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Arterial Aneurysms of the Hand

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Introduction

Arterial aneurysms of the hand, either congenital or acquired, are very rare with the literature citing only a few scattered case reports.[1-9] To our knowledge, none have been reported in Hawai'i. Hand aneurysms predominately occur in the ulnar artery and are mostly of the acquired variety. This study reports on two cases of ulnar artery aneurysms of the hand, one congenital and the other acquired.

Case # 1

An otherwise healthy, right-handed 12-year-old boy was referred from Guam because of a slightly painful and pulsatile mass of the palm of the right hand that had been noted since he was 1. The mass had grown in size during the past several years and he began complaining of occasional tingling, numbness and cold sensation in his right small finger for the past two years.

Physical examination showed a relatively firm pulsatile mass measuring approximately 1 to 1.5 centimeter in diameter located on the hypothenar aspect of the right hand (Figure 1). There was no bruit and Allen's test was negative. An arteriogram was obtained and showed a relatively large fusiform non-thrombosed aneurysm of the ulnar artery (Figures 2 and 3). Under general anesthesia, the aneurysm was explored with good exposure of the ulnar artery both proximal and distal to the arterial dilatation as shown in figure 4. The aneurysm was excised and the wide arterial defect was repaired with an interposition vein graft. Histologic studies showed a true arterial aneurysm. Post-operative course was uneventful and the patient returned to Guam with complete resolution of his symptoms. A follow-up report from his pediatrician a year later indicated good progress with no problems and no recurrence of symptoms.

Case # 2

A healthy right-handed 62-year-old female office clerk was referred to the authors because of an asymptomatic palpable firm mass involving the hypothenar aspect of the left hand that had been present for more than 10 years. She denied any history of trauma. Physical examination showed a non-pulsatile and non-tender superficial subcutaneous firm mass measuring approximately 1cm in diameter over the hypothenar area. Allen's test was negative. The mass was explored through a small incision and was found to be a thrombosed arterial aneurysm. It was excised and the ends of the artery were ligated (Figure 5). Histologic examination of the specimen showed a true aneurysm with an occluded and fibrotic lumen. There were no post-operative problems and the Allen's test remained negative. She was doing well on her last follow-up examination six months after the operation.

Discussion

The overwhelming cause of acquired arterial aneurysms of the hand is trauma.[1-8] Other uncommon causes of hand aneurysms include infection, atherosclerosis, arteritis, tumor infiltration, and metabolic disorders.[1] True congenital arterial aneurysm of the hand as in Case #1, in contrast to false aneurysms in children,[10-13] is extremely rare with only few cases reported in the litterature.[13]

Sharp or penetrating trauma most often leads to pseudoaneurysm, in which a partial laceration to the vessel results in a hematoma which later organizes to become the outer wall of the vessel. The tunica media and tunica adventitia of the original vessel remain uninvolved in a pseudoaneurysm.[14] In a true arterial aneurysm, either congenital (Case #1) or acquired (Case #2), all three layers of the arterial wall are involved. When such aneurysms are symptomatic as in Case #1, the condition is referred to as "hypothenar hammer syndrome" if the aneurysm involves the ulnar artery. If the symptoms involve the distribution of the radial artery, it is referred to as "thenar hammer syndrome".[3] This syndrome was first popularized by Conn et al in the 1970s.[3] They described it as a constellation of signs and symptoms caused by an aneurysm of the ulnar artery followed by thrombosis. It occurs most frequently in men age 50-60 years with no identifiable isolated events. Occupations that are commonly related to this syndrome include: metal workers, mechanics, carpenters, factory workers, blacksmiths, plumbers, farmers, and gardeners. The most common complaint is of a mass in the hypothenar region. The mass may or may not be painful and is pulsatile in less than 10% of cases.[6] Compression of the branches of ulnar or median nerves by such aneurysms may be the source of pain, paresthesias, and weakness in the distribution of the affected branches. Additionally, a thrombosed artery can lead to cold intolerance and ischemic pain, particularly if the patient has an incomplete palmar arch.[5,6] However, as described in Case #1, a non-thrombosed congenital

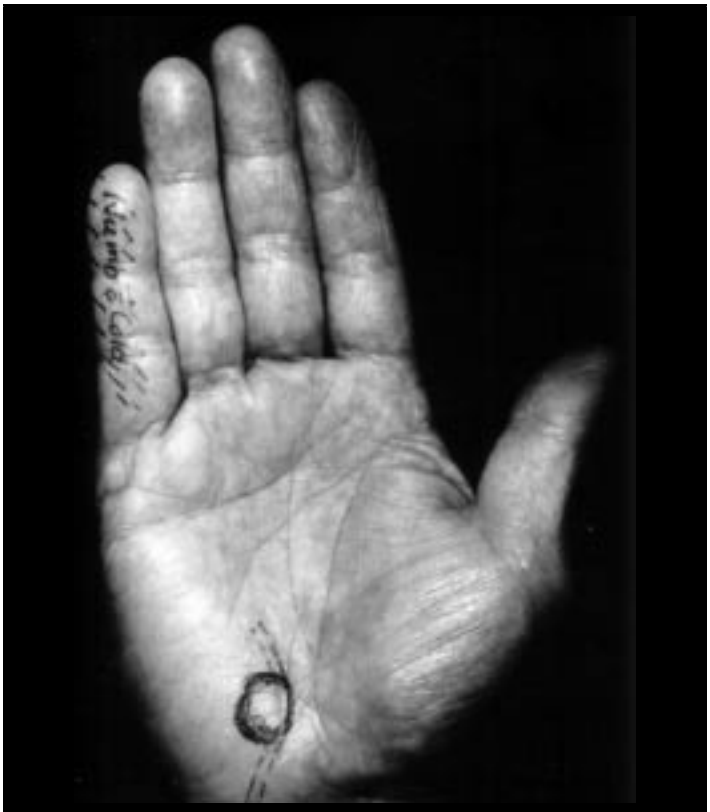

Figure 1.— Location of a palpable congenital ulnar artery aneurysm is marked on the surface of the skin in a 12 year-old boy. Also marked is the area of numbness and cold sensation involving the small finger.

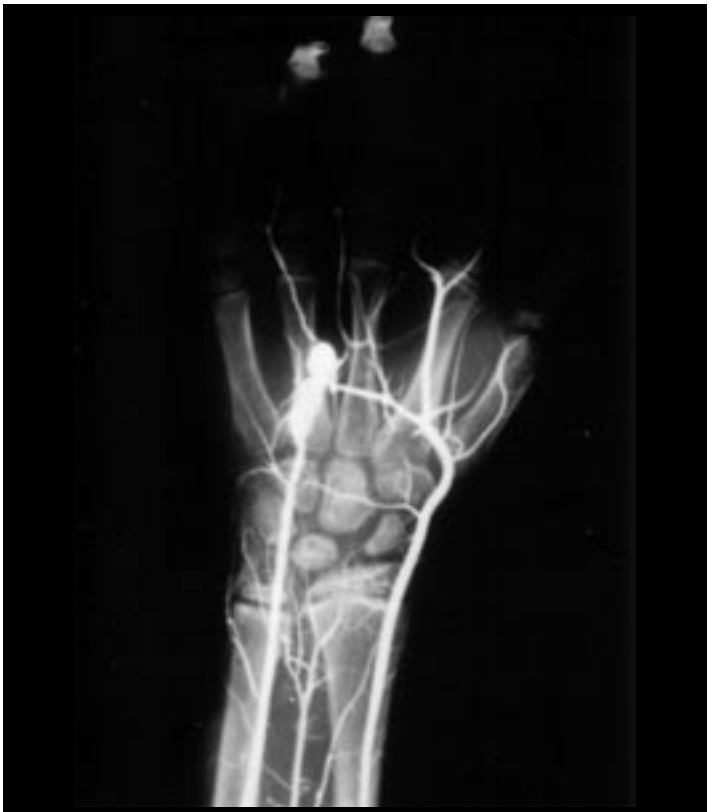

Figure 2.— Arteriogram shows the patent arterial aneurysm with an intact palmar arch.

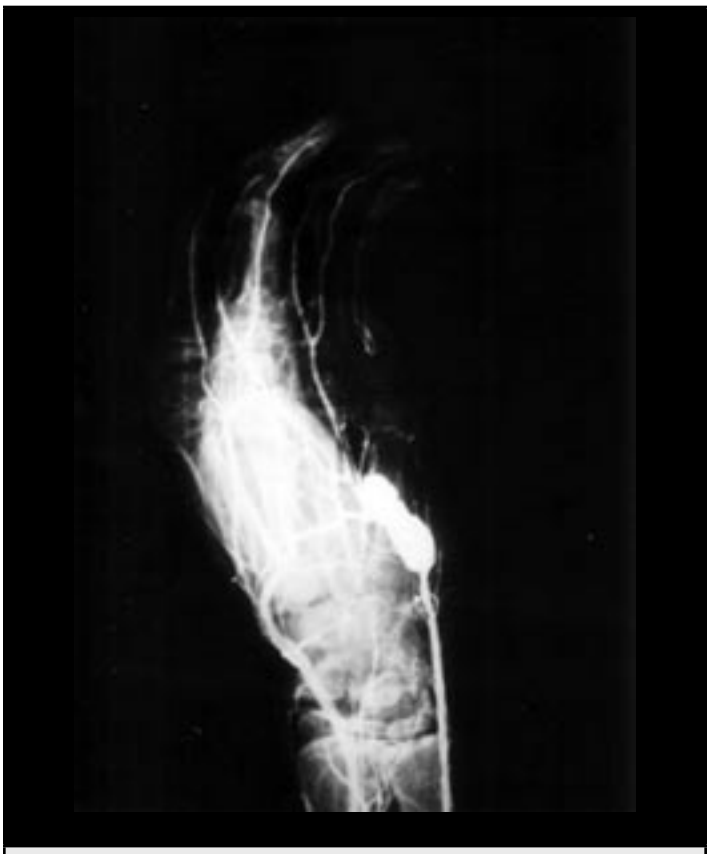

Figure 3.— Lateral view of the arteriogram shown in Figure 2.

aneurysm may also present similar symptoms.

In a retrospective study by Dethmers and Houpt[5] of 28 patients with hypothenar and thenar hammer syndromes, all twenty-eight patients had repetitive blunt trauma that is traditionally thought to cause progressive weakening and dilation of the vessel wall. The ulnar artery courses relatively superficially around the hook of the hamate making the vessel vulnerable to injury. Ferris et al demonstrated that patients with hypothenar hammer syndrome can present with bilateral disease, and histological specimens reveal changes characteristic of fibromuscular hyperplasia.[4] These authors speculate that hypothenar hammer syndrome results when an already diseased artery undergoes repetitive trauma.[4]

The 2 cases reported in this study illustrate the diversity in the presentation of this very rare condition. In Case #1, the diagnosis was very obvious with the presence of a pulsating hypothenar mass accompanied by symptoms of numbness and cold sensation involving the ulnar aspect of the small finger. Although the aneurysm had been present since age 1, treatment was delayed in Guam due to lack of access to specialists. In contrast, in Case #2, an aneurysm was not suspected preoperatively. It had formed in the absence of any obvious blunt trauma and presented with no symptoms despite the lack of flow through the involved segment of the ulnar artery. This shows the importance and effectiveness of collateral circulation that can compensate for a thrombosed ulnar artery. Furthermore, in such long-standing cases of thrombosed artery, the Allen's test may be negative as noted in Case #2.

Review of the literature indicates that a negative Allen's test is a reliable indicator of an intact palmar arch and that the risk of ischemic

Figure 4.— Intra-operative view of the ulnar artery aneurysm with exposed proximal and distal arterial ends.

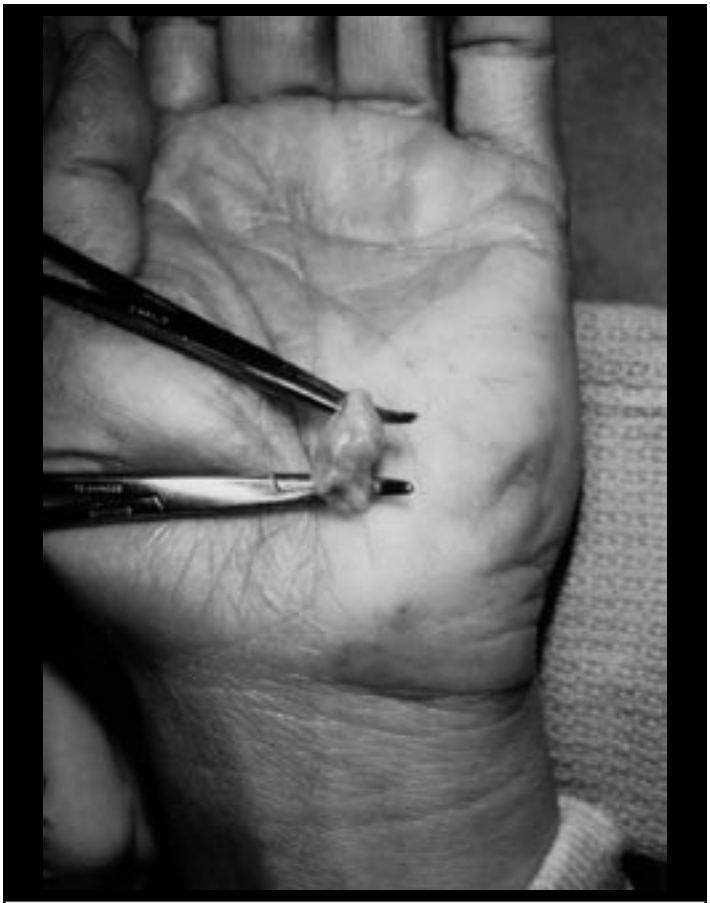

Figure 5.— Intra-operative view of a thrombosed acquired ulnar artery aneurysm in a 62-year-old woman.

hand changes with ligation of the ulnar or the radial artery is extremely low.[6] With a negative Allen's test as in Case #2 where the artery had been thrombosed for a long period and when no symptoms are present, the authors feel that an arteriogram is still necessary even if an aneurysm is highly suspected preoperatively. In such instances, exploration and ligation of the arterial ends most commonly suffice. One must also consider other asymptomatic tumors of the hand in the differential diagnosis such as ganglia, mucous cyst, giant cell tumor, glomus tumor, lipoma, nerve tumor, bone tumor, skin tumor such as epidermal and sebaceous cyst, fibromatous tumor, as well as a variety of vascular tumors other than aneurysms. Such vascular tumors include angiomas (the most common), lymphangiomas, venous malformations, and hemangioendotheliomas among other extremely rare entities.[1,2]

To properly perform the Allen's test one must: 1) raise the hand in question, 2) clench the fist for approximately 30 seconds, 3) apply firm finger pressure on both the ulnar and radial arteries as to occlude them both, 4) keep elevated, and open the hand, which should appear blanched (palor should be seen at levels of the fingernails), 5) release ulnar pressure, at which point the hand should regain color within 5 seconds. If color does not return within 7 seconds the test is positive and indicates inadequate circulation between the ulnar and the radial artery.[1,2,6]

Starnes et al [7]recommend a modified Allen's test that is performed with Doppler ultrasound to assess blood flow in the superficial palmar arch before and during radial artery compression. A decreased audible Doppler signal after radial artery compression is considered as a positive modified Allen's test. First and second digit pressures are measured before and during radial artery compression. A decrease in digit pressure of 40 mm Hg or more with radial artery compression was considered positive.

Herndon et al claimed that a consistent clinical presentation and positive Allen's test obviates the need for arteriography.[15] Arteriography, however, remains the most effective and definitive means of diagnosis and is recommended by most authors.[1-9] We also believe that arteriography can be very useful in the preoperative planning and provides useful information on the location of the aneurysm and on the adequacy of collateral circulation particularly when reconstruction is contemplated. In the case of other soft tissue or bone tumors, MRI may also become necessary.[1]

Treatment of hand aneurysms has evolved over the past several decades. Conservative management options include the cessation of smoking, biofeedback, and environmental and behavioral modifications.[6] Conn et al believed that dorsal sympathectomy, stellate ganglion blocks, and oral vasodilators are effective in the control of symptoms.[3] Decreasing the sympathetic tone in the hand would open themoregulatory arteriovenous shunts and increase perfusion.[5] Kleinert and Voliantis, on the other hand, recommended thrombectomy as the treatment of choice.[16] Resection of the diseased arterial segment was traditionally thought to be unnecessary. However, since

the natural history of the aneurysm is to progressively increase in size with risk of thrombosis and shedding of distal emboli,[6,7] the current trend leans toward arterial resection[4-7] as performed in these two case reports.

The decision to ligate versus repair or reconstruct the artery is debatable.[7] History, nature of symptoms, physical findings as well as angiography help guide the treatment plan. If collateral circulation is inadequate, the artery should be repaired end-to-end if feasible or reconstructed with an interpositional vein graft if the gap is too large[11] as in Case #1. Franck et al believed that whenever possible, normal blood flow should be restored, especially in children.[11] Givens[8] and Vayssairat[9] showed good clinical results even if in certain cases the vascular reconstruction subsequently becomes occluded. In Dethmers' and Houpt's [5] restrospective study, endoscopic thoracic sympathectomy with a venous interpositional graft was compared with grafting alone. Complaints of dry hands and reflex sweating associated with the sympathectomy procedure, however, caused many patients to be dissatisfied.

Conclusion

True arterial hand aneurysms, whether congenital (Case #1) or acquired (Case #2) are extremely rare and must be suspected when a tumor is present on the palm of the hand and particularly when the hypothenar region is involved. The majority are not pulsatile and may or may not be associated with symptoms of pain, dysesthesia, and intolerance to cold. If symptoms are present, the condition is referred to as hypothenar or thenar hammer syndrome depending on the arterial branches involved. Digital ischemia may occur from emboli or from thrombosis of the aneurysm. The Allen's test or its modification as described above, are helpful in evaluating the blood flow of the palmar arch. Arteriogram is recommended in most cases to confirm the diagnosis and when vascular reconstruction is contemplated. Long-standing asymptomatic thrombosed arterial aneurysms of the hand may be safely managed with simple excision and ligation of the arterial ends (Case #2).

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Brugada Syndrome and Brugada-type Electrocardiogram

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Abstract

The Brugada syndrome is an inherited arrhythmogenic and nonstructural heart disease that may cause syncope and sudden cardiac death (SCD). It is characterized by ST segment elevation in the right precordial leads (V1 – V3) and male predominance. Mutation on SCN5A encoding the α-subunit of the sodium channel is seen in 20% – 30% of patients with the syndrome. Because of low penetrance of gene mutation, clinical manifestations and prognosis can be variable in individuals. Therefore, asymptomatic population with Brugada-type electrocardiogram (ECG) exists in community, and SCD risk stratification of the individual can be problematic. Although understanding of the cellular mechanism of the syndrome has advanced, there are conflicting data about its prevalence and prognosis. Population-based genetic epidemiology studies with longer follow-up periods may be able to elucidate clinical outcome of the syndrome, particularly asymptomatic patients.

Introduction

The electrocardiogram (ECG) finding of right bundle branch block (RBBB) pattern with ST segment elevation in the right precordial leads (V1 – V3) in the absence of myocardial injury or obvious structural heart disease was first reported first by Osher HL et al in 1953.[1] The association of this ECG finding with a high risk of sudden death was first described in 1992 by Brugada et al.[2] This identical clinical syndrome has been recognized in East Asia, e.g. in Thailand, the Phillipines, and Japan where it is termed Lai Tai (died during sleep), Bangungut (moaning and dying during sleep), and Pokkuri (die suddenly and peacefully) respectively.[3] The Brugada-type ECG may be up to 10 times more prevalent in men than in women.[4]The condition may be inherited as an autosomal dominant trait.[5] The syndrome remains rare, but is important because of its association with high risk of sudden death, yet diagnosis may be elusive since ECG findings tend to be evanescent and genetic testing is in preliminary stages.

Genetic and Cellular Mechanism

A molecular defect in the cardiac sodium channel gene for SCN5A has been reported to form the genetic basis of this syndrome. The resulting dysfunction of fast inward sodium current (I_{Na}) in conjunction with physiological activity of the transient outward potassium current (I_{to}) in the epicardium (where it is dominant and responsible for the phase I notch of the action potential) is postulated to be arrythmogenic via the following mechanism. Loss of action potential upstroke permits exaggerated effects of I_{to} abbreviating action potential duration epicardially but not endocardially. This heterogeneity results in a transmural voltage gradient (and J point and ST changes on surface ECG) and leads to the development of a marked transmural dispersion of repolarization and refractoriness. This condition permits local reexcitation via a phase 2 reentry mechanism.[6] It results in a closely coupled extrasystole, which triggers a random movement reentry leading to ventricular tachycardia (VT) or ventricular fibrillation (VF) on the body surface ECG.[7,8] This mechanism, which requires a pivotal effect of I_{to}, may also explain male preponderance for development of the Brugada phenotype I_{to} is more prominent in men than in women underlies.[9] Matsuo et al reported a case of two Brugada syndrome patients whose ST segment elevation normalized following orchiectomy prescribed for the treatment of prostate cancer.[10] It may indicate a potential role of testosterone in the etiology of the Brugada phenotype. Spontaneous augmentation of ST elevation was reported to occur along with an increase in vagal activity.[11] This may explain higher chance of VF during sleep in Brugada syndrome.

Various SCN5A mutations have been identified since the first report by Chen et al.[5] However, this abnormality may be identified in only 18–30% of patients presenting with the Brugada syndrome.[5,12] Recently, Poelzing, et al showed that SCN5A polymorphism could explain the low penetrance of SCN5A mutation.[13] This suggests that genetic polymorphism can be a target for SCD risk stratification and treatment of the syndrome in future. A second region on the same chromosome (chromosome 3) as SCN5A may also cause Brugada syndrome, but the specific gene has not been identified yet.[14] Thus, considerable genetic heterogeneity exists in Brugada syndrome.

Diagnosis

Currently, diagnosis relies on the presence of a characteristic ECG together with clinical findings. Although originally RBBB was considered to be a characteristic feature, the R' is now thought to represent an accentuated J wave. Therefore, the presence of RBBB is not included in the diagnostic criteria of Brugada syndrome.[15]

Brugada syndrome is diagnosed with the characteristic electrocardiographic findings (Brugada-type ECG) in

the presence or absence of a sodium channel-blocking agent (Figure 1) in conjunction with one of the following: documented VF, polymorphic VT, a family history of sudden cardiac death at < 45 years old, presence of coved type ECGs in family members, inducibility of VT with programmed electrical stimulation, syncope, or nocturnal agonal respiration.[16] Brugada-type ECG is characterized by J wave and ST-segment elevation representing surface ECG manifestations of transmural voltage gradients. Three variations are recognized. Type 1 ST segment elevation is defined by coved ST-segment elevation ≥ 2mm (0.2mV) followed by a negative T wave observed in 2 or more right precordial leads (V1 – V3). Type 2 ST-segment elevation has a saddleback appearance with a high takeoff ST-segment (J point) elevation of ≥ 2mm and a subsequent pattern of ≥ 1mm ST elevation, which is followed by either a positive or biphasic T wave. Type 3 has either a saddleback or coved appearance with an ST-segment elevation of < 1mm. Although Type 2 and Type 3 ECG are not diagnostic of the Brugada syndrome, the diagnosis is considered positive when these forms are converted to the diagnostic Type 1 pattern in response to sodium channel blockers such as ajmaline, flecainide, procainamide and pilsicainide.[16]

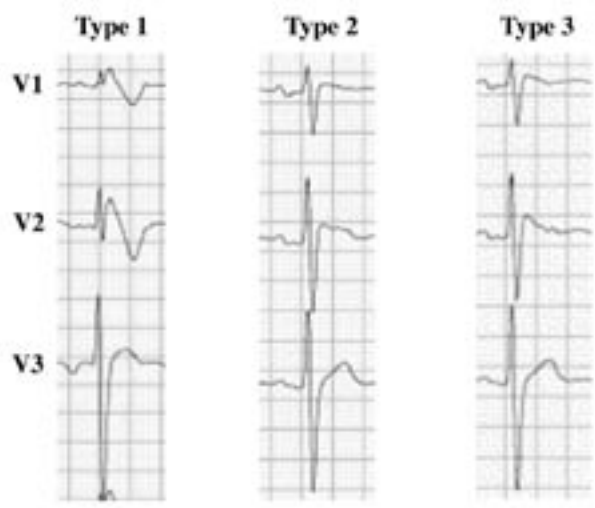

Figure 1.— Brugada-type ECG. This ECG was obtained from one patient, a 29-year-old Hispanic male who presented with syncope.

The ECG findings of Brugada syndrome may be difficult to evaluate. The ECG pattern can be dynamic, with variations from day to day, or even during the day, or simply remain concealed.[17] ECG findings alone without symptoms are neither sensitive nor specific for the Brugada syndrome. Cases of incomplete penetrance may not demonstrate characteristic ECG findings. Manifestation by sodium channel blocker induction do not have 100% sensitivity.[18] Interpretation of J point and ST-segment elevation may be confounded by early repolarisation, acute pericarditis, acute myocardial ischemia / infarction, arrhythmogenic right ventricular cardiomyopathy, hypothermia, etc, which may mimic a Brugada-type electrocardiogram.[6,17]

Prevalence of Brugada-type ECG

In view of the issues confounding ECG interpretation, the true prevalence of the disease in general population is difficult to estimate. Since the disease is most commonly seen in adult men, prevalence data should be interpreted carefully. In general, the disease has been believed to be more prevalent in East Asia than in Europe or the United States. However, a few population-based studies indicated comparable prevalence of the Brugada-type ECG in Japan and Europe (Table 1).[3,4,19-26] Nine population-based studies (5 Japanese, 3 European and 1 from a Japanese-American population in Hawai'i) confirmed a consistently lower prevalence in women than in men (Table 1).[4,19-26] The prevalence of Type 1 ECG ranged from 0–0.15 % in the total population and 0–0.38 % in men. Prevalence of any type of Brugada ECG ranged

Table1.— Prevalence and prognosis of spontaneous Brugada-type ECG in population based studies.

References	Place	Total Subjects N	Mean Age (Range)	Men %	Type1 in Total %	Type1 in Men %	Type1 in Women %	Type1-3 in Total %	Type1-3 in Men %	Type1-3 in Women %	Follow-Up Years	SCD / VT N
Tohyou[19]	Japan	9,569	8.9	54..1	NA	NA	NA	0.01	0.019	0.0	0	0
Tohyou[19]	Japan	4,092	45.8	78.2	NA	NA	NA	0.073	0.094	0.0	0	0
Miyasaka[4]	Japan	13,929	58±10	26.5	0.12	0.38	0.03	0.70	2.14	0.186	2.6 ± 0.3	1
Atarashi[20]	Japan	10,000	42± 9	89.1	NA	NA	NA	0.16	0.19	0.0	NA	NA
Matsuo[21]	Japan	4,788	NA	40.9	0.146	0.358	0	NA	NA	NA	40 – 41y	NA
Furuhashi[21]	Japan	8,612	49.2	69.5	0.047	0.067	0	0.14	0.18	0.04	NA	NA
Ito[23 *]	USA	8,006	54.1	100	0.15	0.15	NA	0.29	0.29	NA	25.5	0
Hermida[24]	France	1,000	39 ± 10	63.2	0.1	0.158	0.0	6.1	NA	NA	4.1 ± 2.5	0
Blangy[25]	France	35,309	37.2	47.0	0.17	NA	NA	0.057	0.084	0.021	2.5	0
Junttila[45]	Finland	2,479	NA (18 – 30)	NA	0.0	0.0	0.0	0.61	NA	NA	NA (19 ± 2)	0
Junttila[26]	Finland	542	50± 6	NA	0.0	0.0	0.0	0.55	NA	NA	11 ± 1	0

*: Japanese-American in Hawai'i, NA: Not mentioned or not known, SCD: Sudden cardiac death, VT: Ventricular tachycardia, Mean Age: Mean Age ± SD, Follow-up Years: Mean Follow-up Years ± SD

Table 2.— Prognosis of Brugada-type ECG without previous cardiac arrest / VF in the registries.										
References	Total Subjects N	Type1 ECG N (%)	Spontaneous Type1 ECG N (%)	Mean Age Years	Men N (%)	FHx of SCD/VF N (%)	Prior Syncope N (%)	Positive PVS N (%)	Follow-up Months	SCD/VF
Brugada[27]	73	73/73 (100)	62/73 (74.7)	47 ± 14	59/73 (80.8)	26/73 (35.6)	73/73 (100)	45/136 (33.1)	26 ± 36	14/73 (19.2)
Brugada[27]	190	190/190 (100)	111/190 (58.4)	40 ± 16	135/190 (71.1)	131/190 (68.9)	0 (0.0)	41/62 (66.1)	27 ± 29	16/190 (8.4)
Brugada[28]	547	547/547 (100)	391/547 (71.5)	41 ± 15	408/547 (74.6)	302/547 (55.2)	123/547 (22.5)	138/547 (25.2)	24 ± 33	45/547 (8.2)
Atarashi[20]	85	37/85 (43.5)	37/85 (43.5)	NA	79/85 (92.9)	≤5/85 (≤5.9)	18/85 (21.2)	NA	36	1/85 (1.2)
Priori[29]	30	30/30 (100)	NA	41 ± 14	NA	NA	0 (0.0)	NA	33 ± 38	0/30 (0.0)
Eckardt[30]	65	65/65 (100)	40/65 (61.5)	45.6 ± 15.6	46/65 (70.8)	16/65 (24.6)	65/65 (100)	40/65 (61.5)	38.9 ± 37.3	4/65 (6.2)
Eckardt[30]	123	123/123 (100)	70/123 (56.9)	43.8 ± 14.4	84/123 (68.3)	41/123 (33.3)	0 (0.0)	38/123 (30.9)	33.7 ± 52.2	1/123 (0.8)

FHx: Family History, SCD / VF: Sudden cardiac death or ventricular fibrillation, PVS: Programmed ventricular stimulation, Follow-up Months: Mean Follow-up Months ± SD.

between 0.057 – 0.61% in total population and 0.084 – 2.14% in men.[4,19-26] Inconsistent results among the studies may be partly explained by differences in the population studied, the method of recruiting study subjects, and of ECG interpretation. For example, Hermida et al reported a very high prevalence of Brugada-type ECG patterns (6.1%), yet admitted that the prevalence of saddle-back type ST-segment elevation might have been overestimated due to difficulties in differentiating these abnormalities from early repolarization.[24]

Prognosis and Risk Stratification

The prognosis of Brugada syndrome varies significantly between population-based studies and registries. A worse prognosis is associated with registry data, possibly because these include symptomatic patients. There are 4 major Brugada registries. They are compiled by Brugada et al, Priori et al, Eckardt et al, and the Japanese Brugada syndrome registry.[9,20,27-30] There is a consensus that subjects with prior spontaneous / drug induced Type 1 Brugada ECG with history of aborted sudden cardiac death (SCD) or ventricular fibrillation (VF) have the highest risk of SCD or aborted SCD.[9,20,27-30] The prognosis of subjects without a history of aborted SCD or VF is controversial. A history of syncope has been linked with a significantly increased risk of sudden cardiac death in some reports. However, arrhythmic event rates were reported to range widely from 0–31% in patients with prior syncope and Type 1 ECG with or without sodium channel blockers.[19-24,31] Brugada et al showed a high risk of SCD or VF of 19.2% in patients with syncope compared to 8.2% without any history of syncope during mean follow-up of approximately 25 months.[27] In contrast, other studies reported no deaths occurring in subjects with syncope [Atarashi et al] and some registries [Priori, Eckardt et al] showed a much lower risk of SCD in asymptomatic population.[20,27-31] These difference might be due to more subjects with family history of SCD being included in the Brugada registry.

The role of electrophysiologic testing (EPS) is similarly controversial. Some data support a role for EPS in risk stratification of both symptomatic and asymptomatic patients.[27-28] Induction of ventricular arrhythmia was a significant predictor of SCD in the Brugada registry, even in patients without prior cardiac arrest or ventricular arrhythmia (odds ratio 5.88, 2.0-16.7).[28] In contrast, the studies by Priori, Kanda, and Erkcardt et al, indicated that inducibility of ventricular arrhythmia during EPS was not a significant predictor of future arrhythmic events.[29-32] This discrepancy cannot be explained simply by the higher cardiac event rate in Brugada registry because Priori, Ekcardt, and Kanda et al failed to show the significance of positive EPS as a predictor of cardiac outcome even in a symptomatic population with a high arrhythmic rate.

Current Management and Treatment

The low prevalence of the Brugada syndrome make it difficult to conduct prospective controlled trials to investigate the efficacy of any treatment designed to prevent sudden cardiac death. Therefore, the consensus on treatment strategies is based on observational data. Currently, the implantable cardiac defibrillator (ICD) appears to be the most reliable and efficient treatment to protect patients. The Second Consensus Report established guidelines for ICD implantation in patients with symptomatic and asymptomatic Brugada syndrome.[33] However, disagreement continues among authors of different registries, especially with regard to management of asymptomatic patients.[34,35] The following summarizes the current state.

An ICD is indicated for cardiac arrest survivors with Type 1 ECG, regardless of the use of sodium channel blockers.[16,35] In contrast, controversy exists for other categories of patients. Thus, in patients with prior syncope, seizure or nocturnal agonal respiration the extent of future risk of sudden death remains unclear. An aggressive management to prevent sudden cardiac death may be considered with a higher priority in young or middle aged patients. Brugada et al recommended risk stratification by EPS and selective ICD placement.[16] On the other hand, Priori et al recommended ICD placement for all patients with Type 1 ECG and prior syncope.[35] Asymptomatic patients with Brugada-type ECG constitute a difficult management group. Risk stratification and management for asymptomatic patients remains controversial. Brugada et al recommend risk stratification by EPS in asymptomatic patients with spontaneous Type 1 ECG, or family history of sudden cardiac death and sodium channel blocker induced Type 1 ECG.[13] Patients in whom sustained ventricular arrhythmia is provoked by EPS should be treated with ICD placement.[16] Asymptomatic patients with Type 1 ECG revealed by sodium channel blocker provocation should be followed closely.[16] In contrast, Priori et al, who questioned the accuracy of EPS risk stratification, favor risk stratification by clinical presentation with symptoms.[18,29] Results from a currently ongoing prospective trial, PRogrammed ELectrical stimULation preDirectivE value in Brugada syndrome (PRELUDE) may elucidate management strategies in this population.[35]

Continues on next page

Pharmacological Therapy

There are few data regarding drug treatment of Brugada syndrome. Quinidine, a class Ia antiarrhythmic drug, normalized the Brugada ECG in 2 cases.[36] Subsequently, quinidine was shown to prevent inducible and spontaneous ventricular arrhythmia in both asymptomatic and symptomatic patients.[37] Quinidine's effect may be mediated by inhibition of the outward current I_{to}, leading to the prolongation of action potential and to electrical homogeneity between the epicardium and the endocardium.[8]

Summary

Diagnosis and management of the Brugada syndrome are difficult because of the condition's low incidence, low penetrance, and genetic heterogeneity. Long-term prognosis and appropriate method of risk stratification remain unclear. Population-based genetic epidemiology studies with long-term follow-up may elucidate actual prognosis of patients with this syndrome.

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Attitudes and Perceptions of Nurses-in-Training and Psychiatry and Pediatric Residents towards Animal-Assisted Interventions

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Abstract

The purpose of this survey is to examine the attitudes and perceptions of University of Hawai'i pediatric and psychiatry residents and nurses-in-training toward animal-assisted interventions (AAI). Respondents demonstrated a positive view of AAI, citing their belief that it was beneficial for most populations of patients.

Introduction

Throughout history, animals have played an important part in human lives. Since the domestication of animals began over 12,000 years ago,[1] animals have acted as more than just sources of food, clothing, and tools. Over the years, their roles have expanded to include companion, assistant, protector, and in some cases, therapeutic aide. According to the literature, Florence Nightingale[1] observed that "a small pet is often an excellent companion for the sick, for long chronic cases especially." Furthermore, she suggested that persons confined to the same room for long periods of time might enjoy the presence of a caged bird. In 18th century Europe, philanthropic groups advocated for the introduction of domesticated animals to progressive psychiatric institutions.[1] Later that century, York Retreat in England became the first recorded institution to use animals therapeutically, in an attempt to decrease the use of restraints and medications.[1] From 1944 to 1945, the Army Air Corps Convalescent Hospital in Pawling, New York became the first institution in the United States to use animals in a therapeutic manner. In the 1960s, American child psychotherapist Boris M. Levinson touted the benefits that his dog brought to counseling sessions, in his book, *Pet-Oriented Child Psychotherapy*.[2]

Over the past few decades, animals have been used in various ways and in a wide range of settings. Terms such as animal-assisted therapy (AAT) and animal-assisted activity (AAA) have been used to describe these interactions. The Delta Society (a major organization responsible for the certification of therapy animals within the United States) defines AAT as goal-directed interventions involving animals that have been screened, trained, and have met specific criteria. It is directed and/or administered by a credentialed therapist who sets therapeutic goals, guides interactions, and evaluates the process. It is designed to promote improvement in the physical, social, emotional, and/or cognitive functioning of humans.[3] In contrast, AAA does not require specific goals or detailed documentation. Instead, its aim is to provide opportunities for motivational, educational, recreational, and/or therapeutic benefits to enhance a person's quality of life. Like AAT, it is delivered by a specially trained professional, paraprofessional, and/or volunteer partnered with an animal that has met specific criteria.[3]

Despite its implementation in a variety of settings, the field of animal-assisted interventions (AAI) has been criticized for its lack of a widely accepted theoretical basis explaining how and why these interventions are potentially therapeutic.[2] A number of possible mechanisms have been suggested, however. These include animals acting as social facilitators, symbols and metaphors, objects of attention and relaxation, objects of attachment, sources of support, and instruments of learning.[2] While many studies have shown that patients view AAI as therapeutic, few have focused on health professionals' perceptions of those interventions. One such study performed by Moody et al,[4] looked at the attitudes of staff on a pediatric ward toward a dog visitation program. Using the Brisbane AAT Acceptability Test,[4] researchers measured staff perceptions and attitudes prior to and after the dog visitation program had been implemented. The study found that prior to the program's implementation, staff had high expectations that it would be beneficial for the ward and the children. Following the program's implementation, those expectations were confirmed. Furthermore, staff was less concerned about the damage that the dogs might do. Interestingly, the views of allied health and nonclinical staff were more positive than those of doctors and nurses.

While AAI is used in hospitals in Hawai'i, no one has looked at the perceptions of pediatric and psychiatric residents and nurses-in-training. The purpose of this study is to examine the attitudes and perceptions of this population toward AAI.

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Table 1.— Sample Characteristics	
Characteristics of respondents (n= 47).	
Mean age	36.29 years (age range 20- 85)
Female	31 (66%)
Male	13 (27%)
Nursing	26 (55%)
Physician	18 (38%)
Unidentified	3 (7%)
Caucasian	15 (31%)
Japanese	11 (23%)
Filipino	5 (11%)
Hawaiian	3 (6%)
Other	8 (17%)
Married	19 (40%)
Single	18 (38%)
Have children	11 (23%)
Own pet currently	28 (59.6%)
Owned pet as a child	34 (72.3%)
Own a dog	21 (62%)
Own a cat	5 (16%)
Own other type of pet	7 (22%)

Table 2.— Attitudes toward Animal-Assisted Interventions (AAI)		
Responses to 20-item subscale addressing participants' attitudes toward AAI.		
	Agree	**Disagree**
Animals harmed	42%	58%
Patients injured	29%	71%
Allergies worsened	56%	44%
Asthma worsened	29%	71%
Infection	9%	91%
Fleas/ticks	7%	93%
Animals dirty	4%	96%
Source of competition	23%	77%
Animals noisy	9%	91%
Animals damage property	4%	96%
Source of support	100%	
Improve prosocial behavior	98%	2%
Decrease stress	96%	4%
Improve socialization	95%	5%
Distract from illness	95%	5%
Improve program image	98%	2%
Humanize institution	95%	5%
Relaxing	86%	14%
Increase communication	90%	10%
Decrease workload	24%	76%

Methods

A brief 1-page survey was created for the project, based on the Brisbane AAT Acceptability Test.[4] The 40-item survey was designed to elicit demographic information, specialty, exposure towards AAI, and attitude statements. Attitudes in favor of and against animal-assisted treatments were rated on a 4-point Likert scale ranging from strongly disagree to strongly agree. Participants were also asked to identify advantages and concerns in open-ended questions. The questionnaire is reproduced in Appendix A.

All undergraduate and masters level nursing students at the University of Hawai'i at Manoa (n= 300) were invited to participate in the survey. In addition, all pediatric and psychiatry residents in the University of Hawai'i Residency Programs were invited to participate in the study. A cover letter describing the project and requesting participation in the study was included with a one-page survey. This packet was distributed to participants via e-mail on 3 separate occasions. Participants were asked to return their surveys anonymously, via e-mail. Thirty students (10%) in the University of Hawai'i nursing program were unable to participate in the study, as their e-mail accounts would not accept the packet, because their accounts were full.

The responses were compiled and entered into a computer program. The data were analyzed using analysis of variance (ANOVA).

Results

Responses were received from 18 residents, 26 nursing students, and 3 unidentified participants. Characteristics of the sample population are shown in Table 1. Ninety-two percent of respondents believed that AAI would be therapeutic for patients, 87% reported that they would prescribe AAI for their patients, 43% reported that they had had a positive experience with AAI, and 89% of respondents reported that they had not received formal training about AAI. Thirteen percent of respondents believed that AAI would be most beneficial for disabled persons, 19% felt that it would greatly benefit those with chronic illnesses, 23% thought that the mentally ill would derive the most benefit from AAI, 28% believed that the geriatric population would benefit the most, 38% felt that it would be beneficial for the pediatric population, and 30% thought that AAI would benefit all populations. Participants felt that AAI would be contraindicated in populations that were violent, demented, and/or psychotic. Respondents also thought that AAI should not be used for those with a diagnosis of conduct disorder or antisocial personality disorder.

The 20-item sub-scale used to elicit participants' attitudes towards AAI was divided into two categories— statements reflecting negative perceptions of AAI and statements reflecting positive views of AAI. Participants' responses are shown in Table 2.

The primary concerns that respondents had about AAI were the possibility of patient injury (13%), worsening of patients' allergies (17%), improper training of staff and animals (30%), acceptance by staff (20%), and the possibility of animals being harmed (20%). The major advantages listed by participants were that animals are nonjudgmental (16%), animals would help to take a patient's mind off of their illness (24%), animals would serve as a source of support (24%), and patients would exhibit positive behaviors (36%).

Discussion

The major limitation of this study was the small sample size. Due to the size of the sample, the results of this study cannot be generalized. The low response rate may have been due to concerns regarding confidentiality and the difficult process of completing and returning a word file electronic survey as opposed to a form-fillable electronic survey.

Despite a lack of formal training about the field of AAI, respondents reported an overwhelmingly positive view of this type of intervention. In general, respondents felt that AAI would be beneficial for most populations, due to its supportive and relaxing nature. Participants' primary concerns about this type of intervention centered around the possibility of injury or worsening of a patient's condition and worries about proper training and acceptance of AAI. Future studies should focus on the effect of cultural and individual differences of patients and health professionals on their perceptions of AAI.

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Appendix A

Animal Assisted Interventions (AAI)

Age: _____

Gender: ❑Male ❑Female

Ethnicity: ❑Caucasian ❑Filipino ❑Hawaiian ❑Japanese ❑Other _____

Marital Status: ❑Single ❑Married/Cohabitating ❑Divorced/Separated ❑Widow(er)

Children: ❑Yes ❑No

Occupation: ❑Nurse ❑Physician

Specialty: ❑Pediatrics ❑Psychiatry

Do you have a pet? ❑Yes ❑No *Type of pet*_____

Did you have a pet as a child? ❑Yes ❑No

Do you think Animal Assisted Interventions are therapeutic? ❑Yes ❑No

Would you be willing to prescribe Animal Assisted Interventions? ❑Yes ❑No

*For what populations?*_____

Have you received any training on Animal Assisted Interventions? ❑Yes ❑No

	Strongly Disagree	Disagree	Agree	Strongly Agree
1. Allergies to pets will be a problem on the ward.	1	2	3	4
2. Animals on the ward humanize the hospital.	1	2	3	4
3. Animals will improve socialization among patients.	1	2	3	4
4. Animals will worsen patients' asthma.	1	2	3	4
5. Animals will spread infection.	1	2	3	4
6. Animals on the ward will decrease staff workload.	1	2	3	4
7. I worry that a patient may be bitten or scratched.	1	2	3	4
8. I worry that an animal might be hurt by a patient.	1	2	3	4
9. Animals will be a source of competition among patients.	1	2	3	4
10. Animals will promote pro-social behavior.	1	2	3	4
11. Animals will give patients fleas or ticks.	1	2	3	4
12. Animals will decrease stress.	1	2	3	4
13. Animals will damage property.	1	2	3	4
14. Animals will benefit the program's image.	1	2	3	4
15. Animals provide a source of support.	1	2	3	4
16. Animals are noisy.	1	2	3	4
17. Animals will improve communication.	1	2	3	4
18. Animals make the ward a relaxed place.	1	2	3	4
19. Animals are dirty.	1	2	3	4
20. Animals will take the patient's mind off illness.	1	2	3	4

What are your primary concerns about *Animal Assisted Interventions*?

What are the major advantages of *Animal Assisted Interventions*?

Have you had any exposure to *Animal Assisted Interventions*? ❑Yes ❑No

What type?

Positive or negative experience? ❑Positive ❑Negative

Please describe.

_____
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The Role of Sunny Buddies in Medical Education

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Sunny Buddies is a non-profit organization that works in conjunction with the Hawai'i State Department of Health to pair medical students with adults and teenagers who are mentally disabled.[1] Originally, volunteers for the Sunny Buddies program were recruited from the medical school and the local community. The program recently discontinued recruiting from the community and has increased its efforts to involve University of Hawai'i John A. Burns School of Medicine (JABSOM) medical students in its activities. The Sunny Buddies program was started in 1998 by Dr. Melissa Lee. Since its inception, the program has continued to grow and expand. It is one of the Community Health and Service Programs available for first-year medical students to fulfill their community health requirement.[2]

The goal of the Community Health and Service Program is to raise the medical students' awareness of the social issues affecting health and to provide non-clinical service learning opportunities. In addition, the Community Health Program aims to develop an understanding of the health needs of the people in Hawai'i in a socially and culturally sensitive context. The Sunny Buddies program is an example of how medical students can fulfill these goals.

First-year medical students apply to the Sunny Buddies Program during orientation week. They are interviewed and screened before being accepted. Most of the interviewing is conducted by upper class medical students who remain involved in the program. With the help of the Department of Health, medical students are matched with their buddies based on gender, similar hobbies, location of residence, and availability for outings.

In 2006, Sunny Buddies recruited 10 first-year medical students. Nine out of the ten of these students have remained in contact with their buddy during their second year of medical school. In 2007, six students were selected from the Class of 2011 and it is anticipated that they too will choose to remain active members of Sunny Buddies throughout their four years at JABSOM.

The program requires that the medical students arrange two activities a month and have one phone or e-mail contact a week with his/her buddy. The most popular activities are: going to a movie, going to lunch, bowling, and playing sports. Shopping and a day at the mall are especially popular with the female students and their buddies. The buddies have varying levels of disabilities; some are not able to communicate orally, while others appear as fully functioning adults. Due to this wide spectrum of disabilities, medical students are challenged to discover suitable social activities and explore alternate forms of communication. The first few meetings are sometimes awkward. The fun and sense of accomplishment begin once a trusting relationship is formed.

Upper class medical students have the opportunity for further involvement in Sunny Buddies by becoming role models and officers in the program. In 2007, there were two officers in the second year class, two in the third year class and one in the fourth year class. Duties of the officers include handling timesheets which are submitted by students each month, organizing meetings, interviewing new volunteers, being in charge of paperwork and fundraising, and most importantly maintaining open communication between JABSOM and the State Department of Health. Although the officers are the backbone of the Sunny Buddies program, it is the efforts of the first year class that keep the program alive.

Planning special events and fundraising are vital components of Sunny Buddies' activities and the responsibility of the first year students. Each year, there is the Christmas lunch with Santa where students invite their buddies and their respective family members to an afternoon of games, entertainment, and photographs with Santa. This event is very popular with the medical students, their buddies, and their families. At the end of the school year, there is a Spring Fling. This past year, the Spring Fling was held at the Waikiki Aquarium. First year students were responsible for organizing this event. Student teams were in charge of invitations, booking the venue, ordering food, decorating, organizing games, and thanking the people who support the program year after year. Last April, the Spring Fling was both successful and fun with a Korean food buffet and a picture-frame making station. Many buddies arrived early and were eager to meet new friends, socialize with their buddy, and enjoy the setting.

In addition to planning these annual events, the first year medical students are involved in fundraising activities. In 2006, Jamba Juice certificates and Krispy Kreme donuts were sold. These fundraising activities allow Sunny Buddies to continue to offer its services. The money is used to pay for the required insurance premium and the special events. In addition, first year medical students are encouraged to write grants to help support the program.

Students find it rewarding to continue socializing with their buddies. Larissa Fujii, MS4 commented, "It's always great to know that your buddy looks forward to your outings and that you make a difference in their life by just being friends." Others see it as a great opportunity to help a person who otherwise may not have as many opportunities for socializing outside of his/her immediate family. John Fujii, a second year medical student, found Sunny Buddies to be an educational experience as it "made [him] more understanding of mentally challenged people and of other social disorders."

Gail Yuen, with the Developmental Disabilities Division at the Department of Health, said, "Since 1998, 55 medical students have been matched with 58 buddies. This includes three buddies who had to be matched a second time because the matches did not work out." Yuen said, "Sunny Buddies is able to provide a valuable resource for adults with intellectual disabilities. By pairing medical students with these individuals, we create natural community support that does not utilize tax dollars. Furthermore, friendships grow over time as volunteers keep in touch, going on outings, and providing

many opportunities for socialization, voicing choices, building self-confidence, and gaining community access. Sunny Buddies is an asset to our Division."

Jeffrey Okamoto MD, program director of the Developmental-Behavioral Pediatrics Fellowship Program in the Department of Pediatrics, has worked with families who utilize Sunny Buddies. Dr. Okamoto said, "Our case managers have told me how beneficial Sunny Buddies is to our patients. This is a wonderful collaborative effort between the Medical School and the Department of Health. Sunny Buddies is providing a much needed community service."

Sunny Buddies will continue to explore opportunities that will benefit both medical students and their buddies. Through Sunny Buddies, medical students are learning the importance of social awareness and the value of understanding the needs and lives of those with a disability. The buddies have the opportunity to meet with a person who truly cares about making a difference in their lives. In 2007, through the support of the Medical School, the buddies and their family members, and the State Department of Health, Sunny Buddies experienced one of its best years of community service.

Acknowledgments

Faculty advisors, Drs. Anthony Guerrero and Kenton Kramer are commended for their support and advice. Gail Yuen, from the Department of Health, is acknowledged for her tireless support and encouragement. Dr. Jeffrey Okamoto, Department of Pediatrics, is recognized for his enthusiastic encouragement. Finally all the medical students who have participated in Sunny Buddies are thanked for keeping this program viable.

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A Very Special Place for Children with Cancer

Carol Zinger Kotsubo APRN, MPH, MS, OCN, CPON
Clinical Nurse Specialist, Pediatric Oncology, Kapiolani Medical Center for Women and Children

Camp Anuenue offers activities specifically for children with cancer.

Swimming, sand castles, hikes, campfires, talent shows, and much more. This is what makes up a week at camp for children everywhere. But what if that child has cancer? The child is bald, has a thin silastic tube inserted in his chest, or has had a leg amputated. Can that child attend a camp? Would that child truly enjoy a week at camp? Would it be safe? The answer is yes to all those questions, if it is Camp Anuenue.

Camp Anuenue is seven days of fun and friendship on the beaches of the north shore of O'ahu. And it is specifically designed for children with cancer.

Camp Anuenue was started in 1985 by the American Cancer Society to offer children who have cancer the opportunity to experience all the adventure and excitement of camp in a safe and nurturing environment. That camp has continued every year since then. What began as a 4 day camp with 29 children is now 7 days for 50-60 children. The camp is offered free to any child with cancer who lives in the state of Hawai'i or Guam. Children must be between the ages of 7-18 years because they spend a week in rustic cabins without their parents or family. A child may be receiving active treatment for the cancer, or may have completed the treatment at any time in the past. The camp is staffed entirely by volunteers of the American Cancer Society, and is funded by donations to the Hawai'i Pacific corporate office of the American Cancer Society.

In many ways this camp is similar to children's camps across the country. The children live together in cabins that accommodate 24 children and several adult counselors. They eat meals in a large communal dining room. The days are spent in activities that are physically and mentally challenging. The evenings are filled with group programs and more food. Children learn self confidence and self sufficiency. They make new friends and share thoughts and concerns with adults who are caring and dependable.

But what is different; what is special about Camp Anuenue? It is that this camp is for children who have been dealt an incredible blow very early in life. These children are battling for their lives against a foe that wins too often. These children live their lives with pain, with nausea, with fatigue, with fear that daunts even an adult. These children may not be in school because their days (and often nights) are spent in hospitals and clinics. The parents of these children live with the constant fear that they might at any time lose their precious children to disease. So the parents do the only thing that is possible…they protect and shield their children from any possible danger.

But they are still children. They want to do what children do. They want to run, to play, to sing, and to have friends. Camp offers these opportunities to children. But children with cancer cannot attend just any camp. The staff would not have the knowledge or experience to handle the challenges of cancer. The parents would not believe that their children were safe. The other children might

Finger painting fun.

mock or tease them for their bald heads, their lack of energy, their crying in the night.

Camp Anuenue was developed specifically for children with cancer. The entire staff of the camp receives specific training in the needs and challenges of the child with cancer. The camp is staffed at all times with a pediatric oncologist and several pediatric oncology nurses. It is possible to have lab tests done, and simple chemotherapy may be administered. Home medications are administered by the nurses. If the child needs additional treatment such as a blood transfusion, the child is driven to the pediatric hospital and then returns to camp when the transfusion is completed. Specific treatments such as home parenteral nutrition and parenteral antibiotics have also been administered at camp. The camp is fully handicap accessible so children in wheelchairs or with amputations can participate in all activities. Two golf carts are available as transportation for children who may be fatigued or not able to walk the distance to the dining hall, or the field for camp fires or archery.

The children need to learn that it is possible to survive cancer, that it is possible to endure the chemotherapy and radiation therapy with a sense of humor, and with an ability to play and laugh. The children learn this at Camp Anuenue. A number of the staff are themselves survivors of childhood cancer. Many attended Camp Anuenue when they were young and now return to "give back". They listen to the children as only adults who have been through similar experiences can listen. They are role models as they themselves demonstrate how they have coped with adversity such as limb salvage, learning disabilities, or hearing deficits. But most of all these survivors laugh and sing and play practical jokes. They show that life goes on, that life is to be enjoyed and shared with those you love.

When parents return after seven days to pick up their children, they are surprised at the child they encounter. The children are often crying because they do not want to leave; they want to spend more time at camp. They want to stay with their new friends and with their beloved counselors. After they return home, the parents often comment that their children are different. The children who were quiet and listless, reluctant to take part in family activities before camp are now smiling all the time and eager to go places and see friends. This past year one young girl began camp with great sadness. She was having a particularly hard time with her complete alopecia, a double lumen Hickman catheter, and a gastrostomy tube. When she greeted her father at the end of the week, she grinned and said "They don't look at me funny here." This can lead to a new self confidence that allows the children to continue cancer treatment with a determination to get it over with and to resume normal life. Most of all the children say, "I can't wait until camp next year."

The evaluations are overwhelmingly positive from the children, the parents, and the volunteer staff year after year. Many volunteers return repeatedly to give a week of their lives for these children. The American Cancer Society is committed to continuing this program for many years to come. It is part of the ACS mission to improve the quality of life for cancer patients. For more information or to volunteer for this program, call the Camps Program Director at 595-7500.

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

Issues in Medical Malpractice XX

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

Question:
Through an oversight, the nurse fails to get patient's signature for the consent form. However, the surgeon did discuss the procedure and risks and did obtain patient's oral consent. The surgery was complicated by an infection that prolonged the hospital stay. Which of the following are true?

A. Oral consent is not legally valid, so the surgeon faces a malpractice suit or a claim for the intentional tort of battery.
B. Oral consent is legally valid, and simple backdating can rectify the lack of a signed form.
C. Oral consent is legally valid; the surgeon additionally should write in the progress notes that he had previously obtained patient's informed consent.
D. It's the patient's word against the doctor's, and jurors will almost always side with the doctor.
E. Claims alleging lack of informed consent go hand in hand with claims of substandard care.

Answer: C, E
Verbal consent, or even one that is implied, is legally valid, but proving that it was given is another matter. At trial, which is typically years down the road, the jurors may be reluctant to take the doctor's word, especially if latter comes across as arrogant or untrustworthy. This is why a signed consent form is vastly preferred, because without documentation the plaintiff can insist that no risks were disclosed. In this case, simply entering a note in the chart would be good advice (choice C). It is too late to go back and get a signed consent, and backdating is of course never a good idea.

Informed consent issues are usually raised in conjunction with alleged substandard treatment that has resulted in an otherwise avoidable injury (choice E). Both are covered by the tort of medical negligence, i.e., malpractice, although in a few jurisdictions, the plaintiff can also bring an action based on assault and battery when alleging lack of informed consent.

Informed Consent & Consent Forms

Human experimentation and end-of-life decisions to forgo life-sustaining treatments (e.g., no-code orders) are well-understood examples where specific consent from the patient is necessary. The law today requires that the patient or legally authorized representative be the sole and ultimate arbiter to accept or reject all forms of treatment, not just those associated with clinical research or end-of-life care. There was a time when the health care provider's recommendation was basically thrust upon the patient, i.e., 'doctor knows best,' the so-called paternalistic model. However, the present-day standard is that absent consent, either explicit or implied, the doctor has no authority to examine or treat the patient. This consent, to be valid, is obtained after the patient has been given the opportunity to make a free and informed decision. In other words, informed consent constitutes the legal authority to treat. It is a pervasive principle evident in clinical situations ranging from decisions to forgo life-sustaining treatment such as a blood transfusion to signing out against medical advice. Generally speaking, the physician is obligated to follow the patient's wishes as long as the patient has medical decision-making capacity.

The law of battery renders one liable if one acts intentionally to inflict an offensive or harmful touching of another person without consent. Thus, medical treatment without the patient's consent has been characterized as an assault and battery in some jurisdictions. This had its genesis in a 1914 New York case in which a fibroid tumor was removed from a woman while she was under ether anesthesia, despite the fact that she had specifically refused the operation. The facts of the case prompted the famous Judge Cardozo to write:

> *"Every person of adult years and sound mind has a right to determine what shall be done with his own body; and a surgeon who performs an operation without his patient's consent commits an assault, for which he is liable in damages."* [1]

Without consent, except under rare circumstances, the physician has no authority to treat, even if the withholding of beneficial treatment is expected to lead to patient harm. The best-known example is the refusal of blood transfusions by Jehovah's Witnesses. Courts have generally ruled that competent adults can refuse blood even if death would result; but where a third-party interest is at stake, e.g., a fetus at term, balancing autonomy against beneficence is trickier and more controversial.[2]

Today, most states consider treatment without informed consent to be covered by the tort of negligence rather than the intentional tort of battery. This has important legal implications because the two torts have different statutes of limitations. In addition, an action in battery requires neither expert medical testimony nor the showing of specific damages. In a dramatic case where a battery claim was brought, the defendant dentist had extracted all 32 teeth during a single visit without the patient's full understanding of and consent to the procedure.[3]

Typically, the health care provider uses a standardized consent form with the details in fine print. This is particularly true for consent forms that cover surgical procedures. Do not confuse informed consent, which is a process, with a signed consent form. The former is a legal principle governing treatment, the latter is merely written evidence that informed consent was purportedly obtained. The signed form can be challenged and invalidated upon a showing that it was improperly executed, e.g., a patient signing the form after the procedure was done, or evidence that the patient was never told of certain risks that were pre-printed on the form. In a Hawai'i case on this matter, the court clearly showed its hostility towards the abuse of such forms:

"Moreover, a physician may not fulfill his affirmative duty of timely and adequate disclosure by merely having the patient sign a printed informed consent form. A signed consent form is not a substitute for the required disclosure by a physician … There is growing reason for concern that consent forms are becoming substitutes for, rather than documentary evidence of, an ongoing process of disclosure, discussion, and decision-making between physician and patient. If physicians come to believe (often erroneously) that their obligation to obtain a patient's informed consent can be satisfied by securing a signed signature — even that of a drowsy, drugged, or confused patient on an abstruse, jargon-ridden, and largely unintelligible preprinted consent form — the law's reliance on written documentation may come to pervert its central purpose in requiring informed consent."[4]

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

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3/3-3/5	Multi	Stanford University School of Medicine	Turtle Bay Resort, O'ahu	Stanford Morbid Obesity Update	Tel: (650) 724-9549 Web: www.cme.stanfordhospital.com
3/5-3/8	FP, IM	UCLA School of Medicine	Maui Prince Hotel, Makena Resort, Maui	Meeting the Challenge of Primary Care	Tel: (310) 794-2620 Web: www.cme.ucla.edu
3/8-3/15	IM	University of Southern California / Keck School of Medicine	Hapuna Beach Prince, Kohala Coast	36th Annual Diagnostic and Therapeutic Skills in Internal Medicine	Tel: (800) 878-1119 Web: www.usc.edu/cme
3/10-3/13	CD	Mayo Clinic College of Medicine	Grand Hyatt Kaua'i	Arrhythmias and the Heart	Tel: (800) 323-2688 Web: www.mayo.edu/cme/
3/10-3/13	FM, PD	American Academy of Pediatrics	Waikiki Beach Marriott Resort & Spa, Honolulu	Uniformed Services Pediatric Seminar (USPS)	Tel: (847) 434-4000 Web: www.aap.org
3/17-3/20	FM, IM	Scripps Clinic	Hapuna Beach Prince Hotel, Hawai'i	Primary Care in Paradise 2008	Tel: (858) 587-4404 Web: www.scrpps.org/conferenceservices
3/17-3/21	R	Stanford Radiology Department, Stanford University School of Medicine	Grand Hyatt Kauai Resort and Spa, Poipu Beach, Kaua'i	16th Annual Diagnostic Imaging Update in Kaua'i	Web: radiologycme.stanford.edu/2008kauai/
3/23-3/28	Multi	Kaiser Permanente	Grand Hyatt Kaua'i Resort and Spa, Poipu Beach, Kaua'i	Kaiser Permanente Primary Care Conference	Web: www.kpprimarycareconference.org
3/23-3/28	OBG, GYN	Kaiser Permanente	Grand Hyatt Kaua'i Resort and Spa, Poipu Beach, Kaua'i	Kaiser Permanente National OB/GYN Conference 2008: Clinical Challenges in Ob/Gyn: Improving Care for Women	Web: www.kpobynconference.org
3/30-4/4	IM	University of California, San Francisco	Wailea Beach Marriott Resort & Spa, Wailea, Maui	Primary Care Medicine: Update 2008	Tel: (415) 476-5808 Web: www.cme.ucsf.edu
April 2008					
4/3-4/6	C	Long Beach Memorial Medical Center/UCI	Westin Maui Hotel, Lahaina, Maui	8th Endovascular Symposium - Mainland to Maui	Tel: (562) 933-0100
4/6-4/11	IM, FM	University of California San Francisco School of Medicine	JW Marriott Ihilani Resort & Spa, Honolulu	Primary Care Medicine: Update 2008	Tel: (415) 476-4251 Web: www.cme.ucsf.edu/cme
4/12	AN	Queen's Medical Center	Queen's Conference Center	Ultrasound Regional Anesthesia Symposium 2008	Tel: (808) 547-4406 Web: www.queens.org/cme.html
4/23-4/25	P	Adult Mental Health Division, Hawai'i State Department of Health	Hawai'i Convention Center, Honolulu	5th Annual Best Practices Conference: Family Psychoeducation: Fortifying Families of Birth and Choice	Tel: (808) 586-4686
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5/2-5/6	PD	Pediatric Academic Societies	TBA	Annual Meeting 2008	Tel: (281) 419-0052 Web: www.pas-meeting.org

5/22	IMG	Queen's Medical Center	Koolau Golf Club	The Queen's Medical Center Conference on Geriatric Medicine, "United We Stand, Divided They Fall"	Tel: (808) 547-4406 Web: www.queens.org/cme.html
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6/18-6/21	ON	Physicians' Education Resource	Grand Hyatt Kauai Resort and Spa, Koloa, Hawai'i	9th International Lung Cancer Congress	Tel: (888) 949-0045 Web: www.cancerconferences.com
6/21-6/27	PD	American Academy of Pediatrics, California Chapter & University Children's Medical Group	Hyatt Regency Maui Resort & Spa, Ka'anapali Beach, Maui	Pediatrics in the Islands… Clinical Pearls 2008	Tel: (808) 354-3263 Web: www.ucmg.org
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6/25-6/28	TS	Society for Clinical Vascular Surgery	Sheraton Keauhou Bay, Kona, Hawai'i	Western Thoracic Surgical Association 34th Annual Meeting	Tel: (978) 927-8330 Web: www.scvs.org
6/28-7/5	Multi	University of California San Francisco School of Medicine	Hapuna Beach Prince Hotel, Kohala Coast	Essentials of Women's Health: An Integrated Approach to Primary Care and Office Gynecology	Tel: (415) 476-4251 Web: www.cme.ucsf.edu/cme
July 2008					
7/18-7/19	Multi	Queen's Medical Center	Hilton Hawaiian Village, Honolulu	Hawaiian Islands Trauma Symposium	Tel: (808) 537-7009 Web: www.queens.org/cme.html
7/23-7/26	Multi	University of California - Davis	Waikoloa Beach Marriott	UC Davis Update on Emerging Infectious Diseases	Tel: (916) 734-5390 Web: cme.ucdavis.edu
7/28/-8/01	ORS	Kaiser Permanente	Hyatt Regency Kaua'i	Kaiser Permanente Orthopaedic Surgery Conference 2008	Web: www.cmxtravel.com
August 2008					
8/3-8/4	GS	Hawai'i Chapter, American College of Surgeons	JW Marriott Ihilani Resort & Spa, Honolulu	Oncology: State of the Art, 2007 and Beyond	Tel: (800) 328-2308 Web: www.hawaiifacs.org
8/4-8/7	R	Stanford University School of Medicine	Grand Hyatt, Kaua'i	LAVA: Latest Advances in Interventional Techniques	Tel: (888) 556-2230 Web: med.stanford.edu
8/6-8/9	EM	University of California - Davis	Mauna Lani Resort and Spa	UC Davis Emergency Medicine 2008: Hot Topics	Tel: (916) 734-5390 Web: cme.ucdavis.edu
8/14-8/17	D, FM, IM, ON	Kaua'i Foundation; Hawai'i Dermatology Association	Hyatt Regency Resort & Spa, Koloa, Kaua'i	22nd Annual Hot Spots in Dermatology	Tel: (413) 458-2800 Web: www.hotspotshawaii.blogspot.com

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THE WEATHERVANE

RUSSELL T. STODD MD, CONTRIBUTING EDITOR

Russell T. Stodd MD

❖ **PRACTICAL POLITICS CONSISTS IN IGNORING FACTS.**
The outrageous planners (the Bush budget) who have scheduled a 10% reduction in Medicare physician reimbursement should hide their collective heads in shame. The reduction was to take place on January 1, 2008, but a special senate finance committee deal arranged for a six month delay. Democratic chairman Max Baucus (Montana) and ranking Republican Charles Grassley (Iowa) wanted to schedule a one or two year delay, but they were unable to get agreement. Without exception every medical organization petitioned Congress not to allow the action to take place. Many doctors and medical facilities are already squeezed to the point of discontinuing care for Medicare patients. All expenses of operating overhead are increasing so it is understandable when doctors tell Medicare they aren't going to take it any more.

❖ **WE HAVE MET THE ENEMY AND HE IS US!** WALT KELLY (POGO)
Medical negligence can occur from simply overlooking a lab slip, or not carefully reading a previous history, or more commonly failure to document instructions or a conversation, but how does one explain operating on the wrong side of a patient's skull? It occurred at a hospital in Rhode Island, and then it happened again! Yes, at the same institution a second patient was craniotomized on the wrong side. Unexplainable, right? And then it happened a third time**,** all in the same year, despite a carefully detailed pre-operative surgical protocol with checks and double checks designed specifically to avoid cutting on the wrong side. In the first case the nurse warned the doctor, but he refused to listen and stated that he knew what he was doing. (An arrogant doctor? I'm shocked!) In the second operation a physician-in-training failed to read the chart before proceeding, and in the third case the nurse saw the error but failed to warn the surgeon. This occurred at the state's most prestigious medical facility which is a teaching hospital for Brown University. How far can you stretch Murphy's Law? Go figure.

❖ **FACULTY: THE PEOPLE WHO GET WHAT'S LEFT AFTER THE FOOTBALL COACHE'S SALARY.**
A recent study published in the journal *Ophthalmology* attempted to determine the incidence of burnout in academic chairs of departments of ophthalmology. Data were returned from 101 department chairs, a satisfying 77% response rate. Seventy percent said they are currently satisfied with their positions, down from 79% in a study done 5 years ago. Nine percent were deemed to have burnout based on Masiach Burnout Inventory-Human Services Survey (MBI-HSS) and 56% had scores consistent with low personal achievement, the major risk factor for burnout. MBI-HSS data showed high levels of emotional exhaustion, and moderate levels of depersonalization and personal accomplishment. Major stress producers are retention/ recruitment of qualified staff, residency and medical education and compliance issues, and of course, hospital and department budget matters. Since it is known that 8 to 12% of physicians are drug-addicted at some point in their professional lives, that the physician suicide rate is 40% higher than other Americans, frequently in a burnout setting, and the cost of replacement of a department chair is probably around half a million dollars, the hospital powers-that-be should strive to keep the department chairs fat and happy.

❖ **PERHAPS CONGRESSMEN SHOULD GET PMS. HEY, I THINK THEY DO!**
In recent years, college coeds have been able to buy birth control pills at a big discount afforded to college and university health facilities by federal statute. Not any more! Since January 1, 2007, the price has risen four or five fold. Fewer college women are taking the pill now because they cannot afford it. What happened? Congress passed the deficit reduction act in 2005 and apparently failed to include college and university health centers on a list of providers for the large discount which they can pass on to the students. Now according to the American College Health Association more students are seeking emergency contraception and pregnancy tests. Two senators, Obama and McKaskill, are trying to get Congress to add the college health centers to the list of dispensers who are qualified for the discount. It would be easy to do and would not cost taxpayers a nickel.

❖ **FACTS DO NOT MATTER. LET'S FIND THAT DEEP POCKET.**
A 4-year-old boy attending a licensed day care center in Virginia was tragically killed in a lawnmower accident that was clearly the fault of the center. The attorney for the plaintiffs (no doubt a supporter of Democrat attorney John Edwards) found that the day care center had a mere $100,000 in liability insurance, so the suit against them was dropped and instead the complaint was addressed to the manufacturer of the lawnmower. The suit cited the lack of a safety device on the 16-year-old lawnmower, a device which had not been invented at that time, nor had anyone even recommended it. The jury found in favor of the plaintiffs for $2 million.

❖ **THE SERUM CHOLESTEROL IS NORMAL SO YOU NEED TO BE TAKING LIPITOR.**
Pfizer Inc. which previously pled guilty to fraud and paid a penalty of $430 million for illegal promotion of their drug Neurontin is being sued by a former employee, Jesse Polansky. Dr. Polansky was Pfizer's director of outcomes management from 2001 to 2003. He was fired for complaining about improper marketing. His lawsuit claims that Pfizer's educational campaign "led thousands of physicians to prescribe Lipitor for millions of patients who did not need medication" and could be harmed by overly aggressive treatment. Dr. Polansky is now working as a senior medical officer for a Medicare fraud and abuse unit. The suit has special significance because Lipitor is the world's No.1 selling drug with 2006 revenue of $13.6 billion, even though the number needed to treat (nnt) for the drug is a remote 83 according to the Anglo-Scandinavian Cardiac Outcomes Trial (ASCOT).

❖ **THINK POSITIVE. DEATH IS ONE OF THE FEW THINGS THAT CAN BE DONE LYING DOWN.**
That slippery slope the "sanctity of life" people worry about has not appeared after ten years of the Oregon "death with dignity" law. According to a report in the *Journal of Medical Ethics* a total of 292 people have chosen physician assisted suicide (PAS) to end their lives, but 248 of them were in hospice care. This number represents 0.15% of all Oregon deaths for this period. In Holland, which has a more flexible euthanasia policy, about 2% of deaths annually result from physician or self-administered lethal drugs.

❖ **A ROTARIAN, ELK, LION – ONE OF THOSE CLUB GUYS.**
In Anchorage, Alaska, a bull moose wandered into town and became intoxicated on fermented crab apples. He ran his immense rack of antlers through a decorated Christmas tree and entangled a string of lights that he was dragging through town. He stopped in the courtyard of Berny's Bungalow Lounge and gave glass-eyed stares at customers until a fish and game biologist arrived to apply a tranquilizer dart. Nicknamed "buzzwinkle" the moose was wearing a tag indicating he had been previously sedated, so perhaps he was hooked on tranquilizers and just needed a fix.

❖ **HERE YOU GO, BOWSER. IT TASTES A LOT LIKE CHICKEN.**
The gullible American public has accepted the absurdity of re-filtered tap water pumped into plastic bottles for consumption in the car, at the seashore, in the theater, in church, and on the plane, train or bus, to the tune of $9 billion annually. Now this nonsense has gone a step further with flavored bottled water of Beef Tenderloin, Bacon Delight, and Roasted Turkey all for phideaux to enjoy with his Kibbles. Those creative polluters, Coca-Cola and Pepsi, are well aware of how devoid of common sense pet lovers can be, so they are enjoying a new population for marketing.

ADDENDA
- ❖ Statistical data collected by the Consumer Product Safety Commission found that 1,300 eye injuries were reported in 2006 as a result of fireworks.
- ❖ Worldwide each New Year's Eve 354 million bottles of champagne are consumed, and in the United States 250 eye injuries are caused by flying champagne corks.
- ❖ According to Finnish scientists, human urine collected from one person over the course of a year could fertilize a 90-square-meter plot and grow more than 160 cabbages, a notable increase over standard fertilizer. Okay, but what will it do to the corned beef flavor?
- ❖ If you ignite a synthetic Christmas tree it will burn up in 32 seconds. No fiery data available on a dry douglas fir.
- ❖ There are 24 flowers on each Oreo cookie.
- ❖ Remember, first you pillage then you burn.

ALOHA AND KEEP THE FAITH — **rts**■

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

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

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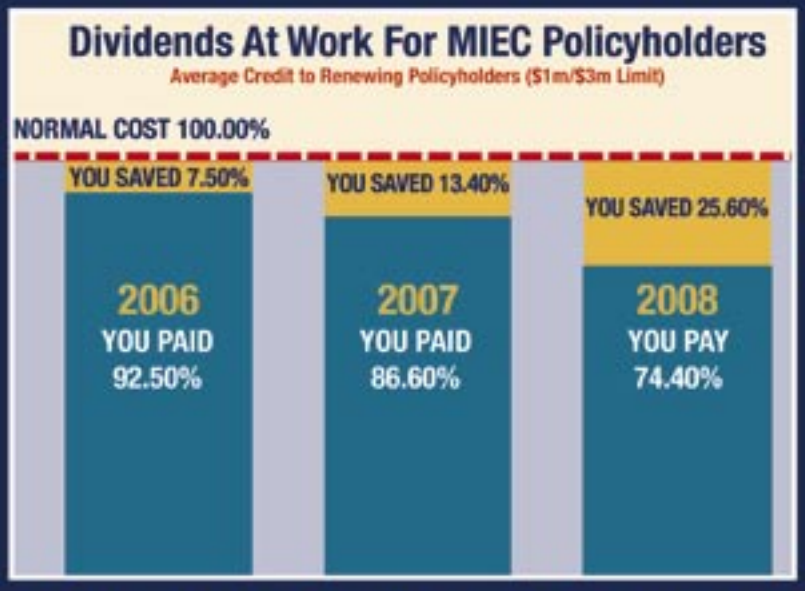

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