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A Fresh Look at Esophageal Cancer Incidence Among Asian/Pacific Islanders and Caucasians

Anita Mittal MD; Fernando V. Ona MD, FACP, FACG; Michelle L. Randolph MD; and Jennifer Yamamoto

Anita Mittal MD

Abstract

*This is a retrospective study comparing esophageal cancer incidence among Asian/Pacific Islanders and Caucasians between Hawai'i and nationally, identifying patterns specific to Hawai'i. SEER*SAT was used for statistical analysis. In Hawai'i, esophageal cancer incidence between the two study groups were similar, but nationally higher in Caucasians. These findings are unique to Hawai'i. More detailed and consistent registries are needed.*

Introduction

Esophageal cancer (EC) is a treatable but rarely curable disease. Currently, it ranks as the seventh most common cancer worldwide.[1] There are two types of esophageal carcinoma, squamous cell (SCC) and adenocarcinoma (AC), and each type is associated with different risk factors.

Esophageal AC arises most commonly in patients with gastroesophageal reflux disease (GERD), which can lead to Barrett's Esophagus (BE). People with BE are 30-125 times more likely to develop AC.[2-7] Other risk factors include obesity, or increased Body Mass Index, use of medications such as anticholinergics, which can relax the lower esophageal sphincter and lead to GERD, and alcohol. Current literature also reveals that Caucasian males over the age of 45 are at the highest risk of developing AC.[2-7]

Risk factors related to SCC include smoking, alcoholism, malnutrition, and infection with human papillomavirus. Over half of SCC cases can be linked to smoking, and this number climbs when alcohol is added into the picture.[4,7] One in 6 Americans have problems with alcohol abuse, and it is responsible for 29% of all esophageal cancers.[2,4,7]

In Hawai'i, the obesity rate ranks one of the lowest in the nation, around 18%. However, 47.9% of Asian/Pacific Islanders living in Hawai'i are overweight/obese as compared to 35.9% of Asian/Pacific Islanders nationally, possibly increasing the risk for developing AC.[8] Asian/Pacific Islanders also have a lower rate of smoking than Caucasians and African Americans in Hawai'i (18.2%, 20%, and 21.9% respectively). However evidence suggests that Asian/Pacific Islanders living in Hawai'i may fare worse than their national counterparts, who have a lower smoking rate at 13.7%.[8-11]

This study will focus on the incidence of esophageal cancer among Asian/Pacific Islanders and Caucasians in Hawai'i and the rest of the United States. Specifically, this study will examine if Asian/Pacific Islanders in Hawai'i really are less likely to develop esophageal cancer than Caucasians, which is important to determine out as 51% of the population in Hawai'i is Asian/Pacific Islanders, and nationally this population is increasing as well. This study will also explore the distribution of histologic type of EC among Asian/Pacific Islanders and Caucasians.

Methods

This is a retrospective study where Hawai'i cases were identified from the Hawai'i Tumor Registry (HTR), a statewide population-based registry, which has been a member of the National Cancer Institute's Surveillance, Epidemiology and End Results (SEER) program since 1972. Twelve SEER registries, Atlanta, Connecticut, Detroit, Iowa, New Mexico, San Francisco-Oakland, Seattle-Puget Sound, Utah, Los Angeles, San Jose-Monterey, Rural Georgia, and the Alaska Native Tumor Registry, were used to identify cases elsewhere in the United States.[12] These registries represent 36% of the US Asian/Pacific Islander population, excluding Hawai'i.

Adult patients diagnosed with EC during 1998-2003 were identified using International Classification of Diseases for Oncology (ICD-O) codes C15.0-C15.9.[13,14] The following ICD-O histology codes were used to classify cases as SCC: 8070-8072, 8074. EC cases with histology codes 8140, 8560, 8144, 8480, 8210, 8490, 8481 were considered to have AC. Patients with other histology codes were excluded from this analysis.

Population counts, used as denominators for calculating the incidence rates in this analysis, were obtained from the US Census Bureau.[15] The Census Bureau provided estimates of the resident populations of the US counties by single-year age groups, gender and race (only Caucasians and Asian/Pacific Islanders were used in this study). The Hawai'i population counts were

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adjusted to correct for an undercount of the Native Hawaiian population that was noted to occur in previous censuses. The net result of this adjustment was an increase in the Asian/Pacific Islander population and decrease in the Caucasians.[15]

Average annual incidence rates were age adjusted to the 2000 US standard population and expressed per 100,000 person-years. Incidence rate ratios (IRRs) were calculated as the ratio of two mutually exclusive rates. Confidence intervals (95%) and tests of significance for the IRRs were calculated to assess differences between groups.[16, 17] The confidence intervals and p-values for the IRRs were derived from an approximation to the F-distribution. Analyses were completed using the SEER*STAT software, version 6.2.[18]

Results

A total of 194,587 patients were identified in Hawai'i and other US tumor registries included in this analysis. Of these cases, 194 were comprised of Asian/Pacific Islanders with EC from Hawai'i (Table 1). SCC was the most common histological type, making up 76% of all cases for this group.

The results showed that there was a significantly higher incidence of esophageal carcinoma for Asian/Pacific Islanders in Hawai'i than reflected by national statistics ($p<0.001$). There was no difference in the incidence of AC for Asian/Pacific Islanders in Hawai'i compared with Asian/Pacific Islanders nationally. However, Asian/Pacific Islanders in Hawai'i did have a significantly higher incidence of SCC than Asian/Pacific Islanders elsewhere in the United States. The incidence of AC in Asian/Pacific Islanders in Hawai'i was lower than the incidence of SCC in Asian/Pacific Islanders in Hawai'i, and this trend was also found to be true nationally (Table 1).

Nationally, esophageal cancer is significantly higher in the Caucasian population than the national Asian/Pacific Islander population ($p<0.0001$). The incidence of SCC was found to be significantly higher in Asian/Pacific Islanders than the national Caucasian population ($p<0.001$). The incidence of AC was significantly lower in Asian/Pacific Islanders ($p<0.0001$). Table 2 highlights the actual incidence ratios and confidence intervals.

Our results showed that in Hawai'i, the incidence of esophageal cancer was not significantly different between the Caucasian and Asian/Pacific Islander populations ($p=0.643$). There was a significantly higher incidence of SCC in the Asian/Pacific Islander population in Hawai'i as compared to the Caucasian population in Hawai'i ($p<0.001$), and there was a higher incidence of AC in the Caucasian population of Hawai'i as compared to the Asian/Pacific Islander population in Hawai'i ($p<0.001$, refer to Table 2).

Table 1.— Incidence Rates per 100,000 of Esophageal Cancer By Histological Type Among Asian/Pacific Islanders in Hawai'i and Elsewhere in the United States

	Asian/Pacific Islanders United States excluding Hawai'i*	Asian/Pacific Islanders in Hawai'i	P-Values
Esophageal Carcinoma	2.45 (N=393)	3.42 (N=194)	P<0.001
Adenocarcinoma	0.38 (N=62)	0.48 (N=28)	P=0.367
Squamous Cell Carcinoma	1.81 (N=291)	2.75 (N=156)	P<0.001

*Rates for the United States are based on 12 SEER registries, excluding Hawai'i

Table 2.— Incidence Rates per 100,000 and Confidence Intervals of Esophageal Cancer by Histological Type Among Asian/Pacific Islanders in Hawai'i, Caucasians in Hawai'i, & Caucasians Elsewhere in the United States

	Asian/Pacific Islanders in Hawai'i	Caucasians United States excluding Hawai'i*	Caucasians in Hawai'i	Confidence Intervals 95% (Lower CI-Higher CI)
Esophageal Cancer	3.42 (N=194)	4.53 (N=7,605)	3.68 (N=70)	2.95-3.94, 4.42-4.62, 2.87-4.70 respectively
Adenocarcinoma	0.48 (N=28)	2.59 (N=4,372)	2.08 (N=40)	0.32-0.71, 2.52-2.67, 1.48-2.88 respectively
Squamous Cell Carcinoma	2.75 (N=156)	1.41 (N=2373)	1.22(N=23)	2.34-3.23, 1.36-1.47, 0.77-1.89 respectively

*Rates for the United States are based on 12 SEER registries, excluding Hawai'i

Discussion

This study revealed that the incidence of esophageal cancer is significantly higher in Hawai'i than the rest of the United States, and that Caucasians and Asian/Pacific Islanders have a similar incidence of esophageal cancer in Hawai'i. A review of the literature shows that current data suggests that the incidence of the type of esophageal cancer may vary with race and/or ethnic background. African Americans are about 6 to 8 times and Asian/Pacific Islanders are about 4 times more likely to develop SCC than Caucasians. However, Caucasians are about 3 times more likely to develop AC than African American, Asian/Pacific Islander, or Native American populations, and 2 times more likely to develop AC than Hispanics.[19-23]

The SEER data cites Hawai'i as having the highest incidence of SCC in the country.[24] Reasons for these findings could be attributable to a higher incidence of SCC in the Asian/Pacific Islander population, although in this study they were only 2.25 times more likely to develop SCC than Caucasians. One can speculate that Asian/Pacific Islanders are the most likely to develop SCC since a higher percentage smoke compared to Asian/Pacific Islanders in other parts of the United States.

Despite the increasing prevalence of AC in the United States, it has not yet overtaken SCC as the most common type of esophageal cancer either in Hawai'i or nation-

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ally. There was a trend seen in this study where the Asian/Pacific Islanders population in Hawai'i had a higher incidence of AC than Asian/Pacific Islanders elsewhere in the United States. This trend was not found to be significant, but one may speculate that because Asian/Pacific Islanders in Hawai'i are more overweight/obese than their national counterparts, they might be more susceptible to developing GERD, which can place them at an increased risk for AC.

The interesting finding in this study was that the incidence of esophageal cancer was similar between Asian/Pacific Islanders and Caucasians in Hawai'i, whereas nationally, esophageal cancer overall was found to be higher in Caucasians. It can be inferred that the reason esophageal cancer has a similar incidence between these two groups is because there is a high SCC incidence in Asian/Pacific Islanders, which may significantly contribute to the overall EC incidence in Asian/Pacific Islanders living in Hawai'i. Also, the Caucasian group in Hawai'i seemed to have a lower EC incidence that their national counterparts.

There were a few limitations with this study. First, there was no central pathology review of these cases, which could possibly result in misclassification of some tumors. The SEER registries do not include all Asian/Pacific Islanders in the US population outside of Hawai'i and it is possible that the remaining population could have a different risk than represented by these registries. Finally, the data obtained did not clearly list risk factors that these esophageal cancer patients might have had, such as increased BMI, GERD, alcohol abuse, or smoking history, nor did it list site of birth for each patient, otherwise this study might have been able to address more definitively reasons for the results.

There has been research similar to this study done in other states, but this is the first such study regarding Hawai'i, and the results show some findings that are unique to Hawai'i. Health care providers need to keep in mind that the incidence of esophageal cancer between Caucasians and Asian/Pacific Islanders living in Hawai'i are similar, and that this finding is different than the current belief in which Caucasians have the highest risk for developing esophageal cancer.

Given the differences found between the two study populations in Hawai'i and the rest of the United States, it is important to find concrete answers to explain these results, which was not the focus of this study given the limitations. Additional research needs to be carried out in order to stratify cancer risk within the Asian/Pacific Islander population. Future prospective research can also focus on different ethnic backgrounds across each state and/or region in the United States, because there is evidence to suggest that race and/or ethnic background itself may be an independent risk factor for cancer development.[25]

Finally, this study highlights the need for more detailed and consistent reporting to the registries. Tracking risk factors for the development of cancer may be just as important as the histologic type of the cancer or the demographics of a patient. That way, the incidence of cancer can be decreased through policy and education targeted at elimination of these risk factors. In the future, further comparisons between ethnic groups in Hawai'i might show some more trends unique to this region.

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A Feasibility Study of Methodology for Recruitment and for Comparative Testing of Ciliary Function in Hawaiians and Caucasians

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Abstract

Native Hawaiians have higher lung cancer incidence and mortality than other ethnic groups, even after controlling for smoking. Could reduced mucociliary clearance, suspected in Polynesians, play a role? In this pilot study of 9 Hawaiian and 8 Caucasian men, mean velocities were faster although not statistically significant in Caucasians. This pilot also generated recommendations on subject recruitment, measures, and data analysis for future studies.

Introduction

Research in Hawai'i has found that Native Hawaiians, the indigenous people of the islands, have the highest incidence and mortality rates for lung cancer of the state's five major ethnic groups, even after controlling for pack-years of smoking.[1-2] Looking across the United States, Native Hawaiians have high lung cancer incidence and mortality relative to other US ethnic groups.[3] Research among the Polynesians in New Zealand (Maori) suggested that Polynesians have more easily damaged ciliary structure and lower ciliary motility than Europeans, which may help to explain these lung cancer disparities.[4-5]

Researchers studying bronchiectasis (the end result of pulmonary damage that may result from any type of pulmonary disease) among Maori prior to 1982 found sub-optimal mucociliary function and suggested this as a possible reason for high lung cancer incidence and mortality rates among Polynesians.[6-7] Specifically, Waite et al studied 20 Maori with bronchiectasis and found that cilia movement was slow, absent, or even retrograde. Microscopic examination of the cilia found loss or partial loss of dynein arms (most common), misaligned central tubules, occasional extra tubules or groups of tubules, and compound cilia.[6] Hinds et al.observed that Polynesian patients with bronchiectasis required more treatment than did Caucasian patients because their disease was more severe.[7]

With optimal mucociliary function, noxious particles are cleared from the respiratory tract, reducing risk of contamination and infection of the bronchial tubes and lungs. Impairment of the nasal and/or tracheo-bronchial transport system, resulting from intrinsic abnormalities in the mucociliary function, reduces the system's ability to sweep the respiratory tract[8] and puts a person at higher risk for chronic pulmonary disease, [9-13] which elevates risk for lung cancer.[14-15] In explanation, Sethi proposed the "vicious circle hypothesis".[14] This suggests that once bacterial pathogens gain a foothold in the lower respiratory track due to impaired mucociliary clearance, they persist in further impairing mucociliary clearance, which can increase inflammatory response, increase elastolytic activity, alter elastase-anti-elastase balance, and contribute to the progression of chronic obstructive pulmonary disease.

No known studies have been done on the mucociliary function of Native Hawaiians. This study initiated examination of mucociliary function of Native Hawaiians, focusing first on testing procedures for recruitment, measurement, and analysis. The team studied the difference in mucociliary function among Hawaiians and Caucasians by comparing the transit velocity for a technetium 99m tracer to travel in the nose. This paper reports on the procedures and findings from these pilot efforts to compare mucociliary function in 17 Native Hawaiians and Caucasians in Hawai'i. A major goal of this study was to test research procedures to inform future research.

Methods

Sampling and Recruitment

The Queen's Medical Center's IRB and the Native Hawaiian Health Care System's IRB approved this study. Because the purpose was to test and refine study procedures, the team aimed to enroll only 20 participants, following strict inclusion and exclusion criteria (Table 1). First, the study was limited to men between the ages of 20 and 55 who were life-long residents of Hawai'i. Native Hawaiian participants were "full-blood Hawaiian," i.e., their lineage included no intermarriage with other ethnic groups. Caucasians were of European ancestry, i.e., their lineage included no intermarriage with individuals of Asian, Pacific Islander, Native American, or African descent. Ethnicity was determined through self-report using a method employed by the Hawai'i Department of Health in its surveillance studies.[16]

Table 1.— Inclusion and Exclusion Criteria Among Nasal Ciliary Function Participants	
Inclusion Criteria	**Exclusion Criteria**
• Full Hawaiian or Caucasian • Age 20 to 55 • Lifelong resident of Hawai'i	• Smoked tobacco or other substances within the past 10 years • Lived or worked in a smoky or polluted environment within the past 10 years • History of lung disease (asthma, COPD, bronchiectasis, allergic rhinitis) and/or recurrent respiratory infections and/or recent upper respiratory infection • Taking nasal or oral steroids or asthma medications such as theophylline. Taking beta 2-antagonists, corticosteroids, or mucolytics. • Taking nasal or oral steroids or asthma medications such as theophylline. Taking beta 2-antagonists, corticosteroids, or mucolytics. • Chronic drinking (consuming more than 2 alcoholic beverages each day) and binge drinking (consuming more than 5 alcoholic beverages in any one sitting) • BMI < 19

Table 2.— Nasal Ciliary Function Participants				
ID#	**Ethnicity**	**Age**	**Velocity (mm/min)**	**Exam Room**
1*	Hawaiian	32	NA	1
2	Caucasian	35	15.57	1
3	Hawaiian	34	9.17	1
4	Caucasian	54	6.70	1
5	Hawaiian	27	1.90	1
6	Caucasian	34	7.80	1
7	Caucasian	45	11.64	1
8	Caucasian	50	5.53	1
9	Hawaiian	45	12.02	1
10	Hawaiian	43	2.27	1
11	Hawaiian	50	4.37	1
12	Hawaiian	48	1.82	5
13	Hawaiian	29	4.62	5
14	Caucasian	50	6.32	1
15	Hawaiian	27	3.33	5
16	Caucasian	35	6.53	5
17	Caucasian	32	5.60	5
18 **	Hawaiian	45	NA	5
19	Hawaiian	23	6.26	5

*left out of analysis due to nasal polyp, **left out due to ciliary immotility

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Excluded were men who smoked tobacco or other substances within the past 10 years; lived or worked in a smoky or polluted environment within the past 10 years; had a history of lung disease and/or recurrent respiratory infections; took beta antagonists, corticosteroids (nasal/oral), mucolytics, or theophylline; and/or were chronic or binge drinkers. All of these factors have been shown to affect mucociliary clearance. Regarding air pollution, Hawai'i has relatively clean air due to year-round trade winds; however, individuals living downwind of the Big Island's active volcano were excluded. Height and weight were collected, and those with a body mass index less than 19 were excluded since this low BMI affects mucociliary clearance.[13-15,17-20]

To recruit participants, the team gave informational talks at several community events. Consenting participants were asked to identify other potential participants. For all participants, the research objectives, procedures, risks, and benefits were explained verbally and in writing. Participants who agreed to participate in the study completed written consent forms prior to scheduling an appointment for the procedure. Efforts were made to recruit pairs of participants (one Hawaiian and one Caucasian) who were relatively close in age (within 5 years) to reduce age variance in the final sample.

In all, 19 men—11 Hawaiian and 8 Caucasian—were enrolled. Two Hawaiian participants were later excluded because one was subsequently diagnosed with a nasal polyp and the other was determined to have ciliary immotility, diagnosed by absent tracer movement during his scan. The final sample included 17 males. The mean age of the 9 Hawaiians [39.67, standard deviation (sd = 10.54)] was similar to that of the 8 Caucasians (38.57, sd = 10.11).

Data on age, ethnicity, height, weight, residence, smoking behavior, alcohol use, history of respiratory disease, and use of beta antagonists, corticosteroids (nasal/oral), mucolytics, or theophylline were reported by each consenting participant directly to the Principal Investigator (KSG).

Clinical Procedure

The mucociliary function test required approximately 2 hours at the medical center, including registration, pre-procedure preparation, and the 40-minute procedure. Mucociliary function was measured using a Siemens gamma camera and a radionuclide technique developed by a nuclear medicine physician based on a review of the literature.[6-7,21-23]

Because the participant had to remain completely still with his head upright and 90 degrees from the floor during the procedure, transpore adhesive tape was placed around the volunteer's head and the gamma camera. A 0.02 mL solution of macro-aggregated albumin (MAA) labeled with technetium 99m was prepared. Within 10 minutes prior to the scan, the dose was assayed to assure concentration of total radioactivity pre-injection and to prevent clumping of the MAA.

One drop was placed by the nuclear medicine physician on the posterior floor of the nose (3 to 3.5 inches into the nose) using thin flexible tubing. After injection, the syringe was re-assayed for residual activity. In 2 cases, the MAA clumped and all remained in the syringe (thus only saline was placed into the nasal passage); another drop was prepared and inserted immediately. After 20 minutes, the tracer was removed by having the subject blow his nose into a tissue. This tissue was assayed for residual activity. The two residual assay measurements were subtracted from the pre-injection dose calculation to determine the total dose given to the participant. The maximum effective dose of radiation in the tracer was 0.05mSv. The Health Physics Society recommends that there is no conclusive evidence of risk for individual doses below 1.0mSv in one year.[24]

Scanning was done with a gamma camera and began immediately after placement of the solution. Serial images were taken with a gamma camera to examine the rate of ciliary mucus clearance, unaided by cough, from the nose area. The gamma camera took a picture every 30 seconds over a 20-minute interval, and data were sent to a dedicated computer. Prior to each study, the camera was calibrated. Tests were conducted in an air-conditioned room to prevent humidity from playing a role in the tracer's movement.

Participants were tested as recruited without regard to ethnicity to avoid bias and apply equally any effect of "drift" or changes in the procedure. The same nuclear medicine physician and technician were present for all procedures, as was the Principal Investigator. It was the team's intent to perform all scans in the same room with the same camera. However, after the first 10 procedures, the camera in exam room 1 (R1) malfunctioned, and the study was moved to exam room 5 (R5). For the two participants excluded from the final analysis, one had his scan in R1 and the other in R5.

Data processing and analysis

The raw data for a patient consist of time-lapse images, with 40 frames taken over 20 minutes. For each patient, up to 5 regions of interest (ROI) were overlaid on a summary composite image from all time lapse-images. Then, the radioactive counts and time within each ROI was generated by the nuclear medicine radioactivity system.

To compute transit velocity using the Philips medical system's Odyssey software, an ROI was selected that showed a clear uprising with an asymptote or a peak. The velocity was computed by dividing the distance (millimeters) traveled by the tracer in the ROI over the uprising time (minutes). The distance was measured by the path of the flow in the specified ROI, which could be horizontal or diagonal. This measure of velocity is a proxy for the mucociliary transit rate. Data were entered and analyzed using SPSS version 14.0. Velocities were transformed to log scale to improve the symmetricity of the estimate rates. An independent two sample t-test was used to statistically compare the ethnic groups as a whole and then by exam room.

Table 3.— Mucociliary Velocity (mm/min) Among Nasal Ciliary Function Hawaiians (n=9) and Caucasians (n=8) with p-values from t-test

Caucasians			Hawaiians			p-value
	Mean	Standard Deviation		Mean	Standard Deviation	
Room 1 (n=6)	9.37	4.73	Room 1 (n=5)	6.07	4.00	0.258
Room 5 (n=2)	6.13	0.48	Room 5 (n=4)	3.26	1.40	0.058
Overall	8.21	3.88	Overall	5.13	3.53	0.120

Results

The mean velocity among all study participants was 6.56 mm/min (sd = 3.78). As shown in Table 3, velocity was slower for Hawaiians (5.13 mm/min, sd = 3.53) compared to Caucasians (8.15 mm/min, sd = 3.88), and the difference approached statistical significance (p = 8.21).

Looking by exam room, velocities were faster for Caucasians than Hawaiians in both rooms, by about 3 mm/min although this was not statistically significant. However, the mean velocities for both Hawaiians and Caucasians were much greater in R1 than in R5. Also, much greater standard deviations were seen in R1 for both Caucasians (sd = 4.73) and Hawaiians (sd = 4.00), than in R5 (0.48 and 1.40, respectively). Thus, the team concluded that the camera in R5 was of higher quality. Ethnic difference in mean velocity approached significance among R5 participants (p = 0.058).

Discussion

In this small pilot study, the team found nasal ciliary velocity in Caucasian participants to be comparable to Caucasian participants in other studies.[19-20] The team also suggests that nasal ciliary velocity may be slower among Hawaiians than Caucasians, although this study was challenged by differences in camera quality in the two exam rooms, along with small sample size. Still, the study allowed the team to test recruitment strategies, measures, and data analysis, which will prove useful to future comparative studies of nasal ciliary motility.

This study's sample was not representative of Native Hawaiians and Caucasians in Hawai'i because of the strict inclusion/exclusion criteria. Rather, the study's usefulness is in its demonstration of a non-invasive method for measuring nasal mucociliary function and computing velocity from graphic measures recorded in the nuclear medicine department. To the research team's knowledge, this is the first report of this method for calculating this type of transit velocity.

In future studies, the team would maintain the strict inclusion and exclusion criteria. The same recruitment strategies would be used, focusing on Mormon churches, sports clubs, and health centers. But more time would be allotted for recruiting, perhaps about 10 to 15 hours for each participant. The experience of participants in the pilot would be shared with potential subjects. Specifically, they reported minimal discomfort associated with the procedure. The most common complaints were the length of time required to sit still and a sense of fullness or tickling caused during placement of the drop in the nose, which frequently caused eye watering. During this wait time following placement of the drop, the team would consider having a health education video running to help the participant to feel more comfortable. The quality of the camera must be very high to reduce variance in measures. Members of the research team should be held constant over the course of the study, and the team should pretest the procedure to assure a high level of skill and consistency. Data processing and analysis strategies used in this pilot should be followed.

Slowed ciliary motility can have consequences for health. Sethi cited evidence from cohort studies linking lower-respiratory tract infections in childhood to impaired lung growth, which is reflected in a lower forced expiratory volume (FEV) in adulthood.[13] In another study, Kishi found that patients with a FEV < 40% were more likely to get lung cancer than patients with greater FEV.[14] Turner et al found that people with ciliary immotility (the cilia do not move at all) frequently coughed when not sick, coughed up mucus when not sick, and had recurrent respiratory problems. These authors suggest that the triad of bronchitis, sinusitis, and otitis media should alert the physician to the possibility of immotile cilia syndrome as an underlying problem. Other investigators suggest that genetic factors may contribute to the incidence of immotile cilia syndrome.[21-22]

Thus, continued studies of mucociliary function may provide important information for physicians who treat patients prone to respiratory conditions and may increase our understanding of higher lung cancer incidence and mortality seen among Native Hawaiians. Findings from this pilot study inform future research in this area.

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Health Care Needs of the Homeless of O'ahu

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Abstract

An interview study of 162 homeless individuals on O'ahu demonstrated that the homeless studied were 3 times more likely than the general population of O'ahu to rate their health as fair to poor, despite the fact that 77% of interviewees had medical insurance and 66% a regular health care provider. Better self ratings of health were only associated with younger age and self report of having dental insurance when demographic variables were controlled for. Qualitatively, the homeless population interviewed described 'good health' as avoiding illness and being able to make healthy lifestyle choices, finding emotional balance and caring for others. Commonly reported barriers to accessing care included financial factors such as being unable to purchase medications; environmental challenges such as clean drinking water and a safe place to stay; and general discomfort with the health care system. Clinical implications of this study indicate the need for providers caring for the homeless be alert to challenges particular to the homeless, such as barriers to following medical advice (high fiber/low salt diet, exercise, refrigerating medications, etc.). The surprising relationship between knowledge of having dental insurance and better self ratings of health deserves additional research, as does the lack of association between health ratings and having health insurance and a regular provider.

Introduction

Homelessness, defined as "having a lack of fixed, regular, and adequate nighttime residence"[1] is rising exponentially in the United States.[2] Recent statistics indicate that more than 1.35 million individuals live in shelters, vehicles, or parks.[3] On O'ahu, Hawai'i, where the average home price doubled between 1993 and 2003,[4] there was an estimated 90% increase in visible homeless during this time.[5,6] A recently published report found that the homeless population on O'ahu was 3,498, with the total homeless population in Hawai'i being 5,943, or 0.47% of the state population, ranking Hawai'i fourth highest nationwide.[7]

Homeless individuals suffer more health challenges than the general population and have disproportionately high rates of premature death.[8] Rates of hypertension, cardiac failure, chronic obstructive pulmonary disease, infections, diabetes, arthritis, and dental problems are higher in homeless individuals than in the general population.[9-13] Medical difficulties in the homeless are compounded by higher rates of mental health disorders.[14] The mortality rate of homeless individuals is 2 to 31 times greater than that of their housed counterparts,[15,16] and the mortality rate in homeless youth is 12 to 40 times greater than that of the general population.[17,18]

Reasons for the health disparities seen in this population include barriers to receiving care, barriers to following self care instructions, and environmental factors including harsh weather conditions, risk of trauma, and lack of storage for medications. Studies of homeless individuals' perceptions have revealed barriers to health care that include complicated and extensive registration procedures, long waits, inconvenient clinic hours, fear of having possessions stolen, and lack of monetary funds, transportation, and telephones.[19] Homeless patients also report receiving discontinuous care due to their transient lifestyle, lack of service provided in their area of living, and distrust of health care providers.[20] In a housed population, having health insurance is strongly associated with better health and improved access to preventive care.[21,22] Only 45% of homeless persons in the continental United States report having medical insurance.[23] The current investigation examines the attitudes of homeless individuals of O'ahu toward health and health care, self ratings of health and level of interest in a subset of potential interventions to improve access to health care.

Methods

A convenience sample of 205 adult individuals at homeless shelters, food distribution events, and other common gathering places for homeless individuals on O'ahu were interviewed using a survey tool developed by the research team. The interviewers collected information on general participant demographics (age, gender, ethnicity, homeless status, family status); what being in good health meant to the participant; his/her self rating of health on a 5-point scale; whether he/she had a regular medical provider or clinic; medical insurance status; if he/she has wanted to see the medical provider but could not in the last year, and, if so, why; if he/she has a regular dental provider or clinic, when last seen, and if haven't been able to be seen, why; rating of helpfulness of five factors related to health care access factors (transportation, extended hours,

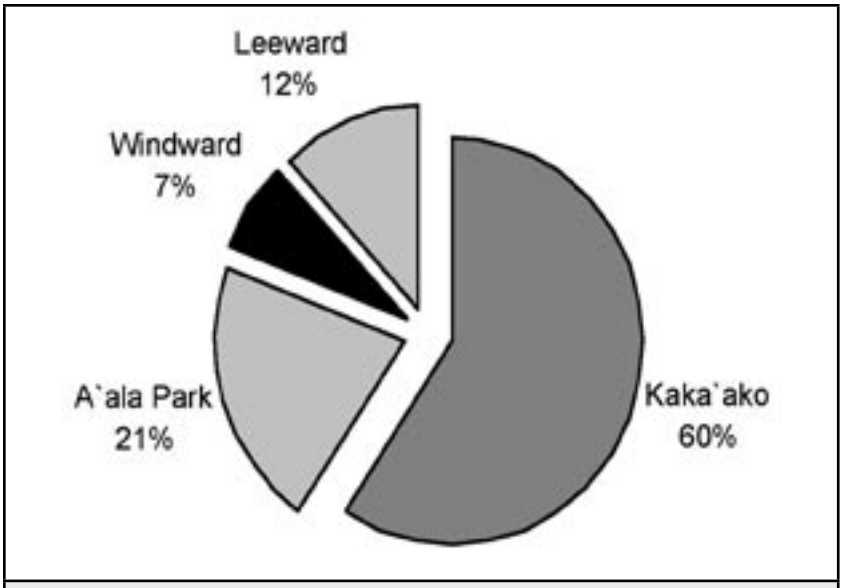

Figure 1.— Distribution of Study Participants

Table 1.— Gender, Age, Ethnicity and Family Status of the Study Participants

Characteristic		Percent of Study Population	Percent in General Population of O'ahu
Gender			
	Women	47%	51%
	Men	53%	49%
Age range			
	18-27	21.5%	
	28-37	21.5%	
	38-47	29%	
	46-57	18%	
	58-65	10%	
Ethnicity*			
	Micronesian	28%	
	Hawaiian	26%	8.3%
	Samoan	6%	
	Caucasian	16%	20.6%
	Asian	7%	47.7%
	Hispanic	5%	7.1%
	African American	4%	2.6%
	Filipino	4%	14%
	Mixed ethnicity	4%	20%
Marital/family status			
	Single no children	49%	
	Single with children	12%	
	Married no children	12%	
	Married with children	27%	

*Because of mixture of ethnicities, the total for census data does not equal 100%.

co-location of social services and health care, mobile clinic, and co-location of all medical services); what else could be done to obtain health care; and ideas to improve dental health.

After IRB approval was obtained from the University of Hawai'i Committee on Human Subjects and the study was pilot tested, the survey was administered in areas where services were being provided or homeless individuals were known to congregate (see Figure 1 for distribution). Data was excluded from analysis if the individual reported having a regular nighttime residence, was under 18 or over 65, or did not answer a majority (at least half) of the questions. The gender, age, ethnicity, and family status of the study participants are described in Table 1.

The quantitative data was analyzed using SAS version 9.1 with Enterprise Guide 3.0. The analyses included descriptive statistics such as range, average, counts, and frequency. Associations between nominal variables were analyzed with Chi square or with Fisher's exact test when sample size was less than 5. Regression analyses were used for examining associations between continuous outcomes such as rating of health. Models were adjusted for predictors of interest and possible confounders.

Qualitative responses were transcribed for each of the 5 open ended survey questions. The data were examined by 3 raters who independently developed thematic categories. After negotiating the most appropriate categories, the researchers used constant comparative analysis to group answers by theme.[24] Themes were then ranked by those most often reported by research participants for each of the qualitative questions. Because qualitative data was entered anonymously, no associations could be examined between qualitative and quantitative answers.

Results

Of the homeless individuals interviewed, 77% reported having health insurance, 39% reported having dental insurance, and 66% of the homeless individuals reported having a regular clinic or provider. Of those with health insurance, more than 75% had insurance subsidized by the government.

Analysis of the qualitative answers to interview questions demonstrated that participants had many explanations for what they consider 'being in good health', the most common being "pain free," i.e. able to get around and avoid going to the doctor. Also of note were responses corresponding to making positive lifestyle choices, being in good mental health, being happy, being safe, helping others, and contributing to society. Examples of answers to the question of what good health meant to the participant related to physical health and included "being healthy [so I] can ride bike and not get hit," "no sickness, illness or disability," and "not waking up with pain, ability to physically func-

tion." About half as common were responses describing healthy behaviors, "eating, sleeping right and daily exercise," "eating good, don't drink, don't use drugs, get good diet and sleep and exercise," as well as emotional factors such as, "balance: physical, mental, emotional," "happiness" and "enjoy your life" and environmental factors such as "having a house" and "not living here [on the beach]." The least frequent answer (one provided about a quarter as often as physical health) involved productive functioning, such as "being able to help the church" and "being well to care for my family". The responses varied and the general thematic categories are outlined in Table 2.

Each study participant was also asked how they rated their own health on a scale of 1 (excellent) to 5 (poor). Distribution approached normal distribution as outlined in Figure 2, with 42% of respondents reporting fair or poor health. Participants with health insurance were more likely to report having a regular provider ($p < .001$) and being able to see a provider when desired ($p < .001$), however they did not demonstrate improved self ratings of health compared to those without health insurance ($p = .26$). The only factors associated with improved self rating of health were younger age and having dental insurance. Participants who reported having dental insurance had a self rating of health averaging .56 units lower (closer to excellent) than those without dental insurance on the 5-point scale (Parameter estimate -.56, standard error .25, $p = .03$) when controlling for age, gender, health insurance status, having a provider, family status, and ethnicity.

Patients who reported being unable to see a provider were 4 times as likely to report financial barriers as the barrier. These included comments such as: "can't afford it, don't have insurance," "medicine too expensive," "lost Medicaid card," and "having to go to a million places to get things signed." Less common responses were anticipatory factors, "doctors don't understand me," "doctor didn't answer questions," and "anxiety," as well as transportation "too far away" and "I'm healthy, no need." Finally, language barriers and being too sick to get to the provider were mentioned occasionally. When asked which of 5 interventions would improve access to health care (transportation, extended hours, co-location of social services and health care, mobile clinic, and co-location of all medical services), the study participants did not identify a significant difference between the 5 interventions.

Participants provided a number of ideas for improving health care access. These included additional financial support factors, particularly providing dental insurance and coverage for medications. In addition, participants wanted "more clinics and more hospitals," "more offices for doctors," "help with filling out forms," and "show us where we can get insurance card." Other factors important to participants included environmental factors such as nutrition and drinking water: "fresh drinking water 24/7" and "make fresh fruits and vegetables, fish available at food distribution." Finally, housing, sanitation, and providing transportation were mentioned.

The primary reasons given for not being able to get dental care were financial, not having insurance, and not being able to pay for services: "no insurance, can't afford" and "insurance does not cover regular dental services, only emergencies," "dentists don't accept Medicaid/Medicare," "wait in line, no insurance," and they "don't take appointments." Financial reasons were five times as common as most other reasons given, including anticipatory feelings such as being "afraid" because it is "painful", "they only pull teeth," and "dentists don't understand me…I don't like dentists." Less common barriers were that the participants did not know where to go, could not get transportation, or didn't need care.

Table 2.— Meaning of Good Health
Physical health: Being pain free, having good hygiene, longevity, being able to ambulate, avoiding illness
Lifestyle choices: avoiding drugs, eating healthy food, not smoking, exercise
Emotional health: free of mental illness, free of worry and anxiety, feeling joy
Environmental factors: housing, safety, food, sleep,
Productive contribution: have a job, care for others

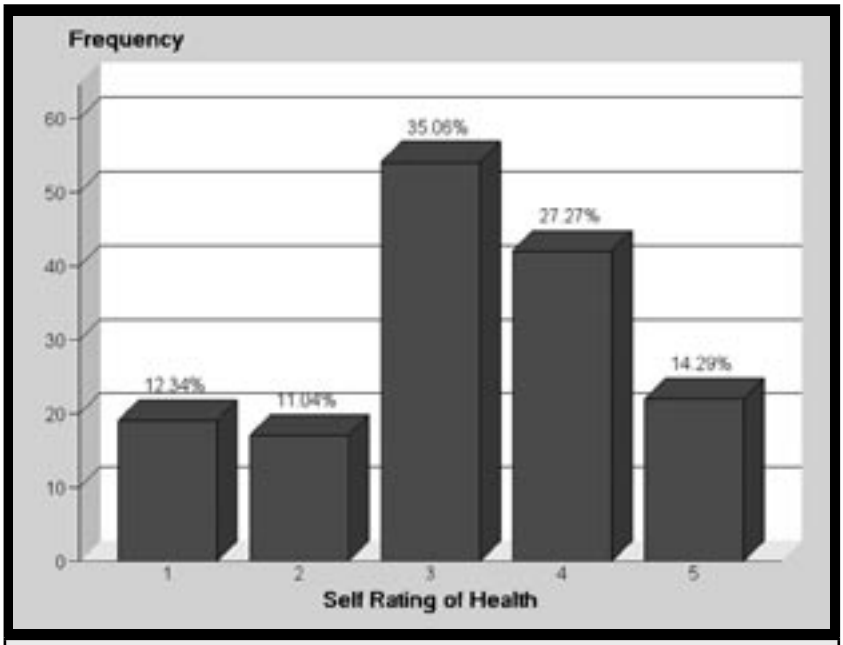

Figure 2.— Frequency of Results of Self Ratings of Health

Self rating of health (1=excellent; 2=very good; 3=good; 4=fair; 5=poor)

Discussion

The meaning of good health in the homeless population studied centers on the avoidance of illness, but reaches beyond that including being able to choose a "healthy lifestyle," "feeling emotionally good," "being in a safe environment," and "being able to contribute to society." Unfortunately, almost half of homeless individuals

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(42%) rated their health as fair to poor compared to 13% of the general population of Oahu.[25] In the population studied, the most commonly reported barrier to receiving health care was financial, despite the fact that 77% of the participants reporting having health insurance. If the sample obtained for this study is representative of the homeless population of O'ahu, there is a significant discordance between the high percentage of health insurance and the low perception of health that deserves additional research. This may indicate that insurance itself does not facilitate medical care as much in the homeless population as in the general population, and that perhaps the funds spent on insurance for this segment of the population could be more effective if used to provide direct care to homeless individuals thereby eliminating the barriers of traveling to care and paying for medications (i.e. mobile free clinics, free medications).

As expected, increasing age was related to poorer self rating of health. Ethnicity, marital status, and gender were not significantly associated. The researchers expected that having health insurance would be positively associated with an improved self rating of health. However this was only true for having dental insurance, not health insurance. Those reporting that they had dental insurance assessed their health status as 10% better than those without dental insurance. It is unclear if this is because having better dentition improves self esteem, increases chance of employment, decreases pain with eating, increases nutrition level, or if those who have dental insurance have a better understanding of the system. It is possible that many participants did not know that they had dental insurance and the more informed participants were those with better perceived health. Barriers to receiving dental care included lack of dental insurance, and too few dentists who take the dental insurance provided, with teeth pulling often being the only covered service. Getting dental insurance and knowing where to go for services (that accept the insurance) were the most remarked upon factors to improve access to dental care.

Limitations of the study include convenience sampling resulting in possible over-sampling of homeless individuals who were already receiving some type of assistance. This would indicate that the health of the homeless population is actually worse than found in this study. Study metrics were limited by the lack of similar studies in the past. In addition, the ethnic make up of participants included a much higher percentage of Micronesians than expected and than in the general population. This is due in part to a higher sampling of participants from the Kaka'ako area where there may be a higher percentage of Micronesian immigrants than in other parts of the island. This finding may also indicate a significant increase in homelessness of Micronesians or an in-migration of Micronesians who have not found housing.

Future research should examine why having dental insurance is related to better self rating of health and particularly the impact oral health has on medical outcomes. Stancil et al found that having dental insurance is associated with better oral health status,[26] and oral health of pregnant women has been shown to impact the health of unborn fetuses.[27] Therefore, future research should more closely assess the significance of dental care and if providing dental care improves health. In addition, assessment of the impact of interventions introduced in Hawai'i such as volunteer health clinics located at homeless shelters, where work training and social services are co-located. Survey results could be paired with medical assessments and tracked in each of the populations where interventions are implemented to study the impact on perceived and measured health over time.

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Interviewer: ____ Date: _____ Location: _____

Homeless Health Needs Assessment

Hi, my name is _____. I'm a research assistant/graduate student/medical student from UH. Can I ask you questions about healthcare services in Hawaii?

We would like to hear your ideas and all answers will be confidential.
Is that okay?

Would you like more information on the project? (offer the half page form)

☐ Male ☐ Female Ethnicity: Age:	Do you currently have a house or apartment where you live? ☐ Yes ☐ No	☐ Single Adult ☐ S.A. w/kids ☐ Adult Couple ☐ Family

What does being in good health mean to you?

_____

_____

Would you say that in general your health is?
Excellent Very Good Good Fair Poor

Do you have a doctor or clinic that you go to regularly? Yes No

In the last year, have you ever wanted to see a doctor but couldn't/didn't? Yes No
If yes, what stopped you from going? (check all that apply)

Do you have health insurance? Yes No
If yes, which plan? HMSA MEDICARE QUEST
KAISER MEDICAID Other

How helpful would these things be for you to obtain health care?
Free transportation not helpful somewhat helpful very helpful
Weekend/evening clinic hours not helpful somewhat helpful very helpful
Health care and social services together at the same place
not helpful somewhat helpful very helpful
A mobile clinic come to your area not helpful somewhat helpful very helpful
Having all medical services at one site not helpful somewhat helpful very helpful

7. What else could be done to help you get healthcare?

_____

Do you have a dentist that you see regularly? ☐ Yes ☐ No

If you don't see a dentist, what are the reasons?

_____

_____

Do you have dental insurance? ☐ Yes ☐ No
If so, what type?

Do you have ideas for how we could help you improve your dental health?

_____

_____

Thank you for your time. We hope to use our findings to improve healthcare services for you.

Native and Pacific Health Disparities Research

Joseph Keaweʻaimoku Kaholokula PhD, Co-Director;[1] Erin Saito PhD;[1] Cecilia Shikuma MD;[2] Mele Look MBA;[1] Kim Spencer-Tolentino MPH;[1] and Marjorie K. Mau MD, MS, Co-Director[1]

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Health disparities are a national health priority and occur "…when a particular population has significantly higher rates of disease incidence, prevalence, morbidity, or mortality than the general population" (U.S. Public Law 106-525).[1] Health disparate populations are often defined by race/ethnicity, socio-economic status (SES), generational status (e.g., older adults), and geographical location (e.g., rural areas). Most often there is an overlap between different populations categorized as health disparate, for example the over-representation of a particular racial/ethnic group in a lower SES.

Although racial/ethnic disparities in health status have been acknowledged for more than a century, it has only recently become a national priority.[2] Toward this end, the Minority Health and Health Disparities Research and Education Act (USPL 106-525) authorized the establishment of the National Center of Minority Health and Health Disparities (NCMHD) under the National Institutes of Health (NIH).

The mission of NCMHD is "to promote minority health and to lead, coordinate, support, and assess the NIH effort to reduce and ultimately eliminate health disparities." To meet this mission, NCMHD seeks to "conduct and support basic, clinical, social, and behavioral research, promote research infrastructure and training, foster emerging programs, disseminate information, and reach out to minority and other health disparity communities."

In 2002, the Department of Native Hawaiian Health (DNHH) was funded by NCMHD to create a Center of Excellence in Partnerships, Outreach, Research and Training (Center EXPORT) to address health disparities in Native Hawaiians and other Pacific Peoples. In 2007, the EXPORT Center was replaced and expanded into the Center for Native and Pacific Health Disparities Research (the "Center") which focuses on cardiometabolic disparities in Native Hawaiians, Alaska Natives, and other Pacific Island Peoples (including Samoans, Chuukese, and Filipinos). The Center is in the DNHH, John A. Burns School of Medicine (JABSOM), University of Hawai'i at Mānoa (UHM). Its partnerships include Alaska Natives in Anchorage and Native Hawaiians and other Pacific Island Peoples in California.

Native Hawaiians, Alaska Natives, and other Pacific Island Peoples are disproportionately affected by diabetes, cardiovascular disease (CVD), obesity, and associated risk factors. Following is an overview of the Center and its three main components that are designed to reduce and eliminate cardiometabolic disparities in the targeted populations.

Community Engagement and Partnerships Focusing on Health Disparities

To confront effectively health disparities in native and Pacific peoples (as with other populations), research activities need to involve partnerships that engage the community and academic researchers in ways that promote trust, co-learning, and mutual benefit. A rich and comprehensive approach to addressing health disparities than the conventional approaches for conducting research are made possible from the diverse perspectives and expertise of different researchers, and the wisdom and intimate knowledge community-based organizations have of their own communities.[3] Such community-academic partnerships can facilitate the translation of scientific research from bench-to-bedside-to-communities, and from efficacy (e.g., RCT) to effectiveness (e.g., translational research) studies.[4] Thus, the Center is comprised of dedicated communities and academic partnerships that extend from Hawai'i to California and to Alaska.

Academically, the Center is comprised of biomedical and behavioral researchers from departments in JABSOM, other UHM colleges, the Queen's Medical Center (QMC), and Southcentral Foundation (SCF), an Alaska Native health care organization. The researchers and their affiliations are Marjorie Mau, MD, J. Keaweʻaimoku Kaholokula, PhD (Center's Co-Directors), Erin Saito, PhD, Kaʻimi Sinclair, PhD, and Mele Look, MBA from the Department of Native Hawaiian Health; May Okihiro, MD from the Department of Pediatrics; Cecilia Shikuma, MD and Marianna Gerschenson, PhD from the Department of Medicine; Prathibha V. Nerukar, PhD from the College of Tropical Agriculture and Bioengineering; Jimmy Efird, PhD from Biostatistics and Data Management Facility, JABSOM; Todd Seto, MD from the QMC; and Ileen Sylvester, MBA and Denise Dillard, PhD from the SCF in Anchorage, Alaska.

In the community, the Center has forged partnerships with a diverse group of community organizations serving Native Hawaiians, Alaska Natives, and other Pacific Peoples. Partnering organizations in Hawai'i include Kōkua Kalihi Valley Family Comprehensive Services (KKV); Hui Mālama Ola Nā ʻŌiwi (the Native Hawaiian Healthcare System on Hawai'i Island); and the Hawai'i Primary Care Association. In Southern California, the community partner is the Pacific Islander Partnership, a grassroots non-profit organization that provides social and health outreach to Native Hawaiians and other Pacific Islanders in Southern California. In Alaska, the community partnership is located at Southcentral Foundation, an Alaska Native owned and managed healthcare corporation.

The Center embraces research referred to as Community-Based Participatory Research (CBPR) to guide the community-academic partnerships. CBPR is an approach to scientific inquiry that "equitably involves all partners [community and academic] in the research process and recognizes the unique strengths that each brings".[5] In all Center-supported research projects, researchers will seek to involve actively community partners in different aspects of research, from identifying the research topics, implementing the study protocol, disseminating research information, and translating research results into practical applications.

The Community Engagement Core, directed by Mele Look, MBA, will enable and nurture our multiple community partnerships by listening to their needs, honoring their community knowledge and wisdom, and involving organizations where appropriate. Some of the activities include health information dissemination projects for diabetes and CVD programs in Native Hawaiians and other Pacific Islanders. In addition, capacity building for community health workers and outreach workers in diabetes and CVD are included.

Scientific Innovation to Eliminate Health Disparities

Health disparities research goes beyond the examination of risk factors, incidence, and prevalence of disease and their consequences. It is about developing effective and innovative interventions to prevent the onset as well as treat and manage diseases. Considered are medical and behavioral interventions, public health initiatives, and/or socio-political advocacy, which are both empirically supported and culturally meaningful. To address these issues, the Center is comprised of interdisciplinary researchers and scientists who conduct basic, clinical, and community-engaged research in partnership with grassroots organizations, native health systems, and community health centers.

Current innovative studies underway are:

1. The Hula Empowering Lifestyle Adaptations (HELA) Study co-led by Todd Seto, MD from QMC and Mele Look, MBA and J. Keaweʻaimoku Kaholokula, PhD from the DNHH. The HELA Study seeks to develop and test a cardiac rehabilitation program that involves hula, the traditional Native Hawaiian dance form, as a means of physical activity. This study is being conducted by the investigators in close consultation with an advisory board of kumu hula (hula experts and teachers) and cardiologists.

2. A study on the use of bitter melon juice on insulin metabolism in an animal model is being conducted by Pratibha V. Nerurkar, PhD from the College of Tropical Agriculture and Bioengineering. The hope is that bitter melon, a local food staple, may prove promising as a means of improving the metabolic syndrome in humans.

3. The Partnerships to Improve Lifestyle Interventions (PILI) ʻOhana Project, a community-academic partnership to address obesity disparities in Hawaiʻi. The researchers are from the DNHH (J.K. Kaholokula, PhD and M. Mau, MD) and five community organizations: 1) KKV (Sheryl Yoshimura, BS, RD), 2) Hawaiʻi Maoli of the Association of Hawaiian Civic Clubs (Henry Gomes; Charlie Rose), 3) Kula no Nā Poʻe Hawaiʻi (Puni Kekauoha), 4) Ke Ola Mamo, Native Hawaiian Healthcare System on O'ahu (Donna Palakiko, RN, MS), and 5) Kalihi Pālama Community Health Center (KPCHC; Anne Leake, PhD). The PILI ʻOhana partnership seeks to test the effectiveness of a community based and community led weight loss maintenance intervention for Native Hawaiians and other Pacific Islanders using CBPR.

4. The Mālama Puʻuwai Study led by researchers from the DNNH (M. Mau, MD) and QMC (T. Seto, MD) is a randomized controlled trial (RCT) to test the efficacy of a culturally-informed heart failure education and support program, called the Mālama Puʻuwai Program (MPP), which is being compared to usual care in Native Hawaiians and other Pacific Islanders with heart failure. The MPP is a nurse-led, home-delivered heart failure intervention that targets symptom and medication managment, sodium intake, and stress management.

5. A study examining obesity through mitochondrial dysfunction is underway by Mariana Gerschenson, PhD in partnership with KPCHC using a community engagement approach that bridges both basic science and clinical perspectives. By examining mitochondrial function in peripheral mononuclear cells (PBMCs), the hope is to find that a mitochondrial phenotype of diabetes and/or obesity may be studied in PBMCs.

6. An epidemiological study examining metabolic syndrome is being conducted by May Okihiro, MD in partnership with the Waiʻanae Coast Comprehensive Health Center and KKV. This study aims to characterize, for the first time, ethnic differences of the metabolic syndrome in three high risk youth populations of Native Hawaiians, Samoans, and Filipinos. Given the rising tide of obesity in youth, this study offers the first step in addressing future efforts to curb the obesity epidemic in these health disparate populations.

Commitment to Research Training and Development of Health Disparities Researchers

Strong scientific expertise as well as cultural competence is required to address the health disparities faced by native and Pacific populations. Effective health disparities research involves communities and academic partners who strive to conduct innovative scientific and culturally relevant research and programs. The Center focuses on research training and development of scientific investigators, primarily on junior investigators who have a commitment to health disparities research.

Cecilia Shikuma, MD, as the Director of the Center's Research Core, provides mentorship to health disparities investigators as well as oversees the pilot funding peer-review program. In addition, a Research Training and Development Unit of the Center, headed by Erin Saito, PhD, was created to support junior scientists interested in cardiometabolic disparities in designing meritorious research studies and acquiring NIH grant writing skills. Research training activities under this Unit will include workshops and seminars on biostatistics, epidemiology, and grant writing. A goal of the Center is to increase the number of investigators who will be capable of developing scientifically rigorous independent research using CBPR approaches in partnership with Native Hawaiian, Alaska Native, and other Pacific Peoples communities.

Center Administrative Core – Health Disparities Research Infrastructure

The Center's Administrative Core provides the foundation that supports the three main components of the Center – Community Engagement, Research Studies, and Research Training and Development. The Administrative Core functions to ensure that fiscal and administrative operations and human subject protection are maintained and monitored. In addition, it oversees the coordination of the annual He Huliau Health Disparities Conference and the

*See **Medical School** p. 222*

The International Association for the Study of Lung Cancer—The Lung Cancer Staging Project: Better data, better decisions, better outcomes

Jonathan Cho MD, Clinical Professor, Hematology-Oncology, Cancer Research Center of Hawai'i

The Sixth Edition of the Union Internationale Contre le Cancer (UICC) *TNM Classification of Malignant Tumours* and the American Joint Committee on Cancer (AJCC) *Cancer Staging Manual* has served as the current tumor, node, metastasis (TNM) staging system since 2002. Recently, the International Association for the Study of Lung Cancer (IASLC), a worldwide organization made up of scientists and clinicians dedicated to the study of lung cancer, has recommended major revisions to the existing lung cancer staging system. Their recommendations have been presented to the UICC and AJCC for incorporation into the Seventh Edition of the *TNM Classification of Malignant Tumours* and the *Cancer Staging Manual* planned for publication in early 2009. The following article is intended to give the reader a historical perspective on the staging of lung cancer and the proposed changes to the staging system for non-small cell lung cancer (NSCLC) as recommended by the International Association for the Study of Lung Cancer-Lung Cancer Staging Project.

Historical Overview

The tumor, node, metastasis (TNM) classification was first developed by Pierre Denoix in a series of papers published between 1943 and 1952.[1] In 1954, the proposed staging system was accepted by the UICC and served as the basis for the First Edition of the *TNM Classification of Malignant Tumours* published in 1968. In 1976, the American Joint Committee on Cancer Task Force on lung cancer accepted a proposal for the TNM staging of lung cancer from Dr. Clifton Mountain. The following year, the UICC incorporated Dr. Mountain's staging system into its Second Edition of the *TNM Classification of Malignant Tumours*. In 1977, the AJCC published its First Edition of the *Cancer Staging Manual*. Since then the UICC and AJCC have worked collaboratively to maintain uniformity between the staging publications.[1]

In 1996, the IASLC held a workshop on lung cancer staging to address concerns from its membership about the applicability and validity of the staging system.[2] Since the existing staging system was based on a database of only 5319 cases, with the majority of cases treated at a single institution; the IASLC realized a need to develop a larger and more international database if as an organization it intended to make revisions to the existing staging system. In 1999, the IASLC established the Lung Cancer Staging Project to develop an international database, analyze the datasets, and form recommendations for the upcoming Seventh Edition of the *TNM Classification of Malignant Tumour*s. Subcommittees were organized to propose revisions for each TNM descriptor. Data was collected worldwide for lung cancer cases treated by all modalities of care, including supportive care, during the period 1990-2000. The major source of initial funding for the project was provided by the Eli Lilly Company. The task of developing and analyzing the database was given to the Cancer Research and Biostatistics (CRAB) organization in Seattle, Washington.[1]

By December 2005, 100,869 cases had been submitted to the central database from 45 sources and 20 countries. The data sources included tumor registries, clinical trials, consortiums, series treated with surgery, and series treated by all modalities of care including supportive care. Screening of the original 100,869 cases resulted in 19,854 cases being excluded because of inadequate staging and survival data, recurrent disease instead of a primary tumor, unknown or inaccurate histology, and cases treated outside the designated time frame. Of the 81,015 remaining analyzable cases, there were 67,725 cases of non-small lung cancer (NSCLC) and 13,290 cases of small cell lung cancer. The groups were analyzed separately. The NSCLC group included 53,640 clinically staged cases and 33,393 pathologically staged cases; with 20,006 cases being both clinically and pathologically staged. Of the analyzable cases, 41% were treated with surgery alone, 23% chemotherapy only, 11% radiotherapy only, and the remainder with combined modality treatment including supportive care. Geographically, 53% of the cases were contributed by European sources, 21% by North America, 14% by Asia, and 7% by Australia. Unlike prior revisions to the staging system, all the data and analyses were internally and externally validated.[3]

T- Descriptors

The T-descriptor subcommittee analyzed 18,198 cases that had complete clinical and pathological staging and adequate T-descriptor information to be assigned a T-stage. Also included in the analysis were 180 cases with M1 tumors on the basis of having additional tumor nodules in a different ipsilateral lobe from the primary tumor. The analysis focused on tumor size and cases where the tumor nodules were located either in the same lobe (T4) or in an ipsilateral different lobe (M1). The tumor size analysis identified 4 tumor sizes; 2, 3, 5, and 7 cm, which had different survival rates. This generated five tumor size subgroups: 1) 2 cm or less, 2) greater than 2 cm but not more than 3 cm, 3) greater than 3 cm but not more than 5 cm, 4) greater than 5 cm but not more than 7 cm, and 5) greater 7 cm. Survival was calculated for all staged cases. For clinically staged cases, the 5-year survival rates for each of the subgroups were 53%, 47%, 43%, 36%, and 26% respectively. For the pathologically staged cases, the 5-year survival rates were 77%, 71%, 58%, 49% and 35%, respectively. Survival rates for tumors greater than 7 cm (cT2N0) were similar to cT3N0 tumors with 5-year survival rates of 26% and 29% respectively. Additionally, pT4 tumors on the basis of additional tumor nodules in the same lobe had a 5-year survival rate comparable to pT3 tumors and a better survival rate than pT4 tumors by other T4 descriptors. Those tumors staged as pM1 on the basis of additional nodule(s) in a different ipsilateral lobe had a similar prognosis to pT4 tumors by other T4 descriptors, and cT4M0 tumors by virtue of pleural involvement (malignant pleural/pericardial effusions, pleural nodules) had a significantly worse prognosis than patients with cT4N0 tumors by other descrip-

tors with a 5-year survival of only 2% versus 14%. The survival for patients with pleural dissemination was similar to patients with M1 disease.[4]

N Descriptors

Of the 67,725 cases of NSCLC meeting the initial screening requirements of cTNM and pTNM, 38,285 cases with information on clinical N stage (cN) and no evidence of metastatic disease and 28,371 cases of surgically treated (pN) provided the dataset on N staging. Further analysis of overall survival of the 38,265 cases of cM0 showed clear difference in outcome between each of the four cN (N0-N3) categories. Likewise, the overall survival of the 28,371 surgically treated patients showed significant differences in outcome for each of the pN categories.

An exploratory analysis was done to determine if, with pN staging, there were any significant differences in overall survival based on the anatomical location of the involved lymph node(s); presence of "skip" metastases (N2 involvement without N1 disease); or by the number of lymph nodes involved at a specific anatomical location. No difference in survival was detected. The committee concluded that the current N0-N3 descriptors needed no revision(s).[5]

M Descriptors

The analysis of this descriptor dataset consisted of clinically staged T4 M0 and M1 cases. Specific categories of clinically staged T4 (nodules in different ipsilateral lobe(s) and pleural dissemination) and M1 cases were compared in terms of overall survival. A documented metastatic site was needed for M1 cases. Four subgroups were compared in terms of overall survival. These subgroups included T4M0 and any N, pleural/pericardial involvement, contralateral lung nodules and distant metastases. The analysis found that cases with pleural involvement had a worse prognosis than other T4M0 cases (median survival, 8 months versus 13 months, 5-year survival of 2% versus 15%) and a similar outcome as contralateral lung nodules. Patients with distant metastases had a significantly worse survival than patients with metastases confined to the lung.[6]

Table 1.— Proposed Definitions for T, N, and M Descriptors

T (Primary Tumor)	
TX	Primary tumor cannot be assessed , or tumor proven by the presence of malignant cells in sputum or bronchial washings but not visualized by imaging or bronchoscopy
T0	No evidence of primary tumor
Tis	Carcinoma in situ
T1	Tumor ≤ 3 cm in greatest dimension, surrounded by lung or visceral pleura, without bronchoscopic evidence of invasion more proximal than the lobar bronchus (i.e., not in the main bronchus)
T1a	Tumor ≤ 2 cm in greatest dimension
T1b	Tumor > 2 cm but ≤ 3 cm in greatest dimension
T2	Tumor > 3 cm but ≤ 7 cm or tumor with any of the following features (T2 tumors with these features are classified T2a if ≤ 5 cm) Involves main bronchus, ≥ 2 cm distal to the carina Invades visceral pleura associated with atelectasis or obstructive pneumonitis that extends to the hilar region but does not involve the entire lung
T2a	Tumor > 3 cm but ≤ 5 cm in greatest dimension
T2b	Tumor > 5 cm but ≤ 7 cm in greatest dimension
T3	Tumor > 7 cm or one that directly invades any of the following: chest wall (including superior sulcus tumors), diaphragm, phrenic nerve, mediastinal pleura, parietal pericardium; or tumor in the main bronchus < 2 cm distal to the carina but without involvement of the carina; or associated atelectasis or obstructive pneumonitis of the entire lung or separate tumor nodule(s) in the same lobe
T4	Tumor of any size that invades any of the following: mediastinum, heart, great vessels, trachea, recurrent laryngeal nerve, esophagus, vertebral body, carina; separate tumor nodule(s) in a different ipsilateral lobe
N (Regional Lymph Nodes)	
NX	Regional lymph nodes cannot be assessed
N0	No regional lymph node metastasis
N1	Metastasis in ipsilateral peribronchial and/or ipsilateral hilar lymph nodes and intrapulmonary nodes, including involvement by direct extension
N2	Metastasis in ipsilateral mediastinal and/or subcarinal lymph node(s)
N3	Metastasis in contralateral mediastinal, contralateral hilar, ipsilateral or contralateral scalene, or supraclavicular lymph node(s)
M (Distant Metastasis)	
MX	Distant metastasis cannot be assessed
M0	No distant metastasis
M1	Distant metastasis
M1a	Separate tumor nodule(s) in a contralateral lobe; tumor with pleural nodules or malignant pleural (or pericardial) effusion
M1b	Distant metastasis

[7]The IASLC Lung Cancer Staging Project: Proposals for the Revision of the TNM Stage Groupings in the Forthcoming (Seventh) Edition of the TNM Classification for Lung Cancer.

The following were the recommendations of the IASLC Lung Cancer Staging Project.[4,5,6]

1. Subclassify T1 as T1a (2 cm or less) or T1b (over 2 cm to 3 cm).
2. Subclassify T2 tumors as T2a (over 3 cm to 5 cm) or T2b (over 5 cm to 7 cm).
3. Reclassify tumors over 7 cm from T2 to T3.
4. Reclassify T4 tumors by virtue of having additional nodules in same lobe as T3.
5. Reclassify M1 by additional nodules in a different ipsilateral lobe as T4.
6. No changes in the N descriptors.
7. Reclassify pleural/pericardial involvement from T4 to M1.

a. Subclassify M1 into M1a-pleural/pericardial involvement or M1b-distant metastases.

The proposed definitions for the TNM descriptors are shown in Table 1. The proposed changes in the descriptors have resulted in changes in the TNM Stage Groupings shown in Table 2. Tumors greater than 5 cm and up to 7 cm in size would be classified as IIA from IB if node negative. Tumors greater than 7 cm would be classified as IIB from IB if node negative and IIIA from IIB if N1 or N2 disease present. If additional nodule(s) are present in the same lobe (T3 instead of T4) down staging occurs from IIIB to IIB if N0 and to IIIA with N1 or N2 involvement. The reclassification of T4 tumors by additional nodules in the same lobe to T3 results in a lower stage being assigned to these TNM subsets. The presence of pleural and /or pericardial involvement results in a M descriptor instead of a T4 descriptor shifting these cases from Stage III to Stage IV.[7]

Table 2.— Proposed TNM Stage Groupings			
Occult Carcinoma	TX	N0	M0
Stage 0	Tis	N0	M0
Stage IA	T1a, b	N0	M0
Stage IB	T2a	N0	M0
Stage IIA	T1a, b	N1	M0
	T2a	N1	M0
	T2b	N0	M0
Stage IIB	T2b	N1	M0
	T3	N0	M0
Stage IIIA	T1, T2	N2	M0
	T3	N1, N2	M0
	T4	N0, N1	M0
Stage IIIB	T4	N2	M0
	Any T	N3	M0
Stage IV	Any T	Any N	M1a, b

[7]The IASLC Lung Cancer Staging Project: Proposals for the Revision of the TNM Stage Groupings in the Forthcoming (Seventh) Edition of the TNM Classification for Lung Cancer.

The accurate staging of lung cancer is crucial to the optimal management of this disease. The proposed revisions to the existing staging system may change the treatment algorithms for this disease. If accepted, it is hoped these revisions will provide more valid information that will enable clinicians to make better treatment decisions. Validation of this new staging system will ultimately depend on the results of prospective clinical trials.

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

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"Medical School" *from p. 219*

External Scientific Advisory Committee (ESAC). The ESAC is comprised of senior scientists with a range of expertise that includes basic science, clinical research, epidemiology, health services research, and traditional healing. These senior investigators are Wilfred Fujimoto, MD; Barbara V. Howard, PhD; Haya R. Rubin, MD, PhD; Ted Mala, MD, MPH and Earl Francis Cook, ScD, MS.

Conclusion

The Center for Native and Pacific Health Disparities Research was developed around three fundamental aspects of health disparities research: The need for strong community and academic partnerships aimed at eliminating health disparities, the need for innovative and scientifically rigorous research agendas and studies that think "outside the box," and the need to develop emerging health disparities researchers that balances scientific rigor with community realities. Building upon this foundation, the Center looks to the future for the people of Hawai'i and our Pacific region of the world that will not only support JABSOM's long term vision of the "best medical school with an Asian Pacific focus" but more importantly to eliminate health disparities in Native and Pacific Peoples through community-academic partnerships.

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Issues in Medical Malpractice XXVI

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Question: A 38-year-old woman consulted board-certified surgeon for a breast lump. She has no family history of breast cancer or other risk factors. Surgeon could not palpate mass upon careful examination, so he reassured the patient and scheduled follow-up appointment in 6 weeks. Patient forgot her appointment, but returned a year later complaining of an enlarging mass, which proved to be malignant and metastatic. Which of the following statements is (are) correct?

A. Surgeon is incompetent in missing the initial breast lump.
B. The standard of care is for surgeon to immediately order a mammogram rather than to schedule a 6-week return appointment.
C. Patient contributed to her injury because she was negligent in missing her follow-up appointment.
D. It is good clinical practice to remind patients of their appointments and to alert them regarding missed appointments.
E. Surgeon's negligence, if any, did not cause patient's death, which was the direct consequence of a highly aggressive cancer.

Answer: C and D are correct.

Incompetence as applied to physician conduct is not a legal term of art. It may be the case that no nodule could be palpated at the first visit, and whether or not the surgeon should have immediately ordered a mammogram would depend on factors such as family history, menstrual history, age, etc. Importantly, we need to know whether the national guidelines recommend routine mammography in low-risk women under the age of 40. This speaks to the important legal issue of standard of care, as negligence is about breaching that standard. In other words, the law is interested in whether the failure to order an immediate mammogram was a breach under the circumstances. Asking the patient to return in 6 weeks for a recheck is certainly good practice, and expert testimony will determine if this was sufficient.

That the patient forgot her appointment may make her contributorily negligent, especially if the surgeon had sent out a reminder or called her after she was a no-show. Contributory negligence constitutes an affirmative defense, i.e., fault on the part of the plaintiff partially or completely frees the defendant from liability. In Hawai'i, we have comparative negligence, which apportions damages according to degree of fault, if the plaintiff is at least 50% negligent.

Finally, in order to succeed in a malpractice lawsuit, plaintiff will have to prove that defendant's failure to make an early diagnosis was the proximate cause of her injury. On the other hand, defendant surgeon will argue that even had the diagnosis been established during the first visit, it would not have made a difference as the disease was a particularly aggressive one. However, most courts will likely find this argument unpersuasive.

Establishing Standard of Care

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 custom of the profession. Both the complaining patient and the defendant doctor are required to produce experts to legally establish what constitutes standard as opposed to substandard care. Experts, by virtue of their skills, knowledge, experience or education – supported by authoritative texts and treatises as necessary – then articulate the standard as it applies to the particular case. In reaching their verdict, the jurors listen to all the evidence and decide which expert, and therefore which of the parties, is the more credible.

In recent years, various medical organizations and governmental agencies have issued practice guidelines that purport to define the best evidence-based medicine. Courts have tended to use these guidelines as reflective of current medical standards because they are usually arrived at by consensus of an objective authoritative body of clinicians, e.g., American College of Surgeons.[1] Some states such as Maine have passed legislation that allows doctors to elect to be covered by practice guidelines, with such compliance constituting evidence against an allegation of negligence.[2] Kentucky's statute presumes that the doctor has met the appropriate standard of care when the treatment has been in compliance with these guidelines.[3] On the other hand, other states such as Maryland, have ruled that practice guidelines are inadmissible as evidence in courts of law.[4]

Medical standards are issues of fact that are ultimately determined by the jury, not the judge. It is highly unusual therefore for a judge in a jury trial to decide what constitutes the proper standard. But in 1974, the Supreme Court of Washington did just that.[5] It held as a matter of law that tonometry, the measurement of intra-ocular pressure to diagnose glaucoma, should be performed on all patients regardless of age. The standard of care at that time was to obtain such measurements only in those past the age of 40 because glaucoma is rare in younger patients. The case involved a 32-year-old woman who became blind because of the failure over a 5-year period of various treating ophthalmologists to measure her intraocular pressures. The Court decided that it would institute its own standard in the name of public safety, since tonometric measurements are easy to perform and may be sight-saving. Some seven years earlier, the same court had held that to permit a surgical operation in an anesthetized patient without a supervising doctor in the operating room amounted to *"negligence as a matter of law."*[6]

There has not been a proliferation of cases where judge-made standards supplanted the traditional medical standard of care established by expert testimony. Allowing judicial weighing of risks versus utility was however at work in several cases of HIV transmission through infected blood products that could have been more thoroughly screened.[7] In one of these cases, the court wondered whether the then prevailing professional standard of care itself constituted negligence![8]

Continues on p. 225

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Date	Specialty	Sponsor	Location	Meeting Topic	Contact
August 2008					
8/13	OBG	Association of Reproductive Health Professionals	John A. Burns School of Medicine	Clinical Update on Intrauterine Contraception	Tel: (808) 692-1060 Web: www.arhp.org/registerIUC
8/14-8/17	D, FM, IM, ON	Kauaʻi Foundation; Hawaiʻi Dermatology Association	Hyatt Regency Resort & Spa, Koloa, Kauai	22nd Annual Hot Spots in Dermatology	Tel: (413) 458-2800 Web: www.hotspotshawaii.blogspot.com
8/15-8/17	Multi	East Hawaiʻi IPA	Mauna Lani Bay Hotel & Bungalows, Kona, Hawaiʻi	Thinking Outside the Box: Expanding Your Horizons Healthcare Symposium	Tel: 650) 724-9549 Web: www.cme.stanfordhospital.com
September 2008					
9/5-9/6	ON	Cancer Research Center of Hawaiʻi	Four Season Resort, Hualalai, Kailua-Kona	11th Annual West Hawaiʻi Cancer Symposium	Tel: (808) 987-3707
9/27	Multi	Honolulu County Medical Society	Dole Cannery Ballrooms, Honolulu	How to Select and Implement an EHR	Tel: (808) 536-6988 Email: info@hcmsonline.org
October 2008					
10/9-10/11	Multi	Hawaiʻi Primary Care Association	Hilton Hawaiian Village, Honolulu	2008 HPCA Annual Conference & Learning Session	Tel: (808) 536-8442 Web: www.hawaiipca.net
10/11-10/15	OPH	American Society of Retina Specialists	Grand Wailea Resort, Wailea, Maui	26th Annual Meeting	Web: www.asrs.org
10/14-10/17	ON	American Association for Cancer Research	JW Marriott Ihilani Resort & Spa at Koʻolina	Chemical and Biological Aspects of Inflammation and Cancer	Tel: (215) 440-9300 Web: www.aacr.org
10/20-10/22	PD	Stanford University School of Medicine	Mauna Lani Resort and Spa	Popular Pediatric Clinical Topics 2008	Web: www.cme.lpch.org
10/22-10/25	Multi	University of California - Davis	Hyatt Regency, Maui	28th Annual Current Concepts in Primary Care Cardiology	Tel: (866) 263-4338 Web: www.ucdmc.ucdavis.edu/cme/
10/25-10/29	PS	American Society of Plastic Surgeons	Hawaiʻi Convention Center, Honolulu	Plastic Surgery 2008	Tel: (847) 228-9900 Web: www.plasticsurgery.org
10/25-10/31	PD	American Academy of Pediatrics, California Chapter & University Children's Medical Group	Grand Hyatt Kauaʻi	Aloha Update: Pediatrics 2008	Tel: (808) 354-3263 Web: www.ucmg.org
10/26-10/30	OBG	University of California - Davis	Ritz Carlton, Kapalua	25th Annual UC Davis Obstetrics and Gynecology Conference	Tel: (866) 263-4338 Web: www.ucdmc.ucdavis.edu/cme/
10/27-10/31	AN	California Society of Anesthesiologists	The Mauna Lani Bay Hotel, Kohala Coast, Hawaiʻi	CSA Hawaiian Seminar	Web: www.csahq.org
10/31-11/2	ORS	Department of Surgery, John A. Burns School of Medicine, University of Hawaiʻi	Sheraton Kaanapali Hotel, Kaanapali, Maui	Wrist Injury Course -- Trauma to Reconstruction	Email: joann.sakuma@wristcourse.org Web: wristcourse.org/maui08home.html
November 2008					
11/3-11/6	Multi	Methodist Healthcare	Fairmont Orchid, Kona	Advances in Medicine	Tel: (901) 516-8933 Web: www.methodistmd.org

11/4-11/7	R	Duke University Medical School, Department of Radiology	Hyatt Regency, Maui	Muskuloskeletal MRI in Maui	Tel: (800) 222-9984 Web: www.dukeradiologycme.org
11/9-11/14	RNR	Department of Radiology, Mayo Clinic	Fairmont Kea Lani, Maui	Neuroradiology: Practice to Innovation	Tel: (866) 242-1581 Web: www.mayo.edu/cme/radiology.html
11/15	Multi	Access Care Today	Queen's Conference Center	Hepatitis – Practical Clinical Concepts	Web: www.idlinks.com
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					
1/10-1/13	Multi	American Society for Reconstructive Microsurgery	Grand Wailea Resort, Wailea, Maui	2009 Annual Meeting	Web: www.microsurg.org

Medical Malpractice *from p. 223*

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.

References

1. *Pollard v. Goldsmith*, 572 P.2d 1201 (Ariz. App. 1977).
2. Me. Rev. Stats. Ann. §2975.
3. Ky. Rev. Stat. §342.035.
4. Ann. Code Md., Health-Gen. §19-1606.
5. *Helling v. Carey*, 519 P.2d 981 (Wash. 1974).
6. *Pederson v. Dumouchel*, 431 P.2d 973 (Wash. 1967).
7. *United Blood Services v. Quintana*, 827 P.2d 509 (Colo. 1992); *Snyder v. American Ass'n of blood Banks*, 676 A.2d 1036 (N.J. 1996).
8. *Advincula v. United Blood Servicers*, 678 N.E.2d 1009 (Ill. 1996).

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THE WEATHERVANE

RUSSELL T. STODD MD, CONTRIBUTING EDITOR

Russell T. Stodd MD

❖ **HEY, BILL, KEEP YOUR HOT TEMPER. HILLARY DOESN'T WANT IT.**

An internist in Santa Rosa, California, has suggested that Bill Clinton's intemperate remarks and responses on Hillary's campaign trail might be due to cognitive brain damage resulting from his quadruple bypass surgery in 2004. The post-surgical condition is called "pump head" or "bypass brain." Specifically, symptoms are short-term memory loss, trouble concentrating, slowed responses and emotional instability. Family members will say, "Dad's not the same as he was before surgery." Clinton's doctor rejected the theory and says the 42nd president is in "excellent shape." However, a landmark study from Duke University Medical Center published in the *New England Journal of Medicine* in 2001documented the cognitive damage associated with bypass surgery. Testing 261 patients before and after bypass surgery, researchers found that 53% of patients had significant cognitive loss after surgery that was still present in 42% of patients 5 years later. A Johns Hopkins School of Medicine group reporting in the *Annals of Neurology* found that 152 bypass patients and 92 patients treated with stents and medication all had cognitive decline after 6 years while the healthy patients cohort had none.

❖ **JESUS SAVES SINNERS, BUT LETS PHYSICIANS HELP WITH SICK CHILDREN.**

In Oregon, parents of a 15-month-old infant who died with bacterial pneumonia and septicemia have been charged with manslaughter and criminal mistreatment. As followers of Christ Church, a Pentecostal sect which teaches that prayer will cure all, the parents relied on faith healing alone to save the baby. The deputy state medical examiner stated that the child could have been treated with antibiotics. Oregon does not provide a religious shield law for parents who believe that gravely ill children can be treated solely with prayer. Concurrently in Wisconsin, parents of an 11-year-old girl with diabetes who fell into coma are facing charges of second-degree reckless homicide. The parents are not Christian Scientists but run a prayer group out of their coffee shop. Both cases are being watched across the nation by advocacy groups and legal scholars. Should the state provide protection for the sick child who might benefit from health care, or does parental religious belief prevail? For medical professionals this question is not worthy of discussion.

❖ **EXPERTISE IS THE KNACK OF RECOGNIZING THE OBVIOUS.**

The Food and Drug Administration (FDA) panel of experts endorsed a bundle of changes for contact lens products and patients with specific recommendations to replace contact lenses, cases, and solutions regularly. After the 2006 episode of at least 180 patients with potential loss of vision from fungal infections linked to Bausch & Lomb's MoistureLoc solution and Acanthamoeba keratitis tied to use of American Medical Optics' Moistureplus solution, the FDA panelists made strong admonitions. Because patients have enormous control over the rate of infections, it is imperative to emphasize the value of contact lens instructions. The FDA panelists also strongly recommended that companies test for effectiveness against Acanthamoeba, which previously was not tested as were bacteria and fungi. Suffice to say it is as ugly as it gets.

❖ **EVERYBODY WANTS TO GET INTO THE ACT!**

Much like the aggressive optometrists, psychologists, and naturopaths, podiatrists want to expand their scope of practice without the nuisance requirement of getting a medical education. The Texas State Board of Podiatric Medical Examiners overstepped its authority and redefined their practice area to include the ankle and leg. The 3rd District Appellate Court overturned a lower court decision and stated that such a change would need to come from the state legislature. Previously in 2001, the Texas Medical Association and the Texas Orthopaedic Association sued the podiatric board for exceeding its role and the attorney general stated that the board acted outside its authority. The pretenders are relentless and organized medicine must be constantly ready to protect the public.

❖ **NEVER LET THE FACTS GET IN THE WAY OF A BAD DECISION.**

In 2004 an 18-year-old New Jersey girl came to Maui to perform with a cheerleading group at the Hula Bowl. Within hours after her arrival she was seen drinking alcohol. The following day her naked body was found on the grounds of the Hyatt Regency Hotel. At autopsy alcohol was found in her blood, and it was determined that she fell to her death from the balcony of a room on the 18th floor. The police could find no evidence of foul play and the case was classified as a "miscellaneous accident." The arbitrator, a noted trial attorney, determined that the chaperone, a parent of one of the other cheerleaders, was partially responsible for the death and ordered her to pay $690,000 to the dead girl's estate. Many view the arbitrator's decision as worse than problematic. The dead girl was an adult and legally responsible for her own behavior, and how far must a chaperone go in monitoring and supervising the behavior of an entire team of cheerleaders? And why should the parents be rewarded when they neglected to properly educate their child? It appears to be yet another example of our legal system deciding that someone else should be blamed. When will this irrational judicial crapola come to an end? Anyone want to volunteer to be a chaperone?

❖ **SWEETENING YOUR COFFEE IS A STIRRING EVENT.**

It is becoming increasingly apparent that coffee is actually good for your health. A new report from the Harvard School of Public Health found that coffee consumption cut the rate of dying from heart disease. Previous studies at the Mayo Clinic found that drinking two or more cups of coffee each day reduced the rate of Parkinson's disease, in 2004 Harvard researchers found that coffee significantly reduced type 2 diabetes, and now this latest study published in the *Archives of Internal Medicine* found that women who drank two to three cups of coffee per day had a 25% lower risk of dying from heart disease than non-drinkers. Still, there was no connection regarding cancer deaths. So, down your coffee, sip your red wine, and enjoy your longevity.

❖ **THE TEST OF GENEROSITY IS NOT HOW MUCH YOU GIVE, BUT HOW MUCH YOU HAVE LEFT.**

No matter how hard they try the transplant bosses of the World Health Organization (WHO) and International Transplantation Society cannot curb the black market in kidney sales and transplants. WHO estimates that 5% to 10% of transplants worldwide are performed annually in the clinical underworld of China, Egypt, Pakistan, Colombia, and the Philippines. Because they are illicit, some corrupt brokers can extort and cheat patients, ignore complaints, and fail to plan post-surgical care. It isn't pretty. The global shortage of donors means that thousands of patients die unnecessarily for lack of a kidney, and the obvious solution is to find donors. Now Garvin Carney, an Australian nephrologist, wants to create a system where healthy donors can sell their kidneys. He points out that the present system is not working because not enough people are willing to give away an organ. His plan would establish a model to provide careful medical screening and education of donors and patients with government directed $50,000 in-kind rewards such as down payment on a house, or a contribution to a retirement fund, or lifetime health insurance. It would be unattractive to anyone who might consider rushing in on the promise of pocketing a large sum of cash.

❖ **MOONING – FREE. MEDICAL CARE – COSTLY. BEING BUTT OF THE JOKE? PRICELESS.**

In Utrecht, Netherlands, three adult pranksters decided to run down the street with their trousers dropped to reveal naked buttocks. One man paused at a restaurant to press his backside against a glass window, but his moonshot was overdone. The window shattered resulting in deep lacerations of his bare buns. All three were detained by police (Reuters).

❖ **THOSE WHOM THE GODS WISH TO DESTROY THEY FIRST PUT ON HOLD.**

In Annapolis, Maryland, a drug dealer who called himself "Zach the weed man" phoned a customer at the moment that his user was being arrested for driving without a license. Police checked the person's incoming caller ID and noted Zach the weed man. They called back, set up a drug deal and Zach is now incarcerated.

ADDENDA

- ❖ Average age of a new grandparent in the United States is 47.
- ❖ The book value of your car now goes up and down with the amount of gasoline in the tank.
- ❖ For too many young males "Say no to crack" means pull up your jeans.
- ❖ "I want to rush for 1000 or 1500 yards this season, which ever comes first." NFL running back…
- ❖ History repeats itself. That's the one thing wrong with history.

ALOHA AND KEEP THE FAITH — rts■

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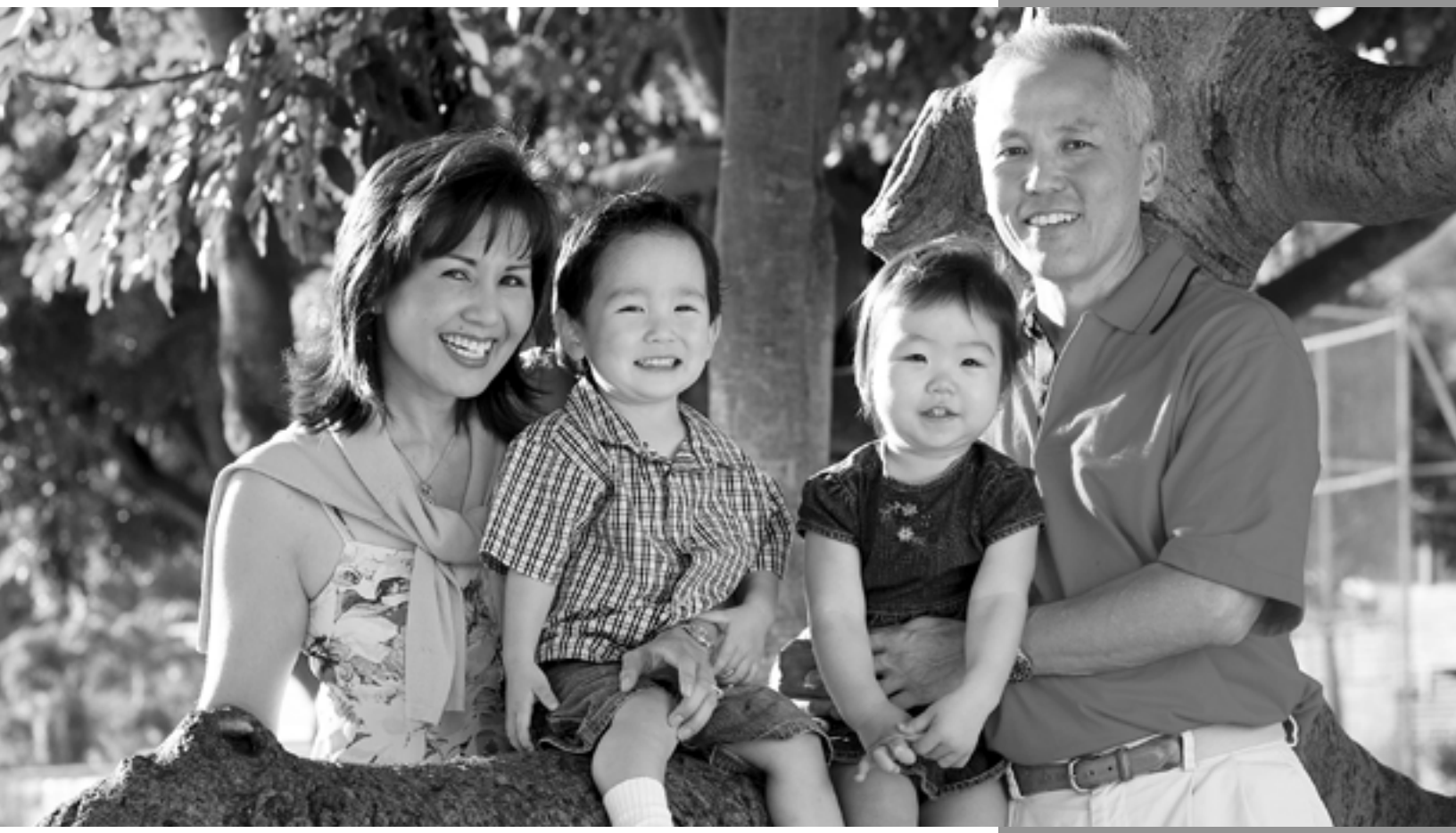

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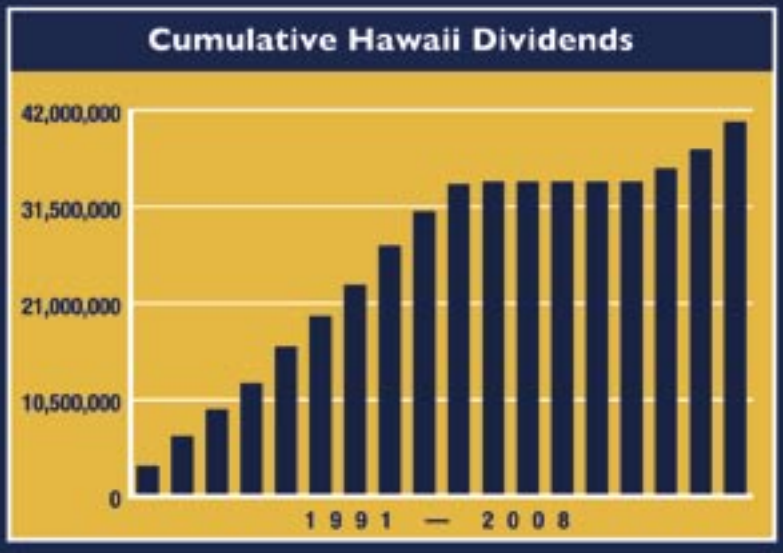

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