



BRODY
SCHOOL of MEDICINE

DEPARTMENT OF INTERNAL MEDICINE

presents the

Seventeenth Annual RESEARCH DAY - 2003



**Thursday, April 10, 2003
8:00 AM – 2:00 PM**

Brody School of Medicine – Room 2W-40

**The Department of Internal Medicine
Seventeenth Annual Research Day – 2003**

is presented by

**The Brody School of Medicine
East Carolina University**

**Department of Internal Medicine
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Department of Internal Medicine

Carlos A. Estrada, MD, MS
Vice Chair for Research
Department of Internal Medicine

Funded by all Divisions of the Department of Internal Medicine

**Department of Internal Medicine 17th Annual Research Day
Thursday, April 10, 2003**

PRESENTATION SCHEDULE

7:30 AM BREAKFAST

7:55 AM REMARKS

**Carlos A. Estrada, M.D., M.S.
Vice Chair of Research
Department of Internal Medicine**

1st Session

**Session Moderators:
George Sigounas, PhD
Melanie Hames, DO**

		<i>Abstract No.</i>	
8:00 AM	L. Staton, MD General Internal Medicine	<i>A1</i>	Impact of Pain Assessment on Physical Functioning in Patients with Chronic Pain
8:15 AM	G. Talente, MD, MS General Internal Medicine	<i>A2</i>	Do Faculty and Patients Agree in Their Evaluation of Internal Medicine Residents
8:30 AM	G. Talente, MD, MS General Internal Medicine	<i>A3</i>	Medical Student Impressions of Early Clinical Experiences
8:45 AM	R. Gayam, MD Pulmonary Fellow	<i>A4</i>	Uterine Cervical Carcinoma Metastatic to the Airway
9:00 AM	Tanika Pinn Medical Student	<i>A5</i>	Readability of Brochures on Human Immunodeficiency Virus Infection
9:15 AM	Ana Lisa Baro J.H. Rose	<i>A6</i>	Impact of Health Literacy on Patients with Human Immunodeficiency Virus Infection

9:30 AM BREAK AND POSTERS

2nd Session

**Session Moderators:
Gordon Downie, MD, PhD
Gregg Talente, MD, MS**

9:45 AM	D.S. Blaise Williams, III, Ph.D, MPT Physical Therapy	<i>A7</i>	The Relationship Between Sensory Neuropathy and Lower Extremity Mechanics
10:00 AM	P. Cook, MD Infectious Diseases	<i>A8</i>	Reduction in Broad-Spectrum Antimicrobial Use Following Implementation of an Antimicrobial Management Program
10:15 AM	P. Cook, MD Infectious Diseases	<i>A9</i>	Use of Unit-Specific AntibioGrams to Help with Empiric Antimicrobial Therapy Decisions
10:30 AM	Bari Eberhardt ECU Freshman	<i>A10</i>	Use of an M1 Evening Clinic to Supplement Teaching of the History and Physical Exam
10:45 AM	T. Kerkering, MD Infectious Disease	<i>A11</i>	Results of an Investigation & Interventions Into a High Under Age 5 Mortality Rate in Western Kenya
11:00 AM	T. Kerkering, MD Infectious Disease	<i>A12</i>	The Prevalence of Anemia & Intestinal Parasites in Children Ages 2-10 YR Villages in Sierra Leone and Results One Year After Corrective Interventions
11:15 AM	C. Estrada, MD, MS General Internal Medicine	<i>A13</i>	Perioperative Hyperglycemia is Associated with Renal Outcomes in Patients Undergoing Coronary Artery Bypass Grafting

11:30 AM "A Day in the Life of a State Epidemiologist"

Jeffrey P. Engel, MD
Division Head, General Communicable Disease Control
State Epidemiologist, Division of Public Health
Department of Health and Human Services
Raleigh, North Carolina

12:30 PM **CLOSING REMARKS**
The W. James Metzger, Jr., MD
Junior Faculty Research Award
Trainees Research Award

Ralph Whatley, MD, Chairman
Department of Internal Medicine

12:30 PM **LUNCH AND POSTERS**

2:00 PM **ADJOURNMENT**

POSTERS

Presenter	Poster No.	Title
Eric Howell Medical Student	P1	IL-4 Production in Response to Allergen Stimulation and Clinical Symptoms
S. Gerkin Nephrology Fellow	P2	FK-506 Induced Thrombotic Microangiopathy with GI and Renal Manifestations
C. Ustun House Officer	P3	Vaccination to Hepatitis B Virus (HBV) Prior to Allogeneic Stem Cell Transplantation

Jeffrey P. Engel, MD
Division Head, General Communicable Disease Control
State Epidemiologist, Division of Public Health
Department of Health and Human Services
Raleigh, North Carolina

Dr. Engel is the State Epidemiologist and Head of the General Communicable Disease Control Branch of the Division of Public Health for North Carolina. He is Board Certified in Internal Medicine and Infectious Diseases. He received his undergraduate and medical degrees at the John Hopkins University in Baltimore, MD, and did his residency, chief residency, and fellowship training at the University of Minnesota and the Minneapolis Veterans Administration Medical Center. From 1988-2002, he was on the faculty at the Brody School of Medicine at East Carolina University in Greenville, NC where he served as Chief of the Division of Infectious Diseases from 1996-2002 and Medical Director of Hospital Infection Control for Pitt County Memorial Hospital from 1997-2002. His areas of interest include viral pathogenesis, hospital infection control, HIV and AIDS clinical care and health policy, and most recently, public health. After serving at ECU for nearly 14 years, he left that institution as a full professor and on July 15, 2002 began his current positions with the NC Division of Public Health. He now leads the General Communicable Disease Control Branch that is responsible for the reporting, surveillance, investigation, and control of over 60 communicable diseases including tuberculosis, the West Nile virus, and the agents of bioterrorism. As State Epidemiologist he serves as a liaison at the State level to the local health departments and to the federal Centers for Disease Control and Prevention.

W. James Metzger, Jr., MD Award

The W. James Metzger, Jr., M.D. award is presented to the most outstanding presentation by a Junior Faculty in the Department of Internal Medicine. A peer-review process selects the winner. The recipient of the award receives a certificate and have his/her name engraved on a plaque that is displayed in the Department of Internal Medicine Library. He/She also receives recognition on the Department of Internal Medicine web site.

Dr. Metzger, a native of Pittsburgh, Pennsylvania, was a graduate of Stanford University and Northwestern University Medical School, Chicago, Illinois. He completed his residency and research fellowship in Allergy-Clinical Immunology at Northwestern University. After serving in the United States Air Force, he came to Greenville in 1984 to join the East Carolina University School of Medicine. During his tenure at East Carolina University Dr. Metzger rose to the rank of Professor of Medicine. He was Section Head of the Section of Allergy-Immunology and held the appointments of Vice Chairman of Research, Department of Internal Medicine; Executive Director, the Center for Asthma, Allergy, and Immunology; Assistant Vice Chancellor for Clinical Research; Assistant Dean for Clinical Research; and Director, Clinical Trials Office. He was the recipient of the East Carolina University Award for Excellence in Research and Creative Activity and the Distinguished Research Professor of Medicine. His research was published in the *New England Journal of Medicine*, *Nature*, and other journals. Dr. Metzger had mentored numerous faculty and fellows.

In August 2000 Dr. Metzger accepted a position as Professor of Allergy, Asthma, and Immunology at the National Jewish Medical and Research Center and was a faculty member at the University of Colorado Medical School, Denver, Colorado. He died on November 11, 2000 at the age of 55. Dr. Metzger represented excellence in research.

2001 Recipients:
Carlos A. Estrada, MD, MS
Paul Mehlhop, MD

ABSTRACTS

Oral Presentations

A1 – 8:00 am

IMPACT OF PAIN ASSESSMENT ON PHYSICAL FUNCTIONING IN PATIENTS WITH CHRONIC PAIN. L. Staton for the 4P Group- Patient and Physician Perception of Pain

NOTES:

BACKGROUND: Chronic pain can lead to poor physical functioning and disability. While discordance of pain perception between physicians and patients has been studied, there is limited data examining the effect of discordance on physical functioning in patients with chronic pain in primary care settings. We sought to determine whether discordance in pain assessment impacts physical functioning.

METHODS: The 4P study is a cross sectional survey of ambulatory patients in 9 academic centers with chronic non-malignant pain for >3 months. Patients and their physicians rated patients' pain on a 0-10 point validated pain intensity scale. A pain score was deemed discordant if the difference between patient and physician was > 2 points. We examined the association between the Physical Functioning scale of the SF36 Health Survey (PF-SF36) and discordance in pain assessment. A linear regression analysis was performed to control for age, gender, race, marital status, depression, education and income.

RESULTS: The patients' mean age was 53 years (range, 23-87). The mean standardized score of the PF-SF36 was 35 (100 represents perfect function). Bivariate analyses revealed that the physical functioning was associated with the difference between patient ratings and physician ratings on the pain scale ($p = .05$). The PF-SF36 score was lower among patients with discordant pain scores (32.0) as compared to concordant pain scores (36.5). Patients mean PF-SF36 score (40.7) was higher when physicians overestimated pain. Linear regression analyses showed that poor physical functioning was significantly associated with discordance in pain intensity score ($p = .04$) and depression ($p = .05$) after adjusting for age, gender, race, marital status, education and income.

CONCLUSION: Interventions to improve physicians' acceptance of patients' pain may reduce discordance and lead to improved physical functioning.

A2 – 8:15 am

DO FACULTY AND PATIENTS AGREE IN THEIR EVALUATION OF INTERNAL MEDICINE RESIDENTS. GM Talente, DR Barnett, PF Bass, JF Wilson

NOTES:

PURPOSE: Much effort has been made to determine the reliability and validity of faculty evaluations. Previous studies have suggested that faculty evaluations fail to distinguish separate skill domains. Also, faculty may not successfully evaluate qualities and behaviors that are important to patients, instead they may represent a rating of knowledge and the interpersonal dynamic between the faculty member and resident. The purpose is to examine the relationship between faculty ratings of resident clinical skills and attributes and patient satisfaction with the resident.

METHODS: Faculty evaluations were obtained for a one-year period. The ABIM standardized evaluation form was used by faculty at one institution to rate residents in nine domains. The mean rating was calculated for each skill and overall rating. Patient satisfaction was measured in the continuity clinic setting using an eight-item survey distributed as part of an exit interview over a two-month period.

RESULTS: Ratings for 35 residents were compared. The mean number of faculty evaluations was 9.82. The mean number of patient ratings for each resident was 19.4. The mean overall faculty rating was 7.61 out of nine. The mean patient satisfaction rating was 9.5 out of 10. Moderate correlations were found between the overall faculty rating for each resident and patient satisfaction ($r = .59$, $p = .001$). Higher faculty ratings in each of the individual skills were related to higher patient satisfaction, with the exception of procedural skills. Correlations between the individual skills and patient satisfaction were: clinical judgement ($r = .64$, $p = .0001$), medical knowledge ($r = .51$, $p = .002$), history taking ($r = .58$, $p = .0001$), physical exam ($r = .56$, $p = .001$), humanistic qualities ($r = .44$, $p = .008$), professionalism ($r = .45$, $p = .007$), medical care ($r = .65$, $p = .001$), and procedural skill ($r = .23$, $p = .17$). Faculty ratings of residents in their continuity clinic were also positively related to patient satisfaction ($r = .46$, $p = .01$).

CONCLUSIONS: There is a significant amount of agreement in faculty and patient ratings of internal medicine residents. Faculty evaluations predict patient satisfaction with internal medicine residents in clinic. Further study is needed to specify what qualities most impact both faculty.

A3-8:30 am

MEDICAL STUDENT IMPRESSIONS OF EARLY CLINICAL EXPERIENCES. GM Talente, JC Byrd, EL McNeill, SC Modi, LC Larsen. Brody School of Medicine at East Carolina University, Greenville, NC.

NOTES:

PURPOSE: Clinical experiences for first and second year medical students have the potential to increase overall interest in medicine, develop clinical skills, promote generalism, and increase professionalism. We sought to examine the students perceived benefit of an early clinical experience in an ambulatory setting and explore which experiences best prepared them for the clinical encounter.

METHODS: All first year medical students attended 4 clinic sessions (1-2 patients per session, all ages). Patients were invited to participate from the attendings' personal clinic or an evening walk in clinic. Patients were seen by the student and then staffed by an attending who observed the encounter. We surveyed all students at the start of their second year.

RESULTS: 68/69 students completed the survey. "Practicing interviewing" (mean 2.6, SD 1.7) and "interacting with real patients" (mean 2.3, SD 1.8) were ranked as more important compared to the other educational outcomes ($p=.0001$) (Rank: 1 = most important, 10 = least important). For example, "developing professionalism" (mean 6.87, SD 2.3) and "practicing a patient-centered interview" (mean 4.69, SD 2) were viewed as less important. The student's mean preparedness increased between the first and last session for both interviewing patients (3.5 to 4.7, $p=.0001$) and examining patients (2.6 to 4.2, $p=.0001$) (Scale: 1 = not prepared, 5 = prepared). The experiences ranked as most useful in preparing students for seeing patients in clinic were "standardized patient encounters" (mean 2.8, SD 2.1) and "physical exam training sessions" (mean 2.7, SD 2) (Rank: 1 = most useful, 10 = least useful). The mean ranking for these experiences differed significantly from all other experiences ($p=.0001$).

CONCLUSIONS: Students perceive that practicing their clinical skills and interacting with real patients are the most beneficial outcomes of early clinical experiences. Hands on experiences are perceived as most useful in preparing students for clinical encounters.

A4 -8:45 am

UTERINE CERVICAL CARCINOMA METASTATIC TO THE AIRWAY. Ravinder R Gayam, MD, Cynthia D Brown, MD and Gordon H Downie, MD, PhD. Division of Pulmonary and Critical Care Medicine

NOTES:

BACKGROUND: Pulmonary metastases from carcinoma of the uterine cervix are relatively uncommon. Pulmonary metastases occurs in 4%-6% of all cervical cancers. The most common histological type was squamous cell (70%-90%). 60% of all pulmonary metastases from cervical carcinoma involve lung parenchyma alone. Mediastinal involvement was seen in less than 20% of cases. Poorer outcomes are reported in patients with mediastinal involvement, and not reported per se, airway compromise may account for these outcomes. Respiratory distress and/or poor performance status may prevent cancer patients from receiving optimal therapies. To our knowledge there are no reports detailing the incidence of metastases directly affecting the airway. We report a case of metastatic cervical carcinoma involving the airway, causing acute respiratory distress.

CASE REPORT: A 61-year-old female presented with postmeno-pausal bleeding. Full work-up revealed a moderately differentiated squamous cell carcinoma. Stage-II b was determined following cervical conization. Patient underwent chemotherapy and brachytherapy for her stage II b carcinoma. 18 month after therapy she developed increased dyspnea and cough. Presentation included respiratory distress with hypercapnia. Bronchoscopy demonstrated 100%, 70% occlusion of the left and right main stem bronchi respectively. Biopsy confirmed metastasis from the cervix. Two self-expandable metal stents (Ultra-flex; Boston Scientific; Natick, MA) were placed urgently in the left and right main stems with immediate palliation of her respiratory distress. The patient received external beam radiation, chemotherapy and surveillance bronchoscopies every 3 months, with cryotherapy, to maintain luminal patency. Immediately after stent placement, PFT's revealed a mild obstructive defect and normalization of her ABG. PFT's 6 months- after stent placement are borderline normal.

CONCLUSION: We report a rare presentation of metastatic cervical carcinoma involving main stem bronchi, requiring urgent interventional bronchoscopy, which stabilized her respiratory status and thus allowed the patient to undergo standard therapy with excellent clinical response.

A5 – 9:00 am

READABILITY OF BROCHURES ON HUMAN IMMUNODEFICIENCY VIRUS INFECTION. McNeill L, Estrada C, Pinn T, Collins C, Byrd JC

NOTES:

BACKGROUND: Functional health literacy is the ability to use reading and writing skills to follow medical instructions and to understand disease processes. Brochures and pamphlets are an inexpensive method of providing information about human immunodeficiency virus (HIV) infection. The readability of patient brochures is unknown.

PURPOSE: We assessed the readability of brochures available to patients with HIV infection.

METHODS: We obtained printed patient information from state and federal governmental agencies, health advocacy groups, educational companies, pharmaceutical companies, and the Internet. Information written in languages other than English or for health care professionals was excluded. Fifty-one brochures were analyzed using a readability scale (SMOG). A grade level for each brochure was calculated.

RESULTS: The overall mean grade level for the brochures was 11.0. Five (9.8 %) of the brochures were written on the eighth grade level or less. Eleven (22%) of the brochures were written at the college level. Only educational companies, health advocacy groups, and governmental agencies had any written materials written at or below the eighth grade level. In our HIV clinic, 60% of patients' reading level is below the ninth grade.

CONCLUSIONS: Brochures intended to provide information about HIV infection are written primarily at the high school level. Most patients in our HIV clinic would be unable to comprehend the current brochures.

A6 – 9:15 am

IMPACT OF HEALTH LITERACY ON PATIENTS WITH HUMAN IMMUNODEFICIENCY VIRUS INFECTION. McNeill L, Estrada C, Pinn T, Baro AL, Collins C, Byrd JC

NOTES:

BACKGROUND: Health literacy requires that individuals use reading and writing skills to comply with follow-up visits, understand instructions, and learn about disease processes. Patients with lower health literacy have lower CD4 counts, higher viral loads, and are more likely to be nonadherent with antiretroviral therapy. This study expands on previous work by assessing the impact of low literacy and the human immunodeficiency virus (HIV) in patients from predominately socioeconomically depressed rural areas.

Purpose: We assessed the magnitude of low literacy in patients with HIV infection in Eastern North Carolina and explored the relationship between literacy level and general knowledge of HIV infection.

METHODS: In a preliminary cross-sectional study of 55 patients with HIV infection, we measured functional health literacy using the Rapid Estimate of Adult Literacy in Medicine (REALM). Patients' knowledge of HIV infection was measured using the HIV KQ-18, a validated questionnaire. The questionnaire was verbally administered. We obtained self-reported grade level by patient interview.

RESULTS: Seventy-six percent of the patients were African American. The mean age was 37 years. Twenty percent were employed, and 87% had incomes less than \$15,000 per year. Although all but one patient reported achieving at least a seventh grade education, low literacy (< 7th grade) was present in twenty-four percent (13/54) on the REALM. Patients with higher health literacy levels had higher scores of HIV knowledge (P<0.0001).

CONCLUSIONS: Low literacy was prevalent in patients' with HIV infection in our study. Patients with lower health literacy had poorer understanding of their disease process.

A7 – 9:45 am

THE RELATIONSHIP BETWEEN SENSORY NEUROPATHY AND LOWER EXTREMITY MECHANICS. Williams, D. S.

NOTES:

BACKGROUND AND OBJECTIVES: There are a number of hypotheses regarding the causative nature of increased plantar pressures in the diabetic population. Peripheral neuropathy has received much attention as a predisposing factor in increased pressures and subsequent ulceration. To date, no studies have evaluated neuropathy and its relationship to abnormal foot and ankle biomechanics during normal walking. The purpose of this study was to demonstrate a relationship between three-dimensional rearfoot biomechanics and diabetic neuropathy during walking.

METHODS: Six individuals with type 2 diabetes mellitus were recruited for this study. Group 1 consisted of individuals without diabetic neuropathy and Group 2 was comprised of individuals with diabetic neuropathy. Neuropathy was defined as the inability to feel a 5.07 monofilament at specific sites on the plantar surface of the foot. Retroreflective markers were unilaterally placed on the segments of the rearfoot, shank and thigh. The subjects walked along a 60ft. walkway at a comfortable speed. Kinematic and force data were recorded using a three-dimensional motion analysis system. Rearfoot eversion excursion and vertical loading rate were calculated for each subject. Comparisons between neuropathic and non-neuropathic subjects were made using a one-tailed Student's t-test ($p \leq 0.05$) to determine whether differences in rearfoot eversion excursion and vertical loading rate existed between these groups.

RESULTS: When compared to non-neuropathic subjects, neuropathic subjects exhibited a higher vertical loading rate and a decreased eversion excursion ($p < 0.05$).

CONCLUSIONS: Increased vertical loading rates and decreased eversion excursion place an increased force over a smaller area with less shock attenuation from rearfoot eversion. These mechanics may provide some explanation for increased pressure and the development of ulcers in the diabetic neuropathic population. Future intervention may focus on gait training and foot orthoses to correct these faulty mechanics.

A8 – 10:00 am

REDUCTION IN BROAD-SPECTRUM ANTIMICROBIAL USE FOLLOWING IMPLEMENTATION OF AN ANTIMICROBIAL MANAGEMENT PROGRAM.

NOTES:

P. Cook, P. Payne, P. Catrou, J. Christie, R. Polk

BACKGROUND AND OBJECTIVES: Many studies have linked the emerging problem of antimicrobial resistance to excessive use of these agents. Antimicrobial resistance is a particular problem in hospitals, where antimicrobial use is very high.

METHODS: We evaluated the effect of an antimicrobial management program (AMP) on broad-spectrum antimicrobial (BSA) use at a tertiary-care teaching hospital. The program involved the review of hospital charts of patients who had been prescribed BSAs 48 hours earlier. Recommendations to streamline antimicrobials were made based on results of available cultures as well as the working diagnosis at the time of review. The charts were reviewed the following day to assess acceptance or rejection of the recommendations. Antimicrobial use was determined before and after the AMP was started and was assessed as the mean quarterly use in the first and second years of the program (2001 and 2002) compared to year 2000. Antimicrobial use was measured as defined daily dose per 1000 patient days (DDD/1000 PD).

RESULTS: Partial or complete acceptance of the recommendations occurred in 92% of cases. In the first year of the program, the average quarterly BSA use decreased from 752.6 to 697.8 DDD/1000 PD, representing a 7.3% decrease in use of these drugs. Use of these same agents decreased substantially in the second year of the program to 617.2 DDD/1000 PD, a 17.2% decline compared with 2000. There was significant variation in the effect on individual antimicrobial agents. Ciprofloxacin use decreased by 29.8%; piperacillin-tazobactam use decreased by 37.9%; imipenem use by 60.8%.

CONCLUSIONS: Implementation of an AMP has resulted in a significant decrease in use of most BSAs. Decreased use of these agents should help to minimize the emergence of antimicrobial resistance.

A9 –10:15 am

USE OF UNIT-SPECIFIC ANTIBIOGRAMS TO HELP WITH EMPIRIC ANTIMICROBIAL THERAPY DECISIONS. P. Cook, P. Payne, P. Catrou, J. Christie

NOTES:

BACKGROUND AND OBJECTIVES: Hospital antibiograms are frequently used to help with empiric antimicrobial decisions in critically-ill hospitalized patients. Antimicrobial resistance is a particular problem in intensive care units, where antimicrobial use is very high. Unit-specific antibiograms have been proposed as a method to help deal with the issue of variations in antimicrobial susceptibilities within the hospital.

METHODS: Using the 2002 Pitt County Memorial Hospital (PCMH) antibiogram as a reference, we examined the differences in antimicrobial susceptibilities of common bacterial pathogens within various units of the hospital. To avoid problems with low numbers of isolates, only units or combinations of units with 30 or more isolates of a particular microorganism were evaluated so that statistical significance was not an issue.

RESULTS: There were significant differences in antimicrobial susceptibilities within various units of the hospitals. In the case of most gram negative bacilli, susceptibilities were lower (i.e., resistance was higher) in the intensive care units of the hospital. For *Pseudomonas aeruginosa*, 72% of the isolates were susceptible to ciprofloxacin hospital-wide, but the susceptibilities were 58% and 51% in the medical intensive care and medical step-down units, respectively. In the case of *Staphylococcus aureus*, 47% of the total hospital isolates were resistant to oxacillin (i.e., MRSA). Units with higher MRSA figures included: medical ICU (68%); medical step-down unit (79%); surgery step-down unit (69%); 2 South nursing unit (71%); and 3 South nursing unit (72%).

CONCLUSIONS: Hospital antibiograms frequently can give misleading information regarding antibiotic susceptibilities within areas of the hospital where antimicrobial use is high. Unit-specific antibiograms may be a more useful tool to help with day-to-day empiric therapy decisions involving critically-ill patients.

A10 – 10:30 am

USE OF AN M1 EVENING CLINIC TO SUPPLEMENT TEACHING OF THE HISTORY AND PHYSICAL EXAM. McNeill L, Eberhardt B, Byrd JC

NOTES:

BACKGROUND: Recent literature indicates that the physical diagnosis skills of medical students are not optimal. A traditional method of teaching the medical history and physical examination has medical students practicing on each other. In recent years, standardized patients (SPs) and patient teaching associates (PTAs) have been utilized to teach the medical history and physical examination.

PURPOSE: To determine if participation in an evening clinic was useful in developing the medical history and physical examination skills when compared to other methods.

METHODS: At the conclusion of the initial semester of the M1 year, 69 students (the entire class) who attended at least one evening clinic completed a survey to evaluate and compare three methods for learning the medical history, the physical examination, and medical documentation skills.

RESULTS: Eighty-eight percent of medical students felt that participation in the evening clinic was a valuable educational experience. While 81% (56/69) of students felt that the evening clinic was helpful in developing their history taking skills, 54% (37/69) felt that SPs were the best method. Forty-six percent (32/69) of students felt that the evening clinic was useful in developing their physical examination skills, however 84% (58/69) felt that PTAs were the most helpful.

CONCLUSIONS: The evening clinic is a useful adjunctive method for teaching the medical history, and the physical examination.

RESULTS OF AN INVESTIGATION & INTERVENTIONS INTO A HIGH UNDER AGE 5 MORTALITY RATE IN WESTERN KENYA. O. Kantai and T. Kerkering

BACKGROUND & OBJECTIVES. The Annual Impact Monitoring & Evaluation System (AIMES) for the International Christian Children's Fund (CCF) recorded an Under 5 Mortality Rate (U5MR) of 606 deaths per 1000 live births in 1999 on the island of Rusinga in western Kenya. An epidemiological study was conducted to determine the causes of death and to assist in designing appropriate interventions.

METHODS. A review of the medical records of the 43 deaths, along with verbal autopsies was conducted. An epidemiological survey included all households on the island in which there was a child under 5 years of age. One time blood smears for malaria were done on 587 randomly chosen children under the age of 5 yrs and on 43 randomly chosen expectant mothers. Health statistics were collected and recorded from the local health facility. Data was entered into EPI-INFO 2000 and subjected to univariate analysis. SAS was used for multivariate analysis. Interventions were introduced and one year to the day 500 children under age 5 had repeat malaria smears taken.

RESULTS. U5MR and causes were found to be 183/1000 due to malaria, 127/1000 due to measles, 127/1000 unknown (probably HIV), 85/1000 diarrhea, 56/1000 ARI, 28/1000 accidents. 1,260 households (42% of the total on the island) were included in the survey. 66.7% of the U5 and 35% of the expectant mothers' blood smears were positive for *P. falciparum*. By univariate analysis income level of the parents, education level of the parents, source of water, method of waste disposal and clearing of the bush around household compounds was found to have a significant association with a U5 having malaria. By multivariate analysis, only clearing of the bush retained significance. Interventions included heightened case finding and management, larvicides, insecticide treated netting and environmental sanitation.

CONCLUSIONS. One year after the interventions the prevalence of positive smears for malaria in the U5 dropped from 66.7% to 30%. The U5MR dropped from 606/1000 to 101/1000 (national average for Kenya is 119/1000). Clearing of the bush is a significant risk for malaria, contrary to what has been taught in the past.

THE PREVALENCE OF ANEMIA & INTESTINAL PARASITES IN CHILDREN AGES 2-10 YR IN 24 VILLAGES IN SIERRA LEONE AND RESULTS ONE YEAR AFTER CORRECTIVE INTERVENTIONS. S. Kamera and T. Kerkering

BACKGROUND AND OBJECTIVES. Intestinal parasites (IP) are known to contribute to malnutrition and anemia children. To get a handle on the effectiveness of simple interventions we conducted a baseline survey, introduced interventions, and repeated the survey a year later. This was carried out in 24 villages in Sierra Leone with children ages 2-10 yrs.

METHODS. At baseline, stools were collected from 8,701 children. Smears were made and examined under direct light microscopy. A drop of blood was placed on filter paper and subjected to colorimetric testing for hemoglobin level. After this, the following interventions were introduced: one time de-worming with mebendazole or albendazole, sanitation with latrines or defecating fields, composting heaps, drying racks, shoes/sandals, cleaner water through the use of deep bore holes, or division of natural water sources. One year later repeat stool and blood samples were taken on 9,087 children.

RESULTS. Anemia was defined as hemoglobin of ≤ 7 g/dl. At baseline 37.8% of the children were anemic (range 11%-86% in the 24 villages). 60.2% had IP (range 27%-89%). Of the children with IP 87.4% had *Ascaris lumbricoides*, 85.2% hookworm, 85.8% *Trichuris*, & 99.6% *Strongyloides stercoralis*. There was a direct correlation with IP and anemia. One year after the interventions were introduced the prevalence of anemia was reduced to 11% (range 2%-40%), $p < .00001$, and the prevalence of intestinal parasites was reduced to 29% (range 14%-74%), $p < .00001$.

CONCLUSIONS. In Sierra Leone, IP are important contributors to childhood anemia. Other than the drilling of deep bore holes, simple, cost effective measures can be utilized to reduce the prevalence of IP and anemia. Indirectly, reduction of anemia contributes to growth and nutrition and improvement in cognitive development.

PERIOPERATIVE HYPERGLYCEMIA IS ASSOCIATED WITH RENAL OUTCOMES IN PATIENTS UNDERGOING CORONARY ARTERY BYPASS GRAFTING. CA Estrada, JA Young, and WR Chitwood, Jr.

NOTES:

BACKGROUND AND OBJECTIVES. Glycemic control in patients undergoing coronary artery bypass grafting (CABG) improves in-hospital outcomes, including lower rates of renal dysfunction. We measured the association between perioperative hyperglycemia and renal dysfunction among patients undergoing CABG.

METHODS. Historic cohort study of 564 patients who had undergone CABG. We excluded patients on dialysis or with a creatinine ≥ 2 mg/dl at baseline. Perioperative blood glucose level was defined as the average of all blood glucose tests obtained on the day of and the day after surgery. The outcome was the increase in serum creatinine (average 4 days pre vs. 7 days post operative). We calculated preoperative mortality risk with the Northern New England score.

RESULTS. Of the 564 patients, 190 had a diagnosis of diabetes (33.7%). In the unadjusted analysis, the mean increase in creatinine was higher among patients with diabetes (0.19 mg/dl, SD 0.44) as compared to patients without diabetes (0.11 mg/dl, SD 0.33) ($P=0.009$). After adjusting for diabetes status and risk score, each 50 mg/dl blood glucose increase was associated with an increase in creatinine by 0.05 mg/dl (95% CI 0.02 to 0.09; $P<0.01$). In the multivariate model, diabetes or mortality risk score were not associated with increased creatinine. Each mg/dl increase in creatinine was associated with longer postoperative days by 5.2 days (95% CI 3.7 to 6.8; $P<0.001$) and increased hospitalization charges by \$16,655 (95% CI \$11,185 to \$22,126; $P<0.001$) (after adjusting for perioperative blood glucose, diabetes, and risk score).

CONCLUSIONS. Perioperative hyperglycemia is associated with mild increases in postoperative creatinine in patients undergoing CABG. The increase in creatinine was associated with significant resource utilization.

ABSTRACTS

Poster Presentations

P1 **IL-4 Production in Response to Allergen Stimulation and Clinical Symptoms of Allergic Rhinitis.** Howell E M3, Mehlhop P MD, Sigounas A, Sigounas G PhD, Patel D MD.

NOTES:

BACKGROUND: IL-4 has been implicated as a major cytokine involved in the mechanism of allergic rhinitis.

PURPOSE: We investigated the relationship between IL-4 production by peripheral blood mononuclear cells (PBMCs) in response to dust mite allergen and the clinical symptoms exhibited by patients with positive skin test to dust mite allergen.

METHODS: PBMCs were isolated from peripheral blood donated by human subjects and the frequency of IL-4 and INF- γ production was measured by ELISPOT after in vitro challenge with dust mite allergen. Symptoms experienced by the study participants were obtained by administration of the Rhinitis Outcomes Questionnaire (ROQ), a validated symptom survey for allergic rhinitis. Additional questions were added to gauge the environmental factors that participants identified as triggers of their allergy symptoms.

RESULTS: The group that tested positive by skin prick to dust mite allergen had elevated numbers of IL-4 producing cells compared to those who were not skin test positive to dust mite allergen (4.0/200,000 cells vs. 0.67/200,000 cells, respectively). The perception of dust as a trigger of allergic symptoms was also higher in the dust mite positive group compared to the dust mite negative group (average symptom score of 3.33 versus 1.25). The participants that both tested positive for dust mite allergen and perceived dust as a significant trigger of their allergic symptoms had an average total score of 34.29 on the symptom survey, in contrast to the average total score of 6.67 for those who were negative for dust mite and did not identify dust as a trigger of their symptoms.

CONCLUSIONS: We found that in addition to a positive correlation between IL-4 production and skin test results, IL-4 production also correlates with clinical symptoms and the perception of dust as a trigger of allergic rhinitis, suggesting a link between IL-4 production and the clinical manifestation of allergic rhinitis.

P2 **FK-506 Induced Thrombotic Microangiopathy with GI and Renal manifestations.** S.Gerkin, M.Hames, C.Christiano, K.Hewan-Lowe, P.Bolin.

NOTES:

BACKGROUND: Calcineurin antagonist associated thrombotic microangiopathy (TMA) is an infrequent cause of acute renal failure in transplant patients. The disease may be present without overt hemolysis or other extra renal manifestations. Rapamycin offers an attractive alternative to calcineurin inhibitors in these patients.

CASE: 37yo female with a history of hypertension and renal transplantation presents with acute renal failure (serum creatinine from 1.1 to 2.4) five months post transplant. Other symptoms included low grade fever, anemia, and diarrhea. Patient was normotensive and euvolemic. Infectious and mechanical causes of acute renal failure were excluded. Medications included: FK-506, Cellcept, Prednisone, Bactrim, Pepcid. FK-506 levels were 5.6-18.6. Biopsies of renal allograft and colon were consistent with TMA. The patient's immunosuppressive regime was switched to Cellcept and Rapamycin. Serum creatinine continued to rise to 4.5 during initiation of Rapamycin with taper of FK-506. This may have been due to the effects of Rapamycin on calcineurin metabolism.

CONCLUSION: TMA is an infrequent but severe complication of FK-506. The literature would suggest that clinical manifestations of calcineurin antagonist associated TMA are limited to the kidneys. Our case documents TMA with extra renal involvement. Initial treatment is by reduction or cessation of the offending drug. Rapamycin has a potentiating effect on the levels of FK-506 that should not be ignored during conversion.

BACROUND AND OBJECTIVES. HBV is common in patients with hematologic disorders and can complicate the course of allogeneic stem cell transplantation (AlloSCT). We investigated if vaccination of recipients or donors or both to HBV prior AlloSCT may reduce complications post-AlloSCT.

METHODS. 63 recipients (patients) and their donors were divided into 3 groups based on their serologic status relative to HBV: 1-The vaccinated group (VG, n=14), consisted of patients who had negative HBV serological markers and were vaccinated with a HBV vaccine prior AlloSCT. 2-The HBV experienced group, consisted of patients who had prior exposure to hepatitis B (HBVEG, n=32). 3- The HBV naive group (NG, n=17), consisted of patients who had negative HBV serological markers and had no vaccination. The donors's groups were VG (n=26), HBVEG (n=16), and NG (n=21). The median follow-up was a 15-month.

RESULTS. *Recipient Vaccination:* Anti-HBs positivity occurred in 85.7% of patients in VG, in 43.7% of patients in HBVEG, and in 35.2% of patients in NG, $p=0.006$. *Donor Vaccination:* Anti-HBs positivity occurred in 88.4% of patients in VG, in 56.2% of patients in HBVEG, and in 0% of patients in NG, $p<0.0001$. Of the 14 vaccinated recipients, 12 received stem cells from vaccinated donor. Eleven out of these 12 patients (91.6%) developed Anti-HBs post-transplant. Four of 63 patients (6%) developed HBV-related events, all of whom were in the HBVEG (4/32, 12.5%), $p=0.13$. There was no statistical difference in occurrence of GVHD, VOD, DFS or OS between the 3 groups.

CONCLUSIONS. Vaccination of either recipient or donor or both shortly before transplantation yielded a good Anti-HBs response. This approach may be useful in the prevention of HBV infections, HBV reactivation, or in the clearance of HBV in carrier recipients. High dose vaccination does not appear to increase GVHD or VOD. Exposure to HBV, but without active infection, does not increase transplant-related complications, or affects the outcome.
