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Kukini
“Kukini” were runners in old Hawaii and still perform today.
Editorial

The American College of Physicians
Annual Meeting – Hawaii Chapter

What’s New on the Horizon?

Norman Goldstein MD, FACP
Editor, Hawaii Medical Journal

I was very pleased to attend the Hawaii Chapter of the American College of Physicians Annual Meeting held in Honolulu in March 2004. As a dermatologist, I have always been interested in all aspects of medicine, and was honored to receive my F.A.C.P. at the National meeting in San Francisco in 1969.

I have attended most of the local meetings over the past 35 years, but this one was truly impressive. The presented papers, the concurrent sessions, the updates, and the poster presentations were outstanding. Under the leadership of Patricia Blanchette MD, MPH, FACP, the Governor of our Hawaii Chapter, and her hardworking Conference Committee, a vast amount of valuable information was presented by College members, future members, as well as medical students and residents.

As Consultant Emeritus at the Tripler Army Medical Center, I was especially proud of the posters and presentations made by military physicians stationed here in Hawaii. This issue of the Journal contains the first group of these presentations. Additional papers will appear in the next issue.

The future of medicine is very exciting, as is evidenced when reading the quality of some of the papers and posters presented at this meeting. All of Hawaii should be proud of the work our practicing physicians, students and residents are now doing.

The next Annual Scientific Meeting of the Hawaii Chapter will be held on Saturday, March 5, 2005. All physicians in Internal Medicine and its sub-specialties are invited to submit abstracts of their scientific work for either oral or poster presentation. For further information, contact the Department of Medicine, John A. Burns School of Medicine, attention Sharon Chun, 1356 Lusitana Street, 7th Floor, Honolulu, Hawaii 96813; 808/586-7478, or sharonch@hawaii.edu.

Until there’s a cure, there’s the American Diabetes Association.

Until there’s a cure, there’s the American Diabetes Association.
Guest Editor

Patricia Blanchette MD, MPH
Governor Hawaii Chapter, American College of Physicians

Aloha. This issue contains the first set of a series of papers to be published in the next few issues of HMJ from the 2004 annual scientific meeting of the Hawaii Chapter of the American College of Physicians. These papers represent only some of the excellent work presented at the meeting.

Of special note is the high caliber work being done by medical residents and students from the John A. Burns School of Medicine of the University of Hawaii (UH) and Tripler Army Medical Center (TAMC). Faculty from both institutions have taken special interest in mentoring young physicians in every aspect of the work, including: helping with the methodology and supervising conduct of the study, practicing presentation skills and attending the meeting to show support.

The annual meeting is remarkable for the collegial involvement between UH and TAMC in the meeting itself and in the “Jeopardy” style competition between UH and TAMC resident teams that is held on the eve of the annual meeting. The “Jeopardy” competition is intense and the scope of knowledge displayed by the residents over a wide range of medical topics is impressive.

For the past several years, Dr. Stephen Salerno, a TAMC internist has done diligent and greatly appreciated work chairing the committee to organize the oral and poster sessions. He has overseen the review and selection of abstracts, organized the oral and poster sessions, recruited judges, and tallied the results for the competition for the best oral and poster presentations among students and residents. This year, these efforts were superimposed on a year in which Dr. Salerno’s military medical duties in administration and clinical care were exceptionally challenging.

This year’s winners in the 2004 oral presentations among students and residents are as follows:

Medical Residents:
1st place: Christian Spies, MD. Limited Flow Reserve Measured by MRI in Bypass Grafts Supplying Infarcted Myocardium. Spies C, Madison JR, Mohrs OK (advisor); Nowak B, Voightlander T. Dr. Spies was a Level 3 UH resident, and now doing a Cardiology fellowship at Rush University.

2nd place: Jared Acoba, MD. Differences in Adjuvant Therapy by Ethnicity and Insurance Status Among Breast Cancer Patients. Acoba J, Palalay MP (advisor). Dr. Acoba was Level 3 UH resident, and is now doing a Hematology-Oncology fellowship at Oregon Health Sciences University.

3rd place: James Madison, DO. Presence of Proteinuria is an Independent Predictor of 27-year Incident Thromboembolic Stroke: The Honolulu Heart Program. Madison JR, Spies C, Schatz IJ, MD (advisor), Masaki K (advisor). Chen R, Yano K, Curb JD. Dr. Madison was a Level 3 UH resident, and now doing a nephrology fellowship at UC San Francisco.

Medical Students:

This year’s winners in the poster presentations among students and residents are as follows:

Medical Residents:
1st place: Hwee Yong Lim. MD. Venous Thromboembolism in Japan: A Case Series. Lim HY, Kishimoto M, Ito H, Tokuda Y, Narita M, Sumida K, Seto TB, Gelber RP (advisor). Dr. Lim was a Level 1 UH resident, and continued into the second year of the UH residency program.

2nd place: David Lawton, DO. Eosinophilic Esophagitis: A Case Series. Lawton DG, Osgard E (advisor). Dr. Lawton was a Level 3 TAMC resident and is now on military assignment in Korea.

3rd place: Christian Spies, MD. Degree of Proteinuria Predicts Incidence Coronary Heart Disease: The Honolulu Heart Program. Spies C, Madison JR, Schatz IJ (advisor), Masaki K (advisor), Chen R, Yano K, Curb JD. As above. Dr. Spies was a Level 3 UH resident, who is now doing a Cardiology fellowship at Rush University.

Medical Students:
Jasmine Ide. Association of Hearing and Vision Problems with Low Cognitive Scores and Caregiver Perception of Dementia. Ide J, Masaki K (advisor), Ardo B, Ross GW, Petrovitch H, Blanchette PL. Jasmine Ide was a second year medical student at the time of the presentation. This poster was invited to be presented at the national ACP meeting and received a certificate of merit.

We hope that you enjoy learning about the good work being done in Hawaii. In featuring the work done by medical residents and students, we look forward to the future of medicine, knowing that we are in good hands.
Teaching Suturing in a Workshop Setting: A Comparison of Several Models

Keith G. Tokuhara, David W. Boldt, and Loren G. Yamamoto MD, MPH, MBA

Abstract

Objectives: Suturing is taught in workshops using a variety of models. The purpose of this study is to compare the resemblance to human skin of four models commonly used to teach suturing: pig skin, beef tongue, hot dog and latex glove.

Methods: 5 centimeter biconvex incisions were made in each of the models and closed by 50 physician study volunteers comprised of 33 board-certified physicians and 17 resident physicians. They rated each model on a scale of 1 to 4, where 4 closely resembles human skin and 1 does not resemble human skin.

Results: The following mean ratings were given by study volunteers: beef tongue 3.5 ± 0.5, pig skin 3.2 ± 0.8, latex glove 1.6 ± 0.7, hot dog 1.4 ± 0.6.

Conclusion: Beef tongue and pig skin were rated highest by study volunteers. However, pig skin is much cheaper than beef tongue. Pig skin is the best inexpensive model for teaching skin suturing of the four models studied.

Introduction

Suturing is taught in workshops using a variety of models that simulate human skin. Teaching medical students and residents in a surgical skills lab rather than in the clinical setting introduces fundamental techniques in a less stressful, more controlled environment and improves suturing skills prior to actual patient contact. It has been shown that formal instruction and practicing of skin suturing in a workshop setting results in measurable improvements in suture placement.

Ideally, the model should closely resemble human skin. High-tech virtual reality suturing simulators have been developed at some training programs that provide a high degree of realism, but most programs do not have the resources to afford such elaborate tools. Many teaching programs use one of several commercially produced synthetic skin models available. These have similarity to human skin, but are purchased at a substantial cost.

It has been suggested that biological models, namely freshly-prepared animal tissue, provide a more realistic medium for practicing skin suturing when compared to synthetic models. A survey in 1989 showed that most dermatology residency programs in the US used pigs’ feet for teaching and practicing skin suturing techniques. The first mention of pigs’ feet as a model for teaching and practicing the skills of skin suturing is by Straith and colleagues in 1961. Since then, several other studies have affirmed its credibility.

The purpose of this study is to compare the resemblance to human skin of four models commonly used to teach suturing: pig skin, beef tongue, hot dog and latex glove, all of which were suggested anecdotally by several clinical professors of surgery. Cost and availability were the two main factors used to select the models for this study.

Methods

Pig skin was purchased from a local beef and pork processor, cut into 5 cm by 12 cm sections, and stored frozen. Beef tongue was also purchased from the processor and stored frozen. Prior to use, these models were defrosted in the refrigerator and allowed to equilibrate to near room temperature. Hot dogs were purchased from a local grocery store, stored frozen, and defrosted in a similar manner. Latex gloves were purchased from a local drug store.

For each suturing session in our study, one 5 by 12 cm piece of pig skin, one beef tongue, one hot dog, and one latex glove were used. The models were replaced for each session. Organic models were used raw, and the latex glove was filled with rolled newspaper and volunteers were instructed to suture only through the latex. Prior to suturing, each model was secured on a tray and a 5 centimeter, biconvex incision was made in each of the models. The order was randomized, and physician study volunteers were instructed to close the incisions in an interrupted fashion with commercially-purchased suture material consisting of a cutting needle and swaged-on suture. Following closure, the volunteers completed a survey rating the four models on a whole-number scale from 1 to 4 (4=closely resembles human skin, 1=does not resemble human skin).

Results

Fifty physicians in total participated in our study. The demographics of our participants are as follows: 22 physicians board certified in emergency medicine, 3 emergency medicine residents, 10 physicians board
certified in obstetrics/gynecology, 8 obstetrics/gynecology residents, 6 pediatric residents, and 1 physician board certified in family practice. 21 were male, and the average number of years in practice for the non-residents was 9.6. The human skin similarity ratings are summarized in table 1. Beef tongue and pig skin are significantly better than latex glove and hot dog (see 95% confidence intervals of the mean in table 1).

**Discussion**

These results suggest that beef tongue and pig skin more closely resemble real human skin. However, for the purposes of teaching suturing in workshops, beef tongue is more expensive compared to the other three models. Pig skin can be purchased inexpensively as pork (pig) backs from most grocery stores or as a large slab of pork (pig) belly skin and divided into several individual pieces that permit 1 or more lacerations each. The skin on pigs’ feet can also be purchased, but this is more expensive. For this reason, pig skin is more economical than beef tongue.

Despite their similarity to human skin, however, there are several limitations to using these biological models as teaching tools. Postmortem changes in the tissue physical properties, make them less realistic compared to viable skin tissue. Beef tongue and pig skin are perishable, requiring refrigeration or freezing and thawing prior to use. There is a risk of exposure to porcine blood-borne pathogens and tissue-colonizing bacteria. These materials are available in beef/pork retailing and wholesaling, but they are not easily obtainable in the hospital setting. Some teaching programs might choose to use synthetic models for these drawbacks, despite their inferior resemblance to human skin.

Hot dog was rated poorly by study volunteers. They cited poor tissue strength and suture pull-through as weaknesses. Cooked hot dogs or sausages with stronger “skins” (casings) may possess more tensile strength than the uncooked ones used in this study, but probably not comparative to that of the biological models. Latex glove material rated higher than hot dog. Perhaps the reason for this preference lies in the observation by several of our study participants that latex gloves possess a good deal of tensile strength. This quality, combined with the ease of accessibility in almost any hospital or clinical setting and a low cost, make latex gloves a reasonable alternative.

Several commercially produced synthetic skin models are available, but we chose not to include them in our study because they are expensive to purchase. These materials are not easily obtained by students and residents, or by smaller teaching program.

Our study design was limited by the inability to blind the physicians to the type of models being tested. Therefore, preexisting bias could not be eliminated. Furthermore, the rating scale of 1 to 4 is subjective, but provided the best estimate of qualitative resemblance to human skin. Biologic models may have varied ratings depending on their freshness, prior storage, and whether they were cooked or not.

In summary, beef tongue and pig skin were rated highest by our study participants. Pig skin is the best model, of the four models tested, to teach suturing in workshops based upon cost and resemblance to real human skin.

**References**

Hemorrhagic Fever with Renal Syndrome

Jeffrey T. Laczek MD and Barnett Gibbs MD

Abstract
Hemorrhagic fever with renal syndrome (HFRS) is caused by the Hantaviruses, a group enveloped RNA viruses transmitted through contact with infected rodent urine or feces. Although distributed widely through Europe, Asia, and the New World, infections acquired in Korea, China, and Russia tend to be among the most severe. The initial presentation of HFRS is extremely variable, but generally includes fever, malaise, headache and abdominal pain. Laboratory findings that may lead to the diagnosis include thrombocytopenia, azotemia, elevated serum creatinine, or proteinuria. We present the case of a patient that acquired hemorrhagic fever with renal syndrome in South Korea.

Introduction
During the Korean War, United Nations troops were affected by an acute febrile illness associated with renal failure, thrombocytopenia, and hemorrhages: similar illnesses had been described in Chinese medical writings as early as 960 AD. During the Korean War, researchers were able to demonstrate the infective nature of the illness and suspected a rodent vector, but the etiologic agent remained obscure. The disease is now known as hemorrhagic fever with renal syndrome and is known to be caused by the Hantaviruses, a family of enveloped RNA viruses. Transmission occurs through inhalation of aerosolized rodent excreta and symptoms begin 1-5 weeks after exposure.

Case Report
A 19-year-old previously healthy woman serving in the US Army was stationed in Korea and went to conduct field-training exercises with her unit. During the exercises, the patient spent most of her time riding in vehicles and slept in an old wooden barracks at night. No signs of rodent inhabitation were noted during her stay. On the tenth day of the exercise, she began to experience an intense headache and blurry vision. Over the next several days, her symptoms expanded to include fever, fatigue, abdominal pain, and myalgias. She sought medical care numerous times and was diagnosed as having migraines, dehydration, or a viral syndrome.

Fourteen days after the start of the field exercises, she was admitted to the hospital after developing acute renal failure. On admission, she was febrile to 101.3°F and was noted to have periorbital and extremity edema; platelets were 79 x 10^9/L, serum creatinine was 1.3 mg/dL, and urine dipstick showed 3+ proteinuria. The patient remained in Korea until her creatinine rose to 4.9 mg/dL, at which time she was transferred to Tripler Army Medical Center in Hawaii. Shortly before transfer, serology returned positive for Hantaan virus IgM and the patient was started on IV ribavirin. On arrival at Tripler, the patient’s platelet count was 257 x 10^9/L, her serum creatinine remained 4.9 mg/dL, and she continued to appear edematous. IV ribavirin was discontinued and the patient underwent a brisk auto-diuresis. She recovered uneventfully with only supportive care and was discharged from the hospital twenty-two days after her field exercise began. Her serum creatinine was 1.2 mg/dL on discharge.

Discussion
Approximately 150,000 people are hospitalized each year due to clinical illness from Hantavirus infection, predominately in Korea, China, and Eastern Russia. The case-mortality ratio for HFRS in this region is approximately 5-10%. When suspected clinically, the diagnosis of HFRS is confirmed with serology. A positive IgM or a four-fold rise in Hantavirus IgG titer confirms Hantavirus infection.

HFRS is classically divided into five sequential but overlapping phases: Febrile, hypotensive, oliguric, diuretic, and convalescent. During the initial febrile phase, patients with HFRS typically present with abrupt onset of fever and chills, lethargy, and weakness, which may later be accompanied by dizziness, thirst, anorexia, myalgias, and abdominal pain. Physical exam may initially be notable for conjunctival injection or pharyngeal erythema. Laboratory studies are usually normal at this point. Then patients progress into the hypotensive phase. In addition to a drop in blood pressure, patients’ platelet counts and renal function decrease and proteinuria develops. Some patients may progress to shock. The disease then progresses to the oliguric phase, characterized by difficulties regulating electrolytes and volume status, potentially leading to pulmonary edema. Although platelet counts begin to
recover in the oliguric phase, patients are most prone to hemorrhage at this point, including gastrointestinal or retroperitoneal hemorrhage. The diuretic phase is marked by a return of renal function, but can be complicated by electrolyte abnormalities as fluid shifts occur. During the convalescent phase, renal function continues to improve. An important marker in the course of HFRS is the patient’s platelet count; a normalization of the platelet count heralds the return of renal function. In this case, the patient from Korea had a normal platelet count on arrival in Hawaii, which was a very good prognostic indicator.

Major causes of mortality in HFRS are related to shock, electrolyte abnormalities, pulmonary edema and hemorrhage. The underlying pathophysiologic abnormality is thought to be endothelial dysfunction. Treatment is generally supportive: cautious use of IV fluids or pressors for hypotension, hemodialysis if indicated for volume overload, administration of blood products, and treatment of electrolyte disturbances.

Intravenous ribavirin exists as a specific treatment for hemorrhagic fever with renal syndrome, although it is still experimental at the current time. In a study conducted in China, intravenous ribavirin given within six days of the onset of symptoms significantly reduced the mortality associated with HFRS. Most of the benefit of ribavirin appears to be associated with a reduction in the risk of entering the oliguric phase. The only side effect noted with ribavirin was a mild hemolytic anemia, which reversed with cessation of drug therapy. In this case, the patient arrived in Hawaii eight days after the onset of her symptoms and already appeared to be recovering, so the ribavirin was not continued after she was transferred.

**Conclusion**

The diagnosis of hemorrhagic fever with renal syndrome should be entertained in any patient with a febrile illness and travel to an endemic area, especially if associated with severe malaise, headache, myalgias, or abdominal pain. Common screening laboratory studies, such as a complete blood count, chemistries, or urinalysis, may show thrombocytopenia, renal failure or proteinuria, offering a clue to the diagnosis. Hantavirus serologies can confirm the diagnosis of HFRS. Treatment is generally supportive, but IV ribavirin may be beneficial if initiated early in the course of the disease.

**References**

Hemophagocytic Lymphohistiocytosis: A Rare Cause of Pancytopenia

Robert S. King MD, Glenn G. Preston MD, Jeffrey L. Berenberg MD, Susan L. Fraser MD, and Francis M. Gress MD

Abstract
A 36-year-old man with fever and pancytopenia due to Hemophagocytic Lymphohistiocytosis is reported. The patient was started on the HLH-94 based treatment. Two weeks after the initiation of therapy the patient's pancytopenia had resolved and he was discharged to complete treatment as an outpatient. The initial clinical presentation, diagnostic criteria, pathophysiology and treatment will be discussed.

Introduction
Hemophagocytic lymphohistiocytosis (HLH) is a rare syndrome seen almost exclusively in children under five years of age.1,2 The syndrome develops as a result of an uncontrolled histiocyte activation and proliferation into multiple organ systems. The syndrome is defined by the presence of fever, cytopenia (2 of 3 cell lines), splenomegaly, hypofibrinogenemia and/or hypertriglyceridemia and hemophagocytosis seen on microscopic examination.3 It develops either from a primary, inherited condition known as Familial Hemophagocytic Lymphohistiocytosis (FHL) or a secondarily acquired form. The latter are infection-associated hemophagocytic syndrome (IAHS) caused by any variety of bacterial, viral, fungal or parasitic organisms, or malignancy-associated hemophagocytic syndrome (MAHS) typically associated with acute lymphocytic leukemia or lymphoma. Although the initial treatment is the same, the prognosis and definitive treatments vary based on the underlying etiology.

Case Report
A 36-year-old active duty Navy Filipino man stationed in Japan complained of a three-day history of persistent headache and fever to 104°F despite repeated doses of acetaminophen. He had no ill contacts and no rodent or mosquito exposures. Initial work up at his local medical clinic was unremarkable and the sailor was sent home. He returned the following day with persistence of his fever, was found to be leukopenic and was transferred to our medical center. His review of systems was otherwise unremarkable and physical exam was significant for splenomegaly without peripheral adenopathy. No rash was noted and the remainder of his physical exam was normal. Initial laboratory studies were significant for an elevated ferritin of 5873 ng/ml, fibrinogen 197 mg/dl, WBC 1700, hemoglobin 10.4 g/dl, hematocrit 30.2%, platelet count 16,000, LDH 998 U/L (normal range: 94-250). Additional abnormal laboratory results include an AST of 165 U/L (normal: 0-37), ALT: 87 (normal: 0-40), alkaline phosphatase of 538 U/L (normal: 38-126) and a conjugated bilirubin of 5.3 mg/dl.

Peripheral blood smear obtained on admission was significant for leukopenia, neutropenia and thrombocytopenia. Bone marrow aspirate was remarkable for normal cellularity without blasts. However, multiple histiocyes were seen with ingested leukocytes, erythrocytes and platelets. The diagnosis of Hemophagocytic lymphohistiocytosis (HLH) was made based on clinical presentation, the presence of all diagnostic criteria (table I) and the observation of phagocytic histiocyte cells on bone marrow biopsy (figure I). The patient was started on dexamethasone and etoposide per the Hemophagocytic Lymphohistiocytosis Study Group-94 guidelines, as well as high-dose intravenous acyclovir. There was an immediate resolution of the patient’s fever, and hemoglobin, platelet and leukocyte counts demonstrated a brisk response to the initial therapy. Peripheral blood PCR for Epstein Barr virus (EBV) DNA was positive. He did not test positive for any of the familial gene mutations. He was discharged for completion of his chemotherapy and antiviral course as an outpatient.

Discussion
Pathophysiology
Although the exact event that triggers activation of the Natural Killer (NK) and Cytotoxic T cells is not clearly understood, it is theorized that an uncontrolled expansion of polyclonal CD8 T lymphocytes and subsequent cytokine storm cause the non-specific T cell activation of macrophages/histiocytes.4 This reaction results in the observed non-malignant invasion of visceral organs, lymph nodes and bone marrow. The non-specific activation also leads to phagocytosis of all hematopoietic precursors by invading histiocytes.

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Excess production of TNF-α and a soluble Fas ligand (CD95; a mediator for cellular apoptosis) cause the tissue damage and inflammation seen specifically in the liver and spleen.

In Familial HLH, there is an inherited loss of function in NK/cytotoxic T cells. The most frequent gene mutations seen in FHLH are in the Perforin Gene (PRF-1 [10q 21-22], a gene for direct cellular killing) and a mutation in Ch 9q21.3-22. T cell dysfunction is a constant feature of primary HLH and does not change after treatment with HLH-94 protocol. This is an important distinction as it has consequences on treatment success. In EBV associated HLH it is believed that infection of T cells results in the overproduction of cytokines IL-1, 2, 6, 10, interferon gamma and TNF-α, which cause excessive activation of macrophage cell lines. In all etiologies, researchers find macrophages with increased expression of CD-36, a key phagocytosis receptor with a lack of antigen presenting ability.

**Diagnostic Criteria**

Hemophagocytic Lymphohistiocytosis (HLH) is a syndrome defined by the presence of five findings:

<table>
<thead>
<tr>
<th>Table 1.— Diagnostic Criteria for Hemophagocytic Lymphohistiocytosis</th>
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<tr>
<td>1. Persistent fever: seen in 60-100% of cases</td>
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<tr>
<td>2. Cytopenia affecting two of the three cell lines: seen in 82-100% of cases</td>
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<tr>
<td>3. Splenomegaly: seen in 35-100% of cases</td>
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<tr>
<td>4. Hypofibrinogenemia: seen in 19-85% of cases and/or hypertriglyceridemia: seen in 59-100% of cases</td>
</tr>
<tr>
<td>5. Hemophagocytosis as seen on bone biopsy: 100% (required for diagnosis)</td>
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Hepatic dysfunction is present in 74 percent of cases. Additional findings that have been proposed to assist in diagnosis are: low/absent NK-cell activity; serum ferritin >500 µg/L, and soluble CD25 (sIL-2 receptor) >2400 U/ml. In patients with neurologic involvement, a predominance of mononuclear cells in the CSF with chronic inflammatory changes on liver biopsy and reduced natural killer activity is also highly suggestive of the syndrome.

Patients may not meet all diagnostic criteria on initial presentation, so retesting is essential. This is particularly important in the evaluation for hemophagocytic histiocytes. Initial bone marrow biopsies may be inconclusive so it is recommended that repeated samples be taken. Alternatively, spleen, lymph nodes and or liver biopsies are recommended if clinical suspicion is high and initial bone marrow biopsy is negative.

**Treatment**

Initial management: During the evaluation for HLH syndrome and continuing into the initial treatment it is essential to provide basic supportive care. This includes replacement of red blood cells, platelets, and fibrinogen. These corrections are often short-lived secondary to hypersplenism and fever. Maintenance of neutropenic precautions and aggressive treatment of all infections is also important. Currently, initial treatment with chemotherapy is the standard. This treatment focuses on the immune suppression and disruption of the aberrant signaling pathways. HLH-94 treatment protocol consists of an initial eight weeks of biweekly etoposide doses and a dexamethasone taper. During weeks 10 through 52 the patient receives etoposide and dexamethasone pulse every other week and twice daily Cyclosporine A with a target serum concentration of 200 mcg/L.

In secondary HLH syndrome the causative etiology needs to be identified and addressed. Primary HLH syndrome will require bone marrow transplant for definitive treatment, since relapse after treatment occurs in all cases. Identification of the underlying cause of this syndrome is essential as primary and secondary disease have different end points. Furthermore, among the infectious etiology, the EBV etiologies differ in that these patients have a worse prognosis as compared to all other infections.

**Summary**

Hemophagocytic Lymphohistiocytosis is a rare disease seen primarily in children with one study estimating the incidence to be 1.2 cases in 1 million. Although this syndrome is an uncommon cause of pancytopenia, the diagnosis of HLH should be considered especially in the setting of hepatic dysfunction and splenic enlargement. The prognosis is poor if the syndrome is not promptly treated (median survival without treatment of two months). In addition, most forms of secondary HLH syndrome are very amenable to treatment. It is also important to remember that although the syndrome is defined by the presence of five criteria, all markers may not be present on presentation. In the absence of any one specific clinical marker and a high clinical suspicion, therapy should commence immediately and testing should continue. Diagnostic work up and treatment of possible underlying malignancy such as acute lymphocytic leukemia, myeloma, lymphoma, and sarcoidosis are recommended.

See Hemophagocytic Lymphohistiocytosis, p. 277
Effects of Upcountry Maui Water Additives on Health

Amber L. Rohner BA, Lorrin W. Pang MD, MPH, Gen Linuma MPH, Damien K. Tavares III BA, Kristine A. Jenkins MSW, and Yvonne L. Geesey BSN

Abstract
Since 2001 Upcountry Maui residents have been concerned that water additives may be linked to health problems in their community. A study using phone surveys was conducted to assess this issue. Most people suffered skin rashes, while others experienced eye irritations or respiratory problems. The surveys suggested that these symptoms might have been attributable to the water additives.

Introduction
The surface water that supplies parts of Upcountry Maui (including Kula, Pukalani, & Makawao) was presumed to be corrosive and leaching lead from lead solder and brass fittings found in several older homes. The Department of Water Supply (DWS) tried to flush the lines and attempted to adjust the pH level, but still had elevated levels of lead in many Upcountry homes. The Federal Safe Drinking Water Act & the Environmental Protection Agency mandate local water utilities to ensure that water from a customer’s tap does not exceed 15 parts per billion of lead. Although the water in the distribution system of concern in Upcountry Maui met this standard, the water coming from the tap of many Upcountry Maui homes did not. Because of these mandates the Calgon product C-9 (zinc orthophosphate) was added to the water supply on June 1, 2001 in an attempt to control the corrosion. C-9 is intended to help by creating a protective film in the water pipes, preventing the leaching of the lead. Unfortunately, ninety-eight people subsequently reported health problems to DWS. The use of C-9 was stopped April 10, 2003 and phosphoric acid was added instead.

Methods
A study using two phone surveys was conducted to assess this issue. The first portion focused on developing a research tool and characterizing the signs and symptoms believed to be associated with the Upcountry water additives. For the second portion random phone numbers from the Upcountry area (Kula, Pukalani, Makawao towns) and 200 random numbers from the Downtown area (Kahului, Wailuku towns) were called. Participants were asked if they had experienced symptoms similar to those reported in the first survey during the past 2 years, the time period when C-9 and phosphoric acid were being used to treat the water. The Downtown area was used as a control group because the area has a different water supply with no C-9 or phosphoric acid treatment. The team used a modified version of the original survey for the randomized, blinded, control group telephone survey. Interviewers were again blinded to the location of participants by using the two-interviewer method.

Results
Twenty-four households were willing to participate in the first survey. Information was collected on sixty-two individuals residing in the twenty-four households. Every household had at least one symptomatic individual. In total there were thirty-two symptomatic individuals. From this first survey it was determined that the primary complaints were skin rashes, eye irritations, and respiratory problems. Twenty-seven
individuals reported a skin rash, thirteen reported eye irritations, and four reported respiratory problems. Twenty-two individuals reported having only one symptom, while eight reported two symptoms, and two reported all three symptoms. Residents strongly believed that their symptoms were related to use of water treated with C-9 or phosphoric acid.

The results of the second randomized, blinded survey with a control group indicated that a statistically significant \((p=0.02)\) number of Upcountry residents experienced similar symptoms over the past two years compared to Downtown residents. Thirty-six homes in the Upcountry group were contacted and information was gathered on ninety-seven individuals. Fourteen of the ninety-seven reported symptoms; ten of them reported getting a skin rash. In the Downtown group, thirty homes were contacted and information was gathered on seventy-seven individuals. Only three reported symptoms, one reporting a skin rash.

**Discussion**

The surveys suggest that these symptoms may have been adverse reactions to the water additives, but more research would be needed to confirm this. A causal relationship cannot necessarily be inferred, however, the way in which the health problems manifested suggested that water use was a factor. In both surveys most symptomatic individuals Upcountry reported symptoms after showering or associated their symptoms with some sort of water exposure, such as watering the lawn. Some also noted that if they showered Downtown or went on vacation that their symptoms would resolve, but would return once Upcountry water use was resumed. However, the three symptomatic individuals from the Downtown group did not attribute their symptoms to water use, instead citing other causes, such as grass allergies when mowing the lawn causing eye irritation. The finding of symptomatic individuals in the Downtown group may simply account for the background rate of skin rashes, eye irritations, and respiratory problems present in the population for that given time. Again, while these results are suggestive that there is an association between treated water & reports of symptoms, further studies would be needed to show a true correlation.

There are several limitations to our study. The sample size was small and there may have been an unintentional selection bias due to the times the calls were made. Also, those with unlisted phone numbers were not included in the study, adding to the bias. Additionally, reported symptoms could have been due to confounding factors, such as allergies or illness, different soap use, or different ages or ethnic groups contacted. However, despite the limitations a statistically significant difference was still shown between the Upcountry group and the control group, suggesting that the water additive could be the factor contributing to the symptoms residents reported. Future studies may include a randomized, double blind, controlled crossover study with participants bathing in treated or untreated water. This may give more solid evidence about whether the water additives truly play a role in producing the symptoms of the residents.

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**Acknowledgments**

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Acute Renal Failure Resulting from Intravenous Immunoglobulin Therapy

Non Wajanaponsan MD, UHIMRP and Shiu-Feng Cheng MD

Abstract
Intravenous administration of immunoglobulin is used for the treatment of many conditions, including primary immunodeficiency states, autoimmune disorders, glomerulonephritides and polyneuropathy. Acute renal failure induced by intravenous immunoglobulin is a known but rare adverse reaction. We have a patient who was treated with IVIG for inflammatory polyneuropathy. Intravenous immunoglobulin therapy 0.5g/kg/day was given for 4 days. Three days after completion of IVIG therapy, patient developed decreased urine output. His serum creatinine increased from baseline of 1.3 to 7mg/dL. Even though IVIG was discontinued, patient required hemodialysis. This case illustrated that IVIG can cause acute oliguric renal failure which is reversible after withdrawal of the drug. Risk factors include pretreatment renal impairment, diabetes mellitus, high concentration of sucrose or glucose in IVIG preparation and older age. Awareness of this serious side effects and recognition of predisposing factors provide means of avoiding a known life threatening complication of IVIG therapy.

Case report
A 76-year-old Chinese male with a history of inflammatory polyneuropathy was admitted for acute renal failure following treatment with IVIG. The patient has been well until one year earlier when he developed progressive lower extremities weakness. He was seen by a neurologist and inflammatory polyneuropathy was diagnosed based on a nerve conduction study. The patient was admitted by his neurologist for IVIG injection (Panglobulin, ZLB). He was hospitalized for 4 days and received IVIG treatment with the dose of 2 mg/kg for maximal rate of 100 ml/h. The admitting serum creatinine was 1.3mg/dL. On the third day of the treatment with IVIG, creatinine increased to 1.5mg/dL. The patient was discharged 3 days before this admission. For two days prior to the second admission, the patient noted decreased urine output. The patient also developed fatigue with anorexia. Because of those symptoms, he was evaluated in the emergency room which yielded only 10ml of urine. Furosemide 50mg was given intravenously without response, followed by continuous intravenous infusion drip with the rate of 30mg/hr without response. The patient had peak serum creatinine of 8.8mg/dL. On the third day of the admission, acute hemodialysis was performed because of anuria and uremia. Shortly after dialysis, the patient's urine output increased and eventually became polyuric. Serum creatinine continued to improve throughout the hospitalization. The patient was discharged on the seventh day of hospitalization with serum creatinine of 2.4mg/dL. He was followed by the nephrologist as an outpatient with clinical improvement of serum creatinine back to baseline.

Discussion
IVIG induced acute renal failure was first described in 1987. In review of case series, most of the patients had a small and transient elevation in the plasma creatinine concentration that may reflect a reduction in creatinine secretion rather than the fall in glomerular filtration rate. In the group of patients who developed acute renal failure, 48% of patients had acute renal failure, 48% were more than 65 years old and in 57% of them there was preexisting renal disease such as diabetes and renal insufficiency. Between 1985-1998, the Federal Drug Administration received a total of 120 reports of adverse renal events (acute renal failure and renal insufficiency) associated with high dose IVIG therapy.
received sucrose containing IVIG: Sandoglobulin and Panglobulin (combined responsible for 69% of all cases in the United States), Gamma-PLV. and Gamma-IV (were responsible for 22 percent of the cases) Fifty – nine percent had diabetes mellitus and 26% had pretreatment renal impairment. All renal adverse events occurred in the first 7 days following the administration of IVIG therapy.1,2,13 In our case, the temporal relationship between acute renal failure and IVIG administration was consistent with that seen in previous reports, there was no other apparent cause for the acute renal failure.

The mechanism of IVIG induced acute renal failure was previously thought to be due to aggregated immunoglobulin complex. However, as series of typical histological findings of renal biopsy in this patient showed vacoulization and swelling of tubular and glomerular cells, has drawn attention to the high concentration of carbohydrate additive in IVIG. Sucrose is the main carbohydrate which is added to IVIG as a stabilizing agent. Uptake of filtered sucrose by proximal tubular cells leads to osmotic water entry and cell swelling which is called “osmotic nephrosis”.6,7,14,15

Osmotic injury by sucrose is the leading hypothesis for IVIG induced acute renal failure, however, there are some arguments against this mechanism since the patient do not present with true hypertonic syndrome. The hypertonic IVIG solutions are quickly diluted in blood. Furthermore, if it was the toxicity causing tubular damage, one would expect to see more severe lesions in the distal proximal tubule where the osmolality due to reabsorption of water and sodium is the highest. But histologic examination indicated that proximal segment of the proximal tubule was the part with the most damage. Also, based on animal studies, it is unlikely that carbohydrate alone can cause severe impairment of kidney function. Some underlying renal disease or drug affecting renal function or hemodynamics seem to be important contributing factors for the development of acute renal failure. Healthy rats treated with high dose mannitol alone did not developed renal failure. Only after concomitant administration of cyclosporin and IV mannitol did the animal develop marked deterioration in renal function and osmotic nephrosis on histology. A similar observation with severe oliguric acute renal failure was noted in a human kidney graft recipient on cyclosporin, in whom a large amount of mannitol had been injected intravenously. Lately, non-sucrose containing IVIG preparation have been used successfully in patients with previous history of IVIG-associated acute renal failure.

Acute renal failure occurred in most cases during first exposure to IVIG. The clinical manifestation varies from asymptomatic rise in plasma creatinine concentration to anuric acute renal failure requiring hemodialysis. Risk factors for IVIG – induced acute renal failure include including age more than 65, those with preexisting renal insufficiency, diabetes mellitus, volume depletion or those who receiving nephrotoxic drug. Spontaneous resolution typically occurs within 4-8 days after discontinuation of IVIG. Identification of patients who are at risk for developing acute renal failure caused by IVIG.

References
Comparing Need between Health Occupation and Health Education Schools: Which Students Benefit Most from the School Health Education Program

Lisa Lam BA, Rachel Lee MA, and Ivy Nip MD

Abstract
Comparing need between Health Occupation and Health Education Schools: Which students benefit most from the School Health Education Program? First-year medical students taught general health topics at public high schools. Pre-test and post-tests were given for each presentation. Health Education students had lower pre-test scores but showed greater improvement. With greater need and fewer resources, Health Education students benefit most.

Introduction
The School Health Education Program (SHEP) began in 2002 as a collaboration between the University of Hawaii John A. Burns School of Medicine (JABSOM), the Hawaii State Department of Education (DOE), and public high school health teachers. This project is sponsored in part by the Fund for the Improvement of Post-Secondary Education (FIPSE) and the U.S. Department of Education. Goals of this initiative included exposing medical students to service learning, and assisting high school teachers in meeting the DOE’s Health Content Standards, which took effect in August 2001. One of the new Health Content Standards’ goals was to support the development of healthy behavior by establishing effective health promotion and education in the kindergarten through twelfth grades. There have been increases in various youth risk behavior. The 1999 national Youth Risk Behavior survey reported that among adolescents, 67% have tried cigarettes, 45% drank alcohol in the past 30 days, and 36% had been sexually active in the past three months. The survey also reports that violence (homicide and suicide) is the leading preventable cause of death among persons age 10-24 years. SHEP aimed to address these preventable high-risk behaviors through a service-learning modality. First-year medical students were sent to six different public high schools to serve as mentors and teachers of general health topics.

Consistent with similar studies relating to teaching high school students, SHEP had been successful in increasing high school students’ knowledge of health topics, as measured by pre-test (given prior to medical student intervention) and post-test test scores from previous years. In this study, the authors looked to improve the program by examining which of the schools benefited most from SHEP. This paper describes SHEP during the 2002-2003 year. The classes in the six high schools were divided into one of two groups: health education classes and health occupation classes. Health education classes were pre-requisites for graduation, while health occupation classes were elective courses chosen by students who have a personal interest in pursuing health careers. Determining which group benefits most is an important question to consider, as funds, time, and human resources are limited and the waiting list of high schools requesting SHEP services is long. Answering this study question has been an exercise in the development of medical student awareness of social responsibility to the community and the meaning of professionalism.

Methods
Study Design
Fifteen first-year medical students were recruited for the 2002-2003 school year. Medical students were divided into three teams, with each team being assigned to two of the six schools. The schools involved were McKinley, Castle, Roosevelt, Waipahu, Nanakuli, and Farrington high schools. Each team worked closely with supervising faculty from the Office of Medical Education (OME), and with health education and health occupation teachers from the respective high school sites. Medical students spent four hours a week participating in SHEP activities, including health content training, curriculum design seminars, and presentation skills training prior to delivery of the specific lessons at the high schools.
The cooperating schools were composed of socio-economically diverse students. The teaching methods designed were tailored to meet the specific needs of students from each of these schools. The health education standards topics and teaching methodologies designed by the medical students for the schools included:

1. Healthy Living: focused on diet, exercise, nutrition and coping with stress
   - Small group discussions, games, poster boards, Problem-Based Learning Case on Eating Disorders

2. Substance Abuse: focused on teenage use and health consequences of alcohol, tobacco, ecstasy, and other illicit drugs
   - Power point presentation, small group discussions, games, and Problem-Based Learning Case on amphetamine use

3. Sexual Health: focused on STD's, date rape, pregnancy and contraceptives
   - Power point presentation with explicit photos (STDs), posters, and proper condom use demonstration

4. Violence Prevention: focused on school violence, domestic abuse, suicide, homicide, and motor vehicle accidents
   - Power point presentation, Jeopardy game, guest speaker from Honolulu Police Department, and skits

Study Population
A total of four classes at McKinley, Nanakuli, and Roosevelt high schools made up the health education group. These health education classes were required for graduation, and the students in them had a wide range of interest in health care: some students were very interested in health issues and careers, others were not. One class each at Castle and Waipahu high schools were the health occupation classes. These were elective classes for students interested in pursuing health care careers. Students in these classes were self-selected and expressed an interest in learning about health care issues and wanted to pursue careers in medicine and nursing. Farrington high school had two classes, one each of health education and health occupation. Farrington high school was excluded from the study results because data from the two different classes were not segregated.

With the exception of Castle and Waipahu high schools, students at each school participated for one semester. New classes of students arrived the next semester. Castle and Waipahu high schools were on a year-long schedule.

Health Education Classes: McKinley, Roosevelt, and Nanakuli High School

McKinley High School: McKinley High School is located in the center of Honolulu, Hawaii the political and economic center for the State of Hawaii. The top ethnic groups at McKinley High School were Chinese 22% and Filipino 16.1%. The average family size of McKinley's community was three, and the median household income was $34,350. The median household income of the State of Hawaii was $49,820. Also, 8.4% of households in this community received Public Assistance Income, compared to 7.6% for the State of Hawaii, and 19.1% of children (ages 3-19) were below the poverty level. Forty-three percent of students received free or reduced-cost lunch, 10.1% were enrolled in Special Education Programs, and 19.6% had limited English proficiency.

Roosevelt High School: Roosevelt High School is also located in Honolulu, Hawaii, and serves a diverse community. Ethnically, 33% were Japanese, 15% Part-Hawaiian, 13% Chinese, 13% mixed, and 7% Caucasian. The number of students enrolled in 2002 was 1543. Scores on the Stanford Achievement Test for Roosevelt tenth graders were 19-29% below average in reading, and 15-20% below average in math. Median household income for this community was $52,797; 4.5% were on public assistance; the number of families living with children in poverty was 11.7%. Eight percent of students had limited English proficiency.

Nanakuli High School: Nanakuli High and Intermediate School is the only school with both intermediate and high school under one administration. The school consists of almost 70% Hawaiian or part-Hawaiian students. The median household income in this community, below that of the state, was at $44,457. Twenty two point five percent of families received public assistance, compared to 7.6% at the state level.

Health Occupation Classes: Castle and Waipahu High School

Castle High School: Castle High School is located in Kailua, Hawaii. The major ethnic groups at Castle were 32.7% Part-Hawaiian, 19.8% Japanese, and 12.1% White. The average family size of Castle's community was 3.6, and the median household income was $68,914, significantly higher than that of the state. Seven percent of households received Public Assistance, and 6.2% of children ages 3-19 lived with families below the poverty level. Approximately forty percent of students received free or reduced-cost lunch, 15.2% were enrolled in Special Education Programs, and 2.6% had limited English proficiency.
Waipahu High School: Waipahu High School serves a community with an ethnic distribution consisting of 58% Filipino, by far the majority, followed by 12% Samoan, and 9% Part-Hawaiian. The student population was approximately 2,400. Over the past four years, test scores revealed 25-44% of tenth grade students were below average in math, and 34-43% were below average in reading on the Stanford Achievement Test. At the socioeconomic level, the median household income was $59,578; 10.9% of households were on public assistance; 9.4% of families with children lived in poverty. Almost fourteen percent of the students had limited English proficiency.9

Mixed Classes: Farrington High School

Farrington High School: Farrington High School has the largest student population of all Hawaii’s public schools. The ethnic distribution at this school is 58% Filipino and 14% Samoan, with other ethnic groups making up a minority. Median household income was slightly less than the state while the percent of households with Public Assistance income was 17%, compared with 7.6% for the State. Sixty-five percent of students received free or reduced-cost lunch and 20% had limited English proficiency.10

Outcome Measures

Multiple choice pre-tests were given prior to the presentation. Although variation existed to account for differences in high school students' needs, a core set of questions were used at every school. After each presentation, medical students encouraged high school students to ask questions and provide feedback. The class period concluded with the administration of post-tests to measure knowledge, confidence in making health decisions, and attitudes regarding learning (the students' self-perceptions of learning). A one group pre- test/post- test design method was used to indicate of how much, or how little students learned about the health risk behaviors in which they engaged. Analysis of data was performed using a Pearson test, comparing test score difference across schools and semesters.

Results

A one-group pretest-post test design was used with a mixed analysis of variance including one-nested factor of high school, and two-repeated measure factors of time (pre versus post) on content knowledge and confidence in health decisions. A full school year of presentations was analyzed, and demonstrated a statistically significant difference between the health occupation and health education classes at pre-test and post-test (fall p = .0002, spring p < .0001). The health occupations classes consistently scored higher when compared with the health education classes.

Discussion

The data showed that although the health occupation classes had higher pre- test scores, health education classes showed greater improvement in scores. Factors that account for higher pre- test scores among the health occupation classes include differences in the level of the class, the resources available to students, and the self-selectivity of students in health occupation classes.

The curriculum of the health occupation classes is designed specifically for students interested in health careers. Prior to SHEP, students in these classes have had previous, in-depth exposure to health topics from their teachers. These students also participated in learning activities outside of the classroom and had other resources available to them. For example, students at Castle high school attended fieldtrips to hospitals, shadowed physicians, and had access to a clinical skills classroom equipped with anatomical models and medical equipment. Students at Waipahu high school also had charts and models available to them and were required to volunteer in hospitals. Students at the health education schools did not have any of these educational opportunities. Finally, students in the health occupation classes were homogenous in their level of interest.

Some of the limitations in this study were variation in medical students’ teaching methods and content and researcher bias. Although the topics taught were fundamentally the same for all schools, each team of medical students had flexibility in how they presented the material. The teams catered to the particular needs of the students in each class. For example, at McKinley high school, the presentations were simplified for the large number of students with limited English proficiency. To control for these differences, the pre- and post- tests had a set of core questions for all schools.

Teaching at both health education and health occupation schools has proven to be challenging and rewarding for the medical students. However, this study has shown that student in the health education classes reaped greater benefits and have greater need for SHEP services. Therefore, in light of limited resources, priority should be placed on health education schools. The data from this study has led to a recent program change in SHEP. SHEP services are no longer provided to Castle and Waipahu high schools' health occupation classes. Instead, resources have been reallocated to two additional health education classes—one at Waipahu High School and the other at Kailua High School. Although it is difficult to deny services to any one group, it is important to allocate resources where they are needed most. Such decision making is not taught in the medical school curriculum.

See SHEP p. 277
Sixty-two men and women began their first day of medical school on July 26, 2004. Thirty-nine women and 23 men were selected from a total of 1,373 applicants from throughout the United States and Canada. Two-hundred-seventy-four, 158 Hawaii residents and 116 non-residents, were screened academically to be interviewed. Finally selected were 58 residents and four non-residents. As a State-supported school, preference is given to residents of Hawaii. Residency is determined by examining five criteria: legal residency, parent’s residence, birthplace, high school attended, and college or professional school attended. An applicant must have at least three of the five to be considered a “resident” for application purposes.

The median age of the Class of 2008 is 23, ranging from 21 to 45. Twenty-one are re-applicants. Forty-five are graduates of mainland colleges, 16 are from Hawaii institutions, and one from Canada. JABSOM is proud of its ethnic diversity of the class, represented by: Caucasian, Japanese, Chinese, Filipino, Chinese/Japanese, Filipino/Japanese, Korean, Vietnamese, Chinese/Filipino, Chinese/Japanese/Native Hawaiian, Chinese/Japanese/Native Hawaiian/White, Chinese/Vietnamese, Filipino/Cherokee/White, Filipino/Japanese/Native Hawaiian, Filipino/White, Japanese/Korean, Japanese/Korean/White/Japanese/Native Hawaiian White, Japanese/White, Korean/White, Māori/White, Okinawan/Chinese, and Persian/Filipino.

Forty-five are graduates of mainland colleges, 16 from colleges in Hawaii and one is an alumnus of a foreign institution. All have their Baccalaureate degrees. In addition, four have their Masters and one has a Doctorate in Pharmacy. The colleges and universities represented are UH Manoa, University of Southern California, UC-Los Angeles, U of Washington, U of Puget Sound, Lewis and Clark, UC-Berkeley, UC-Irvine, BYU Hawaii, College of William and Mary, Colorado College, Gettysburg College, Long Island University-Southampton College, McGill U, Northern Illinois U, Occidental College, Pacific U, Portland State U, Princeton U, Rice U, Saint Louis U-Main Campus, Scripps College, Southern California College, Stanford U, UC-San Diego, UH-Hilo, U of Oregon, U of Pennsylvania, U of San Francisco, Washington State U, Westminster College, Willamette U, and Yale U.


Seventy regular and clinical faculty volunteered to interview applicants. All interviewers were oriented to the admissions process early in the school year. Each interviewer is assigned 8-10 applicants who are held responsible to locate and schedule their appointments that are conducted throughout the State. For neighbor island applicants, at least one interview is conducted on their respective island.

Interviewers are provided the essay portions of the application that contains a brief biographical sketch and written compositions to the questions, “Why medicine as a career?” and “Why the John A. Burns School of Medicine?” Academic scores, transcripts and results of the Medical College Admissions Test (MCAT) are not given to interviewers.

The majority of the students stated that they selected JABSOM for the Problem Based Learning curriculum, the location of the school, and for those from Hawaii, the desire to be close to home, and to serve the people of Hawaii and the Pacific.

At the completion of the interviews, the applicants’ dossiers are submitted to the Admissions Committee composed of ten members, 5 women and 5 men. Seven were clinicians, 2 basic scientists and one social scientist. They represented the major ethnic groups in Hawaii as well as the various age levels. Each member is committed to serve three years. The Committee met twenty-one times between September and mid-May.

The Committee processed two hundred seventy-four dossiers. Each folder contained the application to the American College Admissions Services (AMCAS) that included a biographical sketch and essays, transcripts, the Medical College Admissions Test scores, interview evaluations, and letters of recommendations. The dossier is examined as a composite of an applicant who may have the potential of becoming a physician. Critical in this process are the Committee members’ assessments as to whether the individual displays leadership and interpersonal skills, a compassion to help others, the ability to stand ambiguities, and the stamina and motivation to go through at least seven to eight years of medical education and training. Finally, after a brief discussion, each applicant is given a score that ranges from 1-10. This is a secret ballot. The scores are not discussed and submitted to the registrar who averages all the ratings and keeps them aside. When all 274 candidates have been processed, the ratings are
ranked. The first fifty-five candidates were offered positions in the class. Seven students in the Post Baccalaureate Imi Ho‘ola Program completed their one-year studies and joined the incoming class.

The academic credentials of the class are: median cumulative grade point average (GPA), 3.65; median science GPA, 3.51; MCAT scores, Verbal Reasoning, 9; Physical Sciences, 9; Writing Sample, Q; and, Biological Sciences, 10.

The Class of 1983, celebrating their 25th anniversary since graduation, honored the incoming Class of 2008 at the White Coat Ceremony on July 30, 2004, conceived by the Arnold P. Gold Foundation. Each student received a white coat, a stethoscope, two books, “On Doctoring” and “Bates’ Guide to Physical Examination and History Taking, and a pin depicting the Gold Foundation logo with a stethoscope on the shape of a heart, surrounded with the words, “Humanism in Medicine.” The ceremony was highlighted by the restatement of the Oath of Hippocrates by the entire class as well as the physicians in the audience.

Dr. Edwin C. Cadman, Dean of the School of Medicine, welcomed the students to the John A. Burns School of Medicine. His remarks included the following, “...Becoming a physician is perhaps the most rewarding experience you will ever have. I am delighted that you have chosen the John A. Burns School of Medicine at the University of Hawaii to begin your career. I am committed to excellence in your education. The faculty deeply cares about you and your education. We are here to serve you as your instructors, guide you through the medical maze of knowledge, and provide you the skills required to be an outstanding physician.”

Sixty-two bright, enthusiastic young men and women have embarked on becoming physicians who will contribute towards creating a healthy society in which we live.
The Cancer Research Center of Hawaii was invited in the summer of 2003 to participate in the cancer Biomedical Informatics Grid (caBIG). The project was initiated by the National Cancer Institute’s Center for Bioinformatics (NCICB). Its ambitious goal is to build a network for cancer-related biomedical informatics that will ultimately enable information to be shared easily between cancer researchers. The NCICB believes that successful completion of the project will serve as a model for how all biomedical research can be streamlined to serve the needs of patients, study participants, care providers and researchers more effectively.

The Informatics Challenge:
Technological advances in biological data collection have resulted in a tremendous surge in the amount of data to be stored and processed. The study of informatics involves the application of statistical methods along with computer and information sciences to organize, manipulate, analyze and visualize these large data sets. That task in itself is daunting, but an additional layer of complexity results when attempting to integrate data stores between different disciplines and researchers. The issues facing the management of clinical trials participants are different from those involved in the processing of data generated from a DNA microarray or the analysis of questionnaires for a population study. Even within many disciplines, there are no standards for data collection, making integration of data among researchers difficult. However, if cancer researchers are to gain the maximum utility from the data they are collecting, linking data from different studies and across disciplines will be necessary. Providing the foundation and tools to accomplish this task is the challenge that the NCICB has undertaken.

The caBIG Proposal:
The vision of the caBIG project is to have the NCICB coordinate the development of a unifying informatics architecture. Key to the project is the utilization of the NCI Cancer Centers framework to identify the resources and expertise in cancer informatics that exists among its facilities and researchers. The combined resources of the Cancer Center participants and NCICB can then be used to provide the linkages enabling data sharing across disparate databases. Ultimately, standard vocabularies, data structures and analyses tools will be developed that can tie together data generated from basic

Figure 1. From http://cabig.nci.nih.gov/caBIG/pilotstructure
science and clinical research. The increased integration should lead to the discovery of data relationships that might otherwise be overlooked.

**Pilot Phase Development:**
The Cancer Research Center of Hawaii (CRCH), as one of the 61 NCI-designated Cancer Centers, was asked to become a part of the pilot phase of the caBIG. The original structure of the pilot phase proposed the selection of approximately 10 Cancer Centers to work on informatics projects that would reflect each center’s research strengths, show the feasibility of developing an informatics grid and generate tools to be used by other researchers. CRCH submitted a proposal that focused on data integration issues in the study of the lifestyle and genetic factors contributing to the ethnic variations in cancer incidence in Hawaii.

After evaluation of all the proposals and meetings between NCI and Cancer Center representatives, the NCICB decided to expand the scope of the pilot phase by including more centers and grouping similar projects with a common focus into informatics “Workspaces”. The five Workspaces proposed are divided between “Domain Workspaces” that will develop products to address an informatics need identified by the various cancer centers, and “Cross Cutting Workspaces” that will address issues affecting the Domain Workspaces such as infrastructure, vocabularies, common data elements, standard documentation and data security. Within each Workspace a center may have a role as a developer or an adopter depending on its capabilities and needs (Figure 1).

**Domain Workspaces**

**Clinical Trials Management** – The management of clinical trials participants was the most frequently cited data management challenge for all Cancer Centers. A variety of software tools designed to aid clinical trials data management is already available. This Workspace will work to identify and assemble those tools that fit into the caBIG framework. There will be an emphasis on the utilization of “open source” products to promote universal access to the tools. Cancer Center members of this Workspace will help to develop new tools to add additional capabilities to the software grid.

**Integrative Cancer Research** – This Workspace is focused on enabling data integration and sharing between different researchers. Its objective is to provide tools that will link data sets between different researchers as well as between different disciplines of research. The Workspace aims to demonstrate the feasibility of creating a shared informatics platform that will be available to the entire cancer research community. The diversity of issues to be addressed in this Workspace has resulted in the formation of a number of sub-groups, or special interest groups (SIGs) to work on issues of specific concern to different areas of study. As an example there are SIGs for discussion of DNA microarray data repositories, data analysis and statistics, and translation of basic research to clinical treatments.

**Tissue Banks and Pathology Tools** – The primary goal of this Workspace is the development of tools to inventory, track, mine and visualize tissue samples available from a variety of sources. As is the case with clinical trials data management, a number of tools have been developed independently, but this Workspace will assist in the unification of the resources available. A unique aspect of this area of interest is the storage of physical samples, thus issues of geography are a key consideration in the creation of effective tools and in linking the existing databases describing the samples.

**Cross Cutting Workspaces**

**Vocabularies and Common Data Elements** – The purpose of this Workspace is to address software development issues relating to the creation of tools that will fit the caBIG information network model. Its members will work to establish standards for the tools used in caBIG. They will also be responsible for assessing existing systems that may be integrated into the project.

**Architecture** – This Workspace will put its emphasis on developing the computing framework to support caBIG. Its topics include methodologies for data access and presentation, data transmission standards and data security issues. It is also tasked with ensuring consistent application of development principles of the caBIG.

**Role of CRCH**
CRCH has been selected to participate as a developer in the Vocabularies and Common Data Elements (VCDE) Workspace, one of the Cross Cutting Workspaces. As described above, CRCH will contribute to the implementation of software development standards.

Two researchers in the Biostatistics group of the CRCH Cancer Etiology Program, Dr. Leo Wang-Kit Cheung and Dr. Lynne Wilkens are our representatives in this Workspace. Dr. Cheung has a Ph.D. in Statistics with a background in computer science, genetics and molecular biology. His research interest in bioinformatics, especially as related to genomic and proteomic data mining and analyses, reflects his varied experience. Dr. Wilkens has a Doctorate of Public Health in Biostatistics and heads the Biostatistics Shared Resource at CRCH. Her research focuses on techniques for studying disease associations when the independent variables are measured with error. CRCH’s main contribution to the VCDE Workspace will be to add functionality in terms of vocabulary and common data elements for cancer epidemiology, particularly nutritional epidemiology. The Cancer Etiology Program of the CRCH has extensive experience in studying the role of diet in cancer incidence and will aid in the publication of select international vocabulary systems for dietary variables, as well as CRCH’s internal system, on the caBig. These systems will aid researchers in the future to collect dietary data in a uniform fashion, allowing for easier data integration. Drs. Cheung and Wilkens will also serve as VCDE liaisons to the Integrative Cancer Research Workspace.

The caBIG project and the amount of resources that the NCI is contributing to its operation demonstrate the importance that informatics now plays in biomedical research and treatment. The Cancer Research Center of Hawaii is pursuing other partnerships that will help to develop our resources in this area. The CRCH has entered into collaborations with the Maui High Performance Computing Center (MHPCC), an Air Force Research Laboratory Center managed by the University of Hawaii. Dr. Cheung will utilize the capabilities of the supercomputer facility to support his research in bioinformatics. The MHPCC and the CRCH Etiology program
will work together to develop a secure web-based data management system for a large epidemiology project that will allow easy access to and integration of data for researchers. Dr. Cheung will also participate in the University’s Center for Genomic, Proteomic, and Bioinformatic Research (CGPBR), a new initiative that hopes to aggregate and support investigators working in these areas.

**Conclusion**

The caBIG is a major undertaking to direct cancer informatics toward a unified architecture that facilitates data sharing and integration. The resulting increase in data mining capabilities as well as expanded opportunities for collaborative research should ultimately lead to faster and more effective development of potential treatments and prevention programs. The commitment of the NCI to the success of this project, along with the challenges CRCH faces in managing and integrating its own data stores from epidemiological studies, genomics research and clinical trials, makes our participation vital to the continued development of our research capabilities.

For more information about the Cancer Research Center of Hawaii, please visit our website at www.crch.org.

**References**

FIVE WAYS TO DIE ON THE GOLF COURSE:

1. Hit by a golf ball.
2. Run over by a golf cart.
3. Whacked by a golf club.
4. Struck by lightning.
5. Forgot your hat.

Surprisingly, one million new cases of skin cancer are detected every year. One person an hour in the U.S. dies from melanoma, the deadliest form of skin cancer. If you spend a lot of time in the sun, you should protect yourself. One out of five Americans develops skin cancer during their lifetime. Don’t be one of them. Stay out of the midday sun. Cover up. Wear a hat. Seek shade. And use sunscreen. For more information on how to protect yourself from skin cancer, call 1-888-462-DERM or visit www.aad.org.

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and carcinoma or determining the causative infectious agent is critical as well. It is also important to remember that the presence of EBV virus or other infectious does not preclude underlying FHLH and genetic testing is recommended for all cases. Ultimately in FHLH, after initial treatment with the chemotherapy, the ultimate curative therapy is allogeneic bone marrow transplant. Our patient has done very well and is completing his therapy without return of the syndrome.

References
3. HLH study group. Treatment protocol of the first international HLH Study 1994. Kindly provided by the Study Reference Center, Sweden.

SHEP, from p. 270

References
Never Test The Depth Of The Water With Both Feet.
The latest gimmick to entice patients into the office of the refractive surgeon is conductive keratoplasty. "Throw away those reading glasses!" is the current mantra. Since there are so many potential patients already, and so many baby-boomers heading that way, the market could be huge. Conductive keratoplasty (CK) is circumferential radio-dynamic impulses near the corneal limbus to produce a steeper corneal curve, and thereby aid near vision. The intent is to give the patient reading vision in one eye, while the fellow eye is left for distance acuity. Previous attempts with thermal devices were inconsistent, and the needle produced a screech when touching the cornea. The Holmium laser also failed to give satisfactory results. So now we have our refractive hucksters pushing CK. The cost is $1,500 and the procedure can be repeated in 3 to 5 years if necessary. Of course, CK is identical to the "mono-vision" of post-cataract surgery correction, or contact lens use which we have been using for years. But it's OK to sell CK, RK, PRK, or Lasik if you can. With Medicare and the Blues squeezing reimbursement, and cost of staying in practice going up, why not? People magazine carried a CK story, so check out the web site, and get ready to respond.

The Intolerant Person Always Seems To Be Positive In The Negative.
Two seriously ill women in California were growing marijuana for their own use. Their doctors had recommended that they use the drug for medicinal purposes. Attorney General John Ashcroft (he's back again) prosecuted the two women for violating the Controlled Substances Act. The Ninth Circuit Court ruled that "cultivation, possession, and use of marijuana for medicinal purposes and not for exchange or distribution is not a commercial or economic activity." Therefore, it is not a matter of federal concern. The US Supreme Court let the decision stand. The ruling is limited to those states within the Ninth District which specifically allow doctors to recommend marijuana for their patients; Alaska, California, Hawaii, Nevada, Oregon and Washington.

Life Begets Life And Energy Begets Energy.
It has long been theorized that keeping busy and active are inextricably related to maintaining good health. In Israel, a long term study of men and women born in 1920 has demonstrated the effect of retirement. After analyzing the data at six and twelve year intervals, researchers noted that work, however defined, proved to be a major determinant in longevity. In the study of 1000 people, those who continued to work after age 70 and beyond, were 2 and ½ times as likely to be alive at age 82 when compared with those who were no longer working at the start of the study. Moreover, the numbers appear to show that the longer you continue working, the better for one’s health.

Some Fresh Lipstick And A Tight Skirt – Back To The Street, Sweetie.
In Florida, a traveling internist offered some false and fanciful testimony in a malpractice trial in an attempt to establish negligence. The jury did not accept his story, and found no negligence. The three defendant doctors asked the state medical association to peer review the frivolous testimony of the plaintiff’s "expert" and that was done. Now the itinerant expert is suing the doctors and the state medical association with the claim that the action was defamatory, and serves to intimidate any physician when asked to testify. Perhaps his trial attorney friends don’t call any more. The policy of a medical organization policing such action was established 20 years ago by the American Association of Neurological Surgeons. The Professional Conduct Committee of the AANS was challenged and the court ruled that professional societies could discipline members regarding courtroom testimony, and that the court needed help in scrutinizing expert witnesses. Moreover, the Federation of State Medical Boards passed a resolution stating that fraudulent testimony given by a medical expert witness should be considered unprofessional conduct.

No One Dares To Call It Witchcraft. Now We Call It "Alternative" Medicine.
The human brain is easily convinced that "purging" can cleanse the body. Ancient people used such practices as letting out quantities of blood, drilling holes in the skull, and flushing out the bowel to "detoxify" the body’s innards. With the high-colonic irrigation and related mechanisms, such quackery is as persistent now as in ancient days. Even Dr. Robert Atkins (of the popular low-carb diet), prescribed a Cleanse and Renewal Kit of pills containing butternut bark, ginger root, fennel seed, cayenne pepper and other and sundry things to aid healthy metabolism. The claim is that this concoction promotes bowel health, which is true if you believe such health is flushing-out from appetite to anus. So, believers today empty their wallets to buy various herbal offerings at the local "health food" store containing products of kelp, red clover, dandelion root, alfalfa, ginger, etc., on the expectation they can target problems, varying from acne and halitosis to warts and venereal disease.

Lawyers, I Suppose, Were Children Once.
Ohio Citizens Against Lawsuit Abuse (OCALA) issued a statement stating that Democrat Presidential-candidate John Kerry’s selection of John Edwards, a certified ambulance chaser, for a running mate “is a huge victory for personal injury lawyers and those who do not believe in personal responsibility. It’s bad enough that the trial bar has bought and paid for our court system – now they are looking to buy the White House.” OCALA calls itself a grassroots public education organization that serves as a "watchdog for justice." Even John Kerry, in a statement last spring, referred to Edwards’ support from the trial attorneys. In response, his press secretary said they would be willing to have all of their campaign funds donated by trial lawyers. John Edwards hasn’t even finished his first term in the Senate, but he is pretty, and being a trial attorney, he is suave and articulate. No question, the combination of the Heinz fortune (Kerry’s spouse) and the American Trial Lawyers Association will provide the Kerry campaign with unlimited financial resources.

What Will They Name The Dairy?
A Swedish research team has concocted a cream made from human breast milk which can drastically reduce, and often even eliminate, stubborn verrucae. According to the study published in the New England Journal of Medicine, the alpha-lactalbumin in mother’s milk enters into the nucleus of the wart cell, upsets the control process and causes the wart to self-destruct. Three weeks of daily therapy with the cream cut the size of the warts by 75% or more in all the volunteers. The additional exciting part of this discovery is that the same class of viruses cause cervical cancer, genital warts and some skin cancers, so the medication may have much wider application.

And You Thought They Were Only In Politics.
For the first time in recorded history the Food and Drug Administration has cleared the commercial marketing of leeches for medicinal purposes. For the first time in recorded history the Food and Drug Administration has cleared the commercial marketing of leeches for medicinal purposes. For the first time in recorded history the Food and Drug Administration has cleared the commercial marketing of leeches for medicinal purposes. Whether or not this therapy and FDA approval will work, is unknown. Leeches have been used for centuries to leech blood, and for cleaning up damaged or crushed tissue. They can be very helpful in decompressing peri-ocular hematoma from blunt trauma to the orbit, or removing blood pooled under skin grafts, all very effective in promoting healing.

ADDENDA
❖ A study from UCSF involving 300 elderly patients, has shown that patients taking aspirin or using statins were almost 40% less likely to develop wet macular degeneration or choroidal neovascularization.
❖ Your salivary glands put out approximately two quarts of saliva each day.
❖ Pepperoni is America’s favorite pizza topping. (You probably knew that already)

Aloha and keep the faith —rtsS

Contents of this column do not necessarily reflect the opinion or position of the Hawaii Ophthalmological Society and the Hawaii Medical Association. Editorial comment is strictly that of the writer.
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