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# Cardiac Transplantation in Hawai‘i: A Summary of the First 21 Years

Robert A. Hong MD; Cathy Bailey RN; Kelly Kindle RN; and Carlos E. Moreno-Cabral MD

*Robert A. Hong MD*

**Abstract**

*Between 1987 and 2008, 45 patients have undergone cardiac transplantation in Hawai‘i. This article summarizes the authors' experiences with cardiac transplantation over this 21-year period. The cumulative 1-, 3- and 5-year survival rates after transplantation have been 73.8%, 70.0%, and 63.2%, respectively. The corresponding survival rates have improved over the last eight years and are now 90.0%, 87.5%, and 83.3%, respectively. Despite clinical improvements, low patient volumes make the maintenance of a state-based program in Hawai‘i difficult. Problems with financing and referral biases will need to be addressed if a local program is to continue.*

In the 1980s, there was a resurgent interest in cardiac transplantation. In part, this development was spawned by the Food and Drug Administration's approval and the subsequent routine use of cyclosporine. With the advent of effective immunosuppression with calcineurin antagonists, graft rejection rates decreased and solid organ transplantation survival rates improved.[1] New solid organ transplant programs were started throughout the United States. One of the programs in cardiac transplantation was created at the St. Francis Medical Center in Hawai‘i.[2-3]

On March 10, 1987, Dr. Ricardo Moreno-Cabral performed the first cardiac transplantation in Hawai‘i. The operation was performed at the St. Francis Medical Center-Liliha. Dr. Moreno-Cabral was assisted in this procedure by Dr. Judson McNamara. The heart transplant recipient was a 50-year-old man with a nonischemic cardiomyopathy. The patient had been followed by Dr. Stewart Matsumoto, who assisted with his post transplant management along with Dr. Livingston Wong. The patient lived 11 months after transplantation and died of complications of sepsis. Over the ensuing year, 2 additional patients underwent cardiac transplantation. One patient died of severe right heart failure 3 days postoperatively and the second patient lived an additional 7 years.

Over the next 20 years, 43 additional cardiac transplantations were performed in the state. All patients were followed by the transplantation team that included a transplant surgeon, a transplant cardiologist, and a transplant coordinator. This team was critical for the support of the program. Over the past 21 years, the group of transplantation cardiologists has included Dr. Stewart Matsumoto, Dr. Calvin Wong, and Dr. Robert Hong. The team of transplant coordinators has included Ms. Haunani Nakahiki, Ms. Annette Klemme, Ms. Donna Pacheco-Taylor, Ms. Kelly Kindle, and Ms. Cathy Bailey. Dr. Ricardo Moreno-Cabral left Hawai‘i in 1988 and was replaced by his brother Dr. Carlos Moreno-Cabral in 1989 as the cardiac transplant surgeon. Both cardiac surgeons had completed their transplantation training under the direction of Dr. Norman Shumway at Stanford University. Dr. Shumway was a pioneer in cardiac transplantation and directly responsible for its adoption as a viable therapeutic option in the treatment of advanced heart failure. Over the past 2 decades, cardiac surgical and immunosuppressive techniques have evolved. This manuscript describes experiences between 1987 and 2008.

During the past 21 years, 46 cardiac transplantations have been performed on 45 patients in Hawai‘i. A single patient received 2 heart transplants. All cardiac transplantation was performed at the St. Francis Medical Center-Liliha/Hawai‘i Medical Center East. The diagnoses leading to cardiac transplantation included: nonischemic cardiomyopathy in 28 patients, ischemic cardiomyopathy in 9 patients, valvular heart disease with associated left ventricular failure in 4 patients, restrictive cardiomyopathy in 1 patient, hypertrophic cardiomyopathy with subsequent left ventricular failure in 1 patient, giant cell myocarditis in 1 patient, and arrhythymogenic right ventricular dysplasia with biventricular failure in a single patient. Four patients with nonischemic cardiomyopathies were felt to have a familial etiology. The patients, at time of cardiac transplantation, ranged between 21 to 61 years of age. All patients were severely functionally debilitated with 2 in cardiogenic shock at the time of heart transplantation.

The survival curves of all patients are documented in Figure 1. The immediate postoperative survival rate was 91.3%. The 1-year survival rate for all patients was 73.8%, the 3-year survival rate was 70.0% and the 5-year survival rate was 63.2%. Four patients died during their initial hospitalization for transplantation. Two died of bacterial sepsis, 1 patient died of cardiogenic shock secondary to acute cardiac rejection and the last patient died of intractable right heart failure.

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Twenty-four patients died during a 21-year follow-up period after their initial hospitalization for cardiac transplantation. The causes of death included: acute rejection in 5, chronic graft failure in 5, infection/sepsis in 4, metastatic cancer in 4, progressive coronary artery disease or transplant arteriopathy in 2, sudden death in 2, and bleeding complications in 2. The survival rates of heart transplant patients reported by the International Society for Heart Lung Transplantation Registry (ISHLT) and the United Network for Organ Sharing (UNOS) are 92.0% at 3 months postoperatively, 87.5 % for the first year postoperatively, 79.4% and 72.6% for postoperative years 3 and 5, respectively.[4]

Between 1997 and 1999, the 1-year survival rates of cardiac transplantations performed in Hawai'i decreased to 50% with only 4 of 8 patients surviving a year post transplantation. An audit of the program was performed by UNOS. It was concluded at the end of this audit that the increased mortality rate noted during this period was related to high risk patient selection and 2 deaths caused by fungal pneumonias. Recommendations for formalized regular training updates and affiliation with a high volume center were made. Since the implementation of these recommendations in 2000, a total of 13 cardiac transplantations have been performed. The survival rates for patients in this cohort are summarized in Figure 2. The immediate postoperative survival rate was 92.8%, the 1-year survival rate was 90.0%, the 3-year survival rate was 87.5%, and the 5-year survival rate, 83.3%.

Of the 41 patients surviving to initial post-transplantation hospital discharge, 17 are currently alive. All have improved clinically and 11 have returned to work. The ten-year survival rate of all transplanted patients was 33.3%. The longest living survivor is currently greater than 18 years post transplantation.

On average, only 1-3 heart transplants were performed each year in Hawai'i. Nationally, 2100-2200 heart transplants are performed annually.[5] This figure corresponds to a rate of approximately 7 heart transplants per 1,000,000 population. Extrapolating this figure to the state of Hawai'i, it would be expected that cardiac transplantation would be performed on at least 8 patients per year in the state. The low volume of cardiac transplantation in Hawai'i is related to a variety of factors. Donor availability, financial coverage, and practice patterns have all affected the transplant volume. Patient referral to mainland centers has been postulated as a cause of the diluted state cardiac transplant volumes. However, even after allowing for out of state referrals, the main reasons for a decreased transplant volume in Hawai'i still need to be determined. On average, only 1-3 patients will leave Hawai'i for cardiac transplantation out of state annually. Part of the reluctance of patients to seek out of state transplantation is based on the need of the prospective recipient to relocate to an area adjacent to a mainland transplant program. The associated financial and social stresses of relocation

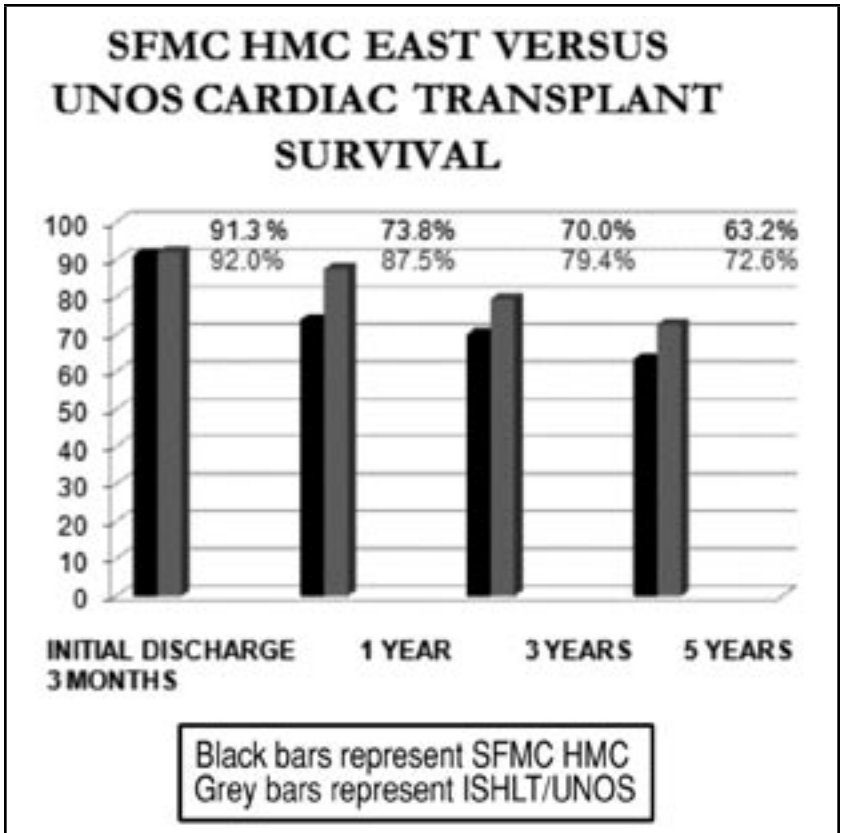


Figure 1.— Survival curves of St Francis/Hawai'i Medical Center East versus ISHLT/UNOS for first five years post heart transplant

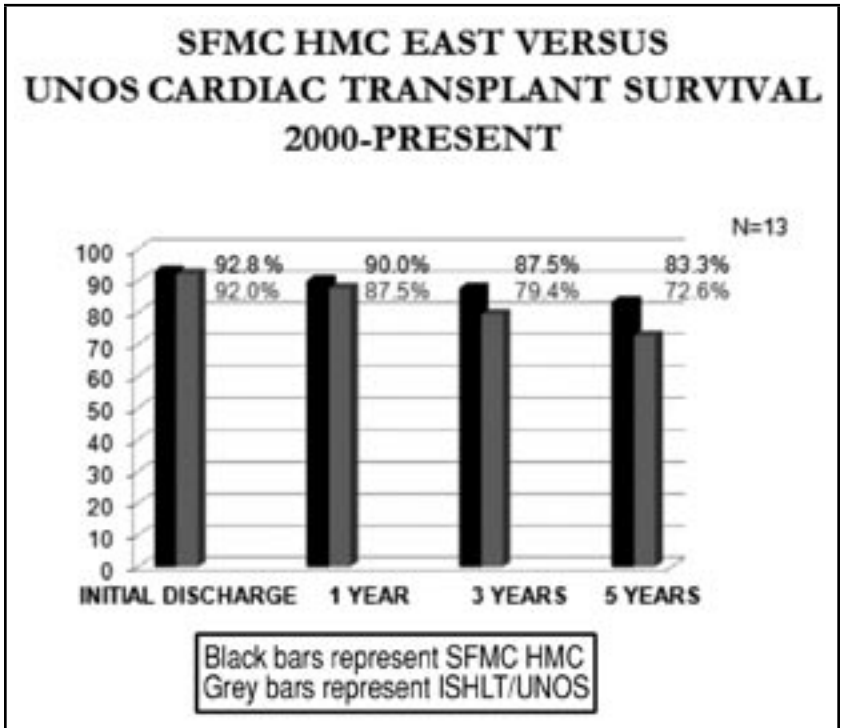


Figure 2.— Survival curves of St Francis/Hawai'i Medical Center East versus ISHLT/UNOS for first five years post heart transplant 2000-2008

of both patients and family may be significant.

The lack of donor hearts has been postulated to be a cause for decreased transplant volumes. Preservation techniques for cardiac transplantation do not allow for the free exchange of hearts between Hawai'i and the mainland United States. Preservation times in excess of 4-6 hours are associated with impaired graft function.[6] Hawai'i's geographic isolation and the protracted air travel times between Hawai'i and the mainland United States result in a situation where local donors are required for local recipients.

In the past, culture differences have been attributed as a cause of decreased donor volumes. This is not the current situation. In an internal audit of donor organs, at least 20 donor hearts available in Hawai'i have not been used for cardiac transplantation over the past 3-years.

Problems with financial reimbursement have been significant issues for cardiac transplantation in Hawai'i. Federally funded programs such as Medicare and Medicaid require that an approved transplant facility perform 10 heart transplants annually to be eligible for funding. This volume exceeds the predicted patient volume based on the state's population. Centers that do not meet this volume requirement are not eligible for federal funding. Many of the patients considered for cardiac transplantation are disabled or functionally limited and therefore unemployed. These potential recipients are frequently covered by federally-funded health programs such as Medicare or Medicaid. This situation creates a tautology; in which a low volume program in Hawai'i will not be able to generate the patient volumes necessary to approach Medicare requirements. Accordingly, federal funding for cardiac transplantation is restricted in the state. Attempts have been made to lobby Hawai'i congressional representatives but an exception to the federal volume requirement has not been made.

Medical practice patterns represent the single most significant obstacle to increasing the volume of cardiac transplantation in the state. The perceptions of limited access to cardiac transplantation and of potentially substandard post transplant care result in dwindling patient referrals. At any time, only 1-3 patients are on the transplant recipient list at the Hawai'i Medical Center East. In the absence of an adequate recipient pool, a full use of donors is not possible. This situation has resulted in the nonuse of donor hearts described above.

The future of cardiac transplantation in Hawai'i depends upon solving these problems. The closure of a local program and out of state referral for cardiac transplantation will not be optimal for the treatment of patients with advanced cardiac disease in Hawai'i. Residents who choose to return to Hawai'i after undergoing transplantation in another state require ongoing extensive clinical support. This support can only be provided by a comprehensive regional transplant program. The closure of a cardiac transplantation program in Hawai'i would therefore have significant impact on the care of patients who have undergone or wish to undergo heart transplantation. Similarly, access to advanced technologies will be limited without a state-based transplant program. Newer technologies, such as left ventricular assist devices, cannot be incorporated into medical practice without a viable cardiac transplantation program. The closure of a cardiac transplant program in Hawai'i would restrict access to advanced cardiac technologies for the state. Despite these concerns, the authors have considered shutting down the state's only cardiac transplantation program. The significant clinical demands of the program and limited resources have resulted in a challenging situation. While the authors recognize the importance of a regional program; maintaining a functioning program may be difficult.

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# A Classic Case of ITP in a Woman Presenting with Spontaneous Bruising

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## Abstract

*Idiopathic thrombocytopenic purpura is an autoimmune disorder causing thrombocytopenia. The authors present the case of a patient who presented with spontaneous bruising. A complete blood cell count revealed the patient was severely thrombocytopenic with a platelet count of 4000. Further evaluation failed to reveal a cause for thrombocytopenia and the patient was subsequently diagnosed with idiopathic thrombocytopenic purpura.*

## Introduction

Idiopathic thrombocytopenic purpura (ITP) is an autoantibody-mediated disorder that results in increased platelet destruction and decreased platelet production. The incidence and prevalence of ITP in the United States is not known. One reason for this uncertainty may be the fact that many patients are asymptomatic and thus never diagnosed. One study estimates that there are 50 to 100 new cases per million persons each year in the United States and Europe.[1] Another study reports a prevalence of ITP in the state of Maryland to be approximately 9.5 per 100,000 residents.[2] ITP affects both the young and elderly, and the incidence increases with age.[3] Adults typically have a chronic course that begins insidiously without preceding illness[4] and affects more women than men.[5]

This disorder was first described by P.G. Werlhof in 1735, although the mechanism of the disease was not discovered until W.J. Harrington's experiment in 1951.[6] After injecting himself and 9 volunteers with plasma taken from patients diagnosed with chronic ITP, 8 of the volunteers developed transient thrombocytopenia. He argued that a humoral antiplatelet factor was responsible for the decrease in platelets. Subsequent studies over time have expanded on the immunologic basis of the disease process. Platelet destruction is initiated by autoantibodies that recognize specific glycoproteins on the platelet surface leading to destruction by antigen presenting cells. The antigen presenting cell, in turn, activates T and B cells against this and other epitopes, thereby amplifying platelet destruction.[5] The events triggering autoantibody production are uncertain. One theory is that autoantibodies are produced by the spleen and bone marrow.[1] The fact that both ITP and myelodysplastic syndromes have been associated with autoantibodies have led some researchers to propose that ITP may be part of the spectrum of myelodysplastic syndromes.[7] We present the case of an elderly patient who developed ITP and was treated successfully by laparoscopic splenectomy.

## Case Report

The patient is an obese 79-year-old woman with a history of hypothyroidism, hypertension, and diabetes who presented to her physician with purpura of 2 weeks duration and fatigue of one month duration. She denies episodes of epistaxis and gingival bleeding. There was no personal or family history of liver, hematologic, or autoimmune disease. She had been transfused with packed red blood cells during knee surgery once in the past. The patient had been taking approximately 8 tablets of Excedrin daily, which the patient ceased using prior to admission. Of note, she was not using heparin or any other anticoagulant medication at the time of presentation. Her physical examination was notable for petechiae and multiple ecchymoses on her upper and lower extremities bilaterally. Her spleen could not be adequately assessed due to body habitus.

Laboratory data revealed a platelet count of 4000 with hemoglobin 11.3, hematocrit 33.5, and white count 5200. Electrolytes and liver function tests were unremarkable. Serum C3 and C4 were within normal limits. Her PT and PTT were also normal. Direct Coomb's test was negative and haptoglobin level was within normal limits. Tests for ANA, anti-dsDNA, PTT-LA, and DRVVT were negative. TSH was 0.28 and free T4 was 1.61. Bone marrow aspirate revealed scattered megakaryocytes. Marrow cellularity and hematopoiesis were normal. There was no evidence of leukemic or lymphomatous infiltrates, metastatic tumor, or granulomatous inflammation. Her spleen did not appear enlarged on abdominal ultrasound. Peripheral blood smear showed decreased but morphologically normal platelets. A hematologist was consulted, who concurred with the diagnosis of ITP.

Initial management included prednisone and 3 transfusions of platelets, which failed to produce a sustained increase in her platelet count. She was then given IVIG, which provided a more favorable response and raised her platelet count to about 70,000. The patient subsequently underwent laparoscopic splenectomy, as was recommended by hematology consult, for long term control of her condition. The patient had minimal

bleeding during surgery and the postoperative course was uneventful. Postoperatively, the patient had a platelet count of 141,000-142,000 and was discharged in stable condition with a platelet count of 156,000.

## Discussion

Idiopathic thrombocytopenic purpura is a diagnosis of exclusion. All other conditions and factors that may potentially cause thrombocytopenia should be ruled out by history and physical examination.[8] Presentation depends on the platelet count: patients with counts less than 20,000/µl typically present with bleeding from the skin and mucosa;[1] patients with severely low platelet counts (<5000/µl) are at risk for intracranial bleeding. Physical exam may show petechiae or bruising but is otherwise unremarkable; a finding of splenomegaly may point to a cause other than ITP for low platelet count.[1] Platelet count and blood smear are usually sufficient to make a diagnosis of ITP; blood smear may show enlarged platelets. Examination of the bone marrow is done to exclude other hematologic conditions. Bone marrow in patients with ITP shows megakaryocytes and an absence of dysplastic features.[1]

The patient presented with fatigue, purpura and a platelet count of 4000 but did not have any signs of active bleeding. The patient has a history of hypothyroidism, which is significant because hypothyroidism has been associated with ITP. The link between ITP and hypothyroidism may be due to the autoimmune state that triggers platelet consumption.[9] The association between ITP and thyrotoxicosis, however, is more frequently observed.[9,10] The patient had low TSH but free T4 was within normal limits, suggesting that she did not have active hypothyroidism. Because the patient was on Synthroid, the patient was thought to have iatrogenic hyperthyroidism. The patient's thrombocytopenia, however, persisted despite decreasing the dose of Synthroid. Also of note in the patient's history, the patient had been using Excedrin, which contains aspirin and acetaminophen, both of which have been associated with thrombocytopenia.[11] The patient's platelet count, however, was low at admission and during hospitalization, despite discontinuation of the drug prior to evaluation by her physician. Laboratory tests did not provide evidence for any specific hematologic or autoimmune process to account for thrombocytopenia. Examination of her bone marrow revealed megakaryocytes without evidence of dysplastic changes, a finding that supports a diagnosis of ITP.

Treatment of adult patients suspected of having ITP is initiated even if the patient is asymptomatic because the risk of bleeding is uncertain at initial presentation.[7] The standard initial treatment for ITP is prednisone 1mg/kg once daily for 2-3 weeks.[7] Intravenous immunoglobulin (IVIG) is generally held for cases of critical bleeding and those in which corticosteroids are either ineffective or contraindicated.[4] Splenectomy is reserved for cases of ITP in which all medical measures fail; emergency splenectomy is performed for patients with intracranial bleed. The patient was initially given corticosteroids and IVIG, to which she had suboptimal response. Thus, the patient subsequently underwent a laparoscopic splenectomy. She was discharged after surgery with a low-normal platelet count.

Laparoscopic technique has been increasing in popularity due to its better short-term results compared to open surgery (4). However, remission rates following splenectomy range broadly from 49 to 86%.[12] Multiple studies have been conducted to determine predictive factors for successful splenectomy to improve selection of surgical candidates, but to date there is no consensus.[12,13] Newer therapies may replace splenectomy, namely the use of thrombopoietins, AMG531, and Eltrombopag.[14] Other new treatment modalities include colchicine, Dapsone, vincristine, vinblastine, anti-D antibody, Prosorba resin columns, azathiprine, cyclosporine, mycophenol, and rituximab, all of which can improve platelet count in ITP.

ITP is one of the most studied hematologic disorders and treatment strategies have been well-defined. However, it remains difficult to predict patient response to available treatment modalities.

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# A Comparison of Adolescent Methamphetamine and Other Substance Users in Hawai‘i

Richard J. Kim PhD and David S. Jackson PhD

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## Abstract

*Methamphetamine use continues to be a significant problem for adolescents in Hawai‘i, especially among Native Hawaiians and other Asian and Pacific Islanders. However, no research has compared the unique characteristics of these methamphetamine (MA) users to other substance users, which could contribute to enhanced treatment approaches. Utilizing a sample of adolescent treatment clients, this study compared those who have ever used and those who have never used methamphetamines on various domains. Results showed that girls were significantly more likely to use methamphetamines than other substances. Native Hawaiians and other Pacific Islanders were more likely to use methamphetamines as well, although the difference was not statistically significant. MA users reported significantly more homelessness and prior treatment episodes. While no differences were found in arrest rates or days in jail/prison/juvenile detention in the past 90 days, MA users scored significantly higher on all self-reported crime indices. MA users also scored significantly higher on all substance problem and mental health indices, and reported significantly poorer health. Implications for future research and treatment are discussed.*


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## Introduction

In the recent decade from 1995 to 2005, nationwide treatment admissions for which methamphetamine/amphetamine was the primary substance of abuse more than doubled, from 4% to 9%.[1] While the epidemic appears to be expanding eastward across the United States, methamphetamine/amphetamine abuse continues to be a significant and growing issue in Hawai‘i and the western states. Treatment admission rates in Hawai‘i have increased 128% from 1995 to 2005.[2] Supporting national level data, the extent of the problem has also been shown to be widely recognized in Hawai‘i. In a study of perceptions among individuals from key human service organizations regarding substance abuse in the state, the increasing trends in crystal methamphetamine along with heroin use were reported to be of greatest concern.[3]

While many authors have reported that rates of drug use for Asian and Pacific Islanders (APIs) are among the lowest, examination of specific ethnic groups reveals considerable differences between them.[4] A study conducted in California and Hawai‘i revealed that Native Hawaiians and Pacific Islanders reported among the highest alcohol, tobacco, and other drug (ATOD) use.[5] More specifically, of all racial/ethnic categories examined in the National Survey on Drug Use and Health, the highest rates (2.2%) of past year methamphetamine use from 2002 to 2004 were found among Native Hawaiians or other Pacific Islanders.[6] In Hawai‘i, 6% of Native Hawaiian high school seniors have tried methamphetamines, as compared to Caucasian (5%), Filipino (5%), Japanese (3%), and Chinese (1%) students. In addition, Native Hawaiian and Caucasian students were reported to have consistently higher treatment needs than Japanese, Filipino, and Chinese students.[7]

Evidently, methamphetamine abuse remains a significant concern in Hawai‘i and especially among Native Hawaiians. However, little research has contributed to the knowledge about the unique characteristics of Hawaiian and other API methamphetamine abusers that would guide successful treatment approaches. A few studies based on the 'Methamphetamine Treatment Project' have described characteristics of methamphetamine users from multiple locations including Hawai‘i,[8,9,10] but data specific to Hawai‘i was not reported. While a greater understanding is needed regarding overall substance use among Hawaiian populations to improve treatment, this is especially true for the subset of methamphetamine abusers. Much related research suggests that methamphetamine abusers may have unique issues that require special attention.

With regard to demographic characteristics, methamphetamine/amphetamine users were found more likely to be women than other substance users.[11,12,13,14] Similarly, the 2003 Hawai‘i Student Alcohol, Tobacco, and Other Drug Use Study[15] found that methamphetamine use by female students in the upper high school grades has often been higher than male students. Brecht, O'Brien, von Mayrhauser, and Anglin (2004) found that many methamphetamine-related patterns were similar between men and women, but there were gender differences in problems associated with ice use as well as differences in motivators, routes of initiation, access, and patterns of use.[16]

Results of previous studies related to patterns of methamphetamine/amphetamine use among different

races and ethnicities have been mixed and likely due to the different locations in which the studies were conducted. The previously mentioned findings suggested higher use among Hawaiian and other APIs, while other studies found methamphetamine users to consist of larger proportions of Caucasian,[17,18] Latino,[19] and Native American users.[20] However, it is evident that ethnic/racial differences in use do exist.

Methamphetamine abuse has also been shown to be related to various physical and mental health concerns.[21,22] Its use has been found to negatively affect the cardiovascular system,[23] neurocognitive functioning,[24,25,26] and behavior.[27] Brecht and associates (2004) found that about one-third of methamphetamine users reported some type of childhood abuse and about one-fourth had attempted suicide and/or received inpatient care for psychological problems.[28] In a study among 8 drug treatment sites across the Western United States, Christian and others (2007) demonstrated that high levels of psychopathology, suicidality, physical abuse, as well as concurrent use of other drugs were associated with heavier use of methamphetamine.[29] Findings also indicate that the medical and psychiatric consequences of methamphetamine abuse may be higher than for other drugs.[30,31,32]

In addition, violence and criminal behavior among methamphetamine/amphetamine users appears to be higher than among other substance users. Methamphetamine use has been found to increase the risk of perpetuating violence in both adults[33] and young adults.[34] Cohen et al (2003) found extensive abuse and violence patterns among methamphetamine users, with 80% of women reporting partner abuse or violence.[35] Austin (2004) examined relationships between drug use and exposure to violence among Native Hawaiians and found, among other results, significant correlations between crystal methamphetamine use and violence for this population.[36] Brecht et al (2004) revealed that methamphetamine users showed high rates of criminal behavior, including being arrested and selling or delivering drugs.[37] Higher rates of delinquent behavior and other illicit drug use have also been found among non-medical stimulant users as compared to non-users.[38] Also, the criminal justice system accounts for 49% of referrals for methamphetamine/amphetamine abuse, as compared to 34% of referrals for other substance abuse.[39]

Considering the unique attributes of methamphetamine users revealed in previous research, an exploration of such distinct qualities in a Hawai'i sample was recognized as necessary for developing and improving treatment approaches for this population. Other authors have also argued that methamphetamine-using adolescents may need enhanced treatment programming.[40] Therefore, this study attempted to determine whether differences exist between those substance abusing/dependent adolescents who have used and those who have never used methamphetamines and/or similar stimulants across various factors known to be associated with substance use. Similar to previous studies,[41] the following domains were examined for similarity or differences between the two groups: 1) demographic variables of age, gender, and ethnicity; 2) homelessness; 3) treatment history; 4) criminal history; 5) substance problems; and 6) physical and mental health.

## Methods

### *Treatment Program*

A culturally-based adolescent residential substance abuse treatment program called '*I Mua Mau Ohana*' (moving families forward) provided outcome evaluation data on 250 youth who were admitted into the program from September 2002 to January 2006. The agencies involved were Maui Youth and Family Services, based on the island of Maui, and Marimed Foundation, based on the island of O'ahu. Participants, who came from throughout the state of Hawai'i, were involved in a longitudinal study with assessments at intake, 3-, 6-, and 12-month follow-ups, although only data from intake assessments were used for this particular study. The Catalyst Group, LLC, based in Honolulu, Hawai'i, conducted the evaluation research.

### *Participants*

Over two-thirds of participants were men (68.4%), while 31.2% were women and 0.4% were self-identified as transgender. With the participants being able to select more than one ethnicity, most reported being at least part Native Hawaiian (64.0%), followed by Caucasian (40.4%), other Pacific Islander (38.0%), Asian (36.8%), Hispanic (24.4%), Native American (8.8%), African American/Black (8.0%), and Alaskan Native (0.4%), while 25.6% reported "some other group." Age of clients ranged from 13 to 18 years old, while the average age was 15.8 years. About three-fourths (75.6%) had spent part of the past 90 days in a controlled environment, with an average of 33.7 days. More than one-fourth of youth (28.8%) considered themselves homeless at some time, and 78.0% had lived with their parent(s) sometime in the past year. More than half (53.2%) of these participants had been in treatment prior to this treatment episode (not including current treatment).

### *Instruments*

The instruments used for this evaluation included the funding source-mandated Government Performance and Results Act (GPRA) Tool and the Global Appraisal of Individual Needs (GAIN).[42] The reliability and validity of the Addiction Severity Index items that are included in the GPRA have been well established in past studies.[43] The GAIN has also been validated psychometrically with many US populations.[44] The Core Version of the GAIN instrument,[45] which is a 73-page version that includes only the grant-required items, was used in the evaluation study. A copy of the instrument can be found at: http://chestnut.org/LI/GAIN/.

The major indices from the GAIN that were used in this study are described below. Other variables were based on single items from the instrument:

**Substance Problems Index.** A total sum of counts of symptoms in the past month [Cronbach's alpha ($\alpha$) = 0.92] combining three sub-indices, including: 1) Substance Issues Index – sum of five symptoms of substance related problems such as hiding use, people complaining about use, and weekly use ($\alpha$ = 0.75); 2) Substance Abuse Index – sum of four symptoms of substance abuse ($\alpha$ = 0.83); and 3) Substance Dependence Index – sum of seven symptoms of substance dependence ($\alpha$ = .88).

**Internal Mental Distress Index.** A total sum of counts of symptoms in the past year ($\alpha$ = 0.94) combining five sub-indices, including: 1) Somatic Symptoms – sum of four physical symptoms associated with mental distress ($\alpha$ = 0.65), 2) Homicidal/Suicidal Thought

– sum of five symptoms of thoughts of hurting/killing someone else or suicide ($\alpha = 0.80$), 3) Depression – sum of nine symptoms of depression ($\alpha = 0.85$), 4) Anxiety – sum of twelve symptoms of anxiety disorders ($\alpha = 0.86$), and 5) Traumatic Stress – sum of thirteen symptoms or memories related to trauma or extreme stress ($\alpha = 0.93$).

**Behavioral Complexity Index.** A total sum of counts of symptoms related to external behavioral problems in the past year ($\alpha = 0.93$) combining two sub-indices, including: 1) ADHD – sum of eighteen DSM-IV symptoms associated with attention deficit and hyperactivity disorder ($\alpha = 0.92$), and 2) Conduct Disorder – sum of fifteen DSM-IV criteria symptoms of conduct disorder ($\alpha = 0.84$).

**General Crime Index.** A total sum of different types of reported illegal activities in the past year ($\alpha = 0.80$) combining three sub-indices, including: 1) Property Crime – sum of seven illegal activities such as vandalism, theft, breaking and entering, etc. ($\alpha = 0.80$), 2) Interpersonal Crime – sum of seven illegal activities related to personal crime such as assault, rape, murder, etc. ($\alpha = 0.54$), and 3) Drug Crime – sum of five illegal activities related to substance use ($\alpha = 0.42$).

### *Procedures*

Trained program staff administered the GAIN intake assessments, which were also used for treatment planning purposes, at the time of admission into the program. Informed consent procedures were adhered to with oversight by an Institutional Review Board. The voluntary and confidential nature of the evaluation research was thoroughly explained to participants, including the assurance that their treatment would not be withheld if participation in the research was refused. Assessments consisted of an approximately 1-hour one-on-one interview with the youth. All interviewing staff had to meet rigorous training requirements mandated by CSAT through the technical consultant contractor, Chestnut Health Systems (CHS). Extensive data quality assurance procedures were also required by CHS.

### *Analysis*

Categorization of participants into the "methamphetamine and/or similar stimulant" group was based on endorsement of the GAIN question "When was the last time you used speed, uppers, amphetamines, methamphetamines, ecstasy, MDMA, or other stimulants?" This variable was dichotomized to distinguish between 2 groups - participants who indicated they had used these stimulants at some time in their lives and participants who had not used these stimulants but used other substances. For semantic simplification in this article, the group who indicated any use is referred to as "Methamphetamine (MA) users" and those who indicated never having used methamphetamine and/or similar stimulants as "non-MA users." A separate item asked participants which exact stimulant they used, although some of this information was missing. However, 88% of those who reported which stimulant they used in the past 90 days indicated crystal methamphetamine, and for this reason, "MA user" was chosen as an appropriate general label.

Consistent with the classification of clinical ranges (low, moderate, and high) provided by the GAIN developer,[46] scores on the major indices were likewise grouped to determine the number of participants falling in these categories. The ratings of moderate or high indicate that the participant rates at a 'clinical level' that warrants further assessment and perhaps additional specialized treatment and other related services.

Continuous measures dependent variables were analyzed using the Multiple Analysis of Variance (MANOVA) to assess the significance of difference between the two independent groups of MA users and non-MA users on multiple variables, including age, days in a controlled environment, times received treatment, general health, and various crime-related variables. Frequency distributions for MA users and non-MA users on all other categorical variables were examined using the Chi-square analyses, including gender, ethnicity, last time homeless, referral source, mental health, substance problems, and crime indices. An alpha level of 0.05 was used as criteria for statistical significance. The total sample sizes reported in the Results section are smaller than 250 because a few cases with missing data on any items were excluded. All analyses were performed with the SPSS version 11 statistical package.

## Results

Examination of the major demographic variables revealed a significant interaction effect between gender and MA use (Table 1): for non-MA users, the majority (85.6%) was male youth, while for MA users, use by female youth (43.2%) approached that of male youth (56.8%; $\chi^2 = 23.03$, df = 1, p = 0.000). Regarding ethnicity, non-MA users were composed of 56.7% Native Hawaiian and 30.8% Other Pacific Islander, while MA users were composed of 68.6% Native Hawaiian and 42.9% Other Pacific Islander, differences that barely missed statistical significance (for Native Hawaiian, $\chi^2 = 3.61$, df = 1, p = 0.057; for Other Pacific Islander, $\chi^2 = 3.71$, df = 1, p = 0.054). While MA users showed a slightly higher mean age than non-MA users, the difference was not statistically significant (Table 2).

In terms of homelessness, there was a statistically significant interaction effect between homelessness and ice use (Table 1), with ice users more likely to have been homeless than other drug users ($\chi^2 = 21.01$, df = 5, p = 0.001). While 15.4% of non-MA users have been homeless before, 39.3% of MA users reported having been homeless.

One item was again used to examine treatment history (Table 2), which showed that MA users reported receiving treatment significantly more times in their life time as compared to non-MA users (F = 8.82, df = 1, p = 0.003). The average number of times MA users received treatment (1.36) was roughly 2 times more than non-MA users (0.78).

Various items examined criminal history (Table 2). No significant differences were found between MA users and non-MA users in the number of times arrested in their lives, the number of times arrested in the past 90 days, or the number of days spent in jail/prison in the past 90 days. The number of days spent in juvenile detention in the past 90 days was considerably higher for MA users, although the difference just missed statistical significance (F = 3.86, df = 1, p = 0.051). With regard to the crime indices (Table 3), MA users were significantly more likely to be in the clinical ranges on sub-indices, including Property Crime ($\chi^2 = 7.51$, df = 2, p = 0.023), Interpersonal Crime ($\chi^2 = 11.96$, df = 2, p = 0.003), and Drug Crime ($\chi^2 = 20.78$, df = 2, p = 0.000), as well as the overall General Crime Index ($\chi^2 = 9.45$, df = 2, p = 0.009). Furthermore, in examining the referral sources for these youths' treatment (Table 1), MA users were

almost twice as likely to be referred by a criminal justice agency (15.7% of MA users versus 8.0% of non-MA users), although this difference was not statistically significant.

Table 3 reveals that the 3 substance problem sub-indices as well as the overall Substance Problem Index all showed significantly higher proportions of MA users in the clinical range. These include the Substance Issues ($\chi^2 = 28.42$, df = 2, p = 0.000), Substance Abuse ($\chi^2 = 36.11$, df = 2, p = 0.000), and Substance Dependence ($\chi^2 = 52.02$, df = 2, p = 0.000) sub-indices, and the summary Substance Problems Index ($\chi^2 = 56.48$, df = 2, p = 0.000).

Physical and mental health measures all indicated statistically significant differences between groups with MA users revealing

Table 1.— Comparisons on Major Demographic Variables and Referral Source

| | MA Users N=140 | Non-MA Users N=104 | | MA Users N=51 | Non-MA Users N=50 |
|---|---|---|---|---|---|
| **Gender*** ** | | | **Referral Source** | | |
| Female | 43.2% | 14.4% | Self | 9.8% | 10.0% |
| **Ethnicity** | | | Mother | 7.8% | 10.0% |
| Alaskan Native | 0.0% | 1.0% | Father | 2.0% | 0.0% |
| Asian | 37.1% | 36.5% | Aunt | 2.0% | 0.0% |
| African American/Black | 6.4% | 10.6% | Teacher | 0.0% | 4.0% |
| Caucasian/White | 36.4% | 45.2% | Social Worker | 9.8% | 10.0% |
| Hispanic, Latino or Chicano | 27.1% | 22.1% | Probation Officer | 29.4% | 22.0% |
| Puerto Rican | 15.7% | 14.4% | Parole Officer | 3.9% | 4.0% |
| Mexican | 6.4% | 5.8% | Other Individual | 3.9% | 16.0% |
| Cuban | 0.0% | 0.0% | Behavioral Health Provider | 2.0% | 4.0% |
| Dominican | 0.0% | 0.0% | Other Health Care Provider | 2.0% | 0.0% |
| Other Central American | 0.0% | 0.0% | School | 2.0% | 0.0% |
| Other South American | 1.6% | 0.0% | Social Service Agency | 2.0% | 2.0% |
| Other | 3.9% | 1.1% | Criminal Justice Agency | 15.7% | 8.0% |
| Native American | 6.4% | 12.5% | State Mental Health Program | 2.0% | 6.0% |
| Native Hawaiian | 68.6% | 56.7% | State Health Department | 5.9% | 2.0% |
| Pacific Islander | 42.9% | 30.8% | Other | 0.0% | 2.0% |
| Some Other Group | 24.3% | 28.8% | | | |
| **Last Time Homeless*** ** | | | | | |
| Never | 60.7% | 84.6% | | | |
| 13+ months ago | 9.3% | 4.8% | | | |
| 4-12 months ago | 16.4% | 2.9% | | | |
| 1-3 months ago | 10.0% | 5.8% | | | |
| 1-4 weeks ago | 3.6% | 1.0% | | | |
| Past 2 days | 0.0% | 1.0% | | | |

*p<.05, **p<.01, ***p<.001

Table 2.— Mean Score Comparisons

| Multivariate Test: F = 5.88, df = 8/228, p = 0.000, partial eta squared = 0.17 | MA Users Mean Score N = 135 | Non-MA Users Mean Score N = 102 | F | Effect Size[1] |
|---|---|---|---|---|
| Age | 15.85 | 15.65 | 2.03 | 0.01 |
| Times Received Treatment (life) | 1.36 | 0.78 | 8.82** | 0.04 |
| Times Arrested (life) | 10.14 | 8.31 | 1.10 | 0.01 |
| Times Arrested (past 90) | 1.01 | 1.75 | 0.87 | 0.00 |
| Days in Jail (past 90) | 6.84 | 4.29 | 0.89 | 0.00 |
| Days in Juvenile Detention (past 90) | 22.13 | 14.90 | 3.86[2] | 0.02 |
| General Health (past 12 Months) | 2.28 | 1.48 | 28.94*** | 0.11 |

Note. *p<.05, **p<.01, ***p<.001; [1]partial eta squared where < .06=small effect, .06-.14=medium effect, and >.14=large effect; [2]p = 0.051

greater problems on each measure. In terms of physical health (Table 2), MA users rated their health as significantly poorer in the past 12 months ($F = 28.94$, $df = 1$, $p = 0.000$). Mental health measures (Table 3), for which significantly greater proportions of MA users scored in the clinical ranges, included the overall Internal Mental Distress Index ($\chi^2 = 21.05$, df = 2, p = 0.000) and its sub-indices that assess Somatic Symptoms ($\chi^2 = 15.86$, $df = 2$, $p = 0.000$), Depressive Symptoms ($\chi^2 = 27.41$, df = 2, p = 0.000), Homicidal/Suicidal Thought ($\chi^2 = 6.60$, df = 2, p = 0.037), Anxiety/Fear Symptoms ($\chi^2 = 21.49$, df = 2, p = 0.000), and Traumatic Stress ($\chi^2 = 21.47$, df = 2, p = 0.000), as well as the overall Behavioral Complexity Index ($\chi^2 = 25.89$, df = 2, p = 0.000) and its sub-indices assessing ADHD ($\chi^2 = 23.42$, df = 2, p = 0.000), and Conduct Disorder ($\chi^2 = 20.35$, df = 2, p = 0.000).

## Discussion

The current findings appear largely consistent with previous literature. The results suggest that adolescent methamphetamine and/or

Table 3.— Comparisons on Mental Health, Substance Problem, and Crime Indices

| Rating | MA Users (N=140) | Non-MA Users (N=104) | MA Users | Non-MA Users | MA Users | Non-MA Users |
|---|---|---|---|---|---|---|
| | **Somatic Symptoms** | | **ADHD** | | **Property Crime** | |
| Low | 19.4% | 42.3% | 10.0% | 26.9% | 22.9% | 36.5% |
| Moderate | 66.9% | 51.0% | 18.6% | 31.7% | 20.0% | 23.1% |
| High | 13.7% | 6.7% | 71.4% | 41.3% | 57.1% | 40.4% |
| (Clinical Level) | 80.6% | 57.7% | 90.0% | 73.0% | 77.1% | 63.5% |
| | **Depressive Symptoms** | | **Conduct Disorder** | | **Interpersonal Crime** | |
| Low | 10.7% | 34.6% | 7.9% | 29.8% | 29.3% | 36.5% |
| Moderate | 35.7% | 39.4% | 51.4% | 41.3% | 39.3% | 51.0% |
| High | 53.6% | 26.0% | 40.7% | 28.8% | 31.4% | 12.5% |
| (Clinical Level) | 89.3% | 65.4% | 92.1% | 70.1% | 70.7% | 63.5% |
| | **Homicidal/Suicidal Thought** | | ***Behavioral Complexity*** | | **Drug Crime** | |
| Low | 56.4% | 72.1% | 5.7% | 22.1% | 20.7% | 48.1% |
| Moderate | 32.1% | 22.1% | 25.7% | 39.4% | 44.3% | 31.7% |
| High | 11.4% | 5.8% | 68.6% | 38.5% | 35.0% | 20.2% |
| (Clinical Level) | 43.5% | 27.9% | 94.3% | 77.9% | 79.3% | 51.9% |
| | **Anxiety/Fear Symptoms** | | **Substance Issues** | | ***General Crime*** | |
| Low | 25.0% | 47.1% | 0.7% | 7.7% | 14.3% | 27.9% |
| Moderate | 45.0% | 44.2% | 58.6% | 79.8% | 13.6% | 18.3% |
| High | 30.0% | 8.7% | 40.7% | 12.5% | 72.1% | 53.8% |
| (Clinical Level) | 75.0% | 52.9% | 99.3% | 92.3% | 85.7% | 72.1% |
| | **Traumatic Stress** | | **Substance Abuse** | | | |
| Low | 34.5% | 60.6% | 1.6% | 19.6% | | |
| Moderate | 10.1% | 13.5% | 32.5% | 49.0% | | |
| High | 55.4% | 26.0% | 65.9% | 31.4% | | |
| (Clinical Level) | 65.5% | 39.5% | 98.4% | 80.4% | | |
| | ***Internal Mental Distress*** | | **Substance Dependence** | | | |
| Low | 27.1% | 45.2% | 5.8% | 32.7% | | |
| Moderate | 42.1% | 47.1% | 16.1% | 33.7% | | |
| High | 30.7% | 7.7% | 78.1% | 33.7% | | |
| (Clinical Level) | 72.8% | 54.8% | 94.2% | 67.4% | | |
| | | | ***Substance Problems*** | | | |
| Low | | | 0.0% | 7.7% | | |
| Moderate | | | 7.9% | 42.3% | | |
| High | | | 92.1% | 50.0% | | |
| (Clinical Level) | | | 100.0% | 92.3% | | |

Notes. "Clinical Level" indicates assessment of Moderate or High; headings in italics represent summary indices.

similar stimulant users possess many characteristics that distinguish them from other substance users. With regard to gender, the findings confirm patterns revealed in other studies,[47,48,49] as methamphetamine use by female youth approached the levels of male youth. Although other substances may tend to attract more male users, the almost equal prevalence of methamphetamine use among women youth points to the need to further explore what attracts females to MA use. Such further exploration may reveal gender specific issues that will likely need to be taken into consideration for treatment approaches.

Although not significant at the 0.05 alpha criteria level, the results revealed expected differences in racial and ethnic distributions among these adolescent methamphetamine users in Hawai'i, as higher proportions of Native Hawaiians and Pacific Islanders were MA users compared to other substance users. Native Hawaiians and Pacific Islanders were also the most represented of all ethnicities among MA users. The high proportion of Asian MA users (37.1%) is also an important finding. Another disturbing pattern is that the 68.6% of ice users who were part or all Native Hawaiian is a substantially larger proportion than the 9.1% (even 9.1% may be an overestimation, since the Census category includes Native Hawaiians and other Pacific Islanders.) Native Hawaiians in the general population of Hawai'i.[50] Thus, these findings highlight the need for development and expansion of culturally appropriate methamphetamine treatment resources and options for Native Hawaiians as well as other Asian and Pacific Islanders. There is no documented evidence-based substance abuse treatment practice established for Hawaiians as of yet. Some effective treatment approaches have been established, although they may need to be culturally-tailored to meet the needs of Hawaiian and API MA users.

As found in other research, MA users in this sample were engaged in a high rate of criminal behavior – significantly more than other substance users. Although MA users did not have a higher rate of arrests and have not spent more time in jail or juvenile detention as compared to non-MA users, their significantly higher scores on the General Crime Index and sub-indices indicated that MA users have committed more crimes, including property crime, interpersonal crime, and drug crime. The percentages of MA users that fell in the clinical levels were 77.1% for Property Crime, 70.7% for Interpersonal Crime, 79.3% for Drug Crime, and 85.7% for General Crime. As a comparison, national data indicate that over 71% of non-medical stimulant users, as opposed to 34% of non-users, have reported delinquent behaviors such as fighting, selling drugs, stealing, and attacking someone else.[51]

The criminal behavior displayed in these youth suggests that MA users may lack judgment and impulse control. A number of previous research[52,53,54] have shown that inclusion of Contingency Management (CM) approaches, as part of comprehensive treatment services, may appropriately address these issues. In addition, the cognitive deficits experienced by MA users may necessitate programs that utilize external motivation for assisting the client toward successful treatment outcomes. For example, programs undertaken with court supervision have shown to be more effective than those without such supervision for MA users.[55]

Regarding substance problems, almost all MA users scored in the clinical range for Substance Issues (99.3%), Substance Abuse (98.4%), and Substance Dependence (94.2%) and all (100%) ranked in the clinical range on overall Substance Problems scale. These levels were significantly higher than other substance users. Stimulant misuse was found to be related to alcohol or other drug use disorders in other research as well.[56] Previous studies have also suggested that stimulant users, as opposed to non-users, are more likely to use other illicit drugs.[57]

It is also well documented that methamphetamine abuse can have serious detrimental effects on physical health.[58,59,60,61,62,63] Thus, it was not unexpected that MA users would report significantly poorer health in the past 12 months compared to other drug users, as evidenced in these findings. As in any other good quality care, this finding along with previous studies further emphasizes the importance of comprehensive health screening and timely access to medical care for this population.

A number of mental health indicators were examined in this study, with MA users displaying significantly higher severity on every index. With the exception of Homicidal/Suicidal Thought, for which 43.5% of MA users scored at clinical levels, a vast majority of MA users were at clinical levels for all other mental health, including internal and external, indices. The percentage of MA users at clinical levels for these indices ranged from 65.5% to 94.3%, suggesting a high rate of co-occurring mental health disorders along with their substance abuse and dependence. It is possible that homicidal/suicidal thought may be higher among MA users, but was not evident in this sample since youth with such issues may have been referred to more appropriate care. Further comparison of homicidal/suicidal thought among MA users and non-MA users is another critical area for future research. These findings indicate that substance abuse treatment, especially for those affected by methamphetamines, will need to also address the significant mental health issues involved. In addition, the homeless situations and repeated treatment episodes of many MA users were also reflected in these findings. More than one-third (39.3%) reported being homeless at some time. MA users are also almost twice as likely to have been in prior substance abuse treatments than non-MA users. These youth will likely bring in a distinctive set of lifestyles and experiences that should be considered in their treatment planning. In addition to the variety of treatment services that these youth will need, they will also likely require extensive case management services to assist them with their numerous challenges in their life circumstances.

In summary, the findings from this sample of youth are highly consistent with previous investigations of youth affected by methamphetamine use. As in other studies, these data provide evidence that MA users have characteristics that are very different than non-MA users; more specifically, their condition requires culturally and gender appropriate treatment and ancillary services. Overall, these results support the need for implementing treatment specialized for these adolescents who are impacted by methamphetamine use, particularly for those of Hawaiian and other API ethnic groups.

### *Limitations of Findings*

One of the limitations of this study is in the limited sample size, which prevents greater generalizability of the results. This sample also consists of adolescents in a particular substance abuse residential treatment setting in Hawai'i, so the findings may not apply to methamphetamine users in other types of treatment or the many who are not being treated. Participants admitted to other treatment programs may display different characteristics than this sample.

Further research should build from these results and substantiate the findings reported here. Related to this is the limited number of participants who reported which specific stimulant they used. While 88% of those who reported a specific stimulant stated methamphetamine, data was missing from 50 (36%) of the 140 participants who reported methamphetamine use. However, informal feedback from individuals involved in the program suggests that a vast majority are indeed methamphetamine users rather than any other stimulants.

Other limitations of these findings may lie in the reliability and validity of data based on the GAIN instrument, although considerable steps have been taken to address these issues. With frequent staff turnover and re-training on GAIN assessments, a concern may exist regarding the inter-rater reliability of GAIN data. Extensive training and certification on administering the GAIN is provided through Chestnut Health Systems to ensure consistency in administration. However, some of the administrators did not complete their certifications. The length of the GAIN instrument and its cultural appropriateness has also been a concern. Caution must be taken when attempting to apply assessments to other cultures (Greenfield, 1997),[64] and there has not yet been adequate evaluation of the compatibility of the GAIN with APIs and Hawaiians. However, with slight cultural modifications (such as using Hawaiian names) in the administration of the GAIN, the measures used in this investigation displayed adequate reliability. The psychometric properties and applicability of the instrument for this population are being examined more thoroughly. Meanwhile, the initial results suggest that the GAIN can be usefully applied to API youth.

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# The John A. Burns School of Medicine (JABSOM) Graduation Objectives

**Damon H. Sakai MD, Associate Professor; and Richard T. Kasuya MD, MSEd, Director and Professor; Office of Medical Education, John A. Burns School of Medicine**

## Introduction

The Liaison Committee on Medical Education requires all medical schools to define the objectives of its educational program.[1] Achievement of these objectives must be documented by specific measurable outcomes, utilizing national norms for comparison when possible. The objectives must be used by faculty members in designing their courses and clerkships and be reflected in the evaluation instruments for students. Finally, the objectives of the educational program must be made known to all medical students, faculty, residents, and the academic leadership of the medical school. These JABSOM Graduation Objectives were approved by the JABSOM Executive Committee on June 20, 2008 and made known to students and faculty. Following are descriptions of how students achieve them and how this achievement is monitored during each student's education at JABSOM and beyond.

## JABSOM Graduation Objectives

The JABSOM Graduation Objectives are organized around seven key domains. A full copy of the JABSOM Graduation Objectives are on the JABSOM website at http://jabsom.Hawai'i.edu/JABSOM/admissions/objectives.php.

*1. Life-Long Learning Skills*

JABSOM graduates are life-long learners who must be capable of identifying learning needs, searching for and retrieving biomedical information, critically appraising this information, and applying it appropriately to patient care.

*2. The Biological Sciences*

JABSOM graduates apply the biological sciences to the practice of medicine. They can explain the normal structure and function of each major organ system and the altered structure and function seen in various diseases and illnesses.

*3. The Care of Patients*

JABSOM graduates care for their patients by applying clinical reasoning and problem-solving skills in performing a complete or organ-specific history and physical exams, ordering appropriate diagnostic tests, performing procedural skills under appropriate supervision, and developing an appropriate therapeutic plan.

*4. Oral and Written Communication Skills*

JABSOM graduates communicate effectively by greeting their patients warmly, eliciting relevant information, understanding their perspective, responding to their feelings, educating them about their condition, and explaining further management.

*5. Populational and Community Health*

JABSOM graduates contribute to the health of communities by applying their knowledge of the epidemiology of disease, non-biological determinants of health, common biostatistical tools, and important public health measures in their role as physicians.

*6. Professionalism*

JABSOM graduates are professional and ethical. They act with integrity, altruism, respect, and accountability while delivering compassionate care to their patients.

*7. Personal Health and Well-Being*

JABSOM graduates know how to maintain their personal health and well-being and can state strategies to cope with stress and access resources available for treating depression, substance abuse, and other forms of physician impairment.

These graduation objectives are placed in student handbooks and posted on the JABSOM website for the entire school community. They are reviewed with all students at the one-week orientation to medical school and periodically thereafter. Large posters describing these objectives hang in the hallway leading to their lecture hall. Similar posters have been made available to each department at JABSOM. Faculty and student knowledge is reinforced by the completion of evaluation forms all of which reflect the graduation objectives.

Student achievement of each of the JABSOM Graduation Objectives is determined by their performance on specific assessments throughout their four-year curriculum. They include, but are not limited to, achieving the grade of "Credit" or "Honors" for all preclinical, clerkship, and required fourth-year courses, a passing score on the JABSOM Observed Standardized Clinical Examination (OSCE), and a passing score on the USMLE Step 1, USMLE Step 2 Clinical Knowledge, and USMLE Step 2 Clinical Skills Examinations.

Student achievement of the Graduation Objectives is also monitored by the JABSOM Curriculum Committee as a measure of program quality. On an annual basis, the committee reviews both internal and external measurable outcomes that include student performance in all JABSOM courses and on all three steps of the USMLE examinations. In addition, reviewed annually are the AAMC Graduation Questionnaire completed by all graduating seniors, the JABSOM National Residency Matching Program results, and surveys of JABSOM graduates in their intern year and JABSOM alumni six years after graduation. Program directors who evaluate JABSOM graduates are also surveyed to determine how our students perform

in comparison to those from other schools. Additional information reflecting program quality and student achievement is obtained from internal reviews of all required courses and the surveys administered to students at the end of each required course.[2-3] The information collected to date indicate that JABSOM students are successful in achieving the school's Graduation Objectives.

- The average score of JABSOM students on the USMLE Step 1 Exam has exceeded the national average in each of the last three reported years.
- All JABSOM graduates pass an internally-developed standardized patient exam assessing clinical skills.
- JABSOM students are successful in obtaining competitive residency positions in a variety of specialties through the National Residency Match Program.
- The percentage of JABSOM students who strongly agreed or agreed with the statement, "Overall I am satisfied with my medical education" on the AAMC Graduation Questionnaire exceeded the national average for all schools in five of the past six years (2003-2008).
- All JABSOM graduates in their intern year who responded to the most recent JABSOM Intern Survey stated that they were either "well prepared" (12) or "adequately prepared" (13) when responding to the statement, "In comparison to others in my intern class, I was ____ to provide competent medical care."
- In their most recent survey, Program Directors stated that 85% (28/33) of JABSOM graduates performed "Very well" or "Above Average" when considering the statement, "In comparison to other interns in the class, how well do you believe this intern did in providing competent medical care?"

## Summary

JABSOM has defined its graduation objectives and shared it with students and faculty. They serve as an organizing principle for both curricular content, student evaluations, and program assessment. The school's Curriculum Committee monitors student achievement as a measure of program quality. Outcome data to date suggest that JABSOM students meet the objectives of the medical school and are prepared as life-long learners to undertake the challenges of their chosen profession as physicians.

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# Issues in Medical Malpractice XXIX

**S.Y. Tan MD, JD, Professor of Medicine, John A. Burns School of Medicine, University of Hawai'i**

**Question:** A general practitioner (GP) evaluated a patient with the sudden onset of monocular vision loss. GP thought about retinal detachment, and advised her to seek specialist care. However, he did not insist on immediate attention, as it was Christmas Eve. The patient waited 36 hours before visiting the emergency department, where the rare condition of Klebsiella endophthalmitis with complicating retinal detachment was made. She subsequently lost vision in that eye. Which of the following is/are correct?

A. In a suit against GP, the plaintiff will prevail because this is *malpractice per se*.
B. GP told the patient to see a specialist, and therefore legally discharged his duty.
C. GP's failure to obtain a stat eye consult once he considered the diagnosis of retinal detachment is a breach of the standard of care.
D. In order to win the lawsuit, the plaintiff must prove that the 36-hour delay caused her blindness.
E. A plaintiff sees a general practitioner at her own peril, and assumes the risk that the doctor will miss rare or difficult eye diagnoses.

**Answer: C, D are correct.** Retinal detachment is an ophthalmologic emergency and GP should have promptly referred the patient to a specialist. His failure to arrange for a stat consult likely constitutes a breach of the standard of due care. GP may not have been expected to confirm or treat, but he has a duty to recognize the diagnosis and to make an immediate referral. A patient is not required to bear the burden of assuming risk of harm, as all doctors have the duty to refer if the condition is not within their area of practice.

However, the patient in this case must still show that were it not for the delay, she would have retained her vision. That is, she must prove causation and show that the 36-hour delay adversely affected the outcome. There is no such thing as *malpractice per se*, and all four legal elements of negligence must be proven, i.e., duty, breach, causation and damages. The facts in this question were modified from an actual malpractice case in Singapore where the lower court found the GP to be negligent but the appellate court reversed the decision because causation was not proven.[1]

## Medical Negligence

One definition of negligence is *"conduct which falls below the standard established by law for the protection of others against unreasonable risk of harm."*[2] The standard is an objective one — as judged by the reasonably prudent person, which means the jury. If the conduct of the tortfeasor, i.e., wrongdoer, falls below this standard, then a breach of the standard of care is said to have occurred.

It has long been recognized that the average lay person is incapable of judging what the acceptable level of medical care ought to be. The law therefore, has taken the position that the level of care is that expected of the reasonably competent physician rather than the reasonably prudent person. Alabama, for example, has held that physicians must *"exercise such reasonable care, diligence, and skill as reasonably competent physicians"* would exercise in the same or similar circumstances.[3] An Illinois court used similar words: *"[a] physician must possess and apply the knowledge, skill, and care of a reasonably well-qualified physician in the relevant medical community."*[4]

While the physician standard goes to injuries arising directly out of health care, the reasonable person standard governs non-health care activities such as falls on slippery hospital floors. Unfortunately the distinction may be unclear. As one author put it, *"Sometimes it is difficult to differentiate bad housekeeping and bad medical care, as where rats in a hospital repeatedly bit a comatose patient."*[5]

An allegation of malpractice is not about a physician's bad judgment, bad faith, or intentional malfeasance. It is about breaching an objective standard of medical practice. As a rule, expert testimony is required to establish the customary standard of the profession.

Even after the plaintiff has established that the defendant doctor has breached his/her duty of due care, there is still the issue of causation. In essence, the court wants to know if the substandard care legally caused the injuries. There are two types of causation, i.e., factual cause and proximate cause. Whether the defendant's conduct was a proximate cause of the plaintiff's harm is often at issue. The basic idea is a showing of reasonable "link" between the negligence and the harm, i.e., did the substandard care cause the injury in a foreseeable manner? The term 'legal cause' is sometimes used interchangeably with the term 'proximate cause.' This has led the California Supreme Court to reject confusing jury instructions regarding proximate cause, and instead to simply ask whether the defendant's conduct was a contributory factor in the plaintiff's injury.[6]

This article is meant to be educational and does not constitute medical, ethical, or legal advice. It is excerpted from the author's book, *"Medical Malpractice: Understanding the Law, Managing the Risk"* published in 2006 by World Scientific Publishing Co., and available at Amazon.com. You may contact the author, S.Y. Tan MD, JD, at email: siang@hawaii.edu or call (808) 728-9784 for more information.

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# Individualizing Colon Cancer Treatment: The Role of Predictive and Prognostic Factors

**Jared D. Acoba MD, Assistant Clinical Professor, John A. Burns School of Medicine, University of Hawai'i**

Nearly 150,000 cases of colorectal cancer will be diagnosed in the United States in 2008, making it the fourth most common cancer.[1] It also ranks as the second most common cause of cancer death. This year, in Hawai'i alone, 700 new cases and over 200 deaths from colorectal cancer are expected.[1] Many new treatments for colon cancer have been introduced in the last decade including cytotoxic chemotherapy agents (irinotecan and oxaliplatin) and monoclonal antibodies to inhibit angiogenesis (bevacizumab) or target the epidermal growth factor receptor (cetuximab and panitumumab). In the postoperative setting, this has led to improvements in cure rates with adjuvant therapy.[2] In the metastatic setting where cure is unlikely, these new medications have increased the median survival from 9 months to over 2 years.[3] Equally important as these novel therapeutic agents, are new assays to determine whether a particular individual will benefit from treatment. While these tests are still a work in progress, they hold the promise of identifying a specific chemotherapeutic agent that will benefit a specific patient.

Present medical advances allow health care providers to individualize treatment through the identification of tumor characteristics that can be predictive, prognostic, or both. Predictive factors provide information on the likelihood of response to a particular treatment. Prognostic factors provide information on the natural history of the disease, irrespective of treatment. As we become better at identifying these factors, we become better at personalizing treatment and delivering the most effective therapy while avoiding exposure to potential side effects. Predictive and prognostic factors range from the traditional tumor, lymph node, distant metastases (TNM) staging, to genetic abnormalities such as microsatellite instability, chromosome 18q deletions, and *KRAS* gene mutations. In addition, new exciting technologies like gene expression profiling and identification of circulating tumor cells are on the horizon.

## TNM Staging

Colon cancer is usually discovered during a colonoscopy for gastrointestinal bleeding or for screening purposes. Following diagnosis patients will undergo imaging tests to assess for metastatic disease. If no metastases are identified, patients undergo surgery for a potentially curative resection. Based on tumor characteristics, cancers are assigned a stage to provide prognostic information – the higher the stage the more advanced the cancer and the higher the likelihood for relapse. For some patients, the risk for relapse can be reduced with adjuvant chemotherapy.

The American Joint Committee on Cancer has standardized the staging for colon tumors based on depth of tumor invasion (T), presence and number of lymph node metastases (N), and the presence or absence of distant metastatic disease (M) (Table 1). TNM staging remains the most powerful prognostic tool for colon cancer, as evident by data from the Surveillance, Epidemiology, and End Results (SEER)[4] (Table 2).

Table 1.— TNM Definitions

| | |
|---|---|
| **Primary Tumor (T)** | |
| T1 | Tumor invades submucosa |
| T2 | Tumor invades muscularis propria |
| T3 | Tumor invades through muscularis propria and into subserosal |
| T4 | Tumor invades into other organs |
| **Regional Lymph Nodes (N)** | |
| N1 | Metastasis in 1 to 3 regional lymph nodes |
| N2 | Metastasis in 4 or more regional lymph nodes |
| **Distant Metastasis (M)** | |
| M0 | No distant metastasis |
| M1 | Distant Metastasis |

Table 2.— Stage Grouping and Survival by Stage. Colon cancer staging by AJCC criteria and 5y median overall survival (OS), 1991-2000.

| Stage | T | N | M | 5y median OS (%) |
|---|---|---|---|---|
| I | T1-2 | N0 | M0 | 93 |
| IIA | T3 | N0 | M0 | 85 |
| IIB | T4 | N0 | M0 | 72 |
| IIIA | T1-2 | N1 | M0 | 83 |
| IIIB | T3-4 | N1 | M0 | 64 |
| IIIC | Any T | N2 | M0 | 44 |
| IV | Any T | Any N | M1 | 8 |

The presence of lymph node metastasis (stage III colon cancer) is the most significant adverse prognostic factor in resectable colon cancer.[5-6] Moreover it appears that the ratio of positive to total resected lymph nodes is also prognostic.[7] Because of the high risk of disease recurrence, adjuvant chemotherapy is considered for all stage III patients.

Among lymph node negative patients, the decision to recommend adjuvant chemotherapy is less clear. Stage II colon cancer encompasses a heterogeneous group, with the 5-year median survival ranging from 72-85%.[4] A number of potentially useful adverse prognostic factors have been identified among subsets of patients with stage II colon cancer – T4 lesion, perforation or obstruction, lymphovascular invasion, grade 3 or 4 tumors, and an evaluation of less than 12 lymph nodes.[5-6,8-10] Retrospective analyses suggest that stratifying stage II colon cancer patients by these factors may identify a subgroup of patients who would benefit from chemotherapy.[2] Nevertheless, randomized prospective trial data do not support the routine use of adjuvant chemotherapy among stage II patients.[11]

## Microsatellite Instability and Loss of Heterozygosity at Chromosome 18q

While traditional tumor characteristics have not been able to adequately stratify stage II colon cancer patients, 2 molecular traits have shown promise for their prognostic and predictive ability – microsatellite instability (MSI) and loss of heterozygosity (LOH) at chromosome 18q. Defects in DNA mismatch repair lead to MSI that is characterized by frameshift mutations and base pair substitutions found in short, tandemly repeated nucleotide sequences known as microsatellites. About 15-20% of colon cancers will be characterized by high-frequency MSI (MSI-H), and these tumors tend to have a better prognosis compared to tumors displaying microsatellite stability (MSS) or low-frequency microsatellite instability (MSI-L).[12] Moreover, data suggest that MSI status may be predictive of response to 5-fluorouracil based treatments.[13-14] Stage II colon cancer patients with MSI-L or MSS tumors appear to benefit from adjuvant 5-fluorouracil while patients with MSI-H tumors do not.

Studies have also assessed the role of LOH at chromosome 18q as a prognostic factor for stage II colon cancers. Allelic loss of chromosome 18q confers decreased expression of the tumor suppressor DCC (deleted in colon cancer). Among stage II patients, those with an intact chromosome 18q experienced a 93% five year survival, while LOH at chromosome 18q was associated with only a 54% 5-year survival.[15-17] The predictive value of allelic loss of chromosome 18q and MSI status for stage II patients receiving adjuvant therapy is currently being studied through a prospective clinical trial, ECOG 5202.

### KRAS mutations

For patients with metastatic colon cancer, the goal of treatment is to alleviate symptoms and prolong survival. With newer therapies for colon cancer, the median survival for patients with stage IV disease has nearly tripled in the last decade.[3] One novel therapeutic strategy involves targeting the epidermal growth factor receptor (EGFR) pathway. Clinical trials have demonstrated that monoclonal antibodies targeting EGFR, such as cetuximab and panitumumab, are active as single agent treatments and in combination with cytotoxic chemotherapy.[18-20] Early studies to identify tumors that would respond to EGFR antibodies however were unsuccessful. The presence of EGFR overexpression by immunohistochemistry has no bearing on response to treatment.

Recently numerous analyses have established KRAS, an oncogenic protein along the EGFR pathway, as both prognostic for colon cancer patients and predictive of response to EGFR inhibitors. Patients whose tumors have a wildtype KRAS gene benefit from longer survival, and 40% will respond to monotherapy with EGFR inhibitors.[21-22] Meanwhile, patients with a mutated KRAS gene have a worse prognosis and virtually no response to cetuximab or panitumumab. Studies have suggested that patients with the KRAS mutation may actually do worse when given EGFR inhibitors with chemotherapy than when treated with chemotherapy alone.[23] This may be of significant interest in Hawai'i due to the large Asian population, as studies of adenocarcinoma of the lung have shown that Asian patients have an extremely low incidence of KRAS mutations.[24-26]

## Gene Expression Profiling and Circulating Tumor Cells

New assays allow for the simultaneous evaluation of thousands of gene products through microarray analysis. The prognostic and predictive ability of gene expression profiling (GEP) has been demonstrated most thoroughly in breast cancer. Two commercially available breast cancer tests utilize GEP to predict recurrence and response to treatment, Oncotype DX and MammaPrint.[27-29] The role of GEP in colon cancer is still early in development, but appears promising. Gene signatures may be better prognosticators than standard TNM staging and show promise as predictors for response to specific chemotherapy regimens.[30-34]

The identification of circulating tumor cells (CTC) is another novel technology being developed to assist colon cancer treatment. Tumor cells in the blood can be detected through immunomagnetic assays for specific antigens present on cancer cells. CTC are potential biomarkers to monitor response to therapy and predict survival.[35-36]

## Conclusion

This is an exciting time in colon cancer research with an influx of new chemotherapeutic and biologic agents and many more coming down the research pipeline. In conjunction with these new medications, there is a push to develop tests to personalize therapy so that patients can be treated more efficiently and responsibly. TNM staging provides invaluable information, however novel technological tools available today challenge the cancer community to move beyond traditional tumor characteristics.

The clinical courses of patients with stage II tumors are varied and difficult to predict. Presently available methods are unable to select patients who would benefit from adjuvant therapy. MSI and LOH at chromosome 18q are currently being tested in a cooperative group trial to identify a subset of stage II patients who should receive postoperative therapy. Assessing the KRAS mutation status of tumors in metastatic colon cancer patients has become standard of care to identify those who will benefit from EGFR inhibitors. Through the advent of new technologies and the creation of tissue banks and clinical databases, oncology is making great strides toward developing truly individualized treatment.

For more information on the Cancer Research Center of Hawai'i, visit www.crch.org.

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# UPCOMING CME EVENTS

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| Date | Specialty | Sponsor | Location | Meeting Topic | Contact |
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| | | | | | |
| **December 2008** | | | | | |
| 12/7-12/12 | EM | Institute for Emergency Medical Education, American College of Emergency Physicians | Wailea Marriott, Wailea, Maui | Annual Current Concepts in Emergency Care | Web: www.ieme.com |
| **January 2009** | | | | | |
| 1/9-1/11 | N | American Society for Peripheral Nerve | Grand Wailea Resort, Wailea, Maui | ASPN 2009 Annual Meeting | Web: www.peripheralnerve.org |
| 1/10-1/13 | Multi | American Society for Reconstructive Microsurgery | Grand Wailea Resort, Wailea, Maui | 2009 Annual Meeting | Web: www.microsurg.org |
| 1/19-1/23 | AN | California Society of Anesthesiologists | Hyatt Regency Maui, Ka'anapali Beach, Maui | CSA Hawaiian Seminar | Web: www.csahq.org |
| 1/25-1/30 | R | Department of Radiology, Mayo Clinic | Mauna Lani Resort | Tutorials in Diagnostic Radiology w/Advanced Radiology Life Support | Tel: (866) 242-1581<br>Web: www.mayo.edu/cme/radiology.html |
| 1/26-1/27 | Multi | Kaiser Permanente | Ihilani Resort & Spa, Honolulu | 7th Annual Pain Management Symposium | Tel: (808) 432-5704 |
| 1/27-1/31 | R | NYU School of Medicine Department of Radiology | The Four Seasons Hualalai | NYU Radiology in Hualalai | Web: www.radcme.med.nyu.edu |
| 1/28-1/31 | PMD | American Academy of Pain Medicine | Hilton Hawaiian Village, Honolulu | Annual & Scientific Meeting | Web: www.painmed.org |
| **February 2009** | | | | | |
| 2/5-2/7 | Multi | Department of Native Hawaiian Health, John A. Burns School of Medicine, University of Hawai'i | Hilton Orange County, Costa Mesa, California | He Huliau -- A Turning Point Eliminating Health Disparities in Native & Pacific Peoples: Cardiometabolic Disparities | Tel: (808) 587-8570 |
| 2/15-2/20 | IM, ID | University of California San Francisco School of Medicine | The Fairmont Orchid, Kohala Coast, Hawai'i | Infectious Diseases in Clinical Practice: Update on Inpatient and Outpatient Infectious Diseases | Tel: (415) 476-4251<br>Web: www.cme.ucsf.edu/cme |
| 2/15-2/20 | R | University of California San Francisco School of Medicine | The Fairmont Orchid, Kohala Coast, Hawai'i | Current Concepts in Body Imaging | Tel: (415) 476-4251<br>Web: www.cme.ucsf.edu/cme |
| 2/22-2/27 | GS | Mayo Clinic | Hapuna Beach Prince Hotel, Kohala Coast, Hawai'i | Mayo Clinic Interactive Surgery Symposium | Tel: (480) 301-4580 |
| 2/27-3/1 | Multi | Hawai'i Academy of Family Physicians | Hilton Waikiki Prince Kuhio Hotel, Honolulu | Hawai'i Update: Celebrating Diversity in Our Community and Our Specialty | Tel: (808) 864-9812<br>Web: www.hafp.com |
| **March 2009** | | | | | |
| 3/5-3/8 | PYG | American Association for Geriatric Psychiatry | Hawai'i Convention Center, Honolulu | AAGP 22nd Annual Meeting | Web: www.aagponline.org |
| 3/12-3/14 | ID, RN, IM | University of Buffalo | Hilton Hawaiian Village, Honolulu | Staphyloccal Symposium | Infections Limited Hawai'i<br>Tel: (808) 373-3488 or (808) 544-2852<br>Web: www.staph2009.com |
| 3/15-3/20 | GE, R, U | Society of Gastrointestinal Radiologists, Society of Uroradiologists | Grand Wailea Resort, Wailea, Maui | 2009 Abdominal Radiology Course | Web: www.sqr.org |

| Date | Specialty | Sponsor | Location | Meeting Topic | Contact |
|---|---|---|---|---|---|
| | | | | | |
| 3/23-3/27 | R | Stanford University School of Medicine | Fairmont Kea Lani, Maui | 17th Annual Diagnostic Imaging Update | Tel: (888) 556-2230<br>Email: radiologycme@med.stanford.edu<br>Web: radiologycme.stanford.edu/2009maui/ |
| **April 2009** | | | | | |
| 4/5-4/10 | IM, FM | University of California San Francisco School of Medicine | Wailea Beach Marriott, Wailea, Maui | Primary Care Medicine: Update 2009 | Tel: (415) 476-4251<br>Web: www.cme.ucsf.edu/cme |
| 4/6-4/10 | IM, FM | Scripps Clinic | Hapuna Beach Prince Hotel | 14th Annual Primary Care in Paradise | Tel: (858) 587-4404<br>Web: www.scripps.org/conferenceservices |
| 4/13-4/17 | Multi | The Permanente Federation | Hyatt Regency Kaanapali, Maui | Kaiser Permanente National Primary Care | Email: cmxtravel@cmxtravel.com<br>Web: www.kpprimarycareconference.org |
| 4/14-4/16 | Multi | State of Hawai'i Department of Health, Adult Mental Health Division | Hawai'i Convention Center, Honolulu | 6th Annual Best Practices Conference: Responsibility and Recovery in the Legal System | Tel: (808) 586-4686 |
| 4/18-4/24 | R | International Society for Magnetic Resonance in Medicine | Hawai'i Convention Center, Honolulu | 17th Annual Meeting | Web: www.ismrm.org |
| **May 2009** | | | | | |
| 5/16-5/17 | OBG | Department of Obstetrics, Gynecology and Women's Health, John A. Burns School of Medicine and Ian Donald Interuniversity School of Medical Ultrasound Hawai'i | Ala Moana Hotel, Honolulu | Contemporary OB/GYN Ultrasound: Recent Advances and Clinical Practice | Tel: (808) 203-6563<br>Email: treevesman@ucera.org |
| **October 2009** | | | | | |
| 10/20-10/24 | Multi | American Society of Human Genetics | TBA | 2009 Annual Meeting | Web: www.faseb.org/genetics/ashg |
| 10/27-11/1 | CHP | American Academy of Child and Adolescent Psychiatry | Hilton Hawaiian Village, Honolulu | 56th Annual Meeting | Tel: (202) 966-2891 |
| 10/25-10/28 | OBG | Central Association of Obstetricians & Gynecologists | Maui, Hawai'i | 2009 Annual Meeting | Tel: (701) 838-8323 |
| **January 2010** | | | | | |
| 1/1-1/7 | D | Skin Disease Education Foundation | Maui, Hawai'i | New Era: Psoriasis Therapy | Tel: (312) 988-7700 |
| **February 2010** | | | | | |
| 2/14-2/19 | IM, ID | University of California San Francisco School of Medicine | The Fairmont Orchid, Kohala Coast, Hawai'i | Infectious Diseases in Clinical Practice: Update on Inpatient and Outpatient Infectious Diseases | Tel: (415) 476-4251<br>Web: www.cme.ucsf.edu/cme |

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# THE WEATHERVANE

RUSSELL T. STODD MD, CONTRIBUTING EDITOR

*Russell T. Stodd MD*

❖ YOU KNOW, THERE'S BIG MONEY IN KIDNEYS AND THIS GUY HAS TWO OF THEM.

A 51-year-old teacher on dialysis in Cypress, California, needed a kidney. Her cousin offered one, however was found to be biologically incompatible, but the teacher received a kidney from an anonymous donor, and that began a cascade of transplants. The cousin's kidney went to another needy recipient, and that patient also had a willing donor who was incompatible, so that kidney was handed off to still another dialysis patient. All the transplants were at the Ronald Reagan UCLA Medical Center where the director believes that the kidney chain phenomenon, "is one of the most exciting things I've been involved with in 30 years in this field." Michael Rees MD, a transplant surgeon at the University of Toledo Medical Center in Ohio, is credited with launching the transplant chain phenomenon. With 77,000 Americans waiting for a kidney transplant the possibility of increased donors through a transplant chain is a welcome ethical expansion.

❖ THERE'S EVEN MORE GOLD IN THEM PROSTATES!

The latest development in cancer therapy is the proton-beam accelerator. This device provides a sharply focused form of radiation that delivers a precise destructive proton-beam to tumor cells while leaving healthy tissue undamaged a mere 0.5 mm away**.** The claim is that this technique is much better than conventional x-ray radiation by sparing surrounding tissue and reducing complications and side effects. Cancers in delicate spots such as found in infants or the brain, spine, or eye can be treated more safely and effectively. These cases are relatively rare, so the real gold mine is in the prostate where 230,000 new patients are found annually. This is a great source of revenue since the cost of treatment is $40,000 and up, significantly more than x-ray radiation, and it is covered by most private insurers and Medicare. The downside is that the facility for delivering the proton-beam is the size of a football field, has concrete walls 10 feet thick and costs $100 to $200 million to construct. Only five facilities presently exist: Loma Linda Medical Center, M.D. Anderson Cancer Center, Mass. General Hospital, University of Florida, and Midwest Proton Institute. Meanwhile, back at the Medicare cash register, bean-counters are considering requiring evidence that proton-beam therapy is better than other prostate treatment.

❖ ROAD KILL DOES NOT REQUIRE A COUNTRY OF ORIGIN.

If you are one of those old fashioned consumers who wonders where your food is coming from, help is on the way. Beginning September 30, 2008, a federal law goes into effect that requires food retailers like Safeway, Trader Joe's, Foodland, Fred Meyers and others to label or otherwise display the country of origin for meat, produce, and some nuts. Consumer groups have been pushing for origin labeling for years, but a recent rash of food scares mostly from other countries has added fuel. Moreover, many people simply like to buy locally-grown food whenever they can. It is usually fresher and also helps the local economy. Also, we know our nuts are superior to foreign nuts.

❖ SO THAT'S WHY YOU TAKE A WALK ON THE LONG FLIGHT!

The Surgeon General, Dr. Steven Galson, is pushing a government campaign to make people aware of the "silent killer" deep vein thrombosis. These clots can rapidly kill if they move to the lungs and become pulmonary emboli. There are no reliable statistics but the surgeon general estimates that between 350,000 and 600,000 Americans suffer annually from deep vein thrombi and at least 100,000 die. The risk factors are many and varied and such clots can result from recent surgery, a broken bone, a fall or car crash, pregnancy, or taking birth control pills. People who sit for extended periods in cramped quarters such as truck drivers, airline pilots, or passengers on long trips are especially vulnerable. Vice-president Dick Cheney had one last year after taking a long trip (apparently he survived). The point is that people need to seek help quickly if they experience unexplained leg muscle pain, tenderness or swelling, or a hot red spot in the skin or shortness of breath on deep breathing.

❖ IF GOD WANTED US TO FLY HE WOULD HAVE GIVEN US TICKETS.

In February 2008 a Go! airlines flight from Honolulu to Hilo resulted in a 15 minute by-pass of Hilo at cruising altitude before the captain awakened and did a one-eighty to land safely. The pilots admitted to falling asleep and have lost their jobs and had their licenses suspended. This is one more episode of pilot exhaustion that safety experts and regulators are worried about. The National Transportation Safety Board (NTSB) has linked at least ten U.S. airliner accidents and 260 fatalities to pilot fatigue since 1990. Mistakes include failure to extend flaps before takeoff, inadvertently shutting down an engine in midair, and losing position on final approach. In several instances crew members have nodded off at the controls. Pilots say certain airlines schedule flight times at the eight hour limit mandated by the FAA so they don't have to pay an extra pilot. Now pilots and safety experts are increasing pressure on the Federal Aviation Administration (FAA) to rewrite rest and scheduling regulations, which have not been updated since the 1960s. Had the Go! pilots not awakened when they did the plane might have flown beyond the fuel capacity to return.

❖ MOTHER, YOUR RIGHT TO BREAST-FEED ON THE PLANE HAS BEEN UPHELD.

It is well known that breast-feeding is better for the baby's health. Now there is additional data indicating that nursing mothers also benefit from breast-feeding their babies. A large analysis in 2007 concluded that breast-feeding tends to protect against type two diabetes as well as breast and ovarian cancer. A current study of 18,326 women in Sweden who breast-fed their babies for 13 months or more found that those mothers were about half as apt to develop rheumatoid arthritis. Experts cannot explain this surprising finding, but note that breast-feeding can change maternal level of immune-regulating hormones.

❖ INVASION OF THE BODY SCRATCHERS.

The National Cancer Institute collected data published in the Journal of Investigative Dermatology that showed some alarming numbers about melanoma. In the years 1980 to 2004 the incidence of invasive melanoma remained about the same for men, but increased by 50% in Caucasian women aged 15 to 39 years. Investigators admit that they do not know the reason for this finding in women born after 1965, but note the increasing numbers of sunburn in young women often related to use of "tanning beds." More research is needed to establish if the increase in melanoma is related to ultraviolet radiation as many believe. No matter. If you live Hawai'i it is wise to use sun screen, wear a hat and protective clothing, and avoid exposure when the sun is strongest between the hours of 10 AM and 4 PM.

❖ LET'S SAY YOU WERE IN CONGRESS. AND LET'S SAY YOU WERE AN IDIOT. BUT I REPEAT MYSELF. (M. TWAIN)

In May of 2006 voters in California gave the Republican-led Congress a sorry approval rating of 23%. Two years later after Nancy Pelosi and company have taken charge, Californians now have dropped approval to 20%, the lowest recorded since the Field poll began asking this question in 1996.

❖ THERE IS MORE STUPIDITY THAN HYDROGEN IN THE UNIVERSE, AND IT HAS A LONGER SHELF LIFE.

In Roanoke Rapids, N.C., a man took $150 worth of groceries to the check out cashier at the Food Lion. He presented the clerk with a $200 bill which portrayed President George W. Brush in the oval and a picture of the White House on the back. The clerk accepted the bill and gave the man $50 in change**!** The police are searching for the counterfeiter.

❖ EVERYONE LIES, CHEATS AND PRETENDS. IN CHINA IT'S AN ART FORM.

China announced that they successfully launched three astronauts into orbit. The video release showed computer tracking across the Pacific, technicians staring at screens with cheering and high-fives, and the ground crew in high celebration. One minor problem: it was three hours before the launch. Authorities said there was a technical glitch. Clever, these Chinese. For the Olympics they staged fake fireworks, bogus ethnic children, a sham cute little singing girl, and more recently artificial milk. But hey, it certainly looks good!

ADDENDA

- ❖ From the Olympic boxing analyst, "Sure there have been injuries, and even some deaths in boxing, but none of them really that serious."
- ❖ Is she ready to be one heart beat away from the most powerful and challenging job in the world? Que Sarah, Sarah!
- ❖ From the Olympic dressage competition, "This is a lovely horse and I speak from personal experience since I once mounted her mother."
- ❖ When all think alike then no one is thinking.
- ❖ This site has not been approved for politically correct content.

ALOHA AND KEEP THE FAITH — **rts**■

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

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—Mitchell B. Miller, MD, physician member of the AMA and his local and state societies

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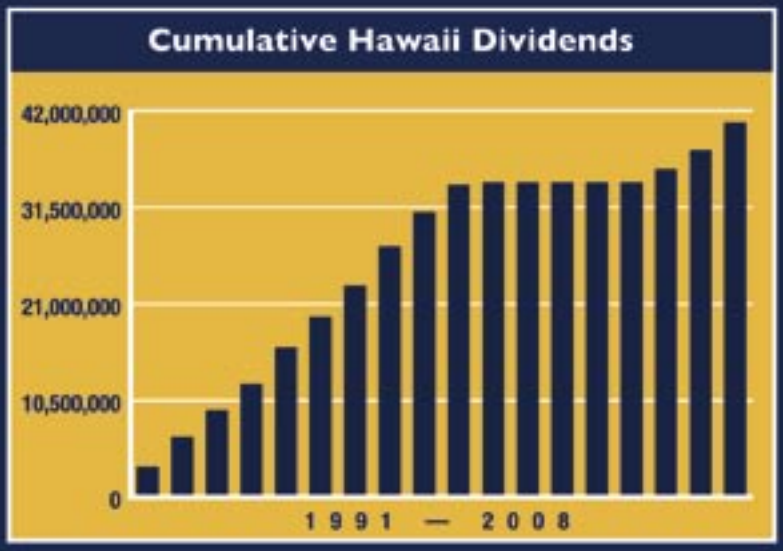


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