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DIABETES AND CARDIOVASCULAR RISK FACTORS IN NATIVE HAWAIIANS 152

N. Emmett Aluli MD; Kristina L. Jones MPH; Phillip W. Reyes MD; S. Kalani Brady MD;
JoAnn U. Tsark MPH; and Barbara V. Howard PhD

**COMPREHENSIVE PAIN PROGRAM OUTCOMES EVALUATION:
A PRELIMINARY STUDY IN HAWAI'I 158**

Ira D. Zunin MD, MPH; Steve Orenstein PhD; Mahana Chang MA; and Sungkun Cho MS

**A SURVEY OF INJURIES AND MEDICAL CONDITIONS AFFECTING
COMPETITIVE ADULT OUTRIGGER CANOE PADDLERS ON O'AHU 162**

Amanda Haley MD and Andrew Nichols MD

**HAWAI'I'S "GOING HOME PLUS" PROJECT: A NEW OPTION TO SUPPORT
COMMUNITY LIVING 166**

Christy M. Nishita PhD; Jean Johnson DPH; Madi Silverman; Rebecca Ozaki PhD;
and Lillian Koller

MEDICAL SCHOOL HOTLINE 169

LCME Accreditation: Role of Students

Andrew Middleton MS III

CANCER RESEARCH CENTER HOTLINE 171

Establishing a Population-Based Cancer Registry DNA Biorepository:

The Hawai'i Tumor Registry's Sharing Ohana Project

Marc T. Goodman PhD, MPH

WEATHERVANE 174

Russell T. Stodd MD



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Diabetes and Cardiovascular Risk Factors in Native Hawaiians

N. Emmett Aluli MD; Kristina L. Jones MPH; Phillip W. Reyes MD; S. Kalani Brady MD; JoAnn U. Tsark MPH; and Barbara V. Howard PhD

Abstract

Objective: Diabetes is an increasing health problem among Native Hawaiians. Diabetes is a risk factor for cardiovascular disease (CVD), the leading cause of death among Native Hawaiians. In this article, the prevalence of diabetes is reported and associations with CVD risk factors are examined.

Design and Methods: Cross-section of 862 Native Hawaiians, ages 19-88. Physical exam included anthropometric measures, blood pressure, glucose and lipid measures, and personal interview.

Results: Age-adjusted prevalences of diabetes (25.1% in men vs. 22.6% in women) and impaired fasting glucose (IFG) (47.8% vs. 39.3%) increased with age and were higher in men. Fasting glucose was higher in diabetic men than women (209 mg/dL vs. 179, $p = .0117$). BMI, waist circumference, systolic blood pressure, triglycerides, and low-density lipoprotein cholesterol were higher in diabetic participants (all $p < .01$), and high-density lipoprotein cholesterol was lower ($p < .005$).

Conclusions: Diabetes prevalence in Native Hawaiians is high. The high proportion with IFG and the increase in CVD risk factors with diabetes suggest that community-based programs are needed to focus on diabetes and diabetes-related CVD.

Introduction

Polynesian Peoples have experienced a rapid rise in diabetes prevalence over the last 40 years.¹⁻⁸ The National Center for Health Statistics reports no data on diabetes in Native Hawaiians, the indigenous people of the Hawaiian Islands. Data from the Hawai'i Behavioral Risk Factor Surveillance System (BRFSS)⁹ and US state mortality data, however, suggest that diabetes occurs at high rates in Native Hawaiians.^{10,11} Diabetes is a major determinant of cardiovascular disease (CVD), the leading cause of death in Native Hawaiians.^{12,13} The overall age- and gender-specific mortality rates due to heart disease are 66% greater among Native Hawaiians than among Caucasians in Hawai'i.¹⁴ The Hawai'i Department of Health reported in 2005 that 71% of all deaths were attributable to heart disease. The CVD death rate per 100,000 was 205.3 statewide and 313.9 among Native Hawaiians/part Native Hawaiians.¹⁵ Individual populations may differ in their CVD risk factor profiles because of individual genetic and socioeconomic characteristics.¹⁶ Thus, systematic data on diabetes prevalence and CVD risk factors in Native Hawaiians with diabetes are needed to tailor community and institutional prevention and treatment programs.

The Cardiovascular Risk Clinics (CRCs) were initiated by the Native Hawaiian community to screen for CVD risk factors, including diabetes, among Native Hawaiians on the island of Moloka'i. A large proportion of the adult population participated in these clinics, thus providing systematic cross-sectional data on the cardiovascular risk status of Native Hawaiians. In this article, data are presented on standardized and age-specific prevalence rates of diabetes and impaired fasting glucose (IFG) in Native Hawaiians, and CVD risk factors in Native Hawaiian men and women with and without diabetes are compared.

Methods

Study Population

The CRC is a screening program initiated in 1992 and implemented by Na Pu'uwai, the Native Hawaiian Health Care System serving the island of Moloka'i, to identify adults at risk for CVD and refer them to health care services. Native Hawaiian men and non-pregnant women \geq age 18 were recruited for participation in the CRCs. Recruitment strategies included mailings and direct contact by community health workers. CRCs were conducted in the town and also in remote communities on the island. Although recruitment was not systematically population-based, efforts were made to identify and contact all Native Hawaiian residents and accommodations made to ensure participation regardless of socio-economic status or health condition.

The cohort consisted of 1,064 men and women, \geq age 18, examined as participants of the CRC program between 1992 and 1998.¹⁷ This group represented approximately half the adult Native Hawaiian population of the island in that age range at the time. The only data available to allow comparisons between our study population and the population of Moloka'i as a whole are from the US census. However, the population covered by the US census differs from our population in age, proportion of self-identified Native Hawaiians, and average household income. Therefore, we cannot make direct comparisons between participants and non-participants.^{18,19} Of our cohort, 74 who identified themselves as non-Native Hawaiian and 126 for whom diabetes status could not be determined were excluded, leaving 862 participants (345 men and 517 women, ages 19-88) for the analysis.

Examination Methods

The examination consisted of a questionnaire evaluating behavioral risk factors, including smoking, alcohol use, physical activity, and diet; measurements of height, weight, waist and hip circumference, and blood pressure (BP); a urine test for protein and glucose; and a fasting blood sample for cholesterol, triglycerides (TGs), high-density lipoprotein cholesterol (HDL-C), low-density lipoprotein cholesterol (LDL-C), A1c, and glucose. Systolic and diastolic BPs were averaged from the second and third of consecutive resting measures taken with a standard arm cuff and aneroid sphygmomanometer. Participants were considered hypertensive if they reported a previous diagnosis of hypertension, took antihypertensive medication, or had a systolic BP (SBP) \geq 140 mmHg or a diastolic BP of \geq 90 mmHg. BMI was calculated by the equation (weight (lb)/[height (in)]² x 703). Total cholesterol (TC), HDL-C, TG, and glucose concentrations were determined by enzymatic methods using a Roche Hitachi 747 chemistry analyzer and consistent, standardized reagents (Boehringer Mannheim, Indianapolis, IN). LDL-C was calculated in those with TG $<$ 400 using the equation TC-HDL-(TG/5). Diabetes duration was determined by questionnaire.

Diabetes was identified by self-report or fasting glucose (FG) ≥ 126 mg/dL; IFG was defined as FG 100-125 mg/dL in participants without diabetes. Use of hypoglycemic agents was not ascertained.

Statistical Methodology

Prevalence rates for diabetes and IFG were analyzed by age and gender. The direct method was used to adjust diabetes and IFG prevalence rates to age data from the 1995 US Census.²⁰ Means for continuously distributed variables were compared in men and women and by diabetic status using t tests. A chi-square test was used to compare categorical variables. Variables that were not normally distributed were log-transformed for comparisons.

Results

Average age was 46, and 57.4% were obese with central fat distribution as indicated by waist circumferences averaging 40 inches in men and 38 inches in women (Table 1). BP and lipid values varied widely. Average age and BMI in men and women were similar, but men had slightly higher BP, lower HDL-C, and were more apt to be smokers.

Diabetes prevalence rates were slightly but not significantly higher in men than in women (Table 2; Figure 1). Age-adjusted rates were 25.1 (men) vs. 22.6% (women). IFG prevalence (Table 2; Figure 1)

was higher in men than in women ($p = .0053$) and was higher than diabetes prevalence in both genders. Rates of diabetes and IFG (Table 2) increased with age in both genders, so that in men and women over age 50, 39.6% and 36.1% had diabetes, respectively, and an additional 58.6% and 54.5% had IFG. Of those with diabetes, many had not been diagnosed (Table 3); rates of undiagnosed diabetes were highest in the younger men. Diabetes control as indicated by fasting glucose levels was significantly higher in men (mean = 209, SD = 91) than in women (mean = 179, SD = 75) ($p = .0117$) but appeared not to differ by age.

Diabetes was associated with greater prevalence of CVD risk factors in men and women, except for smoking (Table 4). In both genders, those with diabetes were more obese and had greater waist circumferences. In men and women with diabetes, the average SBPs were 16 and 12 mmHg higher than in those without, respectively. Diabetes was associated with significant dyslipidemia. Higher levels of LDL-C (difference of 24 mg/dL [men] and 28 mg/dL [women]) and TGs (difference of 102 mg/dL [men] and 95 mg/dL [women]) and lower levels of HDL-C (4 mg/dL [men and women]) were seen in those with diabetes. Smoking rates were higher in men than in women but did not differ significantly between those with and without diabetes in either gender.

Table 1.— Cardiovascular risk factors by gender, Native Hawaiians participating in Cardiovascular Risk Clinics, 1992-1998

Characteristic	Men % or Mean (range)	Women % or Mean (range)	Total % or Mean (range)
N	345	517	862
Age (years)	45 (19-85)	46 (19-88)	46 (19-88)
Body mass index (BMI) (kg/m ²)	32.7 (18.7-69.0)	32.6 (18.3-88.1)	32.6 (18.3-88.1)
Waist circumference (inches)	40.3 (17-77)	38 (20-80)	39 (17-80)
Current smoker (%)	28.6	25.1	26.5
Hypertensive (%) ¹	45.8	38.1	41.2
Systolic blood pressure (mmHg)	131 (57-214)	127 (73-220)	129 (57-220)
Diastolic blood pressure (mmHg)	85 (45-129)	81 (33-131)	83 (33-131)
LDL cholesterol (mg/dL)	132 (39-400)*	133 (48-400)*	133 (39-400)*
HDL cholesterol (mg/dL)	40 (19-81)	45 (23-100)	43 (19-100)
Triglycerides (mg/dL)	205 (38-999)**	148 (30-997)	171 (30-999)**

¹ Defined as systolic/diastolic $\geq 140/90$ mm Hg or self-report of previous diagnosis of hypertension or self-report of taking antihypertensive medication;

* Upper lab limit = 400 mg/dL; ** Upper lab limit = 999 mg/dL.

Table 2.— Age-specific prevalence of diabetes¹ and impaired fasting glucose² in Native Hawaiian men and women

	Men			Women			P for gender difference (Diabetes) ³	P for gender difference (IFG) ⁴				
	Diabetes	IFG		Diabetes	IFG							
Age	N	%	Mean Duration*	N	%	N	%	Mean Duration**	N	%		
< 35	139	17.3	1.5	115	47.0	204	12.8	3.3	178	27.5	0.2441	0.0007
35-50	110	18.2	3.3	90	37.8	155	15.5	5.6	131	32.1	0.5609	0.3794
> 50	96	39.6	11.0	58	58.6	158	36.1	8.9	101	54.5	0.5754	0.6105
Total	345	23.8	8.1	263	46.4	517	20.7	7.4	410	35.6	0.2855	0.0053

¹ Defined as self-reported or fasting blood glucose ≥ 126 mg/dL; ² Defined as fasting glucose level 100-125 mg/dL exclusive of diabetes (self-reported and newly diagnosed); ³ Chi-square tests of difference in proportion of men and women with diabetes in each age group; ⁴ Chi-square tests of difference in proportion of men and women with IFG in each age group; * By age-group missing duration data; < 35, n = 20 (83%); 35-50, n = 8 (40%); > 50, n = 9 (24%); ** By age-group missing duration data; < 35, n = 20 (80%); 35-50, n = 8 (33%); > 50, n = 22 (39%).

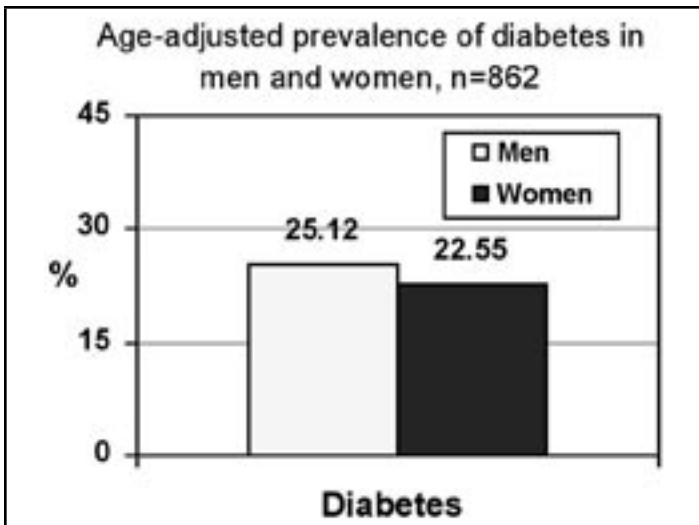


Figure 1A.— Diabetes prevalence in Native Hawaiians, age-adjusted to the 1995 US Census population data

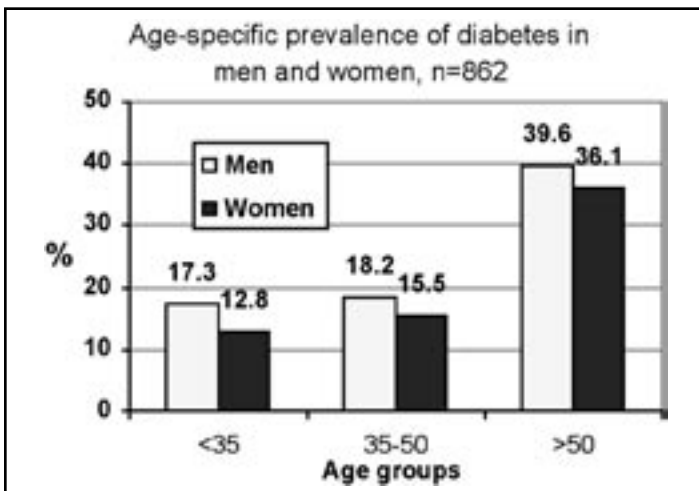


Figure 1B.— Age-specific diabetes prevalence in Native Hawaiians

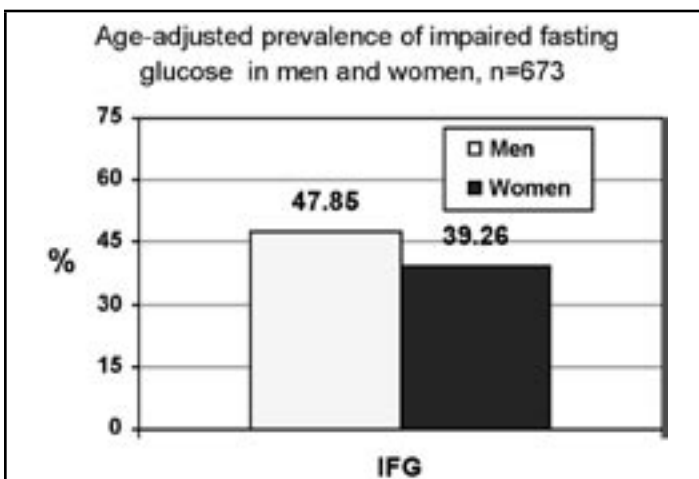


Figure 1C.— Impaired fasting glucose (IFG) prevalence in Native Hawaiians, age-adjusted to the 1995 US Census population data

Discussion

The results of this systematic analysis of Native Hawaiians showed that 24% of adult men and 21% of adult women had diabetes (Table 2). An additional 46% (men) and 36% (women) had IFG, and a high proportion of the diabetes was undiagnosed, especially in younger men. Both diabetes and IFG increased with age so that in the group over age 50, approximately 37% had diabetes and more than 56% had IFG. Except for smoking, diabetes was associated with higher prevalence of CVD risk factors, including increased rates of dyslipidemia and hypertension. Obesity and central obesity also were higher in those with diabetes.

Previous reports of diabetes rates among Native Hawaiians have been published, most of which are from comparisons of several ethnic groups in Hawai'i.^{21,22} In 1958, age-adjusted diabetes prevalence rates in Native Hawaiians and part Native Hawaiians on the island of O'ahu were reported to be 4.9% and 2.7%, respectively, and 1974-1975²³ state health data reported diabetes rates of 2% and 2.2%, respectively, in Native Hawaiian men and women. These numbers were based on self-report. From 1980-1986, age-adjusted diabetes prevalence rates in Native Hawaiian men and women were reported to be 3.0% and 3.1%.² In 1985 a report from the Moloka'i Heart Study, a cross-sectional survey of CVD risk factors in a group of 257 residents of the island, reported diabetes prevalences of 15% (ages 40-49) and 20% (ages 50-59).³ Finally, a 1998 study²¹ that included 574 Native Hawaiian adults from the islands of Hawai'i (North Kohala) and Kaua'i reported 20.4% age-adjusted diabetes prevalence rates in both genders.

Although methods varied, the overall pattern shows increasing prevalence of diabetes over the past 50 years in Native Hawaiians. The current report suggests slightly higher rates than those in the North Kohala and Kaua'i studies, although laboratory methods may not be comparable and it is not clear what proportion of the population was sampled in the North Kohala and Kaua'i studies. A pattern of increasing diabetes has been observed during the past 50 years in all US populations and around the world.²⁴⁻²⁷ It is likely that in Native Hawaiians, as in all populations, the increases are attributable to increasing rates of obesity and increasingly sedentary lifestyles.²⁸⁻³¹ Only one previous study²¹ addressed the issue of unrecognized diabetes (44% using WHO criteria), showing a prevalence similar to that observed in the present study.

Population-based data available on other Polynesian groups who are ethnically related to Native Hawaiians show similar rates of diabetes. In 2001, Simmons et al.⁷ found rates of 21.1% and 25.0% in Maoris and other Polynesians, respectively. Earlier work from 1995 showed increasing rates of diabetes in several Polynesian groups.³² Diabetes rates were higher in those living in urban areas compared with traditional settings, supporting the premise that changing lifestyles play a major role in diabetes prevalence.

In our data set, diabetes rates were somewhat higher in men than in women. Higher rates in men often are found in studies of diabetes in Asian and Polynesian populations.⁵⁻⁷ This finding differs from most systematic studies of whites, blacks, Hispanics, and American Indians, in which women have a higher prevalence than men.^{33,34} However, the greatest increases in prevalence from 1980-2005 occurred among white and black men (116% and 81%, respectively) compared to white and black women (110% and 69%, respectively). The reasons for this gender difference are not clear and warrant further investigation.

Age-group	Men			Women			P-value ¹
	N	% Self-reported	% New diagnosis	N	% Self-reported	% New diagnosis	
<35	10*	40.0	60.0	8**	87.5	12.5	0.0528
35-50	20	65.0	35.0	23	73.9	26.1	0.5256
>50	38	81.6	18.4	56	62.5	37.5	0.0471
Total	68	70.6	29.4	87	67.8	37.2	0.7111

¹Fisher's exact test of difference in proportion of men and women with undiagnosed diabetes in the age group < 35; chi-square tests of difference in proportion of men and women with undiagnosed diabetes in remaining categories; *N = 14 men in this age group with FG \geq 126 mg/dL were missing data for self-report and excluded from analysis for this table; ** N = 18 women in this age group with FG \geq 126 mg/dL were missing data for self-report and excluded from analysis for this table. In each of the other age groups, one woman with diagnosed diabetes was missing self-report data for diabetes.

Characteristic	Men			Women		
	No Diabetes ¹ % or Mean (SD)	Diabetes ¹ % or Mean (SD)	P-value ³	No Diabetes ¹ % or Mean (SD)	Diabetes ¹ % or Mean (SD)	P-value ³
N	263	82		410	107	
Age (years)	43 (15)	50 (14)	0.0001	44.4 (15.8)	53.1 (13.2)	<0.001
Body mass index (BMI) (kg/m ²)	31.8 (7.0)	35.4 (9.0)	0.0036	31.2 (8.6)	35.7 (8.7)	0.0002
Waist circumference (inches)	39.4 (7.8)	42.8 (7.7)	0.0012	37.0 (7.4)	40.8 (6.3)	<0.0001
Current smoker (%)	28.1	30.4	0.7034	26.0	23.0	0.4112
Hypertensive ² (%)	41.4	59.8	0.0037	32.4	59.8	<0.0001
Systolic blood pressure (mmHg)	128 (19)	144 (60)	0.0400	125 (21)	137 (20)	<0.0001
Diastolic blood pressure (mmHg)	85 (13)	86 (10)	0.2611	80 (12)	83 (12)	0.0517
LDL cholesterol (mg/dL)	127 (33)	151 (72)	0.0086	127 (38)	155 (68)	0.0002
HDL cholesterol (mg/dL)	41 (11)	37 (10)	0.0049	46 (11)	42 (9)	<0.0001
Triglycerides (mg/dL)	181 (152)	283 (219)	0.0002	128 (72)	223 (164)	<0.0001

¹Defined as self-reported or fasting blood glucose \geq 126 mg/dL; ²Defined as systolic/diastolic blood pressure \geq 140/90 mm Hg or self-report of previous diagnosis of hypertension or self-report of taking antihypertensive medication; ³Chi-square tests of difference in proportion or t-tests of difference in means.

We found high rates of IFG in Native Hawaiians. IFG increased with age in both genders, although rates were higher in men. It is difficult to compare these data to previous studies because the more current American Diabetes Association criterion of FG \geq 100mg/dL was used in the current analysis, a cut-off level that was not used in previous studies and may not be appropriate in this population. Nevertheless, the only other data reported on glucose intolerance in Native Hawaiians are from the North Kohala/Kaua'i population, which showed that 10.9% of men and 18.7% of women had IGT as determined by glucose tolerance test. This rate did not increase with age and was higher in women than in men. Despite the differing diagnostic criteria, the high rates of deteriorating glucose tolerance observed in both studies are of concern, because individuals with either IFG or IGT have a high probability of developing diabetes.^{35,36} The ability to identify these individuals and target them for intervention strategies aimed at controlling weight and increasing physical activity could slow and possibly reverse the increasing trend of diabetes seen in Native Hawaiians.

This article focuses on the prevalence of CVD risk factors in Native Hawaiians with diabetes, because individuals with diabetes are known to have higher rates of CVD. CVD is the leading cause of death in Native Hawaiians,¹¹ and state BRFSS data report high prevalence rates for CVD risk factors in this group.³⁷ Comparisons to population-based data in whites and blacks³⁸ and American Indi-

ans^{39,40} show population-specific differences. For almost all of the risk factors, diabetes in Native Hawaiians seems to be associated with greater worsening than in other populations. For example, SBP in Native Hawaiian men and women with diabetes is 12-16 mmHg higher than in those without diabetes. Differences in white, black, and American Indian men with diabetes compared to men without diabetes average 3 mmHg, 11 mmHg, and 7 mmHg, respectively,³⁵ although in these populations overall rates of hypertension in those without diabetes are higher than among Native Hawaiians. The biggest effect of diabetes in Native Hawaiians appears to be on dyslipidemia. Diabetes is associated with much larger differences in LDL-C in Native Hawaiians than in other groups; in whites and blacks LDL-C increases only slightly and in American Indians LDL-C decreases slightly in those with diabetes. This influence of diabetes on LDL-C in Native Hawaiians may reflect metabolic differences because receptor clearance capacity is the main determinant of LDL-C levels.⁴¹ This observation of increasing LDL-C with diabetes points to the need for attention to and control of LDL-C in Native Hawaiians with diabetes, because of the strong impact of LDL-C on atherosclerotic disease.

As in other populations, diabetes is also associated with higher TGs and lower HDL-C in Native Hawaiians. In this population, the decrease in HDL-C does not differ from other populations, but the effect on TGs appears to be greater, with Native Hawaiians with

diabetes having TG concentrations almost 100 mg/dL higher than those without diabetes. Because TG-bearing lipoproteins in people with diabetes appear to be particularly atherogenic, attention to control of TG levels is needed. Smoking rates did not differ significantly in those with and without diabetes, and almost 30% of the men in this population smoked. Smoking is a strong determinant of vascular disease, especially in individuals with diabetes; thus smoking cessation campaigns also are warranted.

The present report has a number of strengths. The data were from a community-initiated program and CVD risk factor screening was conducted by a community-based organization, thus promoting wide participation. Data were collected systematically on a wide range of physiologic and behavioral risk factors. This was the largest cohort of adult Native Hawaiians studied to date, and the only database of CVD risk factors in Native Hawaiians with or without diabetes.

This report is limited by several factors. This was not a systematic population-based sample and, therefore, the data may be skewed. However, the recruitment by community outreach staff increased the likelihood that a wide range of individuals participated. Although the laboratory measures were not made by a CVD core lab, all measures were made by the same laboratory, using similar methods across the exam period and longitudinal standardization procedures. Although the sampling occurred over six years, standardized questionnaires and methods were used for the interview and physical exam and all personnel were centrally trained.

In summary, this is one of the largest cohorts of Native Hawaiians assessed to understand CVD risk factors in this group. We found high rates of diabetes and IFG that increased with age and were higher in men than in women. In addition, we found that diabetes in this population appears to be associated with adverse changes in cardiovascular risk factors, with diabetic individuals having increased prevalence of hypertension and elevated LDL-C and TGs. The community in Moloka'i is implementing programs for diabetes prevention focused on weight control and physical activity, and health care providers on the island are targeting risk factor management in all patients with diabetes. These strategies should be implemented throughout Hawai'i and in all areas where Native Hawaiians are served.

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Authors' Affiliations:

- Moloka'i General Hospital, Kaunakakai, HI, 96748 (N.E.A.)
- MedStar Research Institute, Hyattsville, MD, 20783 (K.L.J., B.V.H.)
- Kamehameha Schools, Honolulu, HI, 96813 (P.W.R.)
- John A. Burns School of Medicine, Honolulu, HI, 96813 (S.K.B.)
- Papa Ola Lōkahi, Honolulu, HI, 96813 (J.U.T.)

Correspondence to:

Barbara V. Howard PhD
6495 New Hampshire Ave. Suite 201
Hyattsville, MD 20783
Ph: 301-560-7302; Fax: 301-560-7307
E-mail: Barbara.V.Howard@MedStar.net

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Comprehensive Pain Program Outcomes Evaluation: A Preliminary Study in Hawai'i

Ira D. Zunin MD, MPH; Steve Orenstein PhD; Mahana Chang MA; and Sungkun Cho MS

Abstract

The aim of this study was to provide a preliminary outcome evaluation of the Comprehensive Pain Program (CPP) that was developed in Hawai'i to treat chronic pain patients. The CPP is a biopsychosocial intervention designed to interrupt the pattern of social isolation and to minimize pain-related depression that contributes to reduced quality of life, poor function, and increased utilization of resources. The CPP consists of a comprehensive pre-treatment screening process and a 12-week Intensive Outpatient Program (IOP). Primary elements of the IOP include group psychotherapy, acupuncture, mind/body training, and therapeutic movement. thirty-five participants from a total of five cohorts completed the IOP (i.e., three sessions a week, each lasting three hours for a 12-week period). The CPP demonstrated success in six outcome areas: 1) utilization of healthcare resources, 2) functional capacity, 3) quality of life, and 4) psychological functioning, such as somatization, depression, and anxiety. Post-treatment, patients demonstrated statistically significant decreases in somatization, depression, and anxiety, and statistically significant improvement in quality of life. Patient outcomes further showed substantial improvements with regards to functional capacity, as well as significant decreases in the utilization of healthcare resources. In conclusion, the preliminary evaluation of the CPP suggests additional studies with a larger sample size and comparison groups are warranted to further evaluate critical components of the treatment regimen, clinical outcome, and cost-effectiveness.

Introduction

The treatment of chronic pain is one of the most challenging issues facing the health care industry today. Unlike acute pain, chronic pain persists far beyond expected periods of normal resolution and often occurs in the absence of sympathetic arousal.¹ The National Institute of Health^{2,3} suggests as many as 50 million people nationwide experience chronic pain, affecting more Americans than diabetes, heart disease and cancer combined. Estimates suggest that the cost of chronic pain management in the United States may be as high as \$100 billion annually.² Chronic pain is the most common cause of long-term disability, and is also widely associated with secondary depression and other psychiatric problems as well as alcoholism and prescription drug dependence.^{2,3}

Literature has shown that comprehensive chronic pain programs "offer the most efficacious treatment for chronic pain patients" and are more cost-effective than traditional medical treatments.⁴ Gatchel and Okifuji⁵ reviewed numerous studies on comprehensive chronic pain programs, and results further support the treatment efficacy and cost-efficiency of such programs for chronic pain.

No epidemiological studies have ever been reported for the State of Hawai'i, but it is reasonable to assume, in light of the national figures, that there are thousands of people in Hawai'i suffering from chronic pain conditions at any one point in time and that the monetary and social costs are proportional. Current methods of treatment typically involve patients seeking different services from multiple providers with minimal coordination of care.

It was hypothesized that participation in the 12-week program (IOP) would result in significant post-treatment improvement in

psychological functioning (i.e., somatization, depression, anxiety), quality of life, and physical function at work and/or home, and reduced utilization of healthcare resources, specifically Schedule II opiates.

Methods

Participants

A total of 35 (14 men and 21 women) chronic pain patients aged 25 to 76 (M = 48.55 years) completed the 12-week intensive outpatient chronic pain program, across five cohorts. Patients were referred for screening if they met any of the following criteria: pain that is disproportionate to that of the diagnosis, recovery time exceeding expected resolution, sustained or increased use of triptans and/or opiate analgesics, prolonged or frequently recurring absenteeism, noncompliance with previous medical treatment plans, history of frequent changes in physician, history of multiple concurrent physicians, high emergency department utilization, and/or a history of poorly coordinated care. Participants in the study had a pain duration of at least one year, and the most common diagnoses were back and neck pain, abdominal and pelvic pain, headache, fibromyalgia, and chronic post-traumatic pain.

Psychological functioning

To measure the psychological function of participants, each individual completed the Symptom Checklist-90-Revised⁶ (SCL-90-R), the Pain Patient Profile⁷ (P3) and the Millon Clinical Multiaxial Inventory-III⁸ (MCMI-III). Test results were reviewed by the program's chief psychologist and medical director and each participant underwent an individual psychological consultation.

Quality of life

To measure the quality of life of participants, each individual was given the Quality of Life Inventory⁹ (QLI) and self-report data was taken during intake.

Physical functioning

Clinical assessment of each participant was performed by the medical director.

Utilization

Utilization focused primarily on the amount of Schedule II opiates prescribed.

Procedures

All patients referred for screening first received an initial consultation by the CPP medical director to determine if they were candidates for formal screening. Primary criteria for formal screening included high utilization (i.e., high number of different Schedule II opiates and/or high dosage levels of Schedule II opiates), poor quality of life (as reported by self-report and psychometric testing), poor function (on the basis of clinical assessment results and self-report), willing-

ness to participate in the program, and no initial evidence of key exclusion criteria such as marked cognitive deficits, schizophrenia, severe bipolar disorder, and active suicidal ideation. Patients were considered candidates for Level I screening on the basis of this initial consultation and clearance.

Level I screening involved an evaluation by the medical director that was comprised of a comprehensive medical history and physical examination and a review of all available medical records and diagnostics. Particular care was taken to acquire and review all records describing the clinical course including specialty consultations, hospitalizations, previous procedures, and prescription drug use, as well as illicit drug use. On the basis of Level I screening, if candidates continued to demonstrate motivation to participate in the IOP and did not meet any exclusion criteria, they were cleared by the medical director for Level II screening.

Level II screening included computerized psychometric testing, consultation with the chief psychologist, and an additional visit with the medical director. Psychometric testing included the Beck Depression Inventory-II as a screening tool, SCL-90-R, P3, QOLI and MCMI-III. Results of the psychometric testing were reviewed by the chief psychologist and a case conference between the chief psychologist and medical director determined each participant's candidacy for the intensive outpatient program (IOP).

The chronic pain IOP is a comprehensive biopsychosocial intervention intended to interrupt the pattern of social isolation and to reduce pain-related depression that contributes to reducing quality of life, poor function, and increased utilization of resources. The CPP treats chronic pain as a behavior, using cognitive behavioral strategies to help interrupt the "pattern of suffering," and takes into consideration kinship structure and other social impacts. All participants received care with their specific cohort in a group setting and were expected to attend three sessions a week, each session lasting three hours, for a 12-week period. Primary elements of the program included group psychotherapy, acupuncture, and manual therapy focused on pain management, mind/body training, including breathing exercises, meditation, and visualization, and therapeutic movement, including elements of physical therapy, Feldenkrais (therapeutic movement focusing on neuromuscular re-education), and therapeutic yoga. Supplementary group sessions focused on pain education, education on the pharmacology of pain medicine, lifestyle, diet, and risks and benefits of herbs and supplements. Furthermore, each cohort received an introduction to Ho'oponopono, an ancient Hawaiian practice focused on bringing relationships into equilibrium. These sessions were led by an indigenous Hawaiian practitioner. Concurrently, at a minimum of every two weeks, all participants received an individual re-evaluation by the medical director which included a medication review and attention to individual program goals. Data including somatization, depression, anxiety, quality of life, functional ability, and utilization of healthcare resources were assessed, pre-treatment (i.e. level II screening), post-treatment and one-year post pre-treatment screening.

Results

The data and questionnaires from 20 participants across four cohorts who completed the comprehensive pain program, were analyzed (i.e., seven from the first cohort, three from the second cohort, six from the third cohort, and four from the fourth cohort). Participants'

age and gender were shown not to be significantly different among cohorts. Therefore, all participants were combined for subsequent analyses. Kolmogorov-Smirnov test were performed to determine if data were normally distributed. Results indicated that all of the variables (i.e., somatization, depression, anxiety, global severity, and quality of life) were normally distributed. Means and standard deviation are presented in Table 1.

Trends in the effects of the comprehensive pain program

To examine the effects of the comprehensive pain program on the outcome variables over time, trend analyses were conducted. Results indicated that the trends of all the outcome variables were linear. There was a significant decrease in somatization ($F(1,19)=18.90, p=.000$), depression ($F(1,19)=14.21, p=.001$), anxiety ($F(1,19)=15.54, p=.001$), and a significant increase in quality of life ($F(1,19)=7.98, p=.011$) (see Figures 1 to 5).

Differences in the effects of the comprehensive pain program

In order to examine the differences of the effects of the comprehensive pain program on the outcome variables over time, a one-way repeated measures ANOVA was performed. Results revealed that significant effects were noted in all of the outcome variables; somatization ($F(2,38)=9.61, p=.000$), depression ($F(2,38)=7.99, p=.001$), anxiety ($F(2,38)=8.59, p=.001$), and quality of life ($F(2,38)=7.78, p=.001$). Subsequently, a Bonferroni post-hoc test on the differences in the effects of the comprehensive pain program was performed to identify the location of the significant effects. The results demonstrated that significant differences existed between pre-treatment and one-year follow-up for somatization ($MD=7.75, p=.001$); pre-treatment and post-treatment ($MD=7.25, p=.005$), and pre-treatment and one-year follow-up ($MD=9.30, p=.004$) for depression; pre-treatment and post-treatment ($MD=5.30, p=.004$), and pre-treatment and one-year follow-up ($MD=8.35, p=.003$) for anxiety; pre-treatment and post-treatment ($MD=-10.05, p=.004$), and pre-treatment and one-year follow-up ($MD=-8.65, p=.032$) for quality of life.

Function at work and/or home

The data from 35 participants across five cohorts who completed the comprehensive pain program were analyzed through a clinical assessment by the medical director and via self-report. 64% had been disabled or partially disabled during the 12 months prior to entering the program. 85% of the disabled participants returned to gainful activity or were cleared to work following the program. At one year, the data from the first four cohorts was analyzed, and 100% of those who had returned to gainful activity were still gainfully engaged (see Figure 6).

Utilization of opiate analgesics

The data from 35 participants across five cohorts who completed the comprehensive pain program were analyzed via clinical assessment by the medical director. 77% had been on high level Schedule II opiate analgesics during the twelve months prior to the program. 96% of this group had reduction in high level opiate use by 25% or more following the program. 81% had reductions of 50% or more, and 50% had reductions by 100% following the program. At one year, the data from the first four cohorts was analyzed. 100% of

Table 1.— Means (M) and standard deviation (SD) for the outcome variables

	M	SD
Somatization time 1	69.80	8.08
Somatization time 2	65.65	8.38
Somatization time 3	62.05	8.56
Depression time 1	68.15	6.61
Depression time 2	60.90	8.19
Depression time 3	58.85	9.72
Anxiety time 1	65.10	6.68
Anxiety time 2	59.80	8.83
Anxiety time 3	56.75	10.42
Global severity time 1	69.00	7.31
Global severity time 2	62.30	7.85
Global severity time 3	59.45	10.42
Quality of life time 1	30.70	14.40
Quality of life time 2	40.75	9.12
Quality of life time 3	39.35	13.24

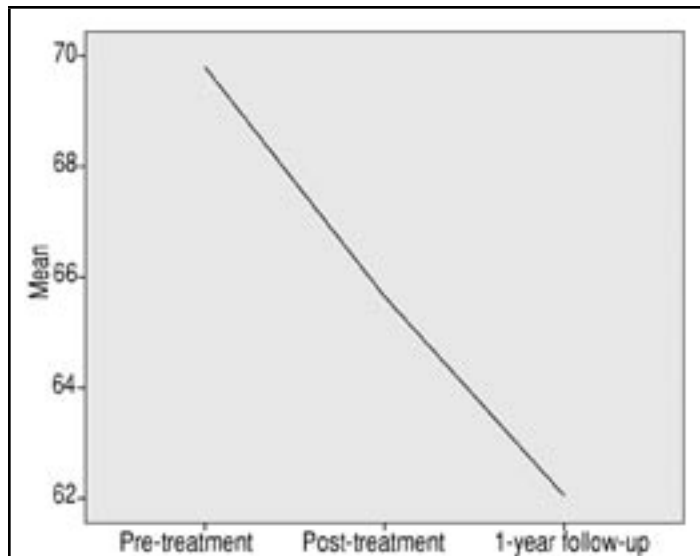


Figure 1.— Trends in the effects of the comprehensive pain program on somatization.

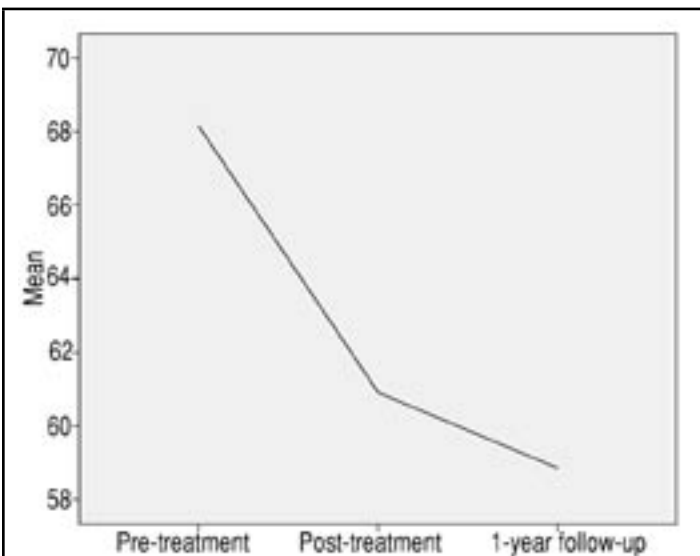


Figure 2.— Trends in the effects of the comprehensive pain program on depression.

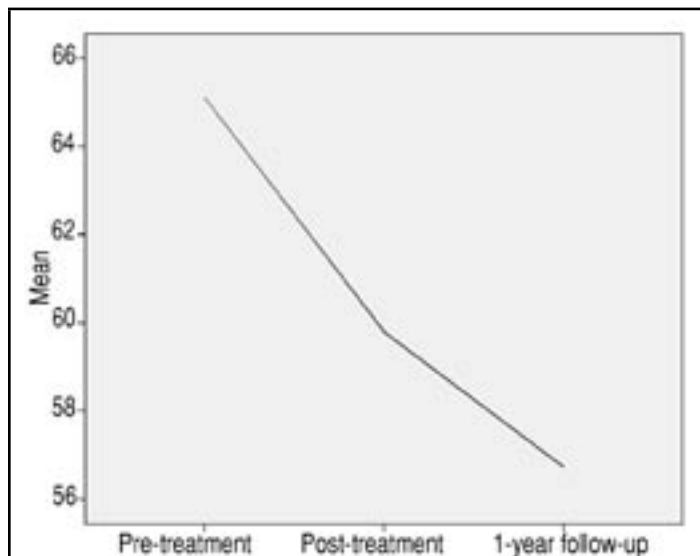


Figure 3.— Trends in the effects of the comprehensive pain program on anxiety.

those who had substantially reduced high level opiate use maintained reduced utilization.

Discussion

In general, respondents manifested a decrease in their utilization of high level Schedule II opiates, and an increase in their overall level of functioning both at work and at home. The results of the psychometric testing indicated decreases in somatization, depression, and anxiety, as well as an increase in quality of life. These results suggest the possibility that the multidimensional format of the program leads to the multidimensional outcomes observed in this study. The primary limitation of this study was the small sample size.

However, outcomes are consistent with previous studies, supporting the effectiveness of a comprehensive pain program in the reduction of opiate analgesic utilization, symptoms of somatization, depression, and anxiety. Importantly, an increase in functional capacity and overall quality of life was also demonstrated. It is premature to generalize the results of this study due to the size of the sample. However, this study suggests the need for further research in the area of intensive outpatient programs as a modality for both treatment and interpersonal support, specifically for patients suffering from chronic pain. Future studies should focus on this aspect of the intensive outpatient program as it relates to chronic pain and other bio-psycho-social health issues.

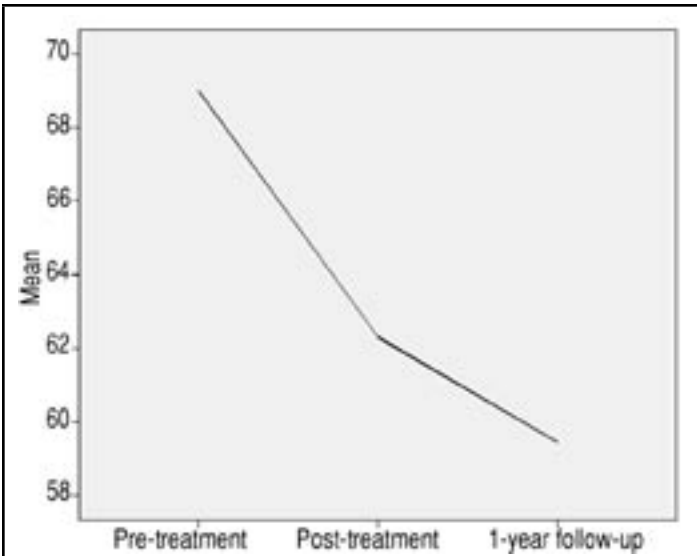


Figure 4.— Trends in the effects of the comprehensive pain program on global severity.

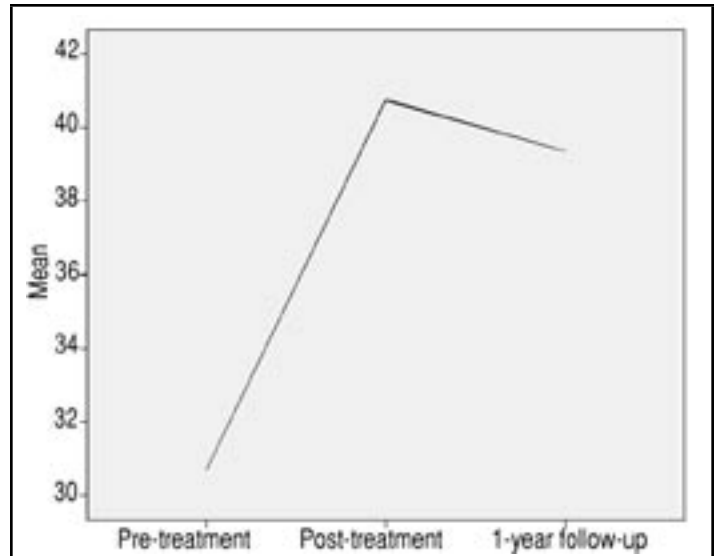


Figure 5.— Trends in the effects of the comprehensive pain program on quality of life.

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Authors' Affiliation:

- Integrative Healthcare Group & Rehabilitation Center, Honolulu, HI 96814 (I.D.Z., S.O., M.C.)
- Department of Psychology, University of Hawai'i at Manoa, Honolulu, HI 96822 (S.C.)

Correspondence to:

Ira D. Zunin MD
 Integrative Healthcare Group & Rehabilitation Center
 932 Ward Ave.
 Honolulu, HI 96814
 Ph: (808) 535-5555; Fax: (808) 535-5556
 Email: zunin@manakaiomalama.com

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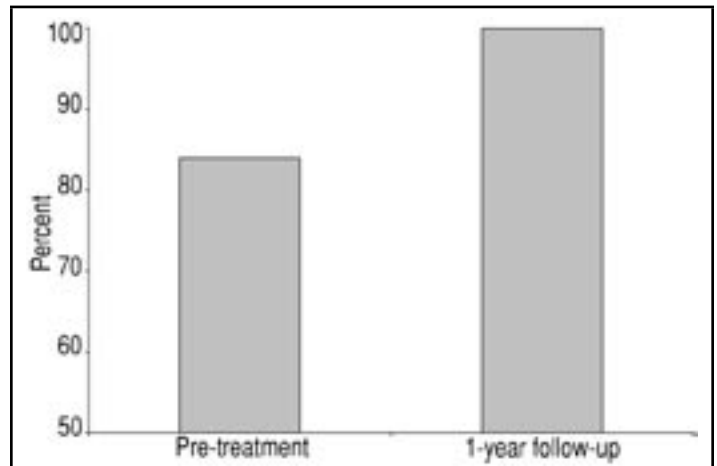


Figure 6.— Percentage of participants who were disabled before and after the program.

A Survey of Injuries and Medical Conditions Affecting Competitive Adult Outrigger Canoe Paddlers on O'ahu

Amanda Haley MD and Andrew Nichols MD

Abstract

Outrigger canoe paddling is a very popular competitive sport in the Hawaiian Islands and Polynesia. The sport is growing rapidly in Australia and the mainland US.

Purpose: *To assess the types and severity of musculoskeletal injuries and medical conditions that affect adult outrigger canoe paddlers on O'ahu, Hawai'i.*

Methods and Study Design: *A survey was designed to assess outrigger canoe paddling injuries and medical conditions based upon a literature review of medical conditions that affect other paddling sport athletes (e.g., rowers, kayakers, and canoeists). The data were compiled and analyzed using statistical software.*

Results: *Surveys were completed by 278 (142 women, 145 men) (9.5%) of the 3,068 registered O'ahu adult paddlers during the summer of 2006. The subjects' mean age was 39 years (range = 18-72 years). Sixty-two percent of respondents had experienced paddling-related musculoskeletal injuries. The most common sites of involvement were shoulder (40%), and back (26%), followed by wrist/hand (10%), elbow (9%), and neck (9%). Forty-nine percent of participants experienced skin lacerations, 33% developed heat illness, 32% sustained injuries from exposure to coral or sea creatures, and 24% developed skin infections. Ten percent of subjects reported prior histories of skin cancer or precancerous lesions. There was no statistically significant increase in injuries when comparing age groups, sex, or boat position. There was a statistically significant increase in the number of injuries in those that paddled in the long and short distance seasons over those that paddled only short distance. Short distance races are sprints less than 2000 meters and long distance races are endurance events usually 20 to 30 kilometers with some more than 40 kilometers. There were also more injuries reported in the first season compared with the second season and in the third or later season as compared with the second, although this may be due to limitations of the survey design.*

Conclusions: *Outrigger canoe paddlers report a high prevalence of musculoskeletal injuries and illnesses related to their sport. The shoulder and back were the most common sites of injury. The rib was the most commonly fractured bone. Paddling may also predispose to such environmentally related conditions as heat illness, injury from sea creatures, and perhaps skin cancers.*

Significance of Findings: *To the authors' knowledge, this is the first study to identify the medical conditions that affect adult competitive outrigger canoe paddlers on O'ahu. The findings will help paddlers, coaches, and medical practitioners to better identify and understand paddling-related injuries and illnesses.*

Introduction

Outrigger canoe paddling is an extremely popular sport in Hawai'i and Polynesia. Among the 10,000 outrigger canoe paddlers in the Hawaiian Islands, more than 4,000 adults and children are registered participants within two O'ahu outrigger canoe racing associations.^{1,2,3} Outrigger canoe paddling is also spreading rapidly to parts of the mainland United States, Australia, New Zealand, and Japan. The Hawaiian-style outrigger canoe (*wa'a* in Hawaiian language) differs from a traditional Olympic-style canoe by the presence of a stabilizing outrigger float (*ama*). The *ama* is attached to the canoe hull via two perpendicularly oriented struts (*iako*).² The *ama* provides stability

of the canoe, but introduces much less hydrodynamic inefficiency than making a single hull canoe wider. Compared to other types of canoes, outrigger canoes can be quite fast, yet are also capable of being paddled and sailed in rough water.

The first outrigger racing canoe was commissioned for construction by Prince Kuhio of Hawai'i and won numerous races between 1907 and 1910. Outrigger racing canoes were abundant in Hawai'i by the 1930s. Races are conducted both as point-to-point open water (long-distance) events and as short-distance (regatta) contests in which each canoe completes laps within a designated racing lane over a one-quarter to one-half mile course. Most outrigger canoe team competitions utilize six-person canoes. Athletes occupying the first five seats, paddle on alternating sides of the canoe, while the rear seat is taken by the steersperson who captains the canoe, motivates the crew, and sets the canoe up for the best course to catch the swells. Special outrigger canoe races are conducted for one-person or two-person (tandem) outrigger canoes.

The short distance season begins in late March or early April with daily practice training for one or two hours. The regatta season consists of weekly races throughout June and July with the championships held in August. The races range from 500 to 2000 meter sprints and take place from 8:00 AM to mid-afternoon depending upon the age range competing. Younger paddlers compete earlier.

The long distance season begins in August after the completion of the short distance season. Training is held daily and races are weekly throughout August and September culminating in womens' and mens' Moloka'i Hoe races from O'ahu to Moloka'i held two weeks apart. Race lengths are generally 20 to 30 kilometers. The Moloka'i Hoe is > 60 kilometers.

A search of the PubMed MEDLINE database using search terms "canoe," "kayak," "outrigger canoe," and "paddling" identified numerous studies of Olympic-style canoeists and kayakers but only two studies of outrigger canoe paddlers. This review confirms that all forms of canoeing and kayaking rely on upper body strength and conditioning and require repetitive motion of the joints of the shoulders, elbows, and wrists. Paddling exercise is potentially aerobic and/or anaerobic in nature depending on the length of the event.⁴ A survey of hard shell whitewater canoe and kayak paddlers identified that the shoulder, wrist/hand, and elbow/forearm to be the most common injury sites, sprain/strains as the most frequent injury types, and that 36%-47% of paddlers sought medical attention for these injuries.⁵ Among 500 British long distance kayakers, 23% experienced wrist tenosynovitis after a long distance event.⁶ The most common sites of injuries among rowers were the low back, ribs, chest wall, shoulder, forearm, and wrist.⁷ Additional reports document a high incidence of facial traumatic injuries during whitewater canoeing and kayaking,⁸ and frequent occurrences of sprains, tendonitis, and chronic musculoskeletal pain in competitive Olympic paddlers.⁹ The two previous outrigger canoe paddler studies utilized Australian outrigger canoe paddlers. Stanton et al. surveyed 101 outrigger canoe

paddlers and found that most supplemented their canoe training with cross/strength training, a majority used ergogenic aids, and 49% reported injuries from paddling, with the most common sites being the shoulder and lower back.¹⁰ Humphries, et al. evaluated 21 outrigger canoe paddlers for body stature, aerobic power, and muscular strength and force, to conclude that measurements were similar to those of athletes in other water craft sports and that muscular imbalances may provide a vulnerability to musculoskeletal injuries.¹¹ As a result of the review of the two previous articles, questions on crosstraining, and injuries to back and shoulder were added to the survey. Review of these articles also lead us to hypothesize that injuries to outrigger canoe athletes would be similar to those of other rowing sports based on the similarities in body measurements. Therefore we focused the survey to include common injuries encountered by other paddling disciplines. The purpose of this survey study is to identify characteristics of a large sample of adult competitive outrigger canoe paddlers on O'ahu and their histories of paddling-related injuries and medical conditions.

Methods

Subjects

Websites of the two major O'ahu-based outrigger canoe racing associations—the O'ahu Hawaiian Canoe Racing Association (OHCRA) and Hui Wa'a--were consulted to identify club contact information for the 2006 summer regatta outrigger canoe racing season.^{12,13} Ten outrigger canoe clubs (6 from OHCRA and 4 from Hui Wa'a) initially agreed to voluntarily provide subjects for participation in the survey study. Surveys were distributed at practices and regattas. In addition, paddlers from other clubs were approached during four different summer weekend regattas. Investigators visited each paddling clubs' tents several times during each event to identify new subjects over the course of the day. To preserve confidentiality, subjects were given the option of returning the surveys to an empty box left in their tent or by mail. Surveys returned at the practices or regattas were collected within one hour of distribution. Participation was strictly voluntary. For inclusion in the study, subjects must be registered (OHCRA or Hui Wa'a) for the O'ahu outrigger canoe racing season, and age 18 years or older. Exclusion criteria were illegible survey completion and age less than 18 years. The study received approval by the Hawai'i Pacific Health Institutional Review Board (RP #06-042-2HPH1) and the University of Hawai'i Committee on Human Studies (CHS#14455).

Survey Instrument

A survey was designed to assess injuries and medical conditions that affect outrigger canoe paddling based upon a literature review of medical conditions that affect other paddling sport athletes, and through consultation with sports medicine physicians and experienced paddlers on O'ahu. The survey instrument was reviewed by a senior academic physician clinical researcher, academic sports medicine physician (co-investigator), and biostatistician.

The survey obtained general data on subject age, gender, ethnicity, paddling position(s), paddling experience, paddling frequency, other training activities, and any chronic medical conditions. Each subject was also asked to provide details of any paddling-related medical conditions including those affecting the skin (sunburn, skin cancer, infections, lacerations, marine organism injuries, etc.), head

(concussions, trauma, etc.), heat injury, and gastrointestinal illnesses. Further details were obtained concerning all prior paddling-related musculoskeletal injuries by site, injury type, types of treatment(s) received, and significance of disability.

Data and Statistical Analysis

The data was compiled and analyzed using spreadsheet and statistical software, SAS version 9.1, with the assistance of biostatisticians.

Results

Overall, 293 of the 320 surveys distributed were collected, for a response rate of 92%. Thus, 9.5% of the 3068 adult paddlers (54% men, 46% women) officially registered for the 2006 O'ahu summer regatta season participated in the study. The subjects' mean age was 39 years (range = 18-72 years).

Age	Male	Female
18-29	29 (49%)	30 (51%)
30-39	49 (50.5%)	48 (49.5%)
40-49	25 (43.9%)	32 (56.1%)
50-59	24 (53.3%)	21 (46.7%)
60-69	10 (55.6%)	5 (44.4%)
70-79	1 (100%)	0
Total	138 (49.8%)	136 (50.2%)

10 surveys did not report age, 3 did not report gender, 3 did not report age or gender.

The participants' self reported ethnicities were Caucasian 57%, Asian 41%, Pacific Islander 26%, American Indian 4%, African American 1.4%, and other 8%. The sum is greater than 100% as some subjects identified with more than one ethnicity.

Only 26 (8.9%) survey participants reported having chronic diseases, such as asthma (5%), hypercholesterolemia (3%), hypertension (2%), deep venous thrombosis (2%), and alcoholism, cancer, diabetes, hypothyroidism, liver disease, lung disease, osteoarthritis, heart disease, stroke, systemic arthritis, and ulcerative colitis (1% each). Sixty-two percent of respondents had experienced paddling-related musculoskeletal injuries. The most common anatomic sites of involvement were shoulder (40%), back (26%), wrist/hand (10%), elbow (9%), and neck (9%). There were no statistically significant differences in the numbers of injuries sustained by age, gender, or canoe seat position. Heat illness was reported by 33% of participants. Skin ailments also occurred frequently with skin lacerations affecting 49%, injuries from exposure to coral or sea creatures experienced by 32%, and non-coral related skin infections noted by 24%. Ten percent of subjects reported being diagnosed with skin cancer or precancerous lesions. Among the 15 survey participants who had experienced paddling related bone fractures, 11 involved the ribs, two the wrist/hand, and one each affecting the head/neck, back, and ankle. (See Table 2)

When questioned about the duration of musculoskeletal injuries sustained, 49.9% reported symptoms that lasted for one week to one month, 10.8%, for less than one week, 24% for one to two weeks, 25% for two weeks to one month, 33.6% for longer than one month, and 6% had developed permanent symptoms. (See Table 3)

Musculoskeletal Injury	181 (61.8%)
Shoulder	116 (39.6%)
Back	76 (25.9%)
Wrist/Hand	29 (9.9%)
Elbow	27 (9.2%)
Neck	26 (8.9%)
Leg	16 (5.5%)
Arm	15 (5.1%)
Knee	11 (3.8%)
Ankle	8 (2.7%)
Groin	2 (0.7%)
Sunburn Requiring Medical Attention	22 (7.5%)
Pre-Cancerous Skin Lesion	18 (6.1%)
Skin Cancer	8 (2.7%)
Head Injury	11 (3.8%)
with loss of consciousness	1 (0.3%)
Gastrointestinal Illness	11 (3.8%)
Unknown pathogen	9 (3.1%)
E. coli	1 (0.3%)
Staphylococcus	1 (0.3%)
Coral or Sea Creature Injury	95 (32.4%)
Man o' War	29 (9.9%)
Box Jelly Fish	8 (2.4%)
Coral	75 (25.6%)
Fish /Insect/Animal Bite	7 (2.4%)
Skin Laceration Not Sea Creature Related	143 (48.8%)
Skin Infection Not Sea Creature Related	71 (24.3%)
Bone Fracture	15 (5.1%)
Rib	11 (3.75%)
Wrist/Hand	2 (0.7%)
Head/Neck	1 (0.3%)
Back	1 (0.3%)
Ankle	1 (0.3%)
Heat Illness	98 (33.4%)

Although a majority of survey participants (55.8%) did not seek treatment for paddling related injuries, 35% consulted a physician, and 2% visited a hospital emergency department. Most reported musculoskeletal injuries (47%) did not limit paddling participation or activities of daily living, 36% experienced mild disability which only interfered with exercise, 14% had moderate disability that also interfered with daily function, and 2% suffered a severe disability that prevented them from working or going to school. (Table 3).

Paddlers who participated in the long distance season reported significantly more musculoskeletal injuries (143/279, 51%) than those paddlers who did not paddle long distance (38/279, 14%) ($\chi^2 = 16.15$, $df = 1$, $p < .0001$). (Table 3)

Paddlers also experienced significantly more paddling-related injuries during their first season or third or later season of paddling

Injuries Long vs Short Distance	
Total Number of Paddlers Reporting Long vs Short distance Involvement	279 (100%)
Paddlers Competing in Both Long and Short Distance Seasons	207 (74.1%)
Musculoskeletal Injuries in Paddlers competing in both Long and Short Seasons	143 (51.3%)*
Musculoskeletal Injuries in Paddlers Competing only in Short Distance	38 (13.6%)
Treatment for Injury ***	
None	179 (55.8%)
Doctor Visit	113 (35.2%)
Emergency Department	7 (2.2%)
Severity of Disability **	
No Disability - able to work and perform daily activity	149 (46.9%)
Mild - unable to paddle or exercise	115 (36.2%)
Moderate – unable to perform daily activities	47 (14.8%)
Severe – unable to work	7 (2.2%)
Duration of Injury ****	
Less than one week	33 (10.8%)
1-2 weeks	76 (24.8%)
2 weeks to 1 month	77 (25.08%)
More than one month	103 (33.6%)
Permanent Disability	18 (5.9%)

* $p < .0001$ [χ^2] = 16.158, $df = 2$

**Musculoskeletal Injuries excluding fractures

***Musculoskeletal, skin, sea-creature/coral injuries, and heat illness

****Musculoskeletal injuries including fractures

Season	Total Injured*	One Injury	Two Injuries	Three Injuries	Four Injuries
First	88 (31.4%)	70 (79.6v)	14 (15.9%)	3 (3.4%)	1 (1.1%)
Second	39 (14.0%)	30 (76.9%)	9 (23.0%)	0	0
Third or After	89 (31.8%)	57 (64.0%)	21 (23.6%)	5 (5.6%)	6 (6.7%)
Total	216	157	44	8	7

* $p < 0.001$ comparing the number of injuries occurring in the first season to those occurring in the second season

** $p < 0.001$ comparing the number of injuries occurring in the second season to those occurring in the third season or after

compared to the second season of paddling ($\chi^2 = 0.93$ and 0.15 respectively, $df = 1$, $p < .001$ for both). (Table 4)

Discussion

To our knowledge, this is the first study to examine adult outrigger canoe paddling-related injuries and medical conditions. The survey group was diverse in regards to gender, age, and ethnicity. Musculoskeletal injuries were common in this survey population but most were mild in severity and short in duration.

There was a statistically significant increase in the number of injuries in those that paddled in the long and short distance seasons compared to those that paddled only short distance. The higher incidence of injuries found in long distance paddlers is likely due to the increase in repetitive movements, cardiovascular and muscular

stress, water exposure, and lack of a substantial rest and recovery period between the consecutive short and long distance seasons.

The higher numbers of injuries described during the first season or third or later seasons of paddling may be due to limitations in the wording of the survey. Perhaps, paddlers are more likely to remember during their inaugural paddling seasons and may be less able to differentiate between subsequent seasons. This finding may also be attributed to relative lack of conditioning, experience, and or proper technique used in the first season of competition. Further, the observed increase in injuries during the third or later paddling season may be due to increased training volume or the additional participation in the long distance paddling season.

The shoulder was the most commonly reported site of musculoskeletal injury in our study as well as in white water kayakers. This differs from injury reports of rowers who most commonly injury their backs. Rumball et al suggest that the high incidence of back injuries in rowers is produced by the repetitive spine flexion that is characteristic of rowing but limited in outrigger canoe paddling.⁷

The high rate of rib fractures found in this study is consistent with previous studies on rowers that report 6% to 12% incidences of rib stress fractures.^{14,15} Our survey did not differentiate between overuse related rib stress fractures and acute traumatic rib fractures. Most subjects reported "cracking a rib" which suggests acute traumatic etiologies. Perhaps, undiagnosed stress injuries are leading to an increase in rib fractures in outrigger canoe paddlers.

Previous episodes of heat-related illness was prevalent in the study population. Unfortunately, the survey did not differentiate between various severities of heat illness. Heat-related medical conditions are exacerbated by warm temperatures, low wind velocities, sun exposure, and inadequate fluid intake while paddling.

The canoe seat position did not seem to influence the frequency of paddling related injuries. Seat position has influenced rates of injuries in other water sports. Preferred seat position may be less important in outrigger canoeing as paddlers often switch seats, with the exception of the steersperson.

A limitation of this study is that survey instrument is not validated and requires a recall of injuries and illnesses that have affected a study participant. Other limitations include the exclusion of non-registered former paddlers, some of whom may have experienced serious, career-ending injuries, and a recent sewage spill into a common practice site waterway that could have increased the numbers of skin infections.

In summary, the results show that musculoskeletal injuries are common in outrigger canoe paddlers, and that most injuries are mild in severity and short in duration. Additionally, paddlers participating in both the long and short distance seasons sustain more injuries than those that participate only in the short distance season. The rib is the most commonly fractured bone in paddlers, and more injuries occur during the first or third or later season of than during the second season of paddling.

Hopefully this study will help paddlers, coaches, and medical practitioners to better identify, understand, and prevent paddling-related injuries and illnesses. Medical practitioners should suspect rib injuries in paddlers and encourage rotator cuff and core strengthening to prevent overuse injuries of the shoulder and back. Coaches should reinforce proper paddling techniques and consider teaching a paddling stroke that decreases the amount of force on the ser-

ratus anterior and external oblique muscles to decrease the risk of rib stress injury.¹⁴ Paddlers should be encouraged to drink to thirst and replace electrolytes during long distance races and frequently be assessed for signs and symptoms of heat illness to prevent life threatening increases in body temperature and heat stroke. Paddlers should aggressively seek sun protection and have lacerations and skin injuries properly cleaned and evaluated by medical personnel if there are signs of infection. Finally, paddling officials and race coordinators should have a documented emergency plan in place that is practiced regularly and includes strategically placed automated external defibrillators.

Prospective studies with large sample sizes are still needed to properly assess the medical risk and benefits of outrigger canoe paddling. It is our hope that data from this study will enforce the need for preparation and precaution in this sport and encourage future generations to participate in this unique part of Hawaiian culture safely.

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Authors' Affiliation:

John A. Burns School of Medicine University of Hawai'i, Honolulu, HI 96813

Correspondence to:

Amanda Haley MD
2330 Pikake Place
Honolulu, HI 96817
Ph: (808) 387-0444
Fax: (808) 547-4614
Email: behlingamanda@yahoo.com

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Hawai'i's "Going Home Plus" Project: A New Option to Support Community Living

Christy M. Nishita PhD; Jean Johnson DPH; Madi Silverman; Rebecca Ozaki PhD; and Lillian Koller

Abstract

The *Going Home Plus* project facilitates the transition of individuals from hospitals, nursing facilities, and intermediate care facilities for the mentally retarded (ICF-MRs) into community settings. The project is a collaborative effort between the State of Hawai'i Department of Human Services (DHS), the University of Hawai'i Center on Disability Studies and their community partners to help elderly and younger persons with disabilities who have been living in an institution for at least six months and express a choice for community living. The project, which provides services such as transition coordination and telemedicine, strives to become a valuable resource for institutionalized patients, their families, and medical professionals.

The right of persons with disabilities to live in integrated community settings is a core value within the *Olmstead v. L.C.* 1999 Supreme Court decision. This decision requires states to provide services in the "most integrated setting appropriate" for persons with disabilities, and determined that unnecessary institutionalization violated the Americans with Disabilities Act (ADA).¹ But for many older adults and persons with disabilities who have lived in institutions for a long time, returning to the community is difficult. Despite a preference to live in a home of one's choice in the community, there may be a lack of supportive services or accessible, affordable housing to make this move possible.

To assist states in promoting community-based alternatives, the Centers for Medicare & Medicaid Services (CMS) started providing Nursing Home Transition Grants in 1998. The Deficit Reduction Act of 2005 enacted the Money Follows the Person Rebalancing Demonstration to assist States in making changes to their long-term care support systems by reducing reliance on institutional care and developing community-based options. In 2007, Hawai'i received a Money Follows the Person grant to assist institutionalized persons with a preference to live in the community. This grant is funding the *Going Home Plus* project, which strives to become a valuable resource for institutionalized patients, their families, and medical professionals.

Project Purpose and Background

Going Home Plus is a collaborative effort between the State of Hawai'i Department of Human Services (DHS), the University of Hawai'i Center on Disability Studies and their community partners to discharge individuals from hospitals, nursing facilities, and intermediate care facilities for the mentally retarded (ICF-MRs) and transition them into community settings. The project targets Medicaid-eligible individuals institutionalized for at least six continuous months. Eligible Medicaid populations include the elderly, persons with physical disabilities, and persons with developmental disabilities who express a choice for community living.

Going Home Plus builds on the success of the *Going Home* project implemented by DHS in July 2003. The original project provides the state's acute waitlisted Med-

icaid patients requiring a nursing home level of care with the choice to leave the hospital and live in residential or foster family homes. This program provides more choices for clients, frees much-needed beds in acute-care facilities, and saves taxpayers about \$78,000 per patient each year.

The new *Going Home Plus* project builds on *Going Home* by reaching out to long-stay residents of nursing facilities and ICF-MRs. The project is supported by a stakeholder group composed of community partners representing hospitals, nursing home associations, policymakers, key advocacy groups, and consumers. The group provides regular input and oversight of the project's implementation.

Rebalancing the System

The overarching goal of *Going Home Plus* and CMS Money Follows the Person projects in other states is to rebalance the long-term care system, which is biased toward care outside the home. Nationwide, Medicaid spent \$67 billion on long-term care in 2000, 75% of which paid for nursing home and institutional care.² Nursing home care has become a form of entitlement, while community-based care is more difficult to access. For example, it is easier for persons in need of long-term care to become eligible for Medicaid payments by entering a nursing home.²

One exception is the Medicaid Waiver program, which provides a range of services to nursing home-eligible persons living in the community. In many states, however, Medicaid Waiver programs cap both the number of participants and the amount of allowable expenditures.² The imbalance between institutional and community care, coupled with the *Olmstead* Decision, serve as an impetus for States to transition individuals from institutional to community settings. In Hawai'i, *Going Home Plus* intends to demonstrate:

- An increased number of persons with long-term care needs living in the community;
- An improved quality of life for community-based individuals;
- Increased provider capacity to manage complex care in the community; and
- Reduced average annual costs compared to institutional services.

Identification of Candidates and Key Services

Potential transition candidates are identified through self-referral, referral from medical professionals or family members, or by review of health assessment reports (e.g., 1147 and 1150 level of care assessments, Minimum Dataset 2.0 (MDS)). A transition coordinator meets with candidates and conducts a preference assessment to ensure the person wants to return home and is aware of community options. Candidates and family members who want to participate in *Going Home Plus* work with the transition coordinator and facility staff to develop a transition plan that includes community-based services as well as a back-up plan.

A *Going Home Plus* housing coordinator helps find a community residence, which could include an individual's own home or apartment, a public or subsidized apartment, or a licensed/certified residence. Transition and housing coordinators arrange for goods and services needed to establish a community residence, such as:

- Housing coordination;
- Housing locator services;
- Roommate locator services;
- Trial visits to qualified community residences;
- Initial housing deposits;
- Utility hook-ups and deposits;
- Essential furniture, appliances, household items and clothing;
- Initial food stocking; and
- Financial services.

Once in the community, individuals have access to a range of services that support independent living, including:

- Case management;
- Nursing and medical services;
- Personal care assistance;
- Environmental modifications;
- Adult day health;
- Home-delivered meals; and
- Transportation.

These services are currently provided in Hawai'i by Medicaid Waiver programs. When the State transitions approximately 37,000 aged, blind and disabled (ABD) clients into the new QUEST Expanded Access (QExA) managed care program in February 2009, two health plans will provide all of the above-mentioned services and expanded home- and community-based services for these Medicaid beneficiaries. Under the QExA contracts, DHS requires the health plans to expand home- and community-based services by at least 5% each year. DHS will financially reward the health plans if they exceed the requirement, and financially penalize the plans if they do not meet the requirement.

QExA will ensure continuity and quality of care for ABD clients by providing comprehensive medical treatment coordinated by teams of healthcare professionals. QExA will also offer additional health services for the beneficiaries, including special programs focused on home- and community-based care, diabetes, heart disease, obesity, and neurotrauma.

Persons transitioning to the community who have complex medical or behavioral problems can also benefit from two telehealth services: remote patient monitoring and video monitoring. The former monitors vital signs, reports certain labs (e.g., blood sugar), provides timely medical reminders, and alerts clinicians when vital signs or other information are out-of-range or missing. The latter system allows clinicians to remotely manipulate video cameras so they can view specific areas of concern (e.g., skin infections). It is hoped that these telehealth services will help transitioned residents remain in the community and reduce the number of re-hospitalizations, emergency room visits, or emergency transports between islands.

Finally, to support informal and paid caregivers in the community, *Going Home Plus* established a "training institute" to help them care

for persons with medical conditions and behavioral health issues. The curriculum covers subject areas such as behavioral interventions, wound care, obesity, vent care and home dialysis.

Challenges in Hawai'i

Compared to other states, Hawai'i faces unique challenges in transitioning institutional residents to the community. In many other states, nursing homes are "over bedded" with many nursing facility residents who are higher functioning. Transition programs in other states are thus aimed at higher-functioning nursing home residents who are inappropriately living in the facility. Hawai'i, on the other hand, is "under bedded," meaning there is an excessive demand for or shortage of nursing home beds. Hawai'i is ranked second in the nation in nursing home occupancy with 94% of beds in the state occupied, compared with the national average of 85%.³

With beds in short supply, nursing homes can be more restrictive in determining which patients to admit. Persons with lower acuity levels may be preferred over persons with more complex medical conditions. As a result, there is a list of individuals residing in hospitals and waiting for nursing home beds. Finding placement in a nursing home is difficult because these hospital patients often have challenging medical conditions, such as obesity or behavioral problems.

To address this problem, *Going Home Plus* relocates clients to community-based settings, rather than nursing homes. Transition coordinators partner with social workers, nurses and discharge planners at local hospitals to discuss patients on the waitlist and meet with these patients individually. If the patient meets project eligibility requirements and expresses a preference to return to the community, the transition planning process begins.

Hospital staff, transition coordinators, families and patients work together to assure that adequate community-based services, a supportive home environment, and a back-up plan are in place. The training institute supplies family and formal caregivers with skills to care for these medically challenging patients in the community. Another problem in Hawai'i is ensuring an adequate supply of public or subsidized housing for transitioned individuals. According to the Hawai'i Public Housing Authority, Hawai'i is plagued with long waitlists within its public housing and Section 8 programs. Currently, there are more than 9,000 people on the waitlist for about 8,000 public housing units. For the Section 8 voucher program, there are more than 3,000 on the waitlist, and the waitlist is closed to new applicants (M. Flores; Director, Hawai'i Public Housing Authority; oral communication; January 2008). The *Going Home Plus* project has a housing coordinator to help participants who are interested in public or subsidized housing. The housing coordinator helps individuals complete housing applications, navigate the tight waiting lists and become competitive renters in the private landlord-tenant sector.

Next Steps

The *Going Home Plus* project began transitioning facility residents in August 2008. An evaluation of the project is being conducted by the University of Hawai'i Center on Disability Studies to monitor the implementation, outcomes and impact of the project. *Going Home Plus* intends to make a lasting positive impact on the long-term care system by ensuring adequate pathways and support for

institutionalized individuals who prefer community living. Therefore, it is important for healthcare professionals to be aware of this project so they can identify and refer potential transition candidates.

Individuals who live in an institution for long periods of time have limited options to transition to the community because they often have lost their prior housing and need assistance in coordinating appropriate housing and services. Successful transitions to the community are a collaborative effort among patients, their families, physicians and other medical professionals. The involvement of the medical community is key, as *Going Home Plus* enables individuals to express their preference and choice for community living – a freedom that is supported by the Olmstead Decision.

Authors' Affiliations:

- Center on Disability Studies, University of Hawai'i, Honolulu, HI 96822 (C.M.N., J.J., R.O.)


- Hawai'i Department of Human Services, Honolulu, HI 96813 (M.S., L.K.)

Correspondence to:


Christy M. Nishita PhD
 Assistant Professor
 UH Center on Disability Studies
 1776 University Ave., UA 4-6
 Honolulu, HI 96822
 Ph: (808) 956-6638
 Fax: (808) 956-6903
 Email: cnishita@hawaii.edu

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LCME Accreditation: Role of Students

Andrew L. Middleton MS3, John A. Burns School of Medicine, University of Hawai'i

In January 2009, the Liaison Committee for Medical Education (LCME) conducted a site visit at the John A. Burns School of Medicine (JABSOM) as part of the school's re-accreditation process. Part of the process includes an independent student analysis of the medical doctor (MD) program at the school. This analysis, in conjunction with the American Association of Medical Colleges (AAMC) Graduation Questionnaire, and the students' meeting with the survey team during the site visit, is the student-based information that the survey team uses in evaluating the school. According to the LCME, the student analysis should be "based on a comprehensive survey of student opinion in all four years, covering a wide range of subjects important to students".¹ The LCME provides 10 specific pieces of information that the report should include. In general, LCME recommends that the analysis cover issues important to the school or its students.

In November 2007, volunteers from all four current classes were solicited to create a student survey committee to design, execute, and analyze a comprehensive survey to be administered to the entire student body. The student survey committee was comprised of two student representatives from each class. In addition, there were two chairs of the committee (a first- and second-year medical student) and a working committee liaison (second year medical student) who represented the students to the rest of the LCME-related, University-wide committees.

The areas of assessment included in the survey were selected according to a combination of LCME analysis requirements, the JABSOM curricula evaluation, and independent student concerns expressed through the LCME student survey committee. Two surveys were created. The first was a general survey evaluating JABSOM in counseling, advising, resource accessibility, adequacy of facilities, student health and well-being, academic electives, research opportunities, and an overall assessment of the curriculum. The second survey evaluated courses and classes in the first and second year, third year clerkships, and fourth year electives and required rotations. The survey was cumulative for each class; i.e. MSI students responded to first year questions, MSII students responded to first and second year questions, and so forth. These surveys were aimed at each medical school year class and each class' unique experience at JABSOM. Questions were answered on a Likert ratings scale and included a free text section for additional comments. Students were asked to provide qualitative comments on various aspects of the JABSOM program that included, but was not limited to, strengths and weaknesses of the program, and most and least valued clerkship rotations, classes, and PBL tutorials.

A mock survey was administered to the entire student body approximately two months prior to the formal survey. The purpose was to assess the clarity of candidate questions for the actual survey, address areas of student concern underrepresented on the survey, and evaluate the data collection method. The mock survey was one

quarter the size of the final survey and administered over a one-week period. Although a significant portion of the questions was modified, the mock survey formed the basic structure for the final survey.

The student surveys were developed with an online-based survey program, SurveyMonkey Professional, and employed a secure-link server. Students were asked to complete the survey via a secured email link disseminated through the class' listserv. Students completed the surveys and were given the option to leave their name and e-mail address for survey participation incentive purposes. This incentive was provided as a token of thanks and appreciation to the students from the student survey committee but was of negligible value for the purposes of this analysis. Access to the survey data was restricted to students of the LCME Student Survey Committee and the LCME Working Committee Liaison.

The survey was presented to each class by their respective committee members at class meetings. Surveys were made available for a period of two weeks. Response rates were high. Based on a gross estimate of 260 students within the JABSOM program, the overall response rate for the student surveys was about 84.6% for all four class years combined.

The students compiled survey data with assistance from an independent statistician. In addition, graphical representations of key questions were also created for inclusion in the final report. The data from each class were analyzed by the respective representatives from that class and submitted to the full survey committee. Comments were reviewed by student members of the LCME Student Survey Committee and compiled into class specific reports and the overall report for JABSOM. The final report was compiled and edited by the entire committee under the leadership of the MS2 chair and the working committee chairman. The content of the survey and final analysis were solely the responsibility of the students. No administration or faculty input was solicited or used. To that end, the content of the analysis represented the student body's unbiased opinion of JABSOM and the MD curriculum.

The final analysis was submitted simultaneously to the JABSOM core committee, JABSOM LCME task force, and LCME in August 2008. The 80-page report represented the survey committee's candid and representative analysis of the student experience in the M.D. curriculum at JABSOM. The analysis highlighted the extremely favorable opinion students had for the JABSOM M.D. curriculum. It also described specific areas of concern and, where appropriate, made recommendations for improvement.

The report was well received by the visiting LCME committee. Its content was used to formulate many of the questions, points of clarification, and areas of concern raised by the visiting LCME committee during their visit with both students and the administration.

The second portion of the LCME accreditation process that included students occurred during the site visit. It was conducted by the sub

committee representing the LCME. The committee conducting the site visit was composed of six members, one of whom was a fourth year medical student from another US LCME accredited medical school. The site visit was conducted over a four day period. Two student luncheons with the committee were held over the visit. At the first luncheon, the committee met with current MS1 and MS2 students and discussed the pre-clinical curriculum, school facilities, and first- and second-year electives. The second luncheon included members of the MS3 and MS4 class; topics discussed included the pre-clinical curriculum, the third-year core clerkship curriculum, electives in the third and fourth year, career advising, and research opportunities. No members of the JABSOM faculty or administration were present at either luncheon. The students were encouraged to discuss matters candidly. Fourth-year medical students also conducted tours of two of the core clinical facilities for the visiting site team. The two facilities visited were the Queen's Medical Center and the Kapiolani Medical Center for Women and Children. These facilities were selected as they are the two centers where the majority of clinical education in the MD curriculum occurs.

For the student members of the survey committee, the entire process provided an invaluable experience in comprehensively analyzing an institution and using that information to suggest improvements. It also ensured that student evaluation of JABSOM would form a core component of the pending accreditation decision by the LCME.

The entire process, however, was not without challenges. While participation from students in the pre-clinical portion of the curriculum was very high, participation from the third- and fourth-year students was, initially, low. Third- and fourth-year students have significantly more daily scheduled activities than first- and second-

year students and are also not on campus often. So as to increase participation from those classes, a small incentive for completing the survey, in the form of gift cards in a nominal amount, was offered to all class years. In addition, members of the survey committee were deployed to class meetings and lectures to encourage participation and explain the importance of completing the survey. Methodically and comprehensively analyzing the data also proved to be a challenge. While the committee initially tried to analyze the data internally, it proved to be more complex than expected. An independent statistician, not affiliated with the MD curriculum in the medical school, was then contracted to complete the basic analysis. The statistician, under the guidance of the committee, also created custom tables and graphs to be included in the final summary. From these challenges came two recommendations from the committee for successful survey administrations in the future. First, ensure that all students are informed of the accreditation process and the role the survey plays in it, early in the survey process. Offering an incentive early, rather than as a contingency, may increase response rates and ensure timely completion of the survey. Second, consider involving a biostatistician in the design of the survey, including types of rating scales that could be used, possible survey administration programs, and statistical analysis package recommendations. Although the final survey was felt to have a strong statistical analysis, early involvement of a statistician may have simplified data collection and analysis.

Reference

1. LCME: "The Role of Students in the Accreditation of Medical Education Programs in the U.S. and Canada". Available online: <http://www.lcme.org/roleofstudentsguide.pdf>. Accessed: 27 February 2009.



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Establishing a Population-Based Cancer Registry DNA Biorepository: The Hawai'i Tumor Registry's Sharing Ohana Project

Marc T. Goodman PhD, MPH

Population-based cancer registries, such as the Hawai'i Tumor Registry, which is jointly operated by the Cancer Research Center of Hawai'i and the Hawai'i State Department of Health, offer tremendous research potential beyond traditional surveillance activities.^{1,2} In 2001, the Surveillance, Epidemiology, and End-Results (SEER) Program of the National Cancer Institute provided supplementation to the Hawai'i Tumor Registry contract to gather malignant tissue from cancer cases within the State. Population-based biorepositories have the advantage of providing an unbiased sampling frame for evaluating the public health impact of genes or protein targets that may be used for therapeutic or diagnostic purposes in defined communities. Such repositories provide a unique resource for testing new molecular classification schemes for cancer, validating new biologic markers of malignancy, prognosis and progression, and assessing therapeutic targets.

The collection of genomic DNA constitutes the next logical step toward increasing the utility of the Hawai'i Tumor Registry resource with the potential to serve as a foundation for molecular epidemiology studies of cancer in Hawai'i. Such collection will allow researchers to measure allele frequencies of cancer-associated genetic polymorphisms or germline mutations in representative samples. Access to DNA specimens through the Hawai'i Tumor Registry will provide researchers with demographic, clinical, and risk factor information on cancer patients with assured data quality and completeness. Clinical outcome data, such as disease-free survival, can be correlated with specific genetic mutations and tissue profiles. The characterization of molecular markers for cancer has the capability to improve disease surveillance, treatment optimization, prediction of response to therapy (pharmacogenetics), and drug discovery (pharmacogenomics).³ Furthermore, the anonymity of the study subject can be protected through rigorous standards of confidentiality.

In June 2009, the Hawai'i Tumor Registry officially launched the *Sharing Ohana* project. This pilot study will gather data on genetics and lifestyle from approximately 1500 men and women who have recently been diagnosed with cancer in Hawai'i. The objectives of this pilot work are 1) to inform newly diagnosed cancer patients about the reportability of their disease and the existence of the Hawai'i Tumor Registry; 2) to provide information to incident cancer cases regarding local and national resources for cancer-related information (e.g., the Cancer Information Service of the National Cancer Institute); and 3) to assess the feasibility of establishing a new, Hawai'i Tumor Registry-based cohort, recruited from the general population of cancer cases across the State of Hawai'i, as a resource for descriptive, etiologic, and survival studies of cancer in areas of current and projected public health importance.

During the next few months, the *Sharing Ohana* project will test the practicality of our proposed data collection methods, develop

and test recruitment strategies, evaluate the subject response to the proposed data collection, and assist with the planning and allocation of study resources, such as staffing. Individuals will be contacted through the mail about joining the *Sharing Ohana* project. Participation in the project is entirely voluntary and individuals who decide to enroll may withdraw at any time. Data collection will include both interview information and biological specimen collection. Study materials include an introductory letter, questionnaire, and specimen collection kit, (buccal cell sample) which was initially piloted for language and acceptability through the use of focus groups of cancer patients.

Sharing Ohana will complement existing efforts by the Department of Health for statewide comprehensive cancer control in Hawai'i. Importantly, these data will assist in the development of strategies for identifying members of the community most in need of cancer prevention, screening, education, and services. The collection of cancer risk factor information will enhance the state's ability to monitor trends in cancer risk factors and to determine ways in which these risk factors influence cancer rates. Information collected from the questionnaires and cells will allow researchers from the Cancer Research Center of Hawai'i to study how lifestyle, environment, personal characteristics, and other factors are related to cancer development and survival. The benefits of such research to individuals and society are likely substantial.

Acknowledgement

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Author's Affiliation:

Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i, Honolulu, HI 96813

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3. Smith BH, Campbell H, Blackwood D, et al. Generation Scotland: the Scottish Family Health Study; a new resource for researching genes and heritability. *BMC Med Genet* 2006;7:74.


UPCOMING CME EVENTS

Interested in having your upcoming CME Conference listed? Please contact Nathalie George at (808) 536-7702 x103 for information.

Date	Specialty	Sponsor	Location	Meeting Topic	Contact
August 2009					
8/11-8/14	EM	University of California, Davis, Health System	Grand Wailea Hotel Resort & Spa, Maui	Emergency Medicine Update: Hot Topics 2009	Tel: (866) 263-4338 Web: cme.ucdavis.edu
8/21-8/23	EM	East Hawai'i Independent Physicians Association	Mauna Lani Bay Hotel & Bungalows, Kona, Hawai'i	Life Can Be a Pain: Pushing the Envelope in Pain Management	Tel: (808) 227-7786 Email: rmuria@healthunified.com Web: www.easthawaiiipa.com
September 2009					
9/4-9/5	Multi	The Cancer Research Center of Hawai'i and the American Cancer Society - Hawai'i Pacific, Inc.	Four Season Resort Hualalai, Kailua-Kona, Hawai'i	12th Annual West Hawai'i Cancer Symposium	Tel: (808) 987-3707 Email: dkuro@aloha.net
9/10-9/12	Multi	American Academy of Professional Coders	Marriott Ihilani Resort & Spa, O'ahu	AACP 2009 Physician Educational Retreat for Coding and Compliance	Tel: (800) 626-2633 Web: www.aapc.com
October 2009					
10/5-10/10	GYN	Mayo Clinic	Hyatt Regency Maui, Ka'anapali Beach, Maui	22nd Annual Advanced Techniques in Endoscopic & Robotic Gynecologic Surgery and Optional Hands-on Laparoscopic and Robotic Suturing Techniques Workshop	Tel: (480) 301-4580 Email: mcs.cme@mayo.edu Web: www.mayo.edu/cme
10/15-10/17	CD, IM	University of California, Davis, Health System	Hyatt Regency Maui, Ka'anapali Beach, Maui	29th Annual Current Concepts in Primary Care Cardiology	Tel: (866) 263-4338 Web: cme.ucdavis.edu
10/20-10/24	Multi	American Society of Human Genetics	Hawai'i Convention Center, Honolulu	2009 Annual Meeting	Web: www.faseb.org/genetics/ashg
10/22-10/24	Multi	International Society for Technology in Arthroplasty	Hilton Waikoloa Village, Hawai'i	22nd Annual Congress	Web: www.istaonline.org
10/27-11/1	CHP	American Academy of Child and Adolescent Psychiatry	Hilton Hawaiian Village, Honolulu	56th Annual Meeting	Tel: (202) 966-2891
10/25-10/28	OBG	Central Association of Obstetricians & Gynecologists	Maui, Hawai'i	2009 Annual Meeting	Tel: (701) 838-8323
10/26-10/30	AN	California Society of Anesthesiologists	Grand Hyatt, Poipu Beach, Kaua'i	2009 CSA Fall Hawaiian Seminar	Web: www.csaqh.org
10/31-11/6	PD	University Children's Medical Group	Grand Hyatt Kaua'i	Aloha Update: Pediatrics 2009	Tel: (800) 354-3263 Email: info@ucmg.org Web: www.ucmg.org
November 2009					
11/1-11/6	DR	University of California San Francisco School of Medicine	Hyatt Regency Maui, Ka'anapali Beach, Maui	Diagnostic Radiology Seminar	Tel: (415) 476-4251 Web: www.cme.ucsf.edu/cme
11/15	Multi	The Queen's Medical Center & the Hawai'i Chapter, American Academy of Pediatrics	Kahala Resort & Spa, O'ahu	Physician Health Thyself	Tel: (808) 377-5738
11/21	Multi	Hepatitis Support Network of Hawai'i	Queen's Conference Center	Viral Hepatitis in Hawai'i 2009	Tel: (808) 373-3488 Web: www.hepatitis.idlinks.com

December 2009					
12/2-12/4	PD	Department of Pediatrics, Stanford University School of Medicine	Mauna Lani Bay Hotel & Bungalows, Kona, Hawai'i	Popular Pediatric Clinical Topics 2009	Tel: (650) 497-8554 Web: www.cme.lpch.org
January 2010					
1/9-1/14	Multi	Pan-Pacific Surgical Association	Sheraton Waikiki	29th Biennial Congress of the Pan-Pacific Surgical Association	Tel: (808) 941-1010 Email: www.panpacificsurgical.org
1/18-1/22	AN	California Society of Anesthesiologists	Hyatt Regency Maui, Ka'anapali Beach, Maui	2010 CSA Winter Hawaiian Seminar	Web: www.csahq.org
February 2010					
2/10-2/13	Multi	The Society of Laparoendoscopic Surgeons	Hilton Hawaiian Village, Honolulu	Asian American MultiSpecialty Summit IV: Laparoscopy & Minimally Invasive Surgery	Tel: (305) 665-9959 Email: Conferences@SLS.org
2/11-2/12	Multi	Department of Surgery, John A. Burns School of Medicine	Hyatt Regency Waikiki, Honolulu	Cross-Cultural Health Care Conference: Collaborative and Multidisciplinary Interventions	Tel: (808) 586-2920
2/13-2/16	OTO	University of California San Francisco School of Medicine	Hilton Hawaiian Village, Honolulu	Pacific Rim Otolaryngology Head and Neck Surgery Update Conference	Tel: (415) 476-4251 Web: www.cme.ucsf.edu/cme
2/14-2/19	IM, ID	University of California San Francisco School of Medicine	The Fairmont Orchid, Kohala Coast, Hawai'i	Infectious Diseases in Clinical Practice: Update on Inpatient and Outpatient Infectious Diseases	Tel: (415) 476-4251 Web: www.cme.ucsf.edu/cme





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❖ IF YOU WANT TO HEAR GOD LAUGH, TELL HIM OF YOUR PLANS.

A sad reminder that we only have today came with the sudden death of Hawaii physician, dedicated politician, long-time Hawaii Medical Association member and all-round good guy, Duke Bainum. Duke served on the Honolulu County Council and narrowly lost the recent election for Honolulu mayor. A ruptured or leaking aneurysm may give symptoms, but too often the break comes abruptly and surgical intervention and survival may be limited to hours if not minutes. He was taken by ambulance to Queen's Medical Center and died within two hours of arrival. At age 56 Duke should have had many good years of life, love and service in his future. He is already sorely missed.

❖ MORALITY CANNOT BE LEGISLATED BUT BEHAVIOR CAN BE REGULATED.

The often moralistic administration posture of the George W. Bush White House has been altered by the current power structure in Washington. The controversial Bush rule that reinforced protection for health care workers who object to providing abortion-related services or even information, is soon to be rescinded. When the administration pushed the rule through in August 2008, the medical community strongly objected fearing that the mandate could endanger both access and funding for care. Additionally, a federal judge has ordered the Food and Drug Administration (FDA) to allow sales of plan B morning-after contraceptive to women age 17 and older without a prescription, overriding the age limit imposed by the Bush administration. On the marijuana side, the Obama Justice Department has decided that the issue is one of states' rights and will not use the power of the federal judiciary to challenge the dozen or so states that permit the medical use of cannabis.

❖ THE FUTURE AIN'T WHAT IT USED TO BE.

Sixteen years ago Hillary Clinton, then the new president's appointee to prepare a national health plan, came to the American Medical Association House of Delegates and delivered a speech that was all sugar and spice. She promised that doctors would be free, patients would be cared for and protected, malpractice cost would be controlled, etc. She received generous applause and was graciously received. She failed in her task, largely because she refused to include established powers in her plans. At this June AMA meeting, President Obama offered no sugar and spice (it was more S & M), and cited the flood of problems in delivering health care and the unmanageable costs, and asked the AMA to participate in helping to restructure how medicine is practiced in America. He received boos from the audience when he said, "I want to be honest with you. I am not advocating for a cap on malpractice awards." He could have left the subject alone since a Democratic Congress and administration are firmly in bed with the trial attorneys, as is known by all. No reason to bring a dead cat to the party. In his speech he referred to the writing of Atul Gawande, M.D. in the New Yorker magazine, which comes very near to advocating for a Kaiser-like system of medical care. It is certain that rationing of medical care is in the future, and it will probably be wearing Henry J. Kaiser's hospital pajamas.

❖ CLEOPATRA'S MAID WAS HARD OF HEARING WHEN SHE CALLED FOR AN ASPIRIN.

Experts from around the world met recently in Melbourne, Australia, to report on snake bite deaths and injuries. At least 100,000 fatalities occur each year with another 250,000 permanently disabled, and tragically a large portion of these are children and young adults in developing nations. The American Association of Poison Control Centers recorded 6,550 snake bites in 2007 and over half were venomous. The real number is far greater since many snake bites are not recorded, and the actual figure is estimated to be in the tens of thousands. Experts agreed that snake bite kits are useless, suction devices remove a mere 1% to 2% of injected venom and tourniquets are of limited value. The important point is that bite victims should try to be calm, minimize activity, immobilize the bitten extremity below the level of the heart, and make a rapid trip to a hospital where anti-venom should be available.

❖ LISTEN TO THE PATIENT. SHE'S TRYING TO TELL YOU THE DIAGNOSIS.

A 44-year-old woman became weak and developed back pain while at work. She went to South Broward Hospital emergency department when her fever spiked to 106°F, and told the nurse she thought she had a kidney stone since she had stones in the past. The nurse did not write that diagnosis

in the chart, nor did the ER physician. The ER doc, a 30-year ER veteran, found the patient acutely ill, and called her attending physician describing the dire condition and possible kidney stone diagnosis. The emergency physician did not treat the patient nor hand-off at shift change, expecting the patient's physician to arrive promptly and initiate care. The treating physician, who never saw the patient and gave orders by phone, claims he received no message of crisis, and did not realize the patient was in septic shock. He decided the patient had acute cholecystitis and she underwent unnecessary surgery, which further weakened her condition. Sixteen hours after arriving at the hospital, a test revealed the kidney stone which was the origin of her sepsis. It was removed. Sadly, to keep her alive surgeons had to remove both arms below the elbow and both legs below the knee. When the three-month malpractice trial ended, the jury could not find anyone at fault. In an extremely rare event, Broward County Circuit Judge Charles Greene reversed the verdict! It was "contrary to the law and the manifest weight of the evidence." A new trial will be set (unless a settlement is reached).

❖ NOTHING IS SO BORING AS HAVING TO MAINTAIN A DECEPTION.

Wow! There's nothing nowhere like leading a research team at a major medical University for keeping your wallet in good shape. Dr. Jeffrey Wang, chief of spine surgery at UCLA medical school, was paid a substantial salary of \$400,000 base pay and \$375,000 for treating patients totaling \$775,000 last year, which would supply an adequate living for most American families. Dr. Wang checked "no" on a UCLA disclosure form asking if he received \$500 or more from Medtronic, which at the time was funding Dr. Wang's study of a company spinal-repair system. Apparently Dr. Wang mis-remembered that between 2004 and 2007 three companies, Medtronic, DePuy unit of Johnson and Johnson and EzioMed Inc., had rewarded Dr. Wang with \$459,500 for speaking and consulting fees as well as royalties on products he helped develop. In January 2007, Medtronic paid Dr. Wang \$14,600 for lecture and teachings at a spine meeting in Korea for one week while the company was funding his study of their spinal-repair system.

❖ IN PRIMITIVE SOCIETY WHEN NATIVES BEAT THE GROUND WITH STICKS AND YELL, IT IS CALLED WITCHCRAFT; IN CIVILIZED SOCIETY IT IS CALLED GOLF.

The Rose Center for Health and Sport Science conducted a study on energy consumption in playing golf. Director Neil Wolkodoff (Walk-it-off?) found that walking 18 holes and carrying your clubs burned off 1442 calories while four hours seated at the computer burned only 517 calories. Riding in a cart is less healthy than walking and consumes only 822 calories. Additional bonus to walkers carrying clubs is that on average they score six strokes better than those who ride and four strokes better than those who rely on a caddy. Still, it is important to note that those who carry clubs or pull carts are often more physically fit. What a neat and concise solution – carry your clubs, and watch your waistline and handicap improve.

❖ NO MATTER THE ADVERTISING, YOU CAN'T MAKE CHICKEN SALAD OUT OF CHICKEN CACA.

After receiving a letter from the National Consumers League, the Food and Drug Administration (FDA) decided to do something about the labeling on the box of Cheerios cereal. The statement "clinically proven to help lower cholesterol" makes Cheerios a drug under federal law. The FDA stated that such claims can be made for drugs only, and that to be in compliance General Mills must desist or file a new drug application. Moreover, the FDA took issue with the website which discussed the benefit of whole grains in reducing the risk of cancer and heart disease. Tom Forsythe, spokesman for Cheerios, stated that the quote came from a study where Cheerios was included in a diet low in saturated fat and cholesterol, and that it had been on the box for two years. Meanwhile the misleading Cheerios television ads continue.

ADDENDA

- ❖ Emergency medical personnel recommend performing CPR chest compressions in time to "Stayin' Alive" rhythm at 103/minute, almost precisely the same as the ideal rate of 100.
- ❖ Thanks to multiple casino security cameras, the heart attack survival rate is 53% in Las Vegas while in Chicago the survival rate is 2%.
- ❖ According to the New York Times, 17% of tattooed Americans regret being inked.
- ❖ A poll taken in 1997 revealed that the face from "Tales from the Crypt" was the most frightening on TV. Number two was Geraldo Rivera.

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