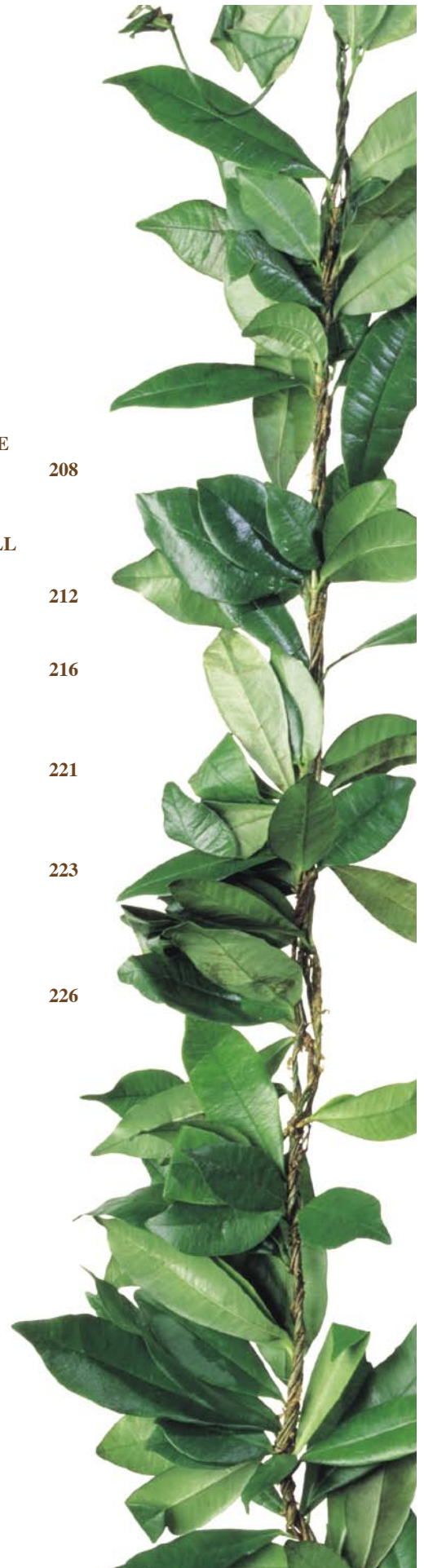


# HAWAI'I MEDICAL JOURNAL

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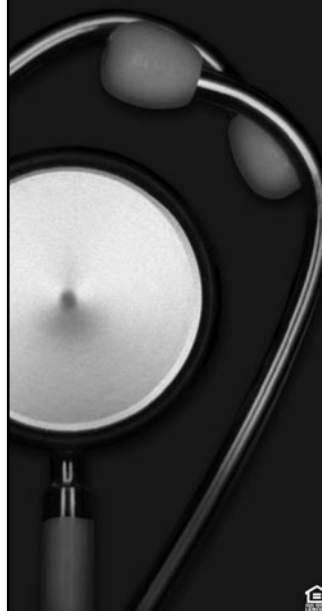
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# Diagnosis of Appendicitis by a Pediatric Emergency Medicine Attending using Point-of-Care Ultrasound: A Case Report

Brunhild M. Halm MD, PhD; Paul J. Eakin MD; and Adrian A. Franke PhD

## Abstract

*Over the past decade Point-of-Care Ultrasound (POC US) is increasingly performed in adult emergency medicine for a variety of indications. Pediatric emergency medicine has been much slower to embrace POC US. The authors report a case of a 15-year-old boy that presented to the pediatric emergency department with abdominal pain. A diagnosis of appendicitis was made using real-time POC US by a pediatric emergency medicine attending. Knowledge of the sonographic characteristics of appendicitis can help the physician in the prompt diagnosis of this condition, thereby reducing morbidity and mortality that may result from a delay in diagnosis.*

Over the past decades ultrasound (US) has been utilized by many different medical specialties and is no longer limited to radiology. In 1999, the American Academy of Emergency Medicine published its position statement defining POC US as a sonographic imaging procedure by an emergency physician on a patient in the emergency department in an effort to detect acute medical problems.<sup>1</sup> POC US has grown dramatically over the last years in adult emergency departments and increasingly emergency physicians have dedicated ultrasound machines available for POC evaluation. In 2001, the American College of Emergency Physicians (ACEP) issued a policy statement on the use of emergency ultrasound, endorsing its use in emergency departments nationwide.<sup>2</sup> Emergency medicine physicians have been on the forefront of clinical use and research of new ultrasound techniques, particularly in adult patients. A POC US is not a complete US but a focused, limited, goal directed exam with the purpose of answering a specific clinical question. The attraction of immediate POC US in the evaluation of specific emergent complaints makes it an ideal tool in the emergency department. The ability to perform these focused studies may allow for faster and safer management of patients.

Most emergency medicine residencies in the United States currently train their residents in POC US as part of the curriculum and it is an accepted tool for the rapid assessment of the emergency patient.<sup>3</sup> Both the American College of Emergency Physicians and the Society for Academic Emergency Medicine continue to support these advancements. In a revised statement from October 2008 the ACEP suggested guidelines for specific training pathways, quality improvement, documentation and credentialing guidelines, but at this time there is no set national standard for training and competency assessment is left to the individual program directors.<sup>4</sup> Pediatric emergency medicine physicians have been much slower to embrace POC US ultrasound, but they have the luxury of adapting some of the proven uses to the pediatric population, for example the FAST exam (Focused Assessment with Sonography in Trauma).<sup>5</sup> Although only a few pediatric emergency medicine fellowships have integrated POC US training into their curriculum and offer a 2- to 4-week ultrasound rotation during the fellowship,<sup>6</sup> 94% of pediatric emergency medicine fellowship directors expressed a desire for pediatric-specific POC US training.<sup>7</sup> Currently, numerous courses and “mini-fellowships” exist and are generally designed for

emergency physicians who graduated without ultrasound training. However, none of these are pediatric specific.

To the authors’ knowledge, there are no previous reported cases of acute appendicitis diagnosed by a pediatric emergency medicine attending using POC US. One of the authors (BMH), who obtained experience in pediatric US through a foreign pediatric residency program that incorporates ultrasound into their curriculum, reports her case here.

## Case Report

A 15-year-old boy was brought to the pediatric emergency department by his father with the chief complaint of abdominal pain for one day. The patient described the pain as intermittent and located initially in the periumbilical area, but stated the pain had become constant and more severe in the right lower abdomen over the last several hours. He reported several non-bilious and non-bloody emeses. He denied any fever, chills, dysuria, cough, or runny nose. His fluid intake and urine output were decreased. Past medical history revealed no hospitalizations or surgery. His immunizations were up to date and he had no known drug allergies. Vital signs on initial examination included a blood pressure of 128/69 mmHg, heart rate of 76 beats/min, respiratory rate of 24/min, temperature of 101° F and an oxygen saturation of 100% in room air. His weight was 48 kg.

He was alert but in obvious pain. His heart and lung exam was normal. He had strong peripheral pulses and good perfusion. The abdomen was non-distended with decreased bowel sounds in all quadrants. He had significant right lower quadrant abdominal tenderness with guarding and rebound. The remainder of the physical examination was unremarkable.

## ER Course

Intravenous fluids with normal saline were started and the patient was given 4 mg of morphine IV for pain control. Laboratory results revealed a white blood cell count of 13,800 per microliter with 71% neutrophils, 13% bands and 16% lymphocytes. CRP was 2.2mg/dl. His electrolytes and renal function were within normal limits. Urinalysis was normal. An abdominal x-ray (Figure 1) revealed a normal intestinal gas pattern and a 2mm calcification in the right side of the pelvis. A radiology US was ordered because of suspicion for appendicitis. However, the US technician was not in-house and needed to be called in. In the meantime, the pediatric emergency medicine attending performed a POC US. A TITAN Handcarried Ultrasound (SonoSite, Inc. Bothell, WA) with a 10-5 MHz 38-mm broadband linear array transducer was utilized. POC US with graded compression technique was performed in the region of maximal pain while the patient was in the supine position. The study revealed a swollen, noncompressible, blind ending tubular structure measuring 1.05 cm in diameter with no peristaltic activity inside the lumen (Figure 2). It also showed an appendicolith with acoustic shadowing. Anterior to the appendix the rectus abdominis



Figure 1.— Calcification in the Right Lower Quadrant (white arrow)

muscle could be visualized on transverse view with its speckled appearance (Figure 3). A picture taken with a 3.5Mz curved array probe showed the proximity to the iliac artery and vein (Figure 4). A surgical consultation was obtained and the patient was seen and evaluated by a pediatric surgeon. The POC US pictures were reviewed and assured the surgeon of the diagnosis. The patient was taken to the operating room just before the US technician arrived. A laparoscopic appendectomy was performed and the diagnosis of acute, suppurative, non-perforated appendicitis was confirmed by visual inspection and pathologic analysis. The patient had an uneventful postoperative course and was discharged home the next day.

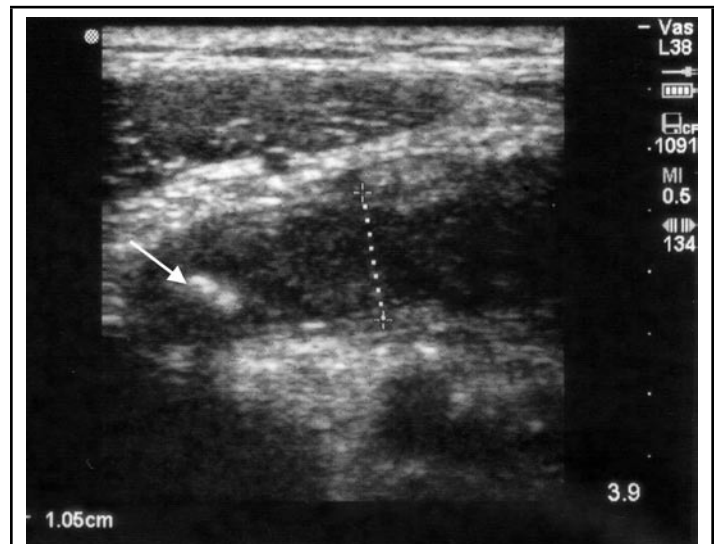


Figure 2.— A noncompressible tubular structure measuring 1.05cm in diameter with an appendicolith in the lumen (white arrow)

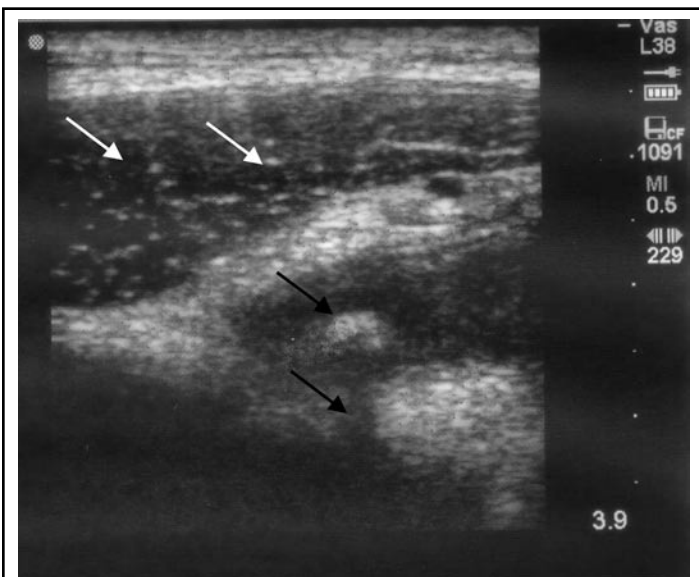


Figure 3.— Appendicolith with acoustic shadowing (black arrows). Rectus abdominis muscle (white arrows) anterior to the appendix

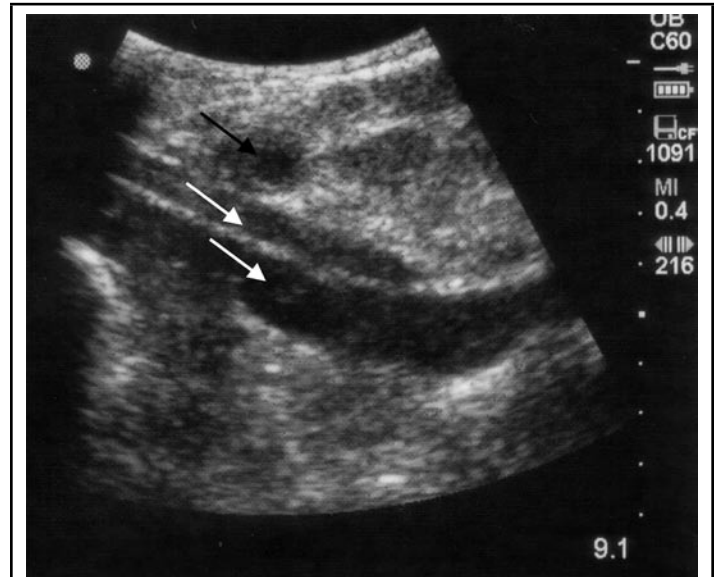


Figure 4.— Appendix in cross-sectional view (black arrow) anterior to the iliac vessels (white arrows)

## Discussion

Appendicitis is a common, yet serious, cause of acute abdominal pain in adolescents and young adults often presenting to an emergency department. In most cases acute appendicitis is caused by a luminal obstruction, which leads to distension, increased intraluminal pressure, and mucosal compromise with subsequent mural invasion by intraluminal bacteria.<sup>8</sup>

With increasing pressure and venous obstruction, gangrene and perforation can result which may lead to peritonitis and death. Early surgical intervention in patients with acute appendicitis is imperative to avoid appendiceal perforation, which is associated with increased morbidity and mortality. Duration of symptoms is the factor most closely associated with advanced disease.<sup>9</sup>

With the invention of helical computed tomography (CT) in the mid 90's, CT has emerged as the leading imaging modality for adult patients with suspected appendicitis in the United States. There is a growing body of literature that shows this imaging modality to be the most accurate way to diagnose or exclude appendicitis. Kim et al reported that helical CT's in patients with a high degree of clinical suspicion for acute appendicitis reduces the number of false positives and has the potential to reduce negative appendectomies.<sup>10</sup> However, Brenner and Hall remind of the significant cancer risk from CT examinations due to exposure to ionizing radiation, especially for children.<sup>11</sup>

Ultrasound has been used for the diagnosis of acute appendicitis as early as 1981.<sup>12</sup> Technologic improvements in ultrasound equipment have made systems more portable, easier to use at the bedside and of higher image quality, enhancing the accuracy of diagnosis. It is a risk free, low-cost, noninvasive, fast and painless procedure that does not use ionizing radiation and can be done at the bedside.

The diagnosis of appendicitis is made by graded compression technique that was first described by Puylaert in 1986. A linear high-frequency transducer is placed on the right lower quadrant and pressure is applied gradually while imaging, displacing the overlying gas-filled loops of bowel.<sup>13</sup>

POC US in the diagnosis of appendicitis is increasingly used in other specialties including gynecology and surgery.<sup>14-16</sup>

Sonographic findings consistent with acute appendicitis include visualization of a blind-ending, non-compressible, tubular structure, 6 mm or greater in diameter, that lacks peristalsis. Secondary signs include hyperemia with color-flow Doppler, periappendiceal fluid, and visualization of a shadowing appendicolith.<sup>17,18</sup>

The success of ultrasound depends largely on the skill and experience of the sonographer. In the hands of emergency physicians, sensitivity ranges between 39% to 96%, whereas the radiology literature reports sensitivities of 75% to 90%.<sup>19-23</sup> A meta-analysis of 9,356 children and 4,341 adults demonstrated sensitivities of 88% and 83% and specificities of 94% and 93%, respectively in diagnosing appendicitis by radiology department ultrasound.<sup>24</sup> Many studies have demonstrated that emergency medicine physicians can be trained in POC US to answer a specific question.<sup>25-30</sup>

In a prospective study, 40 consecutive patients with equivocal physical findings of acute appendicitis were examined with graded compression sonography by emergency medicine residents after a 1-hour lecture and 20 observations. The primary sonographic criterion for diagnosing acute appendicitis was an incompressible appendix with an outer diameter of 6 mm or larger with periappendicular

inflamed fat with or without an appendicolith. The sonographic findings were correlated with surgical and pathologic findings. The sensitivity of emergency medicine residents diagnosing acute appendicitis by POC US was 83%, and specificity was 100%. The positive predictive value was 100% and negative predictive value was 69%.<sup>31</sup>

An important limitation of US is that the sensitivity and specificity for perforated appendicitis are lower than those seen for non-perforated appendicitis.<sup>32-34</sup>

The presence of an appendicolith on US in a patient with acute right lower quadrant abdominal pain is indicative of appendicitis. A retrospective study in 388 patients younger than 18 years found that the presence of an appendicolith was associated with earlier and higher rates of appendiceal perforation in pediatric patients with acute appendicitis.<sup>35</sup>

Management of children with clinically suspected appendicitis involves a risk management decision whether to operate or not. Therefore any examination that improves diagnostic accuracy is helpful.

CT scan and US have assumed critical roles in the diagnosis of patients suspected to have appendicitis.

In the clinical setting the choice between US and CT largely depends on institutional preference and on available expertise. US does not involve ionizing radiation, in contrast to CT, and should therefore be the initial imaging study in children if available. If US is positive, an appendectomy should be performed and if it is equivocal, normal, or doubt remains, the child should undergo CT scanning.<sup>36-39</sup>

Traditionally the radiology department makes the diagnosis of appendicitis with ultrasound. In some pediatric hospitals, radiology department US may not be available.<sup>40</sup> The goal is to diagnose and treat appendicitis as early as possible, since a delay in diagnosis may result in perforation with increased morbidity and mortality. POC US may be valuable if access to radiological facilities is delayed and the pediatric emergency physician has had adequate training in POC US. Surgeons have good understanding of clinical ultrasound and can incorporate the POC US images in the final decision-making.

## Conclusion

For pediatric emergency medicine physicians rapid diagnosis and treatment of life-threatening conditions is of utmost importance. Appendicitis is in the differential diagnosis of children presenting with right lower abdominal pain. The initial imaging modality in children should be graded compression exam by US done by the most experienced sonographer, usually the radiologist. However, if a delay for this study is anticipated, POC US by a physician trained in POC US can be crucial in reducing time to diagnosis and definitive treatment and therefore reducing morbidity and prolonged hospital stay.

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*Aloha: unconditional compassion*



# Illustrations as a Patient Education Tool to Improve Recall of Postoperative Cataract Medication Regimens in the Developing World

M. Scott Hickman MD; William L. White MD; and W. Abraham White MD

## Abstract

**Purpose:** To assess the impact of medication frequency illustrations in patient education for use in the developing world.

**Methods:** This was a randomized controlled trial of a study population of patients undergoing cataract surgery in St-Louis du Nord, Haiti. Patients and accompanying family members were randomized prior to surgery to receive either standard oral post-operative instructions or oral instructions with detailed illustrations regarding the morning, noon, evening, and bedtime use of topical antibiotic and steroid drops. On postoperative day 1, patients and enrolled family members were questioned regarding when and how often the patient was to use his or her eye drops by a blinded examiner, and results were compiled.

**Results:** Of the 65 patients enrolled in the study 32 patients were randomized to the oral group, 33 were randomized to the illustration group. The morning recall was 76% in the illustration group and 50% in the oral group without illustrations ( $p = 0.0259$ ). Bedtime recall was 67% in the illustration group and 38% in the oral group ( $p = 0.0139$ ). There was a statistically significant improvement in recall for the illustration group with the morning and bedtime doses. There was a trend in favor of the illustration group on the afternoon and evening doses; however this was not statistically significant.

**Conclusion:** Illustrations appear to be a useful adjunct in explaining complex medication regimens to patients in the developing world where cultural and language barriers can be difficult to bridge. This better understanding could translate into improved medication compliance and outcomes.

## Introduction

Patient compliance with complex medication regimens has long been recognized as an obstacle to optimal medical care. Patient education typically includes verbal and written instructions. The effectiveness of this mode of instruction can be particularly difficult when the population being served is largely or partly illiterate. Other obstacles include cultural and language differences. One of the authors (WW) noted that on his medical trips to Haiti, post-operative instructions were often poorly communicated and misunderstood. This study was undertaken there to try to improve patient education with the use of illustrations in addition to oral instructions. There have been studies evaluating the effectiveness of visual aids in patient education.<sup>1-4</sup> To the authors best knowledge, little work has been done in this regard in the developing world.

Cataracts are the leading cause of blindness worldwide and also generate a significant public health burden in the developing world.<sup>5</sup> The use of both steroid and antibiotic eye drops multiple times per day after cataract surgery may improve outcomes. Failure to adhere to such a regimen can result in poor outcomes despite a successful surgery, such as infectious endophthalmitis or cystoid macular edema.<sup>6-7</sup>

## Materials and Methods

The research protocol was submitted for review to the Saint Luke's Hospital of Kansas City Institutional Review Board (4401 Wornall Road, Kansas City, MO 64111-3220). IRB review determined that the study was exempt due to its research on the comparison among

instructional techniques [(45 CFR 46.101(b)(1)]. The tenets of the Declaration of Helsinki, a statement of ethical principles for medical research involving human subjects, including research on identifiable human material and data, were reviewed and followed. The authors were involved in a medical mission trip to Haiti at the Northwest Haiti Christian Mission in St-Louis du Nord in January of 2006. Subjects were recruited from the group of patients undergoing cataract surgery for a duration of 8 days. Following receipt of informed consent, patients were randomized by coin toss to receive verbal instructions or verbal instructions with illustrations for their postoperative eye medication administration after their cataract surgery. All patients received a peribulbar or retrobulbar block for anesthesia.

All subjects received the verbal portion of their instructions from the same translator on the day of their cataract operation, and all subjects were given the opportunity to ask questions. Subjects randomized to the interventional group received their instruction with illustrations and each was given a copy of the illustrations to take with them. Written instructions were not given to either group. (Figures 1 to 5). If present, family members were included in the medication regimen discussion. Patients and accompanying family



Figure 1.— Illustration Demonstrating Morning

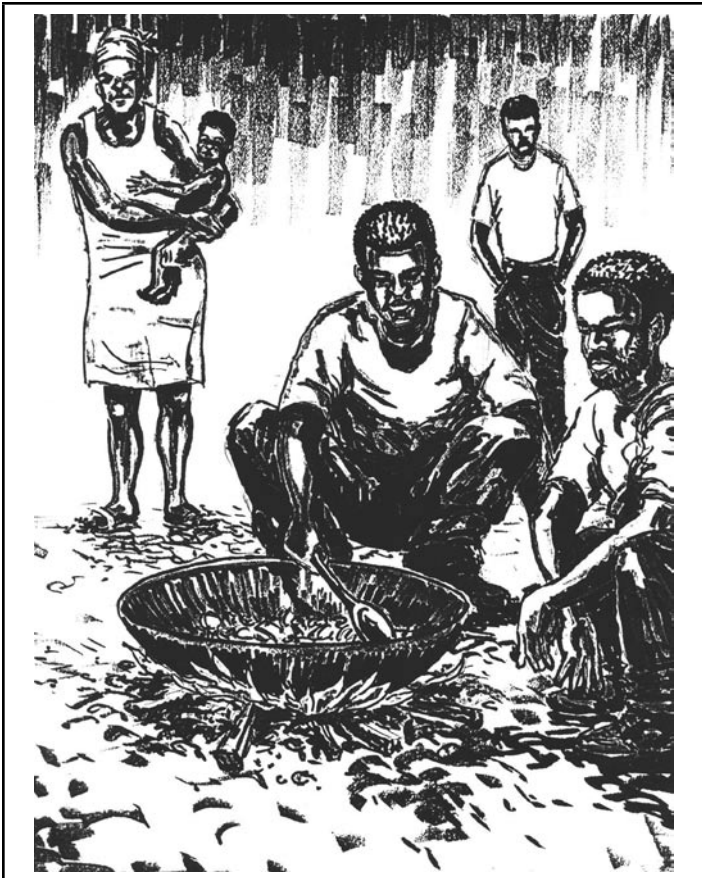


Figure 2.— Illustration Demonstrating Mid-day

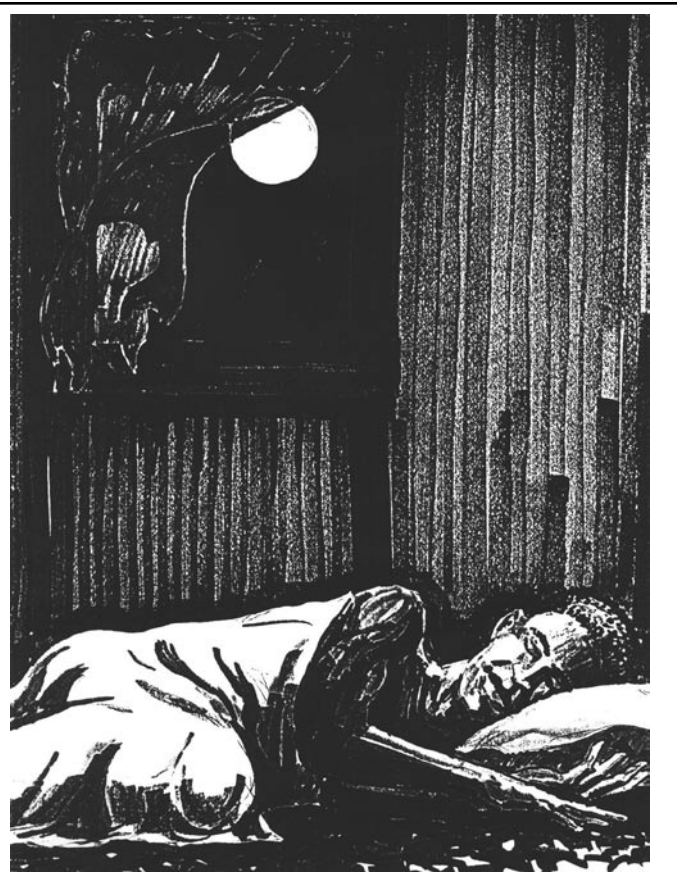


Figure 4.— Illustration Demonstrating Bedtime

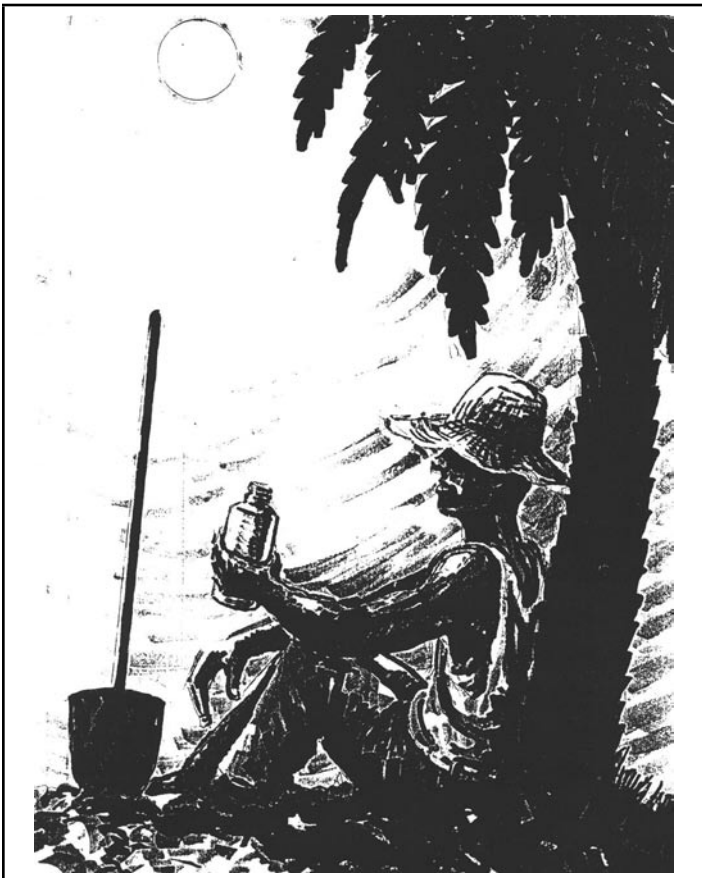


Figure 3.— Illustration Demonstrating Evening

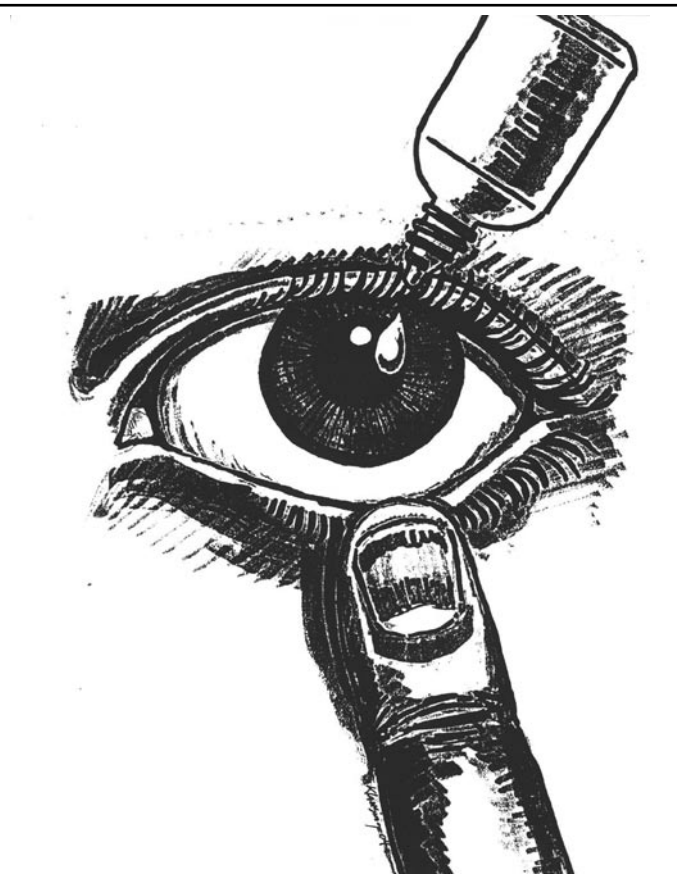


Figure 5.— Illustration Demonstrating Proper Administration of Eye Drops

members were randomized as a unit so that all received either verbal instructions or illustrated instructions. All subjects were instructed to return on postoperative day one for routine postoperative care and examination. Patients were instructed to use one drop of both a steroid and an antibiotic four times a day. The doses were timed in the morning, mid-day, afternoon and bedtime.

On postoperative day one and after their ophthalmic examination, patients and family members who consented to the study were asked standard questions about the medication regimen by a blind examiner and translator, including the timing of drops to be used. Patients and family members were given a correct response for each time they correctly recalled when to use their drops. They were also given a correct response if they mentioned the actual time when to use their drops. For this, morning was from 1:00 AM to 10:59 AM, noon was 11:00 AM to 1:59 PM, afternoon 2:00 PM to 5:59 PM, and bedtime 6:00 PM to 12:59 AM. Each patient and family member was questioned separately with a translator and the blinded recorder. Accuracy of recall was compared using the two-sample test for binomial proportions.<sup>8</sup> The comparison between the illustration and oral groups was specified in the original protocol, but the comparison between family members and patients was a post hoc comparison. All analyses used SPSS for Windows, Release 15 (SPSS, Inc., Chicago, IL).

## Results

A total of 76 subjects provided informed consent to be included in the study. Of these, 65 subjects returned for follow-up as instructed on postoperative day one (65/76, 85.5%). Of the eleven patients who failed to return for follow up, 6 had been randomized to the illustration group and 5 had been randomized to the oral group. Of the 65 subjects who consented to the study and followed up, 32 (19 patients and 13 family members) were randomized to the oral instruction group and 33 (22 patients and 11 family members) were randomized to the illustration group. The average age for patients in the illustration group was 71, and in the oral group 73. 91% (20 of 22) of the patients in the illustration group were female, and 68% (13 of 19) in the oral group were female (Table 1).

Subjects in the illustration group had significantly better recall of the morning and bedtime doses. The morning recall was 76% in the illustration group and 50% in the oral group without illustrations ( $p=0.0259$ ). Bedtime recall was 67% in the illustration group and 38% in the oral group ( $p=0.0139$ ). The illustration group also tended to have better recall of the mid-day (67% illustration group vs. 47% oral group) and afternoon doses (64% illustration group vs. 44% oral group), but this difference was not significant ( $p=0.1004$  and  $0.1010$  respectively) (Table 2).

Within the oral group family members had significantly better recall of the afternoon and bedtime doses than patients. Afternoon recall was 26% in the patient group and 69% in the family member group ( $p=0.0085$ ). Bedtime recall was 21% in the patient's group and 62% in the family member group ( $p=0.0137$ ). Recall trended in favor of family members for the morning and mid-day doses. Morning patient's recall was 37%, while family member's recall was 69% ( $p=0.0556$ ). Mid-day doses patient's recall was 37% and family members recall was 62% ( $p=0.1570$ ), but these differences are not statistically significant (Table 3).

	Oral only instruction group	Oral and illustration instruction group
Average age	73	71
Percent female	68%	91%

	n	Morning correct responses	Midday correct responses	Afternoon correct responses	Bedtime correct responses
Oral only instruction group	32	50% (16/32)	47% (15/32)	44% (14/32)	38% (12/32)
Illustration and oral instruction group	33	76% (25/33)	67% (22/33)	64% (21/33)	67% (22/33)
P value		0.0259	0.1004	0.1010	0.0139

	n	% morning correct responses	% midday correct responses	% afternoon correct responses	% bedtime correct responses
Oral instruction only group with patients	19	37% (7/19)	37% (7/19)	26% (5/19)	21% (4/19)
Oral instruction only group with family members	13	69% (9/13)	62% (8/13)	69% (9/13)	62% (8/13)
P value		0.0556	0.1570	0.0085	0.0137

	n	% morning correct responses	% midday correct responses	% afternoon correct responses	% bedtime correct responses
Illustration and oral instruction group with patients	22	64% (14/22)	64% (14/22)	55% (12/22)	55% (12/22)
Illustration and oral instruction group with family members	11	100% (11/11)	73% (8/11)	82% (9/11)	91% (10/11)
P value		0.0004	0.5906	0.0833	0.0080

Within the illustration group family members had significantly better recall of the morning (patient's recall was 64%, family 100%,  $p=0.0004$ ) and bedtime doses (patient's recall at 55%, family members at 91%  $p=0.0080$ ). Family members tended to have better recall of the mid-day doses (patient's recall at 64% and family member's at 73% ( $p=0.5906$ ) and afternoon doses (patient's recall at 55% and family member's at 82%  $p=0.0833$ , but the latter differences were not statistically significant (Table 4).

## Discussion

The illustrations did appear to be useful in providing patients and their families with education regarding their postoperative medication regimen. Education of family members also appears to be an important adjunct, as they tended to have better recall than the patients themselves.

There are several important limitations to our study. The first is the limited number of patient and family members that were enrolled in the study, and that all time periods of using the medication were not statistically significant. The study is also founded on the premise that improved recall of instructions will improve compliance and outcomes. The authors recognize that recall is a necessary but not sufficient requirement for improved compliance and outcomes. Also, because of the homogenous makeup of our population (all patients were native Haitians), the results of our study may not be generalizable to the many diverse populations found throughout the developing world. Efforts were made by the artist who created the illustrations used in this study to make them as universally applicable as possible to allow use in other cultural settings. An additional limitation was that no effort was made to assess the level of education (i.e. literacy) of the patients in either group, and it is possible that more educated patients could have been randomized to the illustration group. Further studies with larger sample sizes that look at outcomes of decreased complications, better vision, better compliance, as well as recall will be needed in the future to verify the results.

Illiteracy is a common problem throughout the developing and developed world, and illustrations may be an effective method to overcome this barrier to patient compliance. Even in the developed world, there is evidence to suggest that an alarming number of patients do not possess sufficient reading skills to comprehend instructions for medications.<sup>9</sup> A study by Austin et al. from the United States shows that patients with lower educational levels benefit from illustrated discharge instructions, and these findings may be applicable to other populations.<sup>3</sup>

As health care access improves throughout the world, new interventions to improve compliance across cultural and language barriers will become more necessary. The authors hypothesize that illustrations could prove successful in other clinical settings involving complex medication regimens, such as antiretroviral therapy for HIV and multi-drug therapy for tuberculosis, both common conditions in

many parts of the world. The authors propose that the ideal intervention for use in the developing world would be inexpensive, portable, and effective. A photocopied set of these illustrations can be made at minimal expense and easily carried with other documentation or medical equipment, meeting the first two requirements. The results suggest that illustrations may also meet the final requirement. It has been said that "a picture is worth a thousand words," and this proverb may be helpful in the realm of patient education.

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*‘Āina: sacred land*

# Perspective on Racial-Ethnic Birth Weight

David H. Crowell PhD; Raul Rudoy MD; Claudio R. Nigg PhD; Santosh Sharma MD; and Gigliola Baruffi MD

## Abstract

**Objective:** Comprehensive birth weight analyses of single primiparous infants of Samoan, Caucasian, Chinese, Filipino, Hawaiian/Part Hawaiian, Japanese racial ethnic groups. Sampling of intrauterine growth designed to reflect antecedent intra- and extra-environmental factors and insure uniform racial-ethnic data for any later genetic and phenotypic birth weight modeling.

**Study Design:** Based upon predetermined relevant gestational age criteria, 121, 197 single primiparous infants birth weight records analyzed. The racial-ethnic basic research paradigms also specified parental diallelic crosses representing intra- and inter-ethnic racial ancestry. Hypotheses tested: 1) the mean birth weight of single primiparous infants of Samoan parentage will be significantly larger than the mean birth weight of similar single primiparous infants of Caucasian, Chinese, Filipino, Hawaiian/Part Hawaiian, and Japanese parentage; 2) mean birth weight of single primiparous infants of only Samoan intra-parentage will be significantly larger than the mean birth weights of single primiparous infants of only Caucasian, Chinese, Filipino, Hawaiian/Part Hawaiian, and Japanese parentage and 3) mean birth weight of single primiparous infants Samoan mothers and non-Samoan fathers will be significantly larger than single primiparous infants of Caucasian, Chinese, Filipino, Hawaiian/Part Hawaiian, and Japanese mothers and non-Caucasian, non-Chinese, non-Filipino, non-Hawaiian/Part Hawaiian and non-Japanese father.

**Conclusion:** Two of three proposed associated hypotheses adopted: namely, that the mean birth weight of single primiparous infants of one, primary Samoan maternal parentage, and two, of only Samoan maternal and paternal parentage, will be significantly larger than their comparative counterparts. Hypotheses 3 based on Samoan mothers and non-Samoan fathers is tenable, but questionable relative to Caucasian parental background. Research highlights importance of control for potentially confounding variables and assets inherent in independent racial-ethnic cohort investigations.

An immediate demanding basic task in contemporary pediatric research is to identify infant predictors of childhood obesity. Within this perspective birth weight (BW) can be viewed one, as a basic launching platform for plotting the diagnostic development of childhood obesity and two, as an initial target for initiating intervention to control future growth. In line with this prospective disease forecasting strategy is an increased awareness of the role of genomic factors in developing obesity.

## Methods

The context for the present research study is focused, namely, to ultimately determine whether BW may be viewed as a predictive stage event in the early pathogenesis of non-syndromic child obesity. Recent studies draw attention to the prevalence of obesity by race-ethnicity (RE) and specifically, to significantly higher rate in Samoans (S).<sup>1-5</sup> The substantially higher mean birth weight (MBW) data for Samoan (S) compared to Caucasian (C), Chinese (Ch), Filipino (F), Hawaiian – part Hawaiian (H) and Japanese (J) RE groups<sup>6</sup> are viewed as a potential harbinger of obesity, but require further documentation. Validation based on gestational age (GA) specific analysis must eliminate the primary objection about customary ap-

proaches comparing MBWs between diverse populations,<sup>7</sup> namely, the impact of underlying antecedent intra- and extra-environmental factors on BW. Measuring antecedent effects conceivably produces a “normal” status between RE BW when comparisons are made across basic covariates. Furthermore, another inherent result ensues if diallelic crosses representing intra- and inter-ethnic ancestry of the studied populations are sampled: the RE group analyses of BW under the proposed new format presumably would insure uniform data sets for any later RE genetic and phenotypic BW modeling.

Fundamentally, this study compares fetal growth curves, based on the MBW of C, Ch, F, H, J and S single primiparous infants (SPI) at specified GA. The RE of each infant is the same as that of the mother. To evaluate parental influence RE is delineated in terms of diallelic crosses;<sup>8</sup> that is, parentage from the same intra-ethnic (SI), or different (DI), inter-ethnic ancestry. Specifically, it is hypothesized that (1), the MBWs of SPI of S maternal parentage will be significantly larger than the MBWs of similar SPI infants of C, Ch, F, H, and J parentage; (2), MBWs of SPI of only S parentage will be significantly larger than those of similar SPI infants of only C, Ch, F, H, and J parentage; and (3), MBWs of SPI of S mothers and non-Samoan fathers will be significantly larger than SPI of C, Ch, F, H, and J mothers and non-C, non-Ch, non-F, non-H and non-J father. Resolution of these questions are viewed as fundamental to pursuing other significant related obesity research questions

## Analysis

The database for examining factors relative to RE BW were 177,955 State of Hawai‘i birth record files for 1995-2004. Based upon predetermined relevant inclusion and exclusion criteria, (Appendix A), 121,197 SPI BW records of C, Ch, F, J, H and S parentage, were selected for analysis (Table 1). These SPI birth data, with BWs between 500-5000 grams and gestational age 30-42 weeks were complete files, that is, contained no missing information. In order to avoid institutional, professional and medical attendant level variability, only deliveries that were attended by a Doctor of Medicine in Hospitals of Honolulu County, Hawai‘i were included in the study. As a resume: these files included year of birth, month of birth, infant’s gender, GA, mother’s age, father’s age, mother’s education, father’s education, marital status of mothers, month gestation in which prenatal care began, prenatal care visits, and maternal gestational weight gain. Accuracy of GA was based on registered ultrasound procedure. Infants records required report of (1) vaginal delivery without complications in labor, and (2) no congenital anomaly or acute health problems, and (3) absence of any listed medical risk factors, including tobacco and alcohol use in mothers. As stated earlier, cases which had missing values on any of these variables were systematically excluded from the study.

## Statistical Evaluation

All the birth certificate variables except BW, GA and RE of both the mother and father were designated as independent variables. Birth

weight was designated as the dependent variable in the subsequent analyses of covariances (ANCOVAs) at each GA. The total sets of designated independent variables were used as covariates for the ANCOVAs at each GA. This step insured that the effects of any variable were consistently taken into account throughout the range of GAs. The ANCOVAs determined whether there were significant differences in MBW among the cohorts at each GA. When necessary GAs were combined or truncated to establish reasonable statistical sample sizes. For example, 37-42 is selected because numbers for the lower GAs are too small, especially for Samoans. Post-hoc Tukey test<sup>9</sup> followed only when the main effects were significant.

## Results

Table 1 shows the number of first-born singleton births with information on relevant covariates: SPI of C (29.4%) and H (28.6%) women comprise the largest groups; in contrast, Ch (12.5%) and S (3.9%) cohorts were relatively smallest.

### Hypothesis 1

Table 2 presents the RE MBW analyses and highlights the significantly larger S maternal parentage BWs relative to those of C, Ch, F, H, and J for the preterm, terms and entire GA range. Appendix B summarizes in detail the result of multiple comparisons on MRE MBW by GA: demonstrating that the SPI BMW data of S parentage are consistently significantly larger.

### Hypotheses 2

Distribution of birth for the following intra (N=1094) -inter (N=1713) (II) RE MBW comparison are listed in Table 3 based on an N=1094. Table 4 clearly identifies the analyzed intra-racial ethnic parental group comparisons. The sample truncation of MBW to MGA of 37-42 weeks clearly shows that Samoan MBWs emerge as significantly larger.

### Hypothesis 3

The multiple sample comparisons on intra-inter maternal /paternal race-ethnicity for GA 37-42 based on the sample truncation of N=1713 are condensed in Table 5.

Results in Table 5 demonstrate that S maternal parentage was related to significantly larger MBWs in all but the C RE group.

## Discussion

As stated earlier, a basic task in contemporary pediatric research is identifying infant predictors of childhood obesity. The research described here insured uniform data across RE groups. This research confirms prior results<sup>6</sup> describing RE MBW differences in the State of Hawai'i: S mothers were documented as delivering infants with larger than average BWs. The RE confirmatory research paradigms investigated parental diallelic crosses representing intra-and inter-ethnic racial ancestry. The results of these contemporary analyses support the adoption of two of three proposed associated hypotheses: namely, (1) that the MBW of SPI of primary S maternal parentage, and (2), of only S maternal and paternal parentage, will be significantly larger than their comparative counterparts. Hypothesis 3 touting larger MBWs based on S mothers and non-S, Ch, F, H and J fathers is tenable for all these RE groups, but questionable for C paternal background and warrants further study.

This study is in line with the earlier stated prospective forecasting strategy viewed as basic to contemporary pediatric research. Results of this present study demonstrate that uniform data sets can be established for comparative and confirming statements on the state of specific factors in the development of a prenatal status condition, namely, MBW associated with the pathogenesis of non-syndromic childhood obesity. There are other issues associated with this conclusion, which warrant review and incorporation in any planned programmed research, namely:

1. *The precise designation of crucial variables, for example, infant birth length required to further contextualize the role of BW, and ultimately, the body mass index (BMI) is not available in any data sets obtained from birth certificates.*

2. *Adjustments for potential confounding factors. Efforts to equalize statistically internal and environmental factors may not take into account important cultural, behavioral and nutritional factors that can impact on BW.*

3. *Categorizing a RE group as more likely to have higher BW may point to an implication that RE membership group is the cause. Racial-Ethnic ancestry should not be considered a risk factor for obesity in childhood and later life. Such data are only an opportunity for providing education and intervention for the prevention of obesity to all children, especially those born with high BW independently from RE ancestry. Cultural differences in maternal diet, physical activity and levels of stress, in addition to genetics need to be investigated in well-controlled trials to identify the underlying cause of the differences. An immediate result of concern in this area has led to decisions that sub-group RE differences should be examined separately relative to prenatal outcomes.<sup>11</sup> In accord with this viewpoint, the association of faster natal and postnatal growth with childhood BMI has been extensively measured in a single selected cohort.<sup>12</sup> Contemporary studies of RE cohorts also have examined whether rapid weight gain between birth and 6 months is linked with childhood overweight and if the risk is correlated with ethnicity and breast-feeding.<sup>13</sup>*

Systematic uniform data sets provide a uniquely devised prenatal growth chart for further studying infant bodily development. They open avenues for research and information on other covariates influencing BW and reaffirm what may be a prime predictor of obesity – BW and changes in BMI over the early months of development.<sup>1,10-16</sup>

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PRE	Caucasian(C)	Hawaiian(H)	Chinese(Ch)	Filipino(F)	Japanese(J)	Samoan(S)	Total	(%)
Caucasian(C)	25899	2677	847	3167	2879	183	35652	(29.4)
Hawaiian/ Part Hawaiian(H)	2892	21547	646	5168	3639	607	34499	(28.6)
Chinese(Ch)	351	538	2655	356	1089	35	5024	(24.1)
Filipino(F)	1387	4639	287	17879	1711	104	26007	(21.4)
Japanese(J)	1075	2759	998	1772	8548	38	15190	(12.5)
Samoan(S)	225	1697	38	229	133	2503	4825	(3.9)
Total (%)	31829	33857	5471	28571	17999	3470	121197	
	(26.3)	(27.9)	(4.5)	(23.9)	(14.4)	(2.9)		

GA	Caucasian(C)	Hawaiian(H)	Chinese(Ch)	Filipino(F)	Japanese(J)	Samoan(S)	F	Tukey's Multiple Comparison Tests <sup>a</sup>
24-36 <sup>a</sup>	2433.10	2422.91	2388.68	2361.60	2386.89	2684.98	F(511184)= 14.14***	S> C, H Ch, F, J
n	2462	3236	492	2985	1740	275		
37-42 <sup>a</sup>	3500.85	3373.40	3311.04	3230.90	3248.08	3589.03	F(5110001)= 1367.87***	S> C, H, Ch, F, J
n	29367	30621	4979	25586	16259	3195		
24-42 <sup>a</sup>	3418.25	3282.55	3228.10	3140.08	3164.82	3517.39	F(5,12191)= 1072.22***	S> C, H, Ch, F, J
n	31829	33857	5471	25871	17999	3470		

<sup>a</sup>\*\*\* p< 001

Maternal II RE MBW							
Paternal II REMBW	Caucasian	Hawaiian/Part Hawaiian	Chinese	Filipino	Japanese	Samoan	Total
Caucasian	197*	26	17	40	44	1	325
Hawaiian/ Part Hawaiian	0	252*	13	70	61	13	442
Chinese	4	6	101*	3	30	0	144
Filipino	11	53	2	288*	41	2	397
Japanese	15	28	28	28	231*	1	343
Samoan	4	24	0	5	4	25*	62
Total	264	401	161	434	411	42	1713

\*Intra-parentage comparison rates ( N=1094)

GA	Caucasian(C)	Hawaiian(H)	Chinese(Ch)	Filipino(F)	Japanese(J)	Samoan(S)	F	Tukey's Multiple Comparison Tests <sup>a</sup>
37-42	3419.57	3257.63	3237.09	3049.02	3138.38	3558.08	F(5,1088)= 24.74**	S > C, H, Ch, F, J*
Total n	197	252	101	288	231	25		

<sup>a</sup> \*p<.05, \*\*p<.01

GA IIPMBW	Caucasian(C)	Hawaiian(H)	Chinese(Ch)	Filipino(F)	Japanese(J)	Samoan(S)	F	Tukey's Multiple Comparison Tests <sup>a</sup>
37-42 IIREMBW	3402.50	3248.37	3252.02	3094.29	3173.53	3465.60	F(5,1707)= 23.48***	S> H, Ch, F, J
n	264	401	161	434	411	42		

\*\*\* p< .001

**Appendix A:**

**Birth Certificate Data Criteria**

State of Hawai'i 1995-2004	06 Hydramnios/ Oligohydramnios	02 Vaginal birth > c-section = No (0)	08 Seizures
I. Infant Identity	07 Hemoglobinopathy	03 Primary c-section = No (0)	09 Oth acute prob
Single primipara (1)	08 Chrn hypertension	04 Repeat c-section = No (0)	VII. Congen anom of child = None (2)
Year of birth = 1995-2004	09 Preg hypertension	05 Forceps = No (0)	01 Anencephalus
County of Birth = Honolulu	10 Eclampsia	06 Vacuum = No (0)	02 Spina bifida
Type of facility = Hospital	11 Incmptnt cervix	V. Comp Labor/Delivery = None (2)	03 Hydrocephalus
Attendant title = Dr. of Medicine	12 Prv infant 4000+G	01 Febrile	04 Microcephalus
Sex = Male (1) /Female (2)	13 Prv small infant	02 Meconium	05 Other circ anom
Birth weight = 500-5000 grams	14 Renal disease	03 Prem rupture	06 Resp anom
No Prenatal Visit ( )	15 Rh Sensitization	04 Abruption plac	07 Rectal atresia
Est. GA = 24-42 weeks	16 Uterine Bleeding	05 Placenta prvia	08 Tracheo-esoph
APGAR- 1 min = 0-10	17 Infectious disease	06 Seizures	09 Omphalocele
APGAR-5 min = 0-10	18 Other med risk	07 Precipit labor	10 Other GI anom
Mother's race	19Tobacco use	08 Prolonged labor	11 Maformd gent
Mother's age (18-70)	20 Avg no cig/day	09 Dysfunct labor	12 Renal agenesis
Caucasian (1)/ Chinese	21 Alcohol use	10 Breech/Malpres	13 Hydrocele
(4) /Filipino (5)/ Hawaiian/Part	22 Avg no drink/day	11 Cephalopelvic	14 Oth urogen anom
H (2)/ Japanese (6)/ Samoan (9)	23 Pounds gained	12 Cord prolapsed	15 Cleft lip/pal
Mother's education = non-missing	III. Obstetric procedures:	13 Anesth complic	16 Polydactyly
Father's race	01 Aminocentesis = No (0)	14 Fetal distress	17 Club foot
Fathers age	02 Ectrc fetal mon = Yes (10)	15 Other complic	18 Diaphr hernia
Father's education = non-missing	03 Inductn labor = No (0)	VI. Acute prob new-born = None (2)	19 Oth musculoskl
II. Medical risk factors = None	04 Stimulatn labor = No (0)	01 Anemia	20 Downs syndrome
01 Anemia	05 Tocolysis = No (0)	02 Birth injury	21 Oth chrom anom
02 Cardiac disease	06 Ultrasound = yes (1)	03 Fetal alc synd	22 Hemagiona
03 Lung disease	07 Other ob proc = No (0)	04 Hyaline mem dis	23 Necus
04 Diabetes	IV. Deliver methods:	05 meconium aspir	24 Simian crease
05 Genital herpes	01 Vaginal delivery Yes (1)	06 Asst vent <30M	25 Skin tag
		07 Asst vent >30M	26 Oth skin anom

**Appendix B:**

**Multiple Comparisons of Maternal Racial-Ethnic (MRE) Mean Birth Weights (MBW) by Gestational Age (GA) (MRE) 1995-2004 (N=121,197)**

GA	Caucasian(C)	Hawaiian(H)	Chinese(Ch)	Filipino(F)	Japanese(J)	Samoan(S)	F	Tukey's Multiple Comparison tests <sup>a</sup>
30 <sup>a</sup>	1560.21	1682.87	1945.83	1545.33	1659.96	2445		...
n	52	68	6	70	24	7		
31 <sup>a</sup>	1568.49	1699.71	1528	1670.82	1559.51	2356.5		...
n	77	92	11	87	43	4		
33	2029.46	2069.99	2056.58	2044.5	1954.58	2641.95		S> C, H, Ch, F, J
n	167	211	26	185	113	19		
34	2319.62	2313.42	2209.02	2212.88	2212.23	2347.92		
n	307	337	63	338	183	36		
35	2574.66	2542.73	2404.71	2466.01	2459.56	2811.86	F(5,2334)= 10.48***	S> C, H, Ch, F, J
n	517	659	109	599	413	43		
36 <sup>a</sup>	2848.94	2814.88	2740.58	2712.67	2672.92	2989.64	F(5,5089)= 28.47***	S> C, H, Ch, F, J
n	1048	1477	223	1376	830	141		
37 <sup>a</sup>	3064.68	3037.16	2938.69	2931.55	2895.48	3291.95	F(5,10758)= 74.00***	S> C, H, Ch, F, J
n	2175	3086	464	3023	1771	263		
38 <sup>a</sup>	3319.37	3239.89	3180.26	3129.26	3129.32	3456.54	F(5,22899)= 184.82***	Ch> F, J S> C, H, Ch, F, J
n	4570	6526	1040	6457	3710	602		
39 <sup>a</sup>	3470.91	3383.19	3322.64	3269.4	3276.09	3579.66	F(5,32737)= 290.23***	Ch> F, J S> C, H, Ch, F, J
n	8016	9130	1597	8104	4959	937		
40 <sup>a</sup>	3590.91	3492.46	3436.29	3363.17	3379.1	3693.35	F(5,31558)= 336.04***	S> C, H, Ch, F, J
n	9385	8885	1424	6312	4543	1015		
41 <sup>a</sup>	3713.82	3625.27	3547.31	3476.76	6507.05	3748.02	F(5,10654)= 102.42***	Ch> F S> C, H, Ch, F, J
n	4439	2739	423	1529	1190	340		
42	3775.93	3654.62	3697.45	3468.78	3512.23	3766.47	F(5,1365)= 16.58***	H> F S> F, J, H, Ch
n	800	255	31	161	86	38		

\*\*\* p< .001



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*Ea: collective life*



## Autonomy: *Primum Non Nocere* and *Caveat Emptor*

Glenn Rediger MD; Assistant Professor, John A. Burns School of Medicine, University of Hawai'i

(Keynote address at the JABSOM White Coat ceremony, July 16, 2010)

Aloha. In a few minutes we will recite together an oath, a modern iteration of an ancient text, revised to be more relevant to our day. The original, however, is a remarkable document as evidenced by the fact that we still return to it for guidance and inspiration. And in comparing the two, I am struck by an addition that I believe bears some reflection. Today we will say: ***"I will remember that caring for the patient will be my primary concern and while doing so I will honor the autonomy of the sick."***

At some point, I believe relatively recently, autonomy found its way into the Hippocratic Oath. It was inevitable, as autonomy has also made its way to the top of the list of medical ethical imperatives. Right up there with the more traditional value of beneficence, often associated with the phrase *primum non nocere*: First, "do no harm." Of course, we mustn't cling to the outmoded habit of paternalism, (or maternalism, for that matter). Yet, I confess to some ambivalence about the word autonomy in the context of caring for the patient, some of its connotations and some of its incarnations. America is all about self-determination, personal choice, about rugged individualism. Autonomy can connote the free marketplace, the consumer society. For consumer goods, I sell to you; you sell to me. Everything is for sale and we make informed choices. Autonomy in the marketplace is about, *caveat emptor*. "Let the buyer beware."

There are forces trying to move healthcare into this arena of consumer choice. Isn't Healthcare simply another consumer good? Aren't patients smart enough to decide for themselves? There are certainly physicians who are embracing these trends, and their attendant commercial possibilities. There are Doctors who hawk whole body CAT scans on demand, endorsed by celebrity testimonials, never mind the absence of any evidence that the benefits outweigh the risks, and the risks are not fully disclosed. A few years ago, the American Medical Association announced its plan to sell "AMA Seals of Approval," essentially to whoever would produce the cash. They reversed themselves, amidst a wave of outrage, leaving the reputation of the profession a bit tarnished. But well, *caveat emptor*, let the buyer beware.

So, here is my question: how does autonomy accord with beneficence, *caveat emptor* with *primum non nocere*, this great idea embodied in the historic Hippocratic Oath (HO) in this ancient and venerable profession of medicine.

A more literal translation of the original HO states, ***"Into whatever houses I enter, I will go into them for the benefit of the sick, and will abstain from every voluntary act of mischief and corruption."***

For the benefit of the sick: this is the only reason to enter into a patient's house. And whether you make house calls or not, whether you are a primary care physician or a super-sub-specialist, as a physician, you will enter into the most intimate spaces of a person's life,

in ways closer than family, privy to their secrets, and with access to their pocketbook. You will be in a position of privilege and power. You're going to guide patients through the complex, strange, often scary and very expensive world of health care, where they have to make some of the most critical decisions of their lives, at times when they are the most vulnerable and confused. In this world there is plenty of risk for them to make a bad choice; and plenty of people ready to sell them snake oil. There will be mischief if the balance tips from *primum non nocere* to *caveat emptor*. Your patients need to know you have no conflict of interest; your only interest is their well being. Exercising autonomy as a patient is not easy. In guiding a patient well you will empower their autonomy to make the choices that are best for them. Think as an autonomy facilitator.

So, how do we guide our patients? One frequently utilized method is the menu of medical options. This menu, like other menus, has prices, dollar prices, and also risk vs benefit prices, and maybe quality of life vs quantity of life prices. To make a good menu you need to know medicine: basic science, physical diagnosis, the current literature. Yet, given the clearest, best crafted menu a patient is apt to say, quite autonomously, "But Dr., what do you think I should do?" And how will you answer? Some doctors, in the name of patient autonomy, refuse to; but I think that does the patient and profession a disservice. To answer, there is no substitute for knowing your patient. What are his values, her previous decisions? And when you perform the "mother test"— what would I recommend for my own mother? You also need to be well aware of and up front with your own values. Sometimes you may need to engage in some selling to help a patient to make a difficult but authentic decision. And you may even help your patient make a good decision that you would never make for yourself. And when patients choose to disregard your excellent advice, you will not get mad and fire them. Dr. Bill Haning, in his address to the JABSOM graduating Class of 2010, illuminated the obligation that we incur in taking this oath. He said: ***"It is... noteworthy that we do not ask patients to take an oath that would oblige them to tell the truth or to follow our directions. Nowhere in this contract is there a statement of fees, of requirements imposed on the patient, of expectations. This sometimes causes exasperation, as when our patients are untruthful or do not humbly obey our every command. All expectations are incumbent upon the physician. Unique among covenants, its obligation is unilateral."***

But is there autonomy for the physician? I think this is addressed in the original HO. There are some things that are not for sale, even to a well-informed patient who really wants them. I will not prescribe a pessary, or a lethal drug. And though you and I might argue about what a pessary is, or what constitutes a lethal drug, once you, as a physician, decide, there should be no inducement that will get you to breach your obligation to do no harm, not even patient autonomy. *Primum non nocere* trumps *caveat emptor*.

Now, a final question: what is it about patients, as the oath calls

them “all who seek my ministrations,” that awards them this sort of unconditional positive regard, and this extraordinary service of which we speak, regardless of social status, level of intelligence, contribution to society, or personal hygiene. This is something I leave you to reflect on. I hope that the answer, when you arrive at it, will not be “insurance status.”

On a personal note, confronted with a patient who causes me to question the worth of the obligation, I often recite to myself the words of my mentor, “Inasmuch as you have done it unto one of the least of these my brothers, you have done it unto me.”

Much is in flux in the practice of medicine, for good or for ill. You may have already sensed some grouching and cynicism in some of us old folks caught up in change. Don’t let it infect you. I suppose it is banal to say that you who don white coats today, will shape the profession for the next generation. It is nonetheless true. I have already had the privilege of meeting many of you. I have heard you talk about your experiences, your motivations, your aspirations. I am impressed. It makes me optimistic for the future of medicine. Keep your focus, keep your faith. And in 25 years or so, when one of you is standing here in my place, the profession of medicine will be stronger and more trusted than it is now, and it will all be for the benefit of the sick.

Welcome to the profession of medicine.

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Following his speech, Dr. Rediger led the Class of 2014 and all physicians in the audience to recite the following “Restatement of the Oath of Hippocrates” which was recited at the White Coat ceremonies on August 9, 1996 and in 1998.

*I swear by all I hold most sacred and before my family, my teachers, and my peers that to the best of my ability I will keep this Oath and Stipulation:*

*To honor all who have taught me this art and in the same spirit and dedication to impart a knowledge of medicine to others. I will continue with diligence to keep abreast of advances in medicine, and respect those who broaden our knowledge by research. I will treat without exception all who seek my ministrations and discriminate against no one, so long as the treatment of others is not compromised thereby, and I will seek the counsel of particularly skilled physicians where indicated for the benefit of my patient.*

*I will remember that caring for the patient will be my primary concern and while doing so I will honor the autonomy of the sick. I will recognize that such caring requires my being available, giving my time generously, communicating honestly, and comforting as well as treating. Such care also involves offering my support to my patients’ loved ones.*

*I will maintain all patient confidentiality and uphold the highest ethical, moral, and behavioral standards for myself and my peers. My behavior will always be honorable, thoughtful, and reflect justice toward all humanity.*

*My fiduciary role will require protecting patients from all forms of malpractice, malfeasance, and unnecessary expenses, and I will try to prevent, as well as cure, disease.*

*While I continue to keep this Oath inviolate, may it be granted to me to enjoy life and the practice of the art and science of medicine; respected by my peers and society. May my faith strengthen my resolve to attain the above.*

---

As reference, Dr. Rediger cited the original Oath of Hippocrates— translated by Francis Adams (1796-1861), Scottish medical doctor and translator. <http://classics.mit.edu/Hippocrates/hippooath.1b.txt>

*I SWEAR BY APOLLO, the physician, and Æsculapius and Hygeia and All-heal and all the gods and goddesses that, according to my ability and judgement, I will keep this Oath and stipulation—*

*TO RECKON him who taught me this Art equally dear to me as my parents, to share my substance with him and relieve his necessities if required; to look upon his offspring on the same footing as my own brothers, and to teach his Art if they shall wish to learn it, without fee or stipulation.*

*BY RECEIPT, lecture and every mode of instruction I will impart a knowledge of the Art, to my own sons and those of my teachers and to disciples bound by a stipulation and oath according to the laws of medicine, but to none others.*

*I WILL FOLLOW that system of regimen which, according to my ability, I consider for the benefit of my patients and abstain from what is deleterious and mischievous. I will give no deadly medicine to anyone if asked, nor suggest such counsel; and in like manner I will not give to a woman a pessary to produce abortion.*

*WITH PURITY AND HOLINESS I will pass my life and practice my Art I will not cut a person who is suffering with a stone but will leave this to be done by men who are practitioners of this work.*

*INTO WHATEVER HOUSE I enter I will go into them for the benefit of the sick and will abstain from every voluntary act of mischief and corruption; and further from the seduction of females or males, freeman or slaves.*

*WHATEVER IN CONNECTION with my professional practice, or not in connection with it, I may see or hear in the lives of men which ought not be spoke of abroad, I will not divulge, as reckoning that all such should be kept secret.*

*WHILE I CONTINUE to keep this oath unviolated may it be granted to me to enjoy life and the practice of the Art, respected by men of all times, but, should I trespass and violate this oath may the reverse be my lot.*



## Preview of Hawai'i Cancer Facts and Figures 2010

**Brenda Y. Hernandez PhD, MPH; Michael D. Green CTR; Kevin D. Cassel MPH; Ann M. Pobutsky PhD; VyVy Vu BS; and Lynne R. Wilkens PhD**

Each year, nearly 6,700 Hawai'i residents are diagnosed with cancer and more than 2,000 die from the disease. Detailed data on the burden of cancer in Hawai'i, including cancer incidence and mortality rates, are available in *Hawai'i Cancer Facts & Figures 2010 (CF&F)*. A collaborative effort of the Cancer Research Center of Hawai'i, the American Cancer Society and the Hawai'i Department of Health, this update of the original version published in 2003 is intended as a tool for public health education, research, and planning. The following are highlights of years 2000-2006 (a 6-year period) data as featured in *Hawai'i Cancer Facts & Figures 2010*.

From the periods 1995-1999 and 2000-2005, the overall incidence of cancer in Hawai'i remained relatively stable in both men and women while cancer mortality rates continued to decline. This is consistent with the United States pattern of continued overall declines in cancer rates.<sup>1</sup> Decreases in incidence were observed for a number of malignancies including prostate and lung cancer in men, cervical and female breast cancer, and colorectal and stomach cancers in both males and females. Contrasting these trends, increases in incidence were observed for kidney cancers in males, thyroid cancer in females, and leukemia and melanoma in both males and females.

In 2000-2005, the average annual age-adjusted incidence of all cancers was 486 per 100,000 in men and 382 per 100,000 in women (see Figure 1). Prostate and breast cancers remained the most common cancers. For the time period 2000-2005, approximately 800 men were diagnosed with prostate cancer and 860 women with breast cancer annually. Lung cancers followed by colorectal cancers were the leading causes of cancer death in both sexes. Lung cancer was responsible for nearly 500 deaths annually.

The incidence of major cancers in Hawai'i was generally comparable or lower than that of the United States overall. A notable exception was liver cancer. Hawai'i continued to have the highest incidence of liver cancer in the country (age-adjusted rates of 9.6 per 100,000 in Hawai'i vs. 6.3 per 100,000 in the United States).

Survival varied substantially for different cancers. Among the major cancers, overall five-year relative survival was poorest for cancers of the pancreas (6%), liver (13%), lung (16%), and esophagus (17%). Survival varied by stage of disease at diagnosis for most cancers. For example, five-year relative survival for colorectal cancer was 91% for localized tumors, 70% for tumors with regional spread, and only 11% for tumors with metastasis to distant sites.

Disparities were observed among Hawai'i's major ethnic groups. Among men, overall cancer incidence rates were highest in Whites while Native Hawaiians had the highest overall incidence of cancer among women. Cancer death rates were highest in Native Hawaiian men and women. Native Hawaiians also had the greatest incidence and mortality from breast and lung cancers. Colorectal cancer incidence and mortality were highest among Japanese men and women. Melanoma incidence and mortality was predominant in White men and women. Thyroid cancer incidence was highest

among Filipino men and women, although the disparity was more pronounced among Filipino women. Prostate cancer incidence was greatest among Filipinos while death rates were highest for Whites. Cervical cancer incidence was highest in Filipino and Native Hawaiian women. Kidney cancer incidence was predominant in Native Hawaiian and Chinese men. Liver cancer incidence was also highest among Chinese men. Disparities by stage of disease at diagnosis were also apparent for some cancers. For example, Native Hawaiian and Filipino women are more likely to be diagnosed with breast cancer at advanced stages. Ethnic groups were more likely to be diagnosed with skin cancer at later stages than for Whites.

Disparities were also observed among other, less populous ethnic groups. Based on the relative proportion of all cancers, excessive cancer risk is suggested for and include kidney cancers in African Americans, stomach cancers in Koreans, lung cancers in Samoans, and liver and cervical cancers in Vietnamese. Disproportionate numbers of lung, liver, cervical, and thyroid cancers were observed in Micronesians.

In addition to statewide cancer data, *Cancer Facts & Figures 2010* also provides updated statewide data on obesity, physical activity, fruit and vegetable consumption, tobacco use, cancer screening utilization, health insurance coverage, as well as current cancer prevention and early detection guidelines. Featured statewide data from the Behavioral Risk Factor Surveillance System, include the following:<sup>2</sup>

- 17% of adults and 10% of high school students are smokers
- More than half the adult population is obese (22%) or overweight (35%)
- Only 51% of adults reported engaging in the recommended amounts of moderate physical activity
- Only 29% of adults reported eating at least 5 servings of fruits and vegetables daily
- 76% of women 40 and older had a mammogram within the past 3 years
- 82% of women 18 and older had a Pap smear within the past 3 years
- 58% of adults 50 and older have ever had a sigmoidoscopy or colonoscopy

The *Hawai'i Cancer Facts & Figures 2010* includes an on-line version containing the most up-to-date data on cancer in Hawai'i's ethnically diverse populations. To obtain a free copy of *Hawai'i Cancer Facts & Figures 2010*, call the University of Hawai'i Cancer Research Center at 586-3010 or go on-line to [www.crch.org](http://www.crch.org).

INCIDENCE		MORTALITY	
Male Avg. Cases/Yr. (%)	Female Avg. Cases/Yr. (%)	Male Avg. Deaths/Yr. (%)	Female Avg. Deaths/Yr. (%)
Prostate 795 (26.8)	Breast 862 (32.1)	Lung & Bronchus 306 (26.4)	Lung & Bronchus 191 (20.9)
Lung & Bronchus 412 (13.9)	Colon & Rectum 305 (11.4)	Colon & Rectum 126 (10.9)	Breast 129 (14.1)
Colon & Rectum 387 (13.0)	Lung & Bronchus 283 (10.5)	Prostate 112 (9.7)	Colon & Rectum 90 (9.8)
Bladder 147 (5.0)	Corpus Uteri 181 (6.7)	Pancreas 73 (6.3)	Pancreas 72 (7.9)
Melanoma of the Skin 144 (4.9)	Leukemia 108 (4.0)	Liver 65 (5.6)	Ovary 48 (5.3)
Leukemia 142 (4.8)	Non-Hodgkin Lymphoma 106 (3.9)	Stomach 63 (5.4)	Stomach 41 (4.5)
Non-Hodgkin Lymphoma 132 (4.4)	Thyroid 99 (3.7)	Non-Hodgkin Lymphoma 45 (3.9)	Liver 34 (3.8)
Stomach 106 (3.6)	Melanoma of the Skin 89 (3.3)	Leukemia 45 (3.9)	Non-Hodgkin Lymphoma 33 (3.7)
Kidney 100 (3.4)	Pancreas 81 (3.0)	Esophagus 30 (2.6)	Leukemia 31 (3.4)
Oral cavity 100 (3.4)	Ovary 74 (2.8)	Oral cavity 29 (2.5%)	Corpus Uteri 28 (3.1%)
All Sites 2,967(100.0)	All Sites 2,684 (100.0)	All Sites 1,158 (100.0)	All Sites 912 (100.0)

Note: Invasive cases only; Cases (Incidence) and Deaths (Mortality) are 6 year average annual, rounded to the nearest whole; excludes deaths from unspecified cancers.  
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

Figure 1.— Ten Leading Cancer Sites in Cases and Deaths, Hawai'i, 2000-2005

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- Hawai'i State Department of Health (A.P.)

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*Lōkahi: holistic, interconnected*

# 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
<b>October 2010</b>					
10/3-10/7	PMM	Ironman Sports Medicine Conference	Royal Kona Resort, Kailua-Kona, Hawai'i	22nd Annual Ironman Sports Medicine Conference	Tel: (877) 843-8500 Web: www.cmtravel.com
10/23-10/29	U	Western Section of the American Urological Association	Hilton Waikoloa Village	86th Annual WSAUA Meeting	Web: <a href="http://www.wsaua.org/hawaii2010/2010.htm">http://www.wsaua.org/hawaii2010/2010.htm</a>
<b>November 2010</b>					
11/1-11/5	AN	California Society of Anesthesiologists	Mauna Lani Resort & Spa, Kailua-Kona, Hawai'i	2010 CSA Fall Hawaiian Seminar	Web: www.csahq.org
11/20	Multi	Hepatitis Support Network of Hawai'i and Hawai'i Consortium for Continuing Medical Education	Queen's Conference Center	Viral Hepatitis in Hawai'i - 2010	Tel: (808) 538-2881 Web: <a href="http://www.hepatitis.IDLinks/symposium2010">www.hepatitis.IDLinks/symposium2010</a>
<b>January 2011</b>					
1/24-1/28	AN	California Society of Anesthesiologists	Mauna Lani Resort & Spa, Kailua-Kona, Hawai'i	2011 CSA Winter Hawaiian Seminar	Web: www.csahq.org

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## ❖ COME ON, BABY, LIGHT MY... BATTERY?

The electronic cigarette or e-cigarette is a battery powered device which produces inhaled doses of nicotine by way of a vaporized solution. Introduced from China, the e-cigarette is supposed to be an alternative to tobacco products, but no claims of a therapeutic nature have been made. The device may look like a cigar, pipe or cigarette and inhaling provides a sensation of flavored tobacco smoke although there is no combustion. The devices are marketed on the Internet and in shopping malls without age restriction, and may provide a chocolate or strawberry flavor which may appeal to youths. The American Medical Association Council on Science and Public Health reported at the June House of Delegates that not much is known about e-cigarettes, and the House wants the device classified as a drug-delivery system. The Food and Drug Administration blocked the importation of e-cigarettes last year, but the distributors took the matter to court and the traffic continues pending legal decision. While no peer-reviewed studies have been done, it appears very likely it is a new health threat. The FDA should have the authority to regulate e-smoke by the Family Smoking Prevention and Tobacco Control Act.

## ❖ WE DON'T NEED NO STINKING CONDOMS.

Gilead Sciences, Inc., of Foster City, California, markets the anti-retroviral drug tenofovir (Viread) for HIV patients. Now researchers have found that the drug can be prepared in a gel form which can be used before and after intercourse to greatly reduce the possibility of both HIV and herpes infection. The study was randomized, double blind, and placebo-controlled so the findings appear genuine. The study followed 889 women at two centers. About one-third of the women stated that their partners did not know they were using a gel. It is not known if the drug could cause any birth defects if the woman is pregnant. The significance can be huge in money saved at a time when donor nations have been reluctant to increase funding for AIDS. Each dose of the gel costs 32 cents; of which 30 cents goes to packaging and applicator. A larger study involving about 5,000 women is underway in Africa and results are expected in 2013. Bruce Walker, M.D., director of the Ragon Institute for HIV research and immunology (not involved in the study) stated, "This is a potential game changer."

## ❖ CHRONIC ILLNESS GETS NO TWIST OF LYME.

The Infectious Diseases Society of America (IDSA) review panel completed more than a year of hearings and deliberations and unanimously concluded that no changes are warranted in the IDSA 2006 treatment guidelines for Lyme disease. Researchers concurred that based on current evidence, the 2006 IDSA protocol for treatment is sound and there is no convincing evidence for the existence of chronic Lyme disease infection. The long-term antibiotic treatment is unwarranted, unproven and needlessly expensive. The panel also advised clinicians against diagnosing Lyme disease on the basis of non-specific common complaints which are seen in many other clinical conditions, such as fatigue, arthralgia, and cerebral dysfunction.

## ❖ AGE IS A VERY HIGH PRICE TO PAY FOR MATURITY.

While it is commonly recommended that exercising cognitive abilities, e.g. crossword puzzles, helps to keep the brain sharp, a study reported in the Journal of Gerontology Medical Sciences, found that aerobic exercise actually reverses brain shrinkage. Brisk walking three hours a week apparently increases blood flow to the brain and sets off biochemical changes which increase production of brain neurons, both in volume of grey matter and white matter. Arthur Kramer, PhD. of the University of Illinois, Urbana, found that exercising patients improved their working memory, were nimbler at switching between mental tasks and can screen out distractions better than people who did not exercise. Dr. Kramer separated his patients age 60 to 79 into aerobic training, non-aerobic stretching and toning, or nothing. The team used magnetic resonance imaging (MRI) before and after the program and found that neither the stretch and tone group nor the couch potatoes showed any brain changes, but the aerobic group showed a substantial increase in brain volume. The Illinois study is the first to discover that older brains can indeed rev up their production of new neurons which serves to substantiate a study on patients in Sweden that overturned the ancient neuro-dogma that brains do not grow new neurons.

## ❖ FOOL ME ONCE, SHAME ON YOU. FOOL ME EIGHT TIMES, I AM AN IDIOT!

Hilarious Jon Stewart Daily Show bit had eight consecutive presidential videos beginning with Richard Nixon, each president making the same promise about becoming "energy independent." After eight presidents have misled the American public about ending dependence on foreign oil, anyone can see that industry and government are not serious about changing petroleum interdependence. The commission appointed by President Obama to look into the gulf oil spill is long on talkers, but short on scientists. Only two of the seven members have a scientific background; Harvard's Dean of Engineering and Applied Sciences – an expert in optics and physics, and the other an environmentalist with background in coastal management following oil spills. The White House stated that the commission will largely focus on the too cozy relationship of the government and the oil industry. The commission need look no farther than our "for sale" congress.

## ❖ WE FOUGHT OUR WAY TO THE TOP OF THE FOOD CHAIN FOR THIS?

It is called Chinese parsley and is a key ingredient in a wide range of ethnic cuisines; Mexican, Indian and Chinese. Yet it appears likely that cilantro causes more heated negative reaction than any other additive found on restaurant menus. On Facebook a social network of Web sites has emerged bonding a multitude of eaters who say it tastes soapy, rotten or simply vile. They will push away their plates when a whiff comes wafting from the salad or entree. One member of the "I Hate Cilantro" club actually threw her burrito to the floor when, despite specific orders, it was packed with cilantro. It has been cultivated for more than 3,000 years, and was used by Roman and Greek physicians, including Hippocrates, to prepare medicines. It is now grown in many places in the world and the California crop has grown from \$17 million in 2000 to \$30 million 2007. Charles J. Wysocki Ph.D., a behavioral neuro-scientist at the Monell Chemical Senses Center in Philadelphia, contends that the dislike of cilantro generates from its odor and may be a genetic trait. Whatever! It makes me puke.

## ❖ A ROSE BY ANY OTHER NAME WOULD SMELL AS SWEET.

Many of us grew up with the locker room stench of moldy athletic uniforms, pads, towels, shoes, helmets, etc., all the equipment attached to athletic competition. Airing out helps a little, but usually washing machines are necessary to clean and deodorize. A company called Sports o zone has come up with a machine that pumps ozone into an oven-like container, and in about ten minutes 95% of the odor-causing bacteria, fungi and mold are destroyed. Ozone, (O3) which readily occurs in nature, is delivered in a controlled manner, attaches to the ugly growing cultures, literally oxidizes them and then converts to O2. The shoes, football helmets, pads, and assorted athletic stuff no longer smell. Already twelve National Football League teams have purchased the \$15,000 anti-odor, anti-bacteria machine.

## ❖ GOD MUST HAVE A COMMITTEE DREAMING UP BIZARRE LIFE CYCLES.

Recent research has shown that in order to be viable the parasite *Toxoplasma gondii* must be passed in rodent feces which are hosted in a cat's stomach. Somehow the toxo parasite tricks the rodent into overcoming its natural fear of cats and instead lures the cat into eating it. Cat droppings become the vector for human infection which rarely causes a problem, but for a pregnant woman toxoplasma can seriously damage the brain and/or retina of the developing fetus.

## ❖ HE OFFERED BLOOD, SWEAT, TOIL AND TEARS, NOT A PARTIAL PLATE.

A denture which was fashioned for Winston Churchill was offered for auction and expected to bring about \$7500. Instead the plate brought in \$23,723, according to the Washington Post. Earlier this year, a half-smoked Churchill cigar won \$6,800 at auction. Recalling his penchant for alcohol, I wonder what his flask would bring?

## ADDENDA

- ❖ Freedom is never more than one generation from extinction.
- ❖ Someone in the United States is arrested every 38 seconds for a crime related to marijuana.
- ❖ The top 1% of US households earn 19% of the nation's income and, despite popular opinion, pay 28% of all taxes.
- ❖ According to Freshpair.com 28% of women prefer to wear a thong. (Not in my house.)
- ❖ Whatever happened to preparations A through G?

# Hawaii's Physicians **CHOOSE HAPI** as their Medical Malpractice Carrier

In recent years, hundreds of Hawaii's physicians have switched their coverage to HAPI, saving thousands of dollars on their medical malpractice coverage costs.

Started 32 years ago, HAPI is Hawaii's first, physician-owned medical malpractice coverage provider.

As a leading medical malpractice coverage provider, HAPI protects and defends Hawaii's most influential and respected physicians.

With a strictly local presence and NO profit motive, savings are distributed to our members.

HAPI's rates have remained stable, with several rate decreases or no change in rates in recent years.

In these tough economic times and challenging industry trends, you don't have to worry about your medical malpractice coverage costs. Let HAPI's financially sound, affordable plan protect you. Join your fellow colleagues...**contact HAPI and start saving today.**

<b>2009 HAPI's Total Quarterly Costs (Including Fully Mature Retroactive Coverage)</b>	
<b>General Surgery</b>	<b>\$4,168</b>
<b>Internal Medicine</b>	<b>\$1,373</b>
<b>Pediatrics</b>	<b>\$1,662</b>

The above illustration is an example of HAPI's 2009 fully mature costs. These costs apply to physicians who need three years or more of retroactive coverage upon joining HAPI. If you do not need retroactive coverage or if you join HAPI out of a residency or fellowship, you will pay significantly less than shown above. The above specialties were selected for illustrative purposes only. Call HAPI for your specialty's costs.



If you are a D.O. or M.D. in private practice, call Jovanka Ijadic, HAPI's Membership Specialist to discuss the cost savings HAPI could offer you.

"What prompted me to search for a new malpractice insurance provider was the steep increase in premiums. I am a strong believer that you get what you pay for, but also want value. Malpractice insurance companies should provide good legal support if that fateful day arrives. In addition, I was concerned that certain companies would not have enough reserves to handle large or multiple claims. I checked with the insurance commission and researched the integrity of the attorneys and felt that HAPI has the support that I need at an affordable price. Now, that's value!"

**Lance M. Kurata, M.D., Internist**

"After converting my coverage to HAPI, I was pleased with the cost savings but even more impressed with their immediate attention to my concerns. It is very reassuring to know that HAPI is highly accessible if there is a concern. I've experienced excellent customer service since day one."

**Art Wong, M.D., Pediatrician**

"I was pleasantly surprised with the additional savings I received when signing up with HAPI. They have been extremely accommodating in providing liability coverage for my practice, and I would recommend other Osteopathic Physicians to consider HAPI as their carrier as well."

**Leland Dao, D.O., Family Practitioner**