in cost mod-
eling. In addition to MELD, the recipient factors of pre-transplant ICU stay, age and BMI are pre-transplant variables correlated most highly with post-trans-
plant cost across broad populations.

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derbilt University Medical Center.

HEALTH LITERACY AND PARENTAL PERCEPTION AND UNDERSTANDING OF BODY MASS INDEX

THOMAS KENNETH SPAIN, JR.

Healthcare and Public Health Research and Management

BACKGROUND/PROBLEM

Childhood overweight in the United States constitutes a major health prob-
lem. Improved parental knowledge of Body Mass Index (BMI) and weight per-
cision could help address the problem of child obesity. However, change has not been well studied. In addition, the role of literacy and numeracy skills in parental understanding is not known.
OBJECTIVES
To investigate: 1. the relationships between parental literacy/numeracy skills and a) understanding of BMI and b) perceptions of child and self weight status (CSWS), 2. the relationship between parental understanding of BMI and perception of CSWS, and 3. whether color-coding of BMI charts facilitates improved understanding of BMI concepts.

METHODS AND MATERIALS
Parents of children ages 2–8 years were recruited at two university medical centers. Measures collected include: demographics, perceptions of CSWS, health literacy, numeracy, and parent/child BMI. Understanding of BMI was measured with a 12-item scale comprised of 6 black/white and 6 color-coded BMI charts.

RESULTS
To date, 16 parent-child dyads have been recruited. In preliminary analyses, higher parental numeracy is significantly correlated with better understanding of BMI (r=0.76, p<0.001), and modestly associated with more accurate perception of self-weight status. Better understanding of BMI was also modestly, but not significantly, associated with improved weight perception. Understanding of BMI improved with the use of color-coded charting (85% vs 69% correct, p=0.01).

CONCLUSIONS
Data suggests that higher parental numeracy skills may be associated with better understanding of BMI concepts and perception of weight status. In addition, color-coding of BMI charts may improve parental understanding. Additional data is needed to elucidate these relationships.

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PEDiATRIC ENDOCRiNiologISTs’ MANAGEMENT OF CHILDREN WITH TYPE 2 DIABETES MellITUS

KAM WONG
Healthcare and Public Health Research and Management

BACKGROUND
Type 2 Diabetes (T2DM) is a growing problem among children, but little is known about how pediatric endocrinologists (PE) are screening and managing T2DM in these children.

OBJECTIVE
To examine knowledge, attitudes, and self-reported behaviors of PEs about T2DM

METHODS AND MATERIALS
Researchers mailed a survey to one-half of the PEs nationwide. Respondents participated via mail or online. The survey included vignettes to assess providers’ degree of concordance with current ADA guidelines for screening and management of diabetes comorbidities. Provider and practice characteristics were also assessed.

RESULTS
Of 527 eligible PEs surveyed, 211 responded (40%). 50% were female, 53% were ≤ 45 y.o.; 50% had <10 years of post-fellowship practice, and 56% reported seeing <3 children with T2DM weekly. There was a wide range of concordance with current ADA recommendations related to diabetes related monitoring (A1C, BP, Lipids, etc.), with concordance ranging from 46% for foot care to 92% for A1C monitoring. Given three clinical vignettes addressing hyperlipidemia, hypertension, and microalbuminuria, only 34% of PEs were fully concordant with current guidelines. Reported barriers to lipid and BP management included: concerns about adherence, insufficient scientific evidence about treatment, and lack of familiarity with the subject. Age of providers ≤ 45 years, or clinical practice <10 years were significantly associated with more aggressive screening and management behaviors, and higher concordance with ADA guidelines.

CONCLUSIONS
Wide variation among PEs in screening and management of pediatric T2DM suggests potential opportunities for quality improvement. More aggressive screening and management of T2DM among younger providers may be related to recent training when T2DM was more common.

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Amy Potter MD, Shalahj Mulvaney PhD, William E Russell MD, Russell L. Rothman MD MPH, Vanderbilt University Medical Center.

LABOraTOBaSeD BIOMEDICaL RESeARCH

EXPERIENCES IN THE AREA OF LABORATORY-BASED BIOMEDICAL RESEARCH ARE FOCUSED ON HYPOTHESIS-DRIVEN INVESTIGATION IN A BASIC LABORATORY ENVIRONMENT. EACH STUDENT BECOMES A SUCCESSFUL MEMBER OF AN ACTIVE RESEARCH PROGRAM AND COMPLETES A CLEARLY DEFINED PROJECT. FULL-TIME RESEARCH IS PERFORMED DURING THE SUMMER BETWEEN THE FIRST AND SECOND YEARS OF MEDICAL SCHOOL AND INCLUDES A SEMINAR SERIES DESIGNED TO HIGHLIGHT THE INTERACTION BETWEEN BASIC AND CLINICAL INVESTIGATION. STUDENTS PREPARE BOTH WRITTEN AND ORAL REPORTS OF THEIR PROGRESS.

“DIRECTING THE LAB-BASED EMPHASIS AREA WAS QUITE AN ADVENTURE FOR ME AND THE 17 PARTICIPATING STUDENTS. WATCHING AND GUIDING STUDENTS AS THEY MOVED FROM BEING OVERWHELMED WITH THE WEALTH OF POTENTIAL MENTORS AND CHOICE OF PROJECTS INTO BECOMING AN INTEGRAL TEAM MEMBER AT THE LAB BENCH WAS CERTAINLY REWARDING.

Students soon began to share their experiences with each other while taking ownership and pride in their accomplishments. By the end of final spring semester, a great many students were making plans for national poster presentations and portions of manuscripts. Mentors even encouraged a few to put on the brakes and get back to class. A number of the lab-based students are now considering options for exploring a more in-depth research project during an additional year of medical training. All have come to realize that lab research can be challenging but equally rewarding. I am confident that every single student will read journal articles with a much richer appreciation for the behind-the-scenes efforts and serendipity that goes into the discovery process that shapes the future of medicine.”

“FULL-TIME RESEARCH IS PERFORMED DURING THE SUMMER BETWEEN THE FIRST AND SECOND YEARS OF MEDICAL SCHOOL AND INCLUDES A SEMINAR SERIES DESIGNED TO HIGHLIGHT THE INTERACTION BETWEEN BASIC AND CLINICAL INVESTIGATION.”

Lillian Nanney, Ph.D., is the Director of Plastic Surgery Research Activi-ties, Co-Director of the Skin Disease Research Center, and the Founder and Director of Vanderbilt’s Institutional Immunohistochemistry Core Laboratory. She directs efforts to study a broad spec-trum of conditions ranging from poor or delayed skin repair (burns, chronic wounds, mouse models of injury) to undesirable hyperprolifera-tive growth conditions that include malignancy. She teaches full-time in Medi-cal Gross Anatomy course and was the 2005 award recipient for best teaching in a small group setting. Dr. Nanney’s contributions extend to the national level where she recently served as the national president of the Wound Healing Society.
Current results show that 4-HT treatment can be visually monitored.

**METHODS AND MATERIALS**

We used a fusion protein combining the estrogen receptor and the ligand-dependent transcription factor 4-hydroxy tamoxifen (4HT, an estrogen analog). Tamoxifen (4HT) is an estrogen analog that undergoes progressive increasing levels of metabolic clearance. Animals administered 4HT were sacrificed at various times to determine if hormonal effects were apparent. We observed the induction of anti-neoplastic effects of caspase inhibition on lung cancer cells in vitro and in an in vivo mouse model. After treating H460 lung cancer cells with radiation and a pan-caspase inhibitor Z-VAD via upregulation of autophagy, a type II programmed cell death.

**REFERENCES**

Available upon request.

Co-author Neil Bhowmick, Ph.D., Department of Urological Surgery, Vanderbilt University Medical Center.

**OBJECTIVES**

To confirm whether radiosensitization of H460 lung cancer cells in the absence of apoptosis is associated with upregulation of autophagy, a type II programmed cell death.

**METHODS AND MATERIALS**

Experiments were conducted at a Vanderbilt Radiation Oncology laboratory in Medical Center North. The present study examined the radiosensitizing effects of caspase inhibition on lung cancer cells in vitro and in an in vivo mouse model. After treating H460 lung cancer cells with radiation and a pan-caspase inhibitor Z-VAD, the degree of radiosensitization was measured via the clonogenic assay. Tumor volume blocking was utilized to detect the expression level of autophagic proteins, and the punch...
tuate localization pattern of GFP-LP3 under confocal microscopy was used to detect autophagosome formation. Furthermore, the TUNEL assay measured the level of apoptosis in irradiated lung tumors, in which the alterations in angiogenesis and proliferation rates were confirmed with VWF and Ki67 staining, respectively.

RESULTS
Upon radiation treatment in conjunction with a pan-δ integrin inhibitor Z-VAD, H460 lung cancer cells were significantly radiosensitized in the clonogenic assay. The enhanced tumor cytotoxicity was associated with an overexpression of autophagic proteins ATG5-ATG12 and Bedlin-1, and with an increase in punctate localization of GFP-LP3 characteristic of autophagosome formation. The combination therapy yielded promising results in a xenograft tumor mouse model, markedly slowing the rate of tumor growth and angiogenesis with minimal changes in body weight ratio. In addition, combination treatment is associated with reduction in angiogenesis, inhibition of proliferation, as well as decrease in apoptosis. TUNEL assay revealed that the combination treatment produced two-fold less apoptosis in vivo and potentiates the cytotoxic effects produced two-fold less apoptosis in vivo compared to chemotherapy.

CONCLUSIONS
This data suggests that the loss of α2β1 integrin plays a major role in the metastasis of mammary carcinoma cells by promoting dissemination of tumors, leading to an increased metastatic potential.

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INTERSTRAIN COMPARISON OF H. PYLORI GENOMES USING BLAST DATA ANALYSIS
MARLON F. JOSEPH
Laboratory-Based Research

BACKGROUND/PROBLEM
The prototypical pathogenic strain for Helicobacter pylori, 26695, contains 1,667,867 base pairs and 1,590 open reading frames (ORFs). 98-10 is a sequenced strain isolated from a gastric cancer cell line. A bioinformatics method incorporating BLAST (Basic Local Alignment Sequence Tool) can provide a useful screening tool for important differences between multiple sequenced strains, and provide a starting point from which to further characterize 98-10.

METHODS AND MATERIALS
MSTVT neo were crossed with a2-null mice in order to evaluate the role of α2β1 integrin in mammary carcinoma. Female mice were examined for tumors weekly and were sacrificed when primary tumors larger than 4 cm3. Primary tumor cells were harvested and cultured in 2D and 3D in vitro model systems. MCF10A human mammary epithelial cells and MCF10A cells over-expressing HER2 were depleted of α2β1 integrin using a shRNA viral system and were cultured in 2D and 3D.

RESULTS
All mice developed tumors. There was no difference was noticed in latency or size of the primary tumors of a2-null or wild-type mice. However, the α2β1 integrin expression was decreased in the 98-10 strain compared to the 26695 strain.

OBJECTIVES
Use BLAST score ratios as an initial screen to identify differences between 98-10, 199, and 26695 H. pylori strains.

METHODS AND MATERIALS
The study used BLAST data gathered from lab databases on three strains. Furthermore, the study established sorting cutoff points in an attempt to identify significant differences between gene sequences. Additionally, inter-strain identity was assessed and used as a sorting criterion.

RESULTS
In cross-comparing strains, more than 95% of ORFs had an average BLAST Score above 250. Approximately 10% of the ORFs had an average BLAST Score above 500.

CONCLUSIONS
The study generated a database of 98-10 gene sequences predicted to differ from those of 26695 and 199 according to screening methodology criteria. BSR sorting and specificity criteria provided a preliminary group of ORFs from within 98-10 to use for further comparison and analysis.

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Timothy L. Cover, MD, and Mark S. McClain, PhD, Department of Medicine Infectious Diseases, Vanderbilt University Medical Center.

MODULATION OF TRABECULAR MESHWORK PERMEABILITY BY BVES
ASHMER KUPPERMAN
Laboratory-Based Research

BACKGROUND/PROBLEM
Glaucoma is a neurodegenerative disorder associated with increased intraocular pressure (IOP) due to decreased aqueous outflow. The trabecular meshwork (TM) is the first barrier to aqueous outflow and is regulated by tight junctions (TJ) and cellular contraction of TM cells.

OBJECTIVES
Blood Vessel Epicardial Substance (Bves) is a novel adhesion molecule that regulates aqueous outflow at the TM by modulating both TJ formation and cellular contraction.

METHODS AND MATERIALS
TM cell lines from a normal donor (NTM), a glaucomatous donor (GTM), and a glaucomatous donor (Bves) is a novel adhesion molecule that interacts tight junction formation. We hypothesize that Bves plays a role in regulating aqueous outflow at the TM by modulating both TJ formation and cellular contraction.

METHODS AND MATERIALS
TM cell lines from a normal donor (NTM), a glaucomatous donor (GTM), and a glaucomatous donor (Bves) is a novel adhesion molecule that interacts tight junction formation. We hypothesize that Bves plays a role in regulating aqueous outflow at the TM by modulating both TJ formation and cellular contraction.

RESULTS
TM cells had increased Bves and TJ levels compared to NTM cells, leading to decreased TJ contraction. In addition, the expression of Bves and TNF-α was decreased in Bves-overexpressing NTM cells. In contrast, Bves-overexpressing NTM cells, showed increased TJ levels and decreased flow. NTM cells also showed decreased cellular contraction. TM cells, however, showed contraction levels similar to NTM cells, suggesting that the TM cells have altered cell signaling.

CONCLUSIONS
This study confirms the role of Bves in the regulation of TM formation and cellular contraction. Increased levels of Bves lead to increased TJ levels (decreasing outflow) and decreased contraction (increasing outflow). These findings suggest that Bves is an important homeostatic regulator with a differentiation dependent manner.

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A NOVEL ROLE FOR HEPATIC ERBB RECEPTORS IN REGULATING GLUCOSE METABOLISM
DARRICK BROWN
Laboratory-Based Research

BACKGROUND
ErbB1 (EGFR) and ErbB3 are protein tyrosine kinase receptors that are highly expressed in hepatocytes. Both have been implicated in cell growth, regulation, metabolism, and their functional significance is incompletely understood.

OBJECTIVE
To determine the role of EGFR and ErbB3 signaling molecules in hepatocytes.

METHODS AND MATERIALS
Transgenic mice were bred to express EGFR and ErbB3 under the control of the mouse Bves promoter. The mice were fed a high fat (HF) diet, which is a model of liver dysfunction that causes hepatic steatosis, decreased hepatic proliferative response to injury, and leads to metabolic derangements. We assessed the effect of these deletions on growth, body composition, and glucose tolerance after HF diet compared to littermate control and chow fed mice.

RESULTS
Baseline glucose tolerance testing (GTT) and fasting blood glucose (FBG) were similar for control, egfr, and erbB3 hepatocyte knock-out (KO) mice. At 9 weeks, HF fed control, egfr, and erbB3 KO animals showed a 40% increase in body weight compared to chow fed animals. FBG increased 30% and total body fat increased 65% in HF diet mice compared to chow diet mice, but no differences were found between control, egfr, and erbB3 KO groups. HF feeding resulted in comparable glucose intolerance in HF egfr KO and HF control animals. However, HF erbB3 KO mice showed a 40% increase in maximal response to GTT by 40% above the HF control group.

CONCLUSIONS
Loss of erbB3 in hepatocytes may predispose HF fed animals to glucose intolerance, suggesting this receptor is an important regulator in glucose and whole body metabolism.

REFERENCES
Available upon request.

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6-THIOGUANINE ACTS ON GL12 TO DECREASE PTHPR EXPRESSION AND OSTEOSYNTHESIS
MAI P. NGUYEN
Laboratory-Based Research

BACKGROUND
Breast and lung tumor cells frequently metastasize to bone, where they cause osteolytic bone destruction. For many years, conventional therapies including radiation and systemic therapies have been the mainstay treatment in metastatic cancers. However, recent data suggest that drugs specifically targeting the bone micro-environment may provide additional benefits in treating metastatic bone diseases. Parathyroid hormone-related peptide (PTHrP) has been identified as a major mediator of bone destruction in tumors that metastasize to bone. Our labora-
DETECTION OF IMMUNE RESPONSE TO M. TUBERCULOSIS ANTIGENS AMONG BCG VACCINATED HEALTH CARE WORKERS

TOKIN OKANLAWON

BACKGROUND/PROBLEM
Infection with M. tuberculosis remains one of the leading causes of mortal- ity in the developing world. The re- emergence of tuberculosis within the United States is primarily due to entry of foreign-borne workers from areas of high prevalence. Identification of latent tuberculosis among BCG vaccinated health care workers (HCW) is impor- tant to minimize infection to vulnerable persons. Because many of these persons have undergone BCG vaccination, the PPD+ skin test is not a reliable indicator of infection with latent tuberculosis.

OBJECTIVES
Researchers assessed for T cell responses to antigen 85A peptides and alpha- crystalline (HspX) by using the enzyme- linked immunospot assay (ELISPOT) in order to determine latent tuberculosis among HCW who were BCG vacci- nated, PPD negative or PPD+/no BCG vaccination.

METHODS AND MATERIALS
Peripheral blood mononuclear cells (PBMC) from 59 medical personnel (20 BCG vaccines, 16 subjects with latent tuberculosis and 23 PPD-) were isolated from venous blood by ficoll- hypaque density gradient centrifu- gation. ELISPOT assay was performed for gamma interferon (IFN-γ) production using Ag85A peptides and HspX.

RESULTS
Reactivity to Ag85A peptides was observed among 6/20 BCG vaccines compared to 1/23 PPD negative (p = 0.035, Fisher’s exact test), compared to 7/16 PPD+/no BCG vaccination HCW (p = 0.48). Immune responses to HspX was also observed (6/20 BCG compared to 2/23 PPD- HCW (p = 0.11)).

CONCLUSIONS
It was demonstrated that immune responses to Ag85A in BCG vaccinated HCW work- ers suggest that their PPD+ skin test may reflect latent tuberculosis infection. The lack of recognition of Ag85A among PPD- HCW suggests that the recognition observed is not a consequence of expo- sure of environmental mycobacteria. This assay is a complementary mecha- nism for identifying latent tuberculosis infection in HCW working with vulner- able populations.

REFERENCES
Available upon request.

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HIGH GLUCOSE ACTIVATION OF CALCIURIN IN RETINAL ENDOTHELIAL CELLS

MATTHEW J. RIOTH

BACKGROUND
Diabetic retinopathy (DR) is the leading cause of blindness in working-age adults. Both basic science and clinical research have shown the severity and progres- sion of DR is a function of individuals’ glycemic control. One of the first signs of DR is increased vascular endothelial growth factor (VEGF) in the retina; however, the mechanism of this increase is not known. Recent research has demonstrated endothelial cells produce autocrine VEGF when stimulated, via the calcineurin-NFAT signal transduc- tion pathway.

OBJECTIVE
To investigate the activation of the calcineurin-NFAT signaling pathway in retinal endothelial cells in response to high glucose.

METHODS AND MATERIALS
Human retinal endothelial cells and stimulated in vitro with VEGF (50ng/ ml) or 20mM glucose relative to 5mM glucose controls. Stimulated cells were treated with the calcineurin inhibitor cyclosporine at 10nM or the Na-Ca anti- porter inhibitor 2-4-dicholorobenzamil at 50µM. Cells were then stained with an NFATC1 monoclonal antibody and an AlexaFluor555 fluorescent second- ary antibody, and the fluorescence was quantified by confocal microscopy. Endo- thelial cell proliferation was assessed by BrdU uptake assay. Microarray data was generated using an Affymetrix gene array chip with RNA from VEGF-treated and control cells.

RESULTS
Quantification of immunofluorescence signal demonstrated that NFAT trans- locates to the nucleus in high glucose conditions significantly more than un- stimulated endothelial cells (p = 0.001). This translocation was inhibited by both cyclosporine (p = 0.002) and dichlo- robenzamil (p = 0.002). High glucose was also able to induce proliferation of endothelial cells but was inhibited by cyclosporine and dichlo robenzamil. Microarray data showed stimulation with VEGF caused upregulation of the sodium glucose transporter messenger by 7-fold, the most of any glucose trans- porter.

CONCLUSIONS
High glucose activates the calcineurin-NFAT signaling pathway in retinal endothelial cells. This stimulation could lead to the early retinal changes in DR such as increased VEGF. This data im- plies a direct role of glucose and glucose transporters in the microvascular changes associated with diabetes.

ACKNOWLEDGEMENTS
John Penn PhD, Vanderbilt University Medical Center and Sandra Ryeom PhD, Boston Children’s Hospital and National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health.

IDENTIFICATION OF ANGIOSTATIC PROTEINS RESULTING FROM PENETRATING OCULAR INJURY

ANIJALI SHAH AND KUNAL SHARMA

BACKGROUND
Angiogenesis is the formation of new blood vessels from existing vasculature. Many pathological processes of the eye are characterized by persistent, abnor- mal angiogenesis or neovascularization (NV)—including diabetic retinopathy, macular degeneration, retinopathy of prematurity, and vein occlusion retinopathy—and are the leading cause of blindness in the developed world. Current treatments aim to inhibit angiogenesis by introducing synthetic anti-angiogenic compounds into the eye. Such treatments are largely ineffective, destructive, or accompanied by serious risks. In response to injury, the retina produces endogenous anti-angiogenic factors which are released into the vitre- ous humor.

OBJECTIVES
Identification of these anti-angiogenic factors is important for increasing our understanding of retinal NV and pro- vides a potentially less invasive and less toxic endothelial treatment for diseases characterized by NV.

METHODS AND MATERIALS
Vitreous humor was collected from the eyes of rats receiving systemic penetrating ocular injury. The soluble component of homogenized vitreous was fractionated with a cation exchange column. The effect of each fraction on human retinal microvascular endothelial cell (HRMEC) proliferation was mea- sured via BrdU uptake. This procedure was repeated six times.

RESULTS
Unfractionated vitreous protein showed reduced HRMEC proliferation of 35% minimally and 87% maximally. Spe- cific fractions from fractionated vitre- ous protein consistently demonstrated angiostatic activity, while other fractions showed angiogenic potential. Results from a live-dead assay performed with the angiostatic fractions showed little to no cytotoxicity. Quantitative data from tube formation and cell migration assays are pending.

CONCLUSIONS
Proteomic analysis of these angiostatic fractions may be used to identify the endogenous angiostatic proteins. With this information, we hope to develop novel therapeutic strategies for combating retinal diseases with an angiogenic component.

ACKNOWLEDGEMENTS
John S. Penn, PhD, Ophthalmology and Visual Sciences, William Y. Road, PhD, Gary McCollum, PhD, Matthew J. Roth, BS, Diabetes and Nutrition Research Institute, Vanderbilt University Medical Center and Diabetes, and Kidney Diseases Summer Research Training Program.

ROLE OF MTP ISOFORMS IN INHIBITION OF VITREOUS ANGIOTROPIC ACTIVITY, PROTEOMIC IDENTIFICATION OF ANTI-ANGIOTROPIC ACTIVITY, AND IDENTIFICATION OF ANTI-ANGIOTROPIC ACTIVITY IN ADIPOCYTES

KAARTIGA SIVANESAN

BACKGROUND/PROBLEM
Microsomal triglyceride transfer protein (MTP) is a lipid transfer protein es- sential for the assembly of triglyceride (TG)-rich lipoproteins in the liver and small intestine. Our laboratory discov- ered MTP in mouse and human adi- pocytes, as well as in the pre-adipocyte ST3-L1 cell line. Immunohistochemical studies suggest that MTP is abundant on the surface of small (<5µm) lipid droplets. Our studies have also shown that in mice MTP exists as two isoforms (MTP-A and MTP-B) with MTP-B predominating in adipocytes. The func- tion and localization of MTP imply its importance in adipocyte lipid droplet maturation.

OBJECTIVE
To determine the role of MTP in lipid droplet maturation.

METHODS
MTP-null adipocytes were cultured in serum-free medium and harvested at day 40 of the differentiation. Adipocytes were harvested and total proteins were extracted for subsequent analyses. The samples were then separated by 2D-GE and stained with Coomassie blue. The stained gels were digitized and the expression of individual proteins was quantified using ImageJ software. The protein spots were excised and digested in-gel with trypsin. The resulting peptides were fractionated and analyzed by LC-MS/MS. The data were then used to identify the proteins that were differentially expressed in the MTP-null adipocytes.

RESULTS
Unfractionated vitreous protein showed reduced HRMEC proliferation of 35% minimally and 87% maximally. Spe- cific fractions from fractionated vitre- ous protein consistently demonstrated angiostatic activity, while other fractions showed angiogenic potential. Results from a live-dead assay performed with the angiostatic fractions showed little to no cytotoxicity. Quantitative data from tube formation and cell migration assays are pending.

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METHODS AND MATERIALS
CHO cells, which do not express MTP, were transfected with MTP A or MTP B cdNA, and incubated with oleic acid to stimulate TG synthesis and lipid droplet formation. Cells were either fixed and stained with Nile Red to visualize lipid droplets or harvested with subsequent analysis of mRNA by RT-PCR, protein by immunoblot, and TG and phospholipid by gas chromatography.

RESULTS
MTP A and B were expressed at similar levels in CHO cells. Expression of either isomerase did not inhibit total cellular TG or phospholipid content. Lipid droplets in cells transfected with MTP B, but not A, were significantly larger (17%, p = 0.000309) than control.

CONCLUSIONS
The finding of larger droplets in the presence of MTP B suggests a critical role for this protein in lipid droplet maturation. We hypothesize that MTP enhances droplet maturation by facilitating fusion of small droplets.

ACKNOWLEDGEMENTS
Dr. Larry L. Swift, Department of Pathology, Vanderbilt University Medical Center.

GENE EXPRESSION DURING EARLY INNATE IMMUNE RESPONSES TO MODIFIED BCG VACCINE
NATHANIEL E. SMITH
Laboratory-Based Research

BACKGROUND
The current vaccine against tuberculosis is Bacillus Calmette-Guerin (BCG), whereas genes associated with mitochondrial respiration and fatty acid metabolism were more strongly expressed in the mBCG group. By microarray and RT-PCR, genes related to interferon-γ signaling were much more highly expressed in the mBCG and BCG groups compared to control. Compared to the BCG group, the mice vaccinated with mBCG exhibited >2-fold expression of 698 genes and >2-fold diminished expression of 460 genes. Cytokine and lymphocyte-associated genes were more strongly expressed in the mBCG group, whereas genes associated with mitochondrial respiration and fatty acid metabolism were more strongly expressed in the BCG group. By microarray and RT-PCR, genes related to interferon-γ signaling were much more highly expressed in the mBCG and BCG groups compared to control. Compared to the BCG group, the mice vaccinated with mBCG exhibited a >6% reduction in expression of the transferrin receptor (p = 0.005), a >31% reduction in expression of the transcription factor E2F1 (p = 0.001), and a 35% higher expression of IL-12p (p = 0.005) that encodes IL-12p40, an essential component of IL-12 and IL-23.

CONCLUSIONS
There were more similarities than differences in the host response to vaccination with BCG and mBCG at 72 hours post-vaccination. However, the down-regulation of transferrin receptor in mBCG-vaccinated mice may reduce iron availability and allow the host to more efficiently kill and process antigens from mBCG than BCG. Similarly, IL-12p40 plays an important role in macrophage, natural killer cell, and T cell immunity and the higher expression of IL-12b in the mBCG group may enhance the development of CD4+ memory T cells.

ACKNOWLEDGMENTS
Co-investigators: Douglas Kernodle, MD, Cynthia Hager, Laura Johns, and Jie Wei.

DEXAMETHASONE AFTER SUBARACHNOID HEMORRHAGE: QUANTIFICATION OF ANTIOLIGOPHAGIC CEREBRAL VASOSPASM AND CSF BIOMARKERS
DAWN SPRATT
Laboratory-Based Research

BACKGROUND
Cerebral vasospasm is the leading cause of morbidity and mortality after subarachnoid hemorrhage (SAH). The complete cascade of events leading to cerebral vasospasm remains unknown, but an array of potential mediators, including leukocytes, inflammatory cytokines, arachidonic metabolites, reduction in nitric oxide (NO), and elevation of Edothelin-1, likely all play a complex and integrated role.

OBJECTIVE
To measure dexamethasone’s effect on leukocytes, F2-isoprostanes, citruline (indirect marker of NO), as well as basilar artery diameter after SAH.

METHODS AND MATERIALS
18 NZW rabbits underwent SAH by injecting 1.25 mL/kg of autologous blood into the cisterna magna. CSF biomarkers, leukocytosis, and transfemoral basilar artery were angiography quantified at baseline, and again after 3 days in a blinded fashion. Eleven were given intravenous dexamethasone at 2 mg/kg/day via constant infusion. Similarly, seven controls received saline.

RESULTS
On post-SAH day 3, there was a significant decrease in CSF leukocytosis (0.4 vs. 33.6 per mm3, p < 0.01), and an increase in CSF glucose (202 vs. 132 mg/dL, p < 0.01) in the dexamethasone vs. control groups. Compared to baseline, leukocyte counts increased after SAH in the control group (0.6 vs. 33.6 per mm3, p < 0.01), and there was no increase in leukocytosis after SAH in the dexamethasone group (0.5 vs. 0.4).

OBJECTIVES
To determine if FFPE-t is useful in biomarker discovery.

METHODS AND MATERIALS
We compared protein recovery from FFPE-t with frozen tissues from the same donor. We also compared the relative recovery from FFPE-t that has been fixed and stored for different amounts of time. This is necessitated by the inconsistency of fixation methods and differing ages of specimens.

RESULTS
The FFPE-t gave a recovery approximately 80% that of frozen tissue. We found no significant difference among tissue that was fixed for 1, 2, or 4 days, nor did we see a difference in storage time up to 10 years.

CONCLUSIONS
In the context of biomarker discovery work, the ease of collection and knowledge of pertinent information of FFPE-t may outweigh the reduction in protein recovery relative to freshly frozen tissue.

ACKNOWLEDGEMENTS
Daniel C. Liebler, PhD, Director Jim Ayers Institute for Pre-Cancer Detection and Diagnosis, and Jonathan W. C. Brock, PhD.
Students interested in the law and policy area are strongly urged to begin identifying a project and mentor early. Students have presented their work at national meetings and to health policy contacts. In most cases, you will be working primarily with a person outside of Vanderbilt; when this occurs, you will have a secondary mentor in the program. Other parts of this program include: 1) an interdisciplinary course in the spring of the first year with students from the law and divinity schools, which will expose you to different ways of approaching medical ethics and provide you with basic skills in legal research, and 2) an opportunity to present your project to your fellow students, which has turned out to be a great experience for students and faculty. This program is directed by Ellen Wright Clayton, MD, JD, and Joshua Perry, JD, MTS, both in the Center for Biomedical Ethics and Society.

"[The Emphasis Program] was a rich experience for me. Josh Perry, our fellow, and I got to know these students quite well and got to watch them grow and develop during this period in a way that I had not previously experienced in many years of teaching. I am confident that they know more now about the setting in which medicine is practiced, and that they will be more effective advocates in the future as a result."

“I am confident that the students know more now about the setting in which medicine is practiced, and that they will be more effective advocates in the future as a result.”

Ellen Clayton, M.D., J.D., holds the Rosalind E. Franklin Chair in Genetics and Health Policy at Vanderbilt University Center and is the Co-Director of the Center for Biomedical Ethics and Society.

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A REVIEW OF THE EFFECTS OF NATURAL AND SYNTHETIC ESTRÖGENS ON PRECOCIOUS PUBERTY IN AFRICAN-AMERICAN GIRLS

RHEA WHITNEY BOYD
Law and Policy

INTRODUCTION

African American girls are, on average, the earliest sexually developing children in the world. The literature suggests early sexual maturation could be caused by exposure to natural and synthetic estrogens, pediatric obesity, and genetic differences between ethnic groups; each of which may contribute to the unique occurrence of precocious puberty in African American girls.

OBJECTIVES

To explore the relative roles estrogen exposure, obesity, and genetic differences may play in the premature onset of sexual development among African American girls and to identify the public health consequences of precocious puberty.

METHODS AND MATERIALS

The MEDLINE database was searched for articles pertaining to the etiology and nature of precocious puberty and the relationship between precocious puberty and sexual violence. Additional materials were provided by the National Sexual Violence Resource Center and obtained from the American Anthropological Association’s “RACE project” annotated bibliography.

RESULTS

Natural and synthetic estrogens are associated with the occurrence of precocious puberty in girls. In addition, while related, pediatric obesity and genetic differences between “racial” groups do not fully explain the occurrence of precocious puberty in African American girls. Much remains unknown about the causes of early puberty in this population. Evidence does support a potential association with sexual violence and other adverse health conditions.

CONCLUSIONS

Scientific explanation of the unique occurrence of early sexual maturation in the United States requires a nuanced understanding of the dynamic interrelationship between human biology and the physical and sociopolitical environment in which that biology functions and gains meaning. More work is needed to achieve the integrated understanding of the ways in which environmental estrogens, pediatric obesity, and the social construction of “race” may act individually or synergistically to affect adolescent health, necessary to grasp the impact of sexual precocity on African-American girls.

CANC CHARACTERISTICS OF PATIENT COMPLAINT REPORTS PREDICT RISK MANAGEMENT PAYOUTS?

BETH BRENNER
Law and Policy

BACKGROUND/PROBLEM

Previous studies have demonstrated that patient complaint databases may be used to predict physicians’ general risk of claims and lawsuits. However, no attempt has been made to establish which features of complaints make them likely to result in Risk Management (RM) payouts. Therefore, no scientifically established criteria currently exist to enable Patient Affairs offices to identify and preferentially refer such complaints to Risk Management departments.

OBJECTIVES

To determine features of patient complaints preferentially associated with RM payouts, and use these features to create an analytical model that will enable Patient Affairs offices to identify and preferentially refer such complaints to Risk Management departments.

METHODS AND MATERIALS

A list of all RM payouts from 2000-2006 was cross-referenced with the PARS® patient complaint database. 158 complaints associated with payouts were read and coded for over 50 factors hypothesized to differ in prevalence between payout and non-payout complaints. A date-matched set of 158 patient complaints not associated with RM payouts was read and coded for the same factors. A statistical analysis of the data will be performed in the near future.

RESULTS

Data collection is still in progress. Statistical analysis of the data is pending.

CONCLUSIONS

Preliminary inspection of the data suggests that there are global qualitative differences between complaints associated with RM payouts and complaints with no such association. Statistical analysis is required to determine which, if any, of these differences are significant.

REFERENCES

Available upon request.

ACKNOWLEDGMENTS

Dr. Renee Moore, CPPA, Drs. Gerald Hickson and James Pichter, CPPA, Dr. Ellen Clayton, Chuan Zhou, PhD and Angel An, MA, Vanderbilt University School of Medicine.

FEDERAL FUNDING FOR GRADUATE MEDICAL EDUCATION

JAMES J. BRITTMAN
Law and Policy

BACKGROUND

Total funding for graduate medical education (GME) currently equals $18 billion per year, of which $11.5 billion comes from the federal government. On May 23, 2007, the Bush administration declared that states could no longer use federal Medicaid funds for GME, which currently funds 14% of total expenditures. One day later, the Democratic-controlled Congress delayed the implementation of the rule by one year. Teaching hospitals were worried that they would lose large amounts of funding and intensively lobbied against the rule’s enactment.

OBJECTIVES

This project analyzes how federal funding for GME can be designed to meet the needs of the US population most efficiently.
CONCLUSIONS
The current federal payment scheme distorts input and output prices, encouraging hospitals to close beds (a problem for surge capacity) and to admit more Medicare patients, since funding is directly related to the number of Medicare admissions. Teaching hospitals also have less incentive to create new residency positions because of a federal cap on the number that can be funded, which is currently the bottleneck in producing more physicians. The government should remove GME support from Medicare/Medicaid and spin it off into a separate program. This program should pay on a per-patient basis, rather than on a per-admission basis. Funds should also be directly used for stipends or teaching salaries, rather than going into a hospital’s general revenues.

REFERENCES
Available upon request.

ACKNOWLEDGEMENTS
Congresswoman Marcy Kaptur, Dr. Ellen Clayton and Joshua Perry.

COVERING THE UNINSURED IN TENNESSEE: WHY TENNESSEANS HAVE NOT ENROLLED IN COVERTN
ERIN E. BURKE
Law and Policy

BACKGROUND
The number of uninsured in Tennessee has remained high since the TennCare disenrollments. To address this, a new insurance plan called CoverTennessee was instituted. A branch of this plan was CoverTN, which provides an affordable insurance plan called CoverTennessee.

METHODS AND MATERIALS
Using the SurveyMonkey tool, two phone surveys were conducted on a sample population of small businesses and self-employed individuals who had filled out the online application for CoverTN but never enrolled in the program.

RESULTS
Twenty surveys from the self-employed group, and 21 surveys from the small business group were completed. Among the self-employed group, 39% said they had not enrolled because they had been unable to complete the application or the state had not gotten back to them about their application. Similarly, 19.2% in the small business group also cited difficulties with the application as a reason for not enrolling. Another 19.2% in the small business group said they had not enrolled because they had not decided if they really wanted to.

CONCLUSIONS
Fifty eight percent of respondents said they did not enroll because of difficulty completing the application. Many of these would have enrolled with additional assistance. Furthermore, a large proportion of respondents requested to be contacted by a CoverTN representative following the survey. This suggests that with a little more information about the CoverTN program, enrollment might increase.

ACKNOWLEDGEMENTS
Dr. Ellen Clayton, Laurie S. Lee, and John B. Harkey, Jr.

INTERNING FOR RESEARCH AMERICA
ANDREW GORE
Law and Policy

BACKGROUND/PROBLEM
Advocacy organizations are interest groups that attempt to influence political decisions without holding public office.

OBJECTIVES
To learn how advocacy functions in the realm of health policy.

METHODS AND MATERIALS
The researcher interned in the science policy department at ResearchAmerica for eleven weeks. ResearchAmerica is a not-for-profit public education and advocacy alliance located in Alexandria, VA, which is dedicated to making research to improve health a higher national priority. ResearchAmerica commissions studies on public opinion and advocates for increased funding for the NIH, CDC, NSF, and AHRQ, among other things.

RESULTS
The researcher performed various tasks such as tracking the budget and appropriations legislation, updating the ResearchAmerica website and advocacy publications, updating the Four Congress — Your Health website, writing articles for the newsletter, researching the healthcare plans of the 2008 presidential candidates, and drafting a ResearchAmerica Wikipedia entry. The bulk of the work was spent researching the current state and future of health information technology in medicine and research. Other activities included interviewing knowledgeable people in the public and private sectors, performing an extensive literature review, and tracking legislation pertaining to health IT and EHR/EMR.

CONCLUSIONS
Advocacy organizations such as ResearchAmerica provide information pertaining to their policy agendas for the general public, government, industry, and media. Advocacy relies on the newly informed parties to take action. Thus, advocacy indirectly influences policy via grassroots-style methods.

ACKNOWLEDGEMENTS
Ellen Clayton, MD, and Dr. Ellen W. Clayton, Mr. Zach Griffith, Ms. Gwen Hamer, Mr. Josh Perry, Tennessee Department of Mental Health and Developmental Disabilities, Office of Legal Council and Office of Clinical Leadership, Ms. Cynthia Tyler, Ms. Marthagem Whitlock, and Ms. Danette Wilson.

HIPAA VERSUS TENNESSEE CODE ANNOTATED TITLE 33: A PREEMPTION ANALYSIS
MARTHA KATHERINE PRESLEY
Law and Policy

BACKGROUND/PROBLEM
The use of mental health records in the creation of five New Rules to help guide decisions about the disclosure of mental health records in the state of Tennessee. In addition to the five New Rules, a complete preemption analysis was produced to support the rules. The preemption analysis should be used as a reference when the rules are unclear or insufficient to answer a disclosure question. The implementation of the document within the TDMHDD is pending.

ACKNOWLEDGEMENTS

LEARNING FROM THE CUBAN HEALTH PARADOX
CAITLIN TOOMEY
Law and Policy

BACKGROUND/PROBLEM
Infant mortality and life expectancy rates, two health indicators used by the World Health Organization to rank healthcare systems, are the same in Cuba and the United States. This occurs despite the fact that total healthcare expenditure per capita in the United States is $6,092, only but $230 in Cuba.

OBJECTIVES
To examine how the Cuban healthcare system is able to produce the same health indicator levels as the United States for a fraction of the cost.

METHODS AND MATERIALS
The researcher performed an extensive literature review of the Cuban healthcare system. Additionally, I traveled to Cuba for 10 days through Global Exchange, a non-profit organization that organizes healthcare research delegations to different countries. While in Cuba, I visited healthcare settings in both urban and rural areas and met with many people involved in the healthcare field.

RESULTS
Cuba has a universal healthcare system that is run by the government. It has one of the highest doctor per capita ratios in the world and requires medical school graduates to serve in a rural area for at least two years, ensuring all citizens have equal access to care. Services are focused heavily on prevention, primary care, and public health. There is a strong emphasis on community participation in both health outreach initiatives and implementation.

CONCLUSIONS
The cost effectiveness of Cuba’s healthcare is due in part to the efficiencies associated with the Cuban healthcare system, as well as a strong focus on prevention and public health.

ACKNOWLEDGEMENTS
Ellen Clayton, MD, JD, and Joshua Perry, JD, MTS, Vanderbilt University School of Medicine, Masumi Patzel, Global Exchange.

References
University of Tennessee, Why Tennesseans have not enrolled in CoverTn, Emphasis Journal 2008.
**MEDICAL EDUCATION**

Emphasis experiences in the Medical Education area are designed to introduce students to the theory and practice of learning and teaching in medicine. Students are provided an overview of current research describing how medical students, residents, practicing physicians and patients learn as well as information about effective teaching strategies. In addition, each student has the opportunity to develop a project in an area of interest. Projects can include research or curriculum development.

Educational experiences will focus on, but will not be limited to, addressing the following questions:

1. How do students develop skills to reflect on their own performance as part of a personal approach to lifelong learning and continuing professional development that can be used throughout their medical careers?

2. What teaching strategies help medical students, residents, practicing physicians, and patients learn?

3. How are research studies in medical education conducted and research findings interpreted?

4. How is curriculum developed and evaluated in medical school and residency settings?

“Working with students in the Emphasis Program was one of the highlights of the past three years for me. It was an honor and privilege for me to watch and share in their excitement and satisfaction as they worked through and accomplished their projects. I am looking forward to working with the students who choose the Medical Education area during this coming year.”

**HOW DOCTORS DIAGNOSE: CAN SHERLOCK HOLMES PROVIDE SOME CLUES?**

**XINRAN HU**

**Medical Education**

**BACKGROUND**

Hypothetical deductive reasoning and pattern recognition are methods used by physicians to reach a diagnosis. Using pattern recognition, physicians can rapidly generate problem representations for familiar clinical cases. When facing complex or uncommon cases, expert physicians often take more time and use their analytical reasoning skills to reach a diagnosis. By interviewing physicians noted for their diagnostic expertise, a model of clinical reasoning can be developed and compared with that of Sherlock Holmes. Results of the comparisons may be used to develop educational sessions that help medical students understand clinical reasoning.

**OBJECTIVES**

To assess the educational values of Sherlock Holmes stories in medical school in the context of expert diagnostic reasoning.

**MATERIALS AND METHODS**

Participants in this descriptive study were selected by purposeful sampling to provide access to the richest data available describing diagnostic reasoning. A survey letter was sent out by email to all faculty physicians from the Departments of Medicine, Neurology and Pediatrics at Vanderbilt University Medical Center, asking them to recommend a list of skilled diagnosticians. Faculty physicians who have been recommended most frequently were invited to participate in this study.

To facilitate discussion of expert reasoning process and diagnostic reasoning strategies found in the detective literature, an interactive website was developed. The website and brochures have been distributed through collaboration with the Metro Public Health Department for Davidson County.

**Conclusions**

Earlier studies in clinical reasoning have noticed both the value of Holmes-style reasoning and the link between Sherlock Holmes and certain specialties, such as Neurology. Other reports suggested that the reasoning strategies found in the detective literature can inspire physicians to better diagnostic strategies. My literature review also suggests that the method used by Sherlock Holmes resembles the approach used by expert diagnosticians. A cognitive model of expert diagnostic reasoning generated by physician interviews will not only help us to analyze the clinical problem representation by expert physicians, but also provide great value in medical education, inspiring the appreciation of the value of logic and reasoning in the life of a physician.

**REFERENCES**

Available upon request.

**ACKNOWLEDGEMENTS**

Don Moore, PhD (mentor), Vanderbilt University School of Medicine.

**REDUCTION OF NEW HPV INFECTIONS IN DAVIDSON COUNTY: A MULTI-FACETED APPROACH**

**JOHN PHILLIPS**

**Medical Education**

**BACKGROUND**

In July 2006, the FDA approved Gardasil, the first vaccine aimed at specific strains of HPV. Since its approval, the vaccine has been met with controversy, misunderstanding, and lack of use.

**OBJECTIVES**

To reduce the number of new HPV infections by increasing access and use of Gardasil.

**MATERIALS AND METHODS**

For this study, we created separate patient and physician education brochures and an interactive website. The educational materials are aimed at increasing knowledge of the advantages and disadvantages of Gardasil and the availability of Gardasil through local health department clinics. Separate physician and patient brochures will be sent to every physician in Nashville. The impact of this educational intervention will be measured by looking at vaccination rates both before and after the intervention through collaboration with the Metro Public Health Department for Davidson County.

**RESULTS**

The website and brochures have been completed. The educational intervention is an ongoing project. Preliminary data has shown that use in Nashville is very low, especially among those eligible for Gardasil, the first vaccine aimed at specific strains of HPV. Since its approval, the vaccine has been met with controversy, misunderstanding, and lack of use.

“Emphasis experiences in the Medical Education area are designed to introduce students to the theory and practice of learning and teaching in medicine.”

CONCLUSIONS:
After reviewing this data, we determined that long-term intervention was necessary. We will be continuing to send educational information to physicians in Davidson County. We also saw a need for providing access to free Gardasil for those not eligible for Vaccines for Children. We have funded a pilot program of free Gardasil at the Shade Tree Clinic and are working to fund a permanent stock of Gardasil at the clinic. So far, we have received up to $88,000 in funding for the education intervention.

ACKNOWLEDGEMENTS
Dr. Lonnie Burnett, the Nashville Academy of Medicine Foundation, and the Metro Public Health Department.

DEVELOPMENT AND EVALUATION OF A NEW EDUCATIONAL PROGRAM IN MEDICINE FOR HIGH SCHOOL STUDENTS
CHRIS SCALLY AND DAVID WALLACE
Medical Education

BACKGROUND
The Vanderbilt Summer Academy seeks to educate high school students with an intensive summer course. The directors desired a stimulating class on medical education, providing an opportunity to experience modern medicine.

OBJECTIVES
The project sought to effectively teach selected topics in the medical sciences – including anatomy, physiology, and pathology – to a class of high school students.

METHODS AND MATERIALS
Didactic classroom education, hands-on laboratories, and interactions with physicians and patients were used to engage 10 students and encourage their interests in medicine.

A pre-test and a final exam were administered to assess efficacy in educating the students. Surveys were administered to the students and their parents to assess the course’s impact on future career interests and to obtain feedback to improve the course.

RESULTS
The mean score on the pre-test was 57.31%; the final exam mean was 71.67%. This indicates that the students responded well to the educational techniques used, and the challenge was appropriate.

In the initial evaluations, students consistently gave positive ratings, citing the course material and teaching methods as positive factors. Results of the follow-up surveys are pending.

CONCLUSIONS
In addition to the medical curriculum, this course engaged students in discussions of medical ethics, healthcare economics, and their personal perspectives in medicine. We sought to better prepare these students for a future in medicine, both by educating them from a scientific perspective and by helping them grow as individuals. While we must point out the objective measures of our success in the former, we are most proud of our success in the latter.

ACKNOWLEDGEMENTS
Dr. Bonnie Miller, Dr. Virginia Shepherd, Elizabeth Schoenfeld, Jay Watson, our student population.

VU School of Medicine
Emphasis Forum III
Medical Humanities

MEDICAL HUMANITIES

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During the first semester of VMS I, students will be exposed to the nature of humanities scholarship through lectures, seminars and individual meetings with potential mentors in each area described above. In the spring semester, students will meet with area director and members of the area committee to discuss their projects. At the end of Spring semester, students will turn in an annotated bibliography covering the pertinent literature for their projects.

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Mark J. Bliton, Ph.D. received his undergraduate degree in Philosophy and English from Allegheny College before studying Applied Philosophy at Bowling Green State University, OH and then becoming a student of Richard M. Zarei at the Center for Clinical and Research Ethics at Vanderbilt University. While working toward his Ph.D. in the Department of Philosophy at Vanderbilt, Bliton also served as a Clinical Fellow in the Center as well as an Instructor of Medical Ethics in Vanderbilt’s School of Medicine. A faculty member of Vanderbilt University’s Center for Biomedical Ethics and Society, Bliton is an Associate Professor in the Department of Medicine. He has been member of Vanderbilt University Medical Center’s Ethics Committee since 1991. His work is now focused on the Monroe Carell, Jr. Children’s Hospital at Vanderbilt...
BACKGROUND
Healthcare reform is among the most complex and hotly debated issues in current political and popular discourse in this country. Advances in medical technology, changes in cultural values, and worldwide trends in healthcare delivery have generated concerns about the need for reform at the level of professional, personal, social, and economic interactions.

DESCRIPTION OF PROCESS
The goal of this project has been to write extensively about these concerns and interactions as a way to imaginatively anticipate the changes that are occurring, and then probe the same to imagine what we ought to do. The writing used a number of narrative fiction styles, incorporating elements of satire and humor. By creating and developing characters that represented varied perspectives in a societal environment different, but not far removed from our own, my objective was to interrogate personal and social standpoints, whether explicit or implicit, evident in our proposed solutions. Among the issues I have incorporated in this narrative are whether “slippery slope” arguments are ever valid, if so, in what circumstances and by what mechanisms. How these arguments might relate to medical and ethical issues such as privacy and end-of-life care became central medical and ethical issues such as privacy and end-of-life care became central.

OBJECTIVES
To review the current mechanistic understanding of the placebo effect in the fields of psychology and neuroscience. To develop a cohesive model of how contextual factors within a medical encounter can generate healing. To provide concrete suggestions on how physicians can use the mechanism of the placebo effect to enhance the efficacy of treatment.

METHODS AND MATERIALS
This paper examined relevant literature in peer review journals as well as published books in the fields of psychology, neuroscience and medical history.

RESULTS AND CONCLUSIONS
Four broad contextual factors were outlined and shown to affect a patient's expectation of treatment outcome. This psychological expectation correlated with objective neurological changes in the prefrontal cortex and initiated a series of neurological and physiological changes that incited or aided a healing response. A physician can enhance the efficacy of a treatment by designing a treatment plan that is compelling and meaningful to the patient and by purposefully reinforcing the patient’s confidence in both treatment and the physician.

ACKNOWLEDGMENTS
Many thanks to Dr. Larry Churchill, Professor of Medical Ethics, Vanderbilt University, for his generous guidance and support in the development of this work.
Experiments are currently in progress. The results and conclusions will allow us to perform lineage map- tion. Leading to irreversible LacZ marking of fusion enzyme in Lrig1 Cre-ERT2 mice with the ROSA26 LacZ reporter mice harboring Lrig3 and Mig6 flox/flox.

**OBJECTIVES**

To confirm the involvement of ubiquitination in the radioprotective effect of lithium and to determine specific ubiquitination targets using HT22 hippocampal neurons.

**MATERIALS AND METHODS**

We are utilizing a mouse harboring Lrig1 Cre-ERT2 knock-in allele and mice harboring Lrig3 and Mig6 fox/fox alleles. We will cross Lrig1 Cre-ERT2 mice with the ROSA26 LacZ reporter strain which contains a Cre-activatable ROSA26 LacZ reporter. Treatment with tamoxifen will activate the Cre-ERT2 fusion enzyme in Lrig1 Cre-ERT2 mice allowing excision of the ‘roadblock’ sequence in the ROSA26 LacZ reporter leading to irreversible LacZ marking of Lrig1, Lrig3, or Mig6 positive cells. This will allow us to perform lineage mapping of these cells in vivo. We also plan to knock out Lrig3 and Mig6 in Lrig1 Cre-ERT2 mice by crossing this mouse with mice harboring Lrig3 and Mig6 fox/fox alleles followed by tamoxifen treatment. Using these models, we will evaluate gastrointestinal carcinogenesis and recovery from gastrointestinal injury.

**RESULTS AND CONCLUSIONS**

Experiments are currently in progress.
CONCLUSIONS Our results show an effect of diet on cortical responses to the psychostimulant amphetamine. These results parallel previous studies of diminished amphetamine response in hypoinulinemic animals, suggesting insulin resistance, consistent with the obese phenotype that results from a high-fat diet, contributes to the observed effect. Future research remains to be done to understand the interaction of diet, energy balance hormones like insulin, and dopaminergic reward systems in the development of obesity.

ACKNOWLEDGEMENTS Calum Avison, Kevin Niswender, Jason Williams, Aurelio Galli, and Nicole Speed.

LINEAGE TRACING OF THE SEROSAL MESOTHELIUM
NICHELLE I. WINTERS Medical Scientist Training Program

BACKGROUND/PROBLEM The serosal mesothelium has recently been identified as the major source of vascular smooth muscle cells to the developing intestines. Wilm’s tumor protein (WT1) is an early mesothelial marker.

OBJECTIVES To determine the developmental potential of the serosal mesothelium.

METHODS AND MATERIALS Mesothelium lineage tracing was performed using WT1cre;R26R and WT1cre;eYFP mouse lines. Whole mount intestines were incubated with X-gal. Immunohistochemistry for β-gal, eYFP, c-kit, α-SMA, s100, PECAM and PGFP9.5 was used to identify specific cell types.

RESULTS Whole mounts of intestines show β-gal-expressing cells in blood vessels as well as in linear and clustered networks. Immunohistochemistry with β-gal or eYFP and markers of interstitial cells of Cajal (c-kit), glial cells (s100), and endothelial cells (PECAM) did not co-label. A subset of neurons, identified by PGFP9.5, and vascular smooth muscle cells, identified by α-SMA, co-labeled with eYFP. Other β-gal or eYFP+ cell types have not yet been identified.

CONCLUSIONS It is well established that enteric neurons are neural crest derivatives. Co-labeling of the lineage markers with a neural marker indicates it is likely that neural crest cells express WT1 at some point during their development although this has not yet been demonstrated. Future studies will focus on distinguishing mesothelial derivatives from neural crest derivatives by temporal isolation using a WT1 inducible-Cre or direct labeling of the mesothelium.

REFERENCES Available upon request.

ACKNOWLEDGEMENTS David Baker, Adam Greer, Rebecca Thomason, and the Vanderbilt Medical Scientist Training Program.

PATIENT-ORIENTED RESEARCH

The area of Patient-Oriented Research addresses:
1) the mechanisms of human disease,
2) therapeutic interventions,
3) clinical trials,
4) the use of new technologies for the diagnosis, treatment, or prevention of disease, and
5) the emotional, social, development, and behavioral mechanisms of health and disease.

In addition to standard randomized clinical trials, patient-oriented methodologies also include self-perception measures (e.g., patients completing questionnaires), interviews, and focus groups. The core of this focus area is the scientific study of human participants to understand the causes of disease, health, and function. This understanding contributes to therapy and prevention. Clinically derived scientific knowledge, laboratory science, and patient-oriented science are core disciplines of the medical profession.

“The Emphasis Program provides me a unique opportunity to nurture aspiring medical students in the field of clinical research. The motivation to learn from each clinical encounter, fostered by the patient-oriented research of the Emphasis Program, is likely to transform each participating student into a life-long learner, effective problem-solver, and compassionate thinker. To paraphrase William Osler, ‘No matter how trifling the clinical question on hand, answer it with a feeling that it demands the best that is in you, and when done look it over with a critical eye, not sparing a strict judgment of yourself.’ Through the auspices of the Emphasis Program, I wish to inculcate such a spirit of reflection in each medical student.’

“The Emphasis Program provides a unique opportunity to nurture aspiring medical students in the field of clinical research.”

Jayant Shenai, MD, is the Director of Educational Affairs for the Division of Neonatology, Vanderbilt Children’s Hospital. His primary research interests include vitamin A in relation to chronic lung disease in pre-term infants and related clinical applications. As the Editor-in-Chief of NeoReviews Plus, he contributes to the Self-Assessment Program for neonatologists developed by the American Academy of Pediatrics. He participates in the grant review process at the National Institutes of Health as a member of the Study Section of Reproductive Biology. He is an Amos Christie Award winner for his outstanding teaching accomplishments and was a 2006 recipient of an Excellence in Teaching award for his contribution to continuing medical education.
ISOPROSTANES AS A BIOMARKER OF PRETERM BIRTH
Tiffany N. S. Ballard
Patient-Oriented Research

BACKGROUND
Preterm birth, or birth before 37 weeks' gestation, continues to be a major public health and economic concern in the U.S. However, measurable biomarkers that can predict a woman's risk for delivering preterm have yet to be discovered. Oxidative stress has been implicated in premature rupture of the membranes, a condition associated with 30-40% of preterm births, and is therefore a potential biomarker. F2-isoprostanes are currently recognized as the most accurate index of levels of oxidative stress and can be easily measured in urine.

OBJECTIVES
We plan to conduct a pilot study to determine whether levels of oxidative stress can be used as a biomarker of preterm birth by measuring the levels of isoprostanes in pregnant women.

METHODS AND MATERIALS
We plan to enroll high risk women with a previous history of preterm birth already participating in the Better Birth Outcomes study. We will measure the level of isoprostanes in urine samples collected during the woman's second and third trimesters. Birth outcomes, risk factors, and levels of isoprostanes will be analyzed.

RESULTS
Isoprostane level measurement is in progress.

CONCLUSIONS
At the time of analysis twenty urine samples had been collected from eleven different women. These samples will allow for an initial assessment of the value of isoprostanes as a marker of preterm birth to be completed, and patient enrollment is ongoing.

ACKNOWLEDGEMENTS
Pat Temple, MD, MPH and Jason Morrow, MD.

MAXIMIZING INTERPRETABLE HEART SOUNDS IN THE ED USING DIGITAL AUSCULTATION AND COMPUTERIZED ANALYSIS
Yuriy Bronshtein
Patient-Oriented Research

BACKGROUND
Recent efforts to use stethoscope-based digital phonocardiography for detection of 33 heart sounds in the Emergency Department (ED) environment have been limited by the high noise/signal ratio (NSR) of recordings.

OBJECTIVES
To determine an optimal combination of the three factors (patient position, auscultation location, and stethoscope type) capable of minimizing NSR for computer-analyzed digital heart sound recordings.

METHODS AND MATERIALS
Retrospective chart review of 31 patients undergoing combined PCI and Valve Surgery in Vanderbilt's Hybrid OR and compare with the predicted mortality of combined CABG and Valve Surgery.

RESULTS
Of the 31 patients reviewed in the study, two patients (7%) died within 30 days of surgery. Four patients (13%) had reoperations for bleeding. Three patients (10%) developed LCOs, 1 patient (3%) developed a stroke, and 1 patient (3%) developed renal failure requiring dialysis. The observed mortality of combined PCI and Valve Surgery was 3.8%. This was significantly lower than the Society of Thoracic Surgeons (STS) predicted mortality of 8.9% for combined CABG and Valve surgery.

CONCLUSIONS
The Hybrid PCI and Valve surgery do represent a feasible alternative to conventional CABG and Valve surgery. This may be particularly useful in high-risk patients who require re-operative cardiac surgery. However, the lower mortality rates achieved may be the costs of risks of bleeding associated with PCI.

ACKNOWLEDGEMENTS
Dr. John Byrne, Dr. Marzia Leach, Dr. Ram Unamantan, Jodi Weinstein, Frank Zhao, and Mohan Mallipudi.

RECENT EFFORTS TO USE STETHOSCOPE-BASED DIGITAL PHONOCARDIOGRAPHY FOR DETECTION OF 33 HEART SOUNDS IN THE EMERGENCY DEPARTMENT (ED) ENVIRONMENT HAVE BEEN LIMITED BY THE HIGH NOISE/ SIGNAL RATIO (NSR) OF RECORDINGS.
RESULTS
Of 58 patients, 31 survived to 3 months age (53%). Twenty-one patients (68%) did not develop cPH and 10 patients (32%) did. Two patients with cPH died at 3 and 70 months. Demographic variables (gestational age, birth weight, side of CDH, liver position) were not significantly different between the two groups. Furthermore, ventilator settings before ECMO and time on ECMO were different between the two groups. But, after ECMO, patients with cPH required significantly higher ventilator settings, more advanced ventilator modes, and longer intubation (all p<0.05).

CONCLUSION
Babies with CDH who are destined to develop cPH appear to have both anatomically and physiologically similar to babies who have resolution of cPH until the period after ECMO. Then, babies who develop cPH require more pulmonary support for longer times. This suggests that in patients who develop cPH congenital physiologic differences are not manifested prior to coming off ECMO. Optimization of the CDH patient coming off ECMO to reduce ventilator support may prevent cPH and reduce long term morbidity and mortality.

ACKNOWLEDGMENTS
I would like to thank Dr. Edmund Yang, Vanderbilt University School of Medicine, for his mentorship, guidance, and friendship.

REVIEW OF OUTCOMES IN ADOLESCENTS AND YOUNG ADULTS AT VANDERBILT- Ingram CANCER CENTER
ALLISON FLOYD
Patient-Oriented Research

BACKGROUND
Although a large population of adolescents and young adults (AYAs), ages 15 to 30, are diagnosed with cancer each year, they have incurred the least amount of improvement in 5-years survival. Studies have shown that those participating in a clinical trial, as well as those treated at a pediatric institution, have better outcomes than those who are not.

OBJECTIVES
To determine if the majority of AYA cancer patients in Tennessee are not treated at Vanderbilt and, if those treated at Vanderbilt-Ingram Cancer Center (VICC) on a clinical trial, or at Monroe Carell Jr. Children’s Hospital at Vanderbilt (VCH) have better outcomes than those not treated at VICC, not on trial, or those treated at Vanderbilt University Medical Center.

METHODS AND MATERIALS
A retrospective chart review was performed on all patients treated at VICC diagnosed between 15 and 30 years old from 1990 to 2005. Data recorded included age at diagnosis, type of cancer and stage, participation in a clinical trial, specialty of referring physician, specialty of treating physician, and whether the patient is alive or dead. A similar review was performed for those patients in Tennessee not treated at VICC, and both sets of data were compared.

RESULTS
No data from outside VICC has been collected thus far, but of those treated at VICC, 13% of patients were on study, of which 70% are alive. Sixty-seven percent of patients were not on study, of which 79% are alive. For 23% trial status is unknown.

CONCLUSIONS
Data is inconclusive thus far.

ACKNOWLEDGMENTS
Dr. Anderson Collier, Monroe Carell, Jr. Children’s Hospital at Vanderbilt.

CORTICOTROPIN RELEASING HORMONE BINDING PROTEIN AND PRETERM BIRTH
ELIZABETH A. GORDON
Patient-Oriented Research

BACKGROUND
Preterm birth (PTB) is the leading cause of neonatal mortality in the United States and a source of significant morbidity, including cerebral palsy, lung disease, and behavioral/cognitive deficits. Nationally, a healthy disparity exists in African Americans (AA), in whom PTB rates are 50% higher than in Whites (data corrected for socioeconomic factors). The multi-factorial etiology of PTB includes a genetic component. The hypothalamic-pituitary-adrenal (HPA) axis is hypothesized to influence the onset of parturition. Corticotropin Releasing Hormone (CRH) levels in maternal plasma peak at delivery, with a more rapid rate of increase in preterm deliveries. CRH Binding Protein (CRH-BP) also differs by race. CRH Binding Protein (CRH-BP) binds CRH, effectively removing CRH from the HPA axis. Levels of CRH-BP fall in late pregnancy to a nadir at delivery, increasing bioavailable levels of CRH and possible onset of parturition.

OBJECTIVES
Test associations between CRH-BP single nucleotide polymorphism (SNP) genotype in mothers/infants and pregnancy outcome (term vs. preterm), ethnicity (AA vs. White), and mRNA levels in maternal plasma.

METHODS AND MATERIALS
Subjects enrolled in the study, of which 68 completed a follow-up survey approximately 1 to 3 months later. A Likert scale was formulated to determine parents’ attitudes towards spanking and a summed score was calculated for each participant. Statistics included Wilcoxon signed rank tests.

RESULTS
Of the 49 individuals in the intervention group, 48 felt more confident that they could respond to hurtful behavior in an appropriate way as a result of viewing the Play Nicely program (27 agreed, 21 strongly agreed). Furthermore, 86% planned to change how they would respond to hurtful behavior with their children. While there was no statistically significant difference in attitudes towards spanking between the intervention and control groups at follow up, among the parents in the intervention group, there was a significant shift (p<0.045) in parents’ attitudes favoring less spanking when compared to before viewing the program. This positive shift was even greater in parents who, immediately after viewing the video, listed spanking as an option they would choose (less than five years of age who either had a preschool age or were enrolled in the McNeilly Center or presented to the pediatric clinic with their child for a well-child visit. The intervention was a 20 minute segment of the Vanderbilt Medical education program that focused on teaching childhood aggression management skills. A total of 100 parents participated in the study, of which 68 completed a follow-up survey approximately 1 to 3 months later. A Likert scale was formulated to determine parents’ attitudes towards spanking and a summed score was calculated for each participant. Statistics included Wilcoxon signed rank tests.

RESULTS
The results of this study will provide information regarding the possible role of CRH-BP polymorphisms in premature birth and the racial health disparity of prematurity.

REFERENCES
Available upon request.

ACKNOWLEDGEMENTS
Patricia Temple, MD, Scott M. Williams, PhD, Nancy C. Chescheir, MD, Alison Woodworth, PhD, Nabil Mohammad, The Vanderbilt GCRC, and the Vanderbilt University Medical Center.

EFFECTS OF A BRIEF VIOLENCE PREVENTION PROGRAM ON PARENTS’ ATTITUDES AND RESPONSES TO CHILDHOOD AGGRESSION
EMMA HAMILTON AND MELISSA JOHNSON
Patient-Oriented Research

BACKGROUND/PROBLEM
Childhood aggression and poor parental disciplining skills are two risk factors for committing a violent crime as an adolescent.

OBJECTIVES
The aim of the study is the see whether a short, interactive CD-Rom program can affect parents’ disciplinary beliefs and techniques and help parents better manage childhood aggression and may aid efforts in violence prevention.

REFERENCES
Available upon request.

ACKNOWLEDGEMENTS
Dr. Seth Scholer and the Department of Pediatrics, Vanderbilt University School of Medicine, the McNeill Center, and Nurses for Newborns.
from three patients with H&Y IV PD implanted with DBS.

RESULTS
There was no significant difference in the length of STN (4.7±0.64mm for EPD vs. 4.7±0.64mm for APD [n=26]). The ratio of background noise in STN to substantia nigra pars reticulata (SNr) was significantly lower in EPD (2.12±0.9 vs. 3.19±4.1, p<0.01). Average firing was significantly lower in EPD (23.0±9 Hz) compared to APD (26.9±9 Hz, n=58, p=0.02).

CONCLUSIONS
STN mapping of three EPD patients shows that hyperactive neuronal activity similar to that observed in APD can be used to guide DBS lead placement. Relative increases in background noise and firing frequency of STN in APD indicate increased activity with disease progression. Given the potential toxicity of STN output, these data may support the argument for earlier initiation of DBS therapy.

ACKNOWLEDGEMENTS
P. David Chi, MD, T. Hendelander E. Gill, BS, and Thomas L. Davis, MD, Department of Neurology, C. Chris Kao MD, Department of Neurosurgery, Michael S. Remple, PhD, Peter E. Konrad MD, PhD, and Joseph S. Neimat MD, MS, Department of Neurosurgery, and Niel D. Marcus, Vanderbilt University.

UNDERSTANDING SYMPTOM BURDEN IN HEAD AND NECK CANCER (HNC) PATIENTS

BRITTANY HOLMES
Patient-Oriented Research

BACKGROUND
HNC affects over 40,000 patients per year in the United States. Studies have identified a number of problematic symptoms and psychosocial concerns in this patient population. However, the incidence of these issues at the time of diagnosis is unknown. Of particular concern is insomnia, which is experienced by a high percentage of patients. The causes and consequences of sleep disturbance in HNC remain poorly understood.

OBJECTIVES
1. To capture baseline prevalence of symptoms and psychosocial issues at the time of diagnosis in HNC patients. 2. To gather longitudinal data on sleep quality during therapy and the correlation with quality of life, mood, fatigue, and head and neck symptom burden.

METHODS AND MATERIALS
A cross-sectional survey was designed using validated measures to assess head and neck symptoms, demographics, pain control, general symptoms, mood, smoking and drinking history, and quality of life. A second tool was developed to collect weekly prospective data on the incidence of insomnia, extent of sleep disturbance, and possible contributing factors, as well as head and neck symptoms, quality of life, mood, demographic, and tumor and treatment variables.

RESULTS
Data collection is in progress with protocols open to recruitment.

CONCLUSIONS
These data will characterize the baseline symptom burden of HNC patients. In addition, detailed information about sleep quality and its effect on quality of life will be obtained. Future research may correlate symptom burden with patient outcomes.

ACKNOWLEDGEMENTS
Dr. Barbara Murphy, Department of Medicine, Vanderbilt University School of Medicine.

PEDiatric ASTROBLASTOMA: an AnalySIS OF the SEER dAtABASE And one institution’s experience

ANDREW J. LAUTZ
Patient-Oriented Research

BACKGROUND
Astroblastomas are rare glial neoplasms, reportedly comprising 0.4-2.8% of gliomas described in the literature. These tumors typically present as well-circumscribed, cystic masses in cortical or subcortical locations within the cerebral hemispheres. The rarity of these tumors has precluded an official WHO grade, and the literature stratifies astroblastoma into low and high grades according to anaplasticity, mitotic activity, and vascular proliferation. High-grade astroblastomas are associated with a poorer prognosis and increased risk of recurrence. The paucity of large-scale studies has also prevented a consensus in optimal management of astroblastoma.

OBJECTIVES
1. To examine the pediatric astroblastoma population treated at Vanderbilt from 1973 to 2004 for trends in incidence, demographics, and treatment-related outcomes. 2. To compare these results to the astroblastoma patients tracked by the Surveillance, Epidemiology, and End Results (SEER) database in that time frame.

METHODS AND MATERIALS
This retrospective study was conducted using patient records at an academic medical center and data from the SEER database. The National Cancer Institute’s SEER*Stat statistical software program was utilized to gather epidemiologic data and information on treatment-related outcomes. Astroblastoma patients treated at Vanderbilt are being identified with the assistance of a neuropathologist.

RESULTS
The final results are pending further analysis of the data.

ACKNOWLEDGEMENTS
John F. Kottches, Jr., PhD, MD, Department of Pediatrics, Division of Pediatric Hematology-Oncology, Vanderbilt University Medical Center.

CYTOKINEs ASSOCIATED WITH MORTALITY IN FEMALE PATIENTs WITH ARDS

MICHELLE LIGHTFOOT
Patient-Oriented Research

BACKGROUND
Acute Respiratory Distress Syndrome (ARDS) is common among critically ill patients and causes significant long-term morbidity and mortality. Elevated pro-inflammatory cytokines such as interleukin (IL)-1β and IL-6 have been shown to correlate with mortality in ARDS patients.

OBJECTIVES
To assess whether there are gender differences in cytokines associated with mortality in patients with ARDS.

METHODS
Data was collected prospectively from adult trauma patients admitted to an ICU for at least 48 hours. Blood was drawn within 24 hours of enrollment for analysis of initial cytokine values (IL-1, IL-6, IL-8, IFN, and TNF-a). Subsequent cytokine analysis was performed approximately 48 hours after the initial blood draw. The presence of ARDS was defined in accordance with the American European Consensus Conference definition. The primary outcome was 28-day in-hospital mortality.

RESULTS
One hundred eighty-four patients with ARDS (107 males, 77 females) were enrolled. Cytokine values and mortality (19% for males vs 23% for females, p=0.46) did not differ by gender. Females with ARDS who died had elevated IL-2, IL-5, IL-12, and IFN levels compared to survivors. The second values of IL-5 and IFN were also increased in female non-survivors, demonstrating a persistent elevation of these cytokines. No cytokines were associated with mortality in male ARDS patients.

CONCLUSIONS
Female non-survivors of ARDS demonstrate significant elevations of the pro-inflammatory cytokines IL-2, IL-5, IL-12, and IFN. Since no such correlation appears to exist for males with ARDS, this finding may indicate a gender-specific inflammatory and/or immune response to pulmonary injury.

ACKNOWLEDGEMENTS
Dashi Heffernan, MD, Leidy Dosssett, MD, MPH, Addison May, MD, Department of Trauma Surgery, Vanderbilt University Medical Center.

VOXEL-BASED FRACTIONAL ANISOTROPY DIFFUSION IMAGING IN YOUNG ADULTS WITH PRE-NATAL ALCOHOL EXPOSURE

MARIA MAGUIRE
Patient-Oriented Research

BACKGROUND/PROBLEM
Individuals exposed to alcohol in utero exhibit behavioral deficits that meet diagnostic criteria for Attention Deficit-Hyperactivity Disorder. Attention, executive function, and arithmetical magnitude representation have been found to be particularly impaired in these individuals.

OBJECTIVES
The aim of this study is to determine whether structural abnormalities exist in white matter tracts that connect brain areas subserving attention, impulse control, and number processing in pre-natal alcohol exposed (PNAE) subjects.

METHODS AND MATERIALS
Participants were recruited from the Detroit Fetal Alcohol and Cocaine Exposure Cohort, which consists of African-American young adults born between 1986 and 1989 who were exposed to at least 7 drinks per week in utero. Nine PNAE subjects and seven age- and race-matched controls underwent MRI scanning which included Diffusion Tensor Imaging (DTI). DTI images were acquired using single-shot, diffusion weighted echo planar imaging. Data was corrected for eddy current warping and fractional anisotropy was calculated in each image voxel. Each subject’s fractional anisotropy data was registered to its own T2-weighted and high-resolution T1-weighted images in Talairach space using the Adaptive Bases Algorithm. Mean FA maps for each group were created and aligned to an average template to determine microstructural differences.

RESULTS
At this time DTI image analysis is in progress, with each subject’s images individually co-registered. Mean FA maps and group comparisons analyses are ongoing.

CONCLUSIONS
It is hypothesized that PNAE subjects will show decreased overall fractional anisotropy than controls, indicating more poorly organized white matter tracts. We expect areas affected will include the internal capsule bilaterally and the corpus callosum. Likewise, we expect the level of white matter organization to correlate with subjects’ performance on impulse control and mathematical tasks.

ACKNOWLEDGEMENTS
Calum Avison, PhD, Vanderbilt University Institute of Imaging Science, Adam Anderson, PhD, and Sundi Narayan.

MEASUREMENT OF LONGITUDINAL (T1) RELAXATION IN THE HUMAN LUNG AT 3.0 T

MICHAEL B. NICHOLS
Patient-Oriented Research

BACKGROUND
Several pathologic conditions of the lung can be characterized by impaired gas exchange and thus the ability to measure the extent of dissolved oxygen in pulmonary capillaries is an important diagnostic tool. The spin-lattice (or longitudinal) relaxation time of lung parenchyma gives insight into the amount of dissolved oxygen and the microvascular volume.

OBJECTIVES
To measure the longitudinal (T1) relaxation time of human lung parenchyma at 3.0 T, independent of large vessel signal, and to examine the distribution of position in gravitational, isovascular, and radial planes.

METHODS AND MATERIALS
Sixteen subjects were imaged. A series of 16-20 turbo field echo (TFE) images was acquired over a six second period after the application of a single non-selective inversion (180°) pulse. Tissue-based segmentation was used to separate parenchymal tissue from large pulmonary vascular tissue in the resulting images. Time-intensity curves for each tissue type were calculated and the time point at which relaxation time was determined by line-fitting the time-intensity curves. The
RESULTS
The T1 relaxation time of human lung parenchyma at 3.0 T was determined to be 1.37 ± 0.226 milliseconds, while the T1 of blood in large pulmonary vessels was 1623 ± 236 milliseconds. Whole lung T1 was found to be 1.397 ± 24.4ms.

CONCLUSION
T1 of lung parenchyma was found to be significantly shorter than the T1 of blood in large pulmonary vessels and whole lung T1. No regional gradient was seen in the gravitational or isogravitational directions, but a significant gradient was seen in the radial direction.

CAN PRELIMINARY BRONCHOALVEOLAR LAVAGE CULTURE RESULTS EXPEDITE VENTILATOR ASSOCIATED PNEUMONIA DIAGNOSIS?
JARED O'LEARY
Patient-Oriented Research

BACKGROUND
Ventilator associated pneumonia (VAP) is the number one ICU infection in the United States. It is associated with increased morbidity and mortality as well as increased length of hospital stay, increased costs, and necessary exposure to broad spectrum antibiotics (BSA) increasing the risk of multi-drug resistant bacteria. Clinical diagnosis of VAP is made by culture of a bronchoalveolar lavage (BAL) sample to determine infection and identify the pathogen. The final results of these cultures are reported 2-4 days later.

OBJECTIVES
Our aim is to determine whether the time to diagnosis can be shortened by using preliminary culture data to diagnose VAP.

METHODS AND MATERIALS
Diagnosis of VAP was defined as growth of more than 10,000 CFUs in the BAL sample. Eighty patients with VAP were included. The preliminary BAL culture was sent within 24h after the patient was intubated. The preliminary culture was considered separate from the initial BAL culture when the preliminary BAL was taken within 24 hours of the first BAL culture.

RESULTS
A total of 80 patients were included in the analysis. The preliminary culture was available in 77 patients (96.3%). The median time from intubation to obtaining the preliminary culture was 3.0 hours (IQR 1.5-6.0). The preliminary culture was positive in 56 patients (72.5%). There were 6 patients in whom the preliminary culture was negative and the initial culture was positive. Among the patients with positive preliminary cultures, the median time to receipt of results was 24 hours (IQR 2.0-48.0). Among the patients with negative preliminary cultures, the median time to receipt of results was 24 hours (IQR 24.0-24.0).

CONCLUSIONS
Using preliminary BAL culture results to expedite the diagnosis of VAP is feasible. Further studies are necessary to determine if this practice affects patient outcomes.
Objective: To define the epidemiology of MRSA colonization in 250 pregnant women and their newborns.

Methods and Materials: Pregnant women (34-38 weeks gestation) were scanned twice, on admission and prior to hospital discharge. Cultures were plated on selective media with and without oxacillin, and MRSA isolates were confirmed by PCR detection of the mecA gene.

Results: Preliminary analysis suggests that AMPT administration and subsequent dopamine depletion diminish functional connectivity with right anterior thalamus to left ventral striatum, between left and right head of caudate, and between a region inclusive of dorsal raphe and right ventral striatum (p < 0.05).

Conclusions: Dopamine depletion appears to affect evidence of functional connectivity among regions known to have strong dopaminergic activity. Such non-invasive, low-cost scanning methods may be valuable for assessing dopaminergic function in disease.
DETERMINANTS OF INTRAOPERATIVE GRAFT FAILURE FOLLOWING INTRAOPERATIVE ARTERY BYPASS SURGERY

JODI WEINSTEIN
Patient-Oriented Research

BACKGROUND
Intraoperative graft failure in coronary artery bypass grafting (CABG) surgery may result from technical errors. In our hybrid operating room (OR), intraoperative completion angiography can be routinely performed to identify such anastomotic defects. However, because completion angiography requires additional time and cost, it would be desirable to identify which subsets of patients are at risk for intraoperative graft failure and would benefit most from completion angiography.

METHODS AND MATERIALS
A retrospective chart review of 239 consecutive patients who underwent CABG with intraoperative completion angiogram between 04/05-07/06 in the Vanderbilt Hybrid OR was conducted. Twenty-nine preoperative characteristics and 12 intraoperative characteristics were compared between patients with and without angiographic defects. Statistical analysis was performed to identify risk factors for graft failure.

RESULTS
A total of 517 grafts were performed. Ninety-nine percent of patients had left anterior descending (LAD) grafts, 95% had left internal mammary artery to LAD grafts, 64% had circumflex artery grafts and 49% had right coronary artery (RCA) grafts. Anastomotic defects were identified in 4% of grafts. The presence of preoperative anastomotic defects and history of smoking were observed to be statistically significant predictors of graft failure. Grafts to the RCA territory were also seen to be more prevalent in patients with angiographic defects. Conclusion: Intraoperative graft failure occurred in 4% of grafts in our high-volume center and was detected by completion angiography. It is more likely to occur in patients requiring preoperative inotropic support, with a history of smoking and with grafts in the RCA territory. These results validate the necessity of completion angiogram in CABG surgery to improve graft patency.

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Dr. John Byrne, Dr. Marzia Leacche, and Dr. Ramanan Umapathan, Cardiac Surgery, Vanderbilt University Medical Center, and James Balvich, American Association for Thoracic Surgery.

HIPOCPPAMPAL VOLUMES IN BIPOLAR DISORDER, TYPE I, WITH PSYCHOTIC FEATURES

ELIZABETH G. ZELLNER
Patient-Oriented Research

BACKGROUND
The hippocampus is a medial temporal lobe structure that plays a vital role in cognition and emotion. Multiple studies have found that several neuropsychiatric disorders, including schizophrenia and major depressive disorder, are associated with reduced hippocampal volumes. To better understand structural changes of the hippocampus in bipolar disorder and the possible functional ramifications.

ACKNOWLEDGEMENTS
Stephan Heckers, MD, Suzanne Avery, Cara Pendergrass, PhD, and Neil Woodard, PhD, Psychiatric Neuroimaging Program, Vanderbilt University Medical Center.

RESULTS
The mean expression of Class I HDACs 1 and 3 were 3-fold higher in the tumors (p<0.05) with little to no expression in most of the normal samples. HDAC 2 expression was present in all tissue samples, but was 1-4 fold higher in the tumors (p<0.05). The tissue array showed moderate to robust (2-3+) staining of HDACs 1, 2 and 3 in the tumor samples, in contrast to zero to moderate (0-2+) staining in the normal ovarian tissues. FRK228 inhibited colony formation of SKOV-3 cell lines by ~40% with IC50 of FRK228 and by ~80% with staurosporine.

CONCLUSIONS
Ovarian cancer cell lines have higher levels of Class I HDAC isoforms expression and are sensitive to treatment with FRK228. This data argues for further development of this agent or congeners in the treatment of ovarian cancer.

ACKNOWLEDGEMENTS
Arthur Fleischer, MD (Mentor), Dinoe Khabele, MD, Andrew Yilchuk, MD, Deek-Soo Son, PhD and Angelika K. Parlik, PhD, Meharry Medical College

METHODS AND MATERIALS
Nineteen ovarian tissue samples were obtained from women diagnosed with papillary serous ovarian carcinomas and from age-matched women who had their ovaries removed for gynecological conditions other than ovarian cancer. Protein levels of HDAC isoforms were assessed by Western blot analysis. Immunostaining of Class I HDACs was performed on an ovarian tissue microarray generated from the patient samples to determine the localization of HDAC expression. Representative 6-well plate of SKOV-3 (p-53 null) human ovarian cancer cells were treated for 48 hours with increasing concentrations of FRK228. After 7 days, colonies were visualized after staining for 30 minutes with methylene blue.

RESULTS
To determine the expression of HDACs 1, 2, and 3 across ovarian cell lines, tissue microarrays, normal and ovarian cancer tissues were analyzed by immunostaining and Western blot analysis. The mean expression of Class I HDACs 1 and 3 were 3-fold higher in the tumors (p<0.05) with little to no expression in most of the normal samples. HDAC 2 expression was present in all tissue samples, but was 1-4 fold higher in the tumors (p<0.05). The tissue array showed moderate to robust (2-3+) staining of HDACs 1, 2 and 3 in the tumor samples, in contrast to zero to moderate (0-2+) staining in the normal ovarian tissues. FRK228 inhibited colony formation of SKOV-3 cell lines by ~40% with IC50 of FRK228 and by ~80% with staurosporine.

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ElizaBeTh g. zellner

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ACKNOWLEDGEMENTS
Arthur Fleischer, MD (Mentor), Dinoe Khabele, MD, Andrew Yilchuk, MD, Deek-Soo Son, PhD and Angelika K. Parlik, PhD, Meharry Medical College

HYBRID CORONARY REvascularization: CORONary ARtery ByPASS grafts AND PERCUTANeous CORONary interventiOns

FRANK ZHENG ZHAO
Patient-Oriented Research

BACKGROUND
Current treatment for cardiac ischemia due to coronary atherosclerosis include: coronary artery bypass grafting (CABG) and percutaneous coronary intervention (PCI). The Vanderbilt hybrid operating room allows for a combined approach. One-stop hybrid coronary revascularization applies the advantages of both procedures for complex patient populations in one operative setting.

OBJECTIVES
To evaluate procedural safety and efficacy at Vanderbilt Medical Center.

METHODS AND MATERIALS
From April 2005 to July 2006, 239 patients received hybrid coronary revascularization. These patients received the LIMA to LAD bypass graft with a combination of PCI and/or vein grafts. Indications for the performance of hybrid revascularization were divided as follows: in 23% (29) patients had not graftable target vessels but favorable lesions for PCI, in 45% (patients had poor or no conduits, in 118 (88%) patients required decreased operative risk, in 27 (35%) patients required PCI was done to reverse deficits identified on completion angiogram. All patients also underwent coronary angiograms before sternal closure, but and received either 300mg of Plavix the surgery the (in the post CABG surgery PCI group). And Plavix intraoperatively. One hundred fifty grafts and 146 stents were placed during hybrid therapy.

RESULTS
Post-operative results were compared using the patient group receiving standard CABG (n=161) versus hybrid revascularization (n=78). There were no significant differences between the two groups in hospital mortality, perioperative Mls, chest tube drainage, postoperative bleeding, wound infection, stenosis at the site of angioplasty, and length of stay. We also reduced the average aortic cross-clamping time by 7 minutes in the hybrid group, resulting in improved intra-operative cardiac perfusion.

CONCLUSIONS
We believe that hybrid CABG-PCI is feasible and safe. With comparable Clnical outcomes we are currently comparable including heterogeneous samples of patients, including a group of complicated CAD patients. This approach may prove to be superior to current methods of choice in selected patients. Long-term benefits of the procedure are currently being investigated.

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Marta Leacche, MD, Ramanan Umapathan, MD, and John Byrne, MD, Department of Cardiac Surgery, Vanderbilt University Medical Center, James Balvich, MD, Meharry Medical College, and Jodi Weinstein, Vanderbilt University School of Medicine, and the American Association for Thoracic Surgery.

NEWLY DIAGNOSED DEMENTIA IN THE EMERGENCY DEPARTMENT

ELI ZIMMERMAN
Patient-Oriented Research

BACKGROUND
Dementia is common in older adults and decreases quality of life. Pharmacologic therapies exist and can slow the progression of dementia, especially if initiated early. The emergency department (ED) may be well-suited for dementia screening, especially in older patients frequently using the ED.

OBJECTIVES
To determine how often dementia occurs in older ED patients with no prior history of dementia.

METHODS AND MATERIALS
This was a post hoc analysis of a cross-sectional study examining delirium in the ED. The Mini-Mental State Examination (MMSE) was administered to patients 65 and older without a past his-
tory of dementia, and those with scores <23 (of a possible 30) were considered to have dementia. Medical record review was performed to determine whether emergency physicians recognized dementia during the visit.

RESULTS
This analysis included 244 patients without a prior history of dementia. Median (IQR) age was 73 (68, 79) years old. Sixty-seven (37.5%) of patients were alone in the ED and 113 (46.3%) were discharged home. Fifty-eight (23.8%) had dementia based on the MMSE; none were detected by emergency physicians. Among those with dementia, 17 (30.3%) had no surrogate present and 24 (41.4%) were discharged home.

CONCLUSIONS
We observed that dementia occurs frequently in older ED patients without a prior history. Of note, no patient's newly diagnosed dementia was detected by emergency physicians, raising potential safety concerns, especially in those who are alone in the ED and discharged home. ED dementia screening may aid earlier diagnosis and treatment, and future studies should determine if early ED screening improves patient outcomes.

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Jin H. Han, MD, MSc, Department of Emergency Medicine, E. Wesley Ely, MD, MPH, Division of Allergy, Pulmonary, and Critical Care Medicine, Vanderbilt University Medical Center.

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