HAWAI'I MEDICAL JOURNAL

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Hawai‘i Air Quality Monitoring Assessment: Some Effects of Hawai‘i’s Smoke-Free Work and Public Places Law

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Abstract

In November 2006, the Smoke-Free Work and Public Places Law passed to protect people from secondhand smoke in Hawai‘i. An air-quality monitoring assessment to determine the difference this law made in air quality was conducted at 15 bars/restaurants. Levels of particulate matter ($PM_{2.5}$) at enclosed (indoor) venues fell 90% after implementation of the law while partially enclosed restaurants/bars were all below the EPA 24 hour average limit both before and after the law.

Introduction

Secondhand Smoke and Smoking Prevalence in Hawai‘i

The Environmental Protection Agency (EPA) and the US Surgeon General have concluded that prolonged exposure to secondhand smoke (SHS), also known as environmental tobacco smoke or indoor air pollution, presents a serious public health risk.[1-3]

More than 17 years ago, Hawai‘i passed a statute prohibiting smoking in most areas open to the public (e.g. workplaces) (Chapter 328K of the Hawaii Revised Statutes), and all counties subsequently adopted ordinances that offered varying levels of protection to workers and the public against SHS.[4] The Hawai‘i Legislature passed SB 3262 CD1 in May 2006 and Governor Linda Lingle signed Act 295 on July 10, 2006 making Hawai‘i the 14th state to enact a strong smoke-free workplace law. This new law restricts smoking in all workplaces, including bars and nightclubs (previously exempted by the prior statute), and includes outdoor areas of bars, as well as enclosed or partially enclosed areas of buildings and public places.

The objective of the present air quality monitoring assessment was to assess any changes in air quality that occurred in a convenience sample of venues before and after implementation of the new law, statewide. However, it is important to note that Hawai‘i provides a unique set of venues to test air quality since many restaurants and bars may be fully enclosed, while others may be only partially enclosed or have areas such as a *lanai*.[5] Therefore, Hawai‘i presents a distinctive opportunity to test air indoor quality at some fully enclosed venues, as well as partially enclosed venues (with varying degrees of ventilation).

Smoking Bans and Indoor Air Quality Assessment

Published studies have assessed the effect of statewide smoking bans on indoor air quality.[6-8] Repace (2004) measured RSP particulate matter in six bars, one casino, and one pool hall in Delaware before and after their state-wide law went into effect, and Travers and colleagues (2004) assessed the change in air quality in 20 hospitality establishments before and after the implementation of the New York State Clean Indoor Air Act. They both reported dramatic reductions in RSP levels after the smoking laws took effect.

It is important to note that only a few studies to date have focused on assessment of the effects of smoking, secondhand smoke, and outdoor air quality.[9,10] A recent study by Klepeis, Ott, and Switzer (2007) concluded that "…it is *possible* for outdoor tobacco exposure to present a *nuisance* or *hazard* *under certain conditions* of wind and smoker proximity" (*co-authors' emphasis*). It is important to point out that there is a difference in what could constitute a public health "nuisance" versus an actual public health "hazard".

Clearly much more research is needed in this area, especially since the present Hawai‘i air-quality assessment included both enclosed sites without adequate ventilation and partially enclosed sites (with varying degrees of ventilation). In partially enclosed venues, it is likely that trade wind patterns and conditions throughout the state of Hawai‘i could result in high overall air quality and high levels of ventilation. Therefore, in this assessment, along with the other measurements, the average temperature, average humidity, wind conditions and outdoor air quality were also reviewed during the testing dates and times, both prior to and after the implementation of the new law.

Methods

Monitoring the change in respirable suspended particles (RSPs) in restaurants/bars/clubs may be a useful tool to assess the effectiveness of smoking policies, since SHS is one source of RSPs.[11] RSPs, specifically a class of RSPs known as $PM_{2.5}$ (i.e. particulate matter less than 2.5 microns in diameter), are very small particles suspended in the air that pose health risks, since they can

easily be inhaled deep into the lungs,[12] and are useful markers for approximately 4000 compounds, of which 50 are carcinogenic. Because of their negative health effects, the EPA has instituted an outdoor standard for RSPs less than 2.5 microns ($PM_{2.5}$), consisting of an average annual $PM_{2.5}$ exposure level of 15 $\mu g/m^3$ and a daily (24 hour average) exposure level of 65 $\mu g/m^3$; this current study uses this standard.[13]

This assessment attempted to follow, as much as possible, the protocols and methodology of other SHS air quality monitoring studies conducted throughout the United States.[14] Following such protocols, a minimum of 6-10 venues were selected, since several venues could be sampled in one evening and only require one or two individuals to conduct the testing. The sampling frame included a minimum of 3-5 establishments where smoking was allowed prior to the new law implementation (i.e. bars/nightclubs, pool halls, and restaurant/bars) along with a minimum of 3-5 smoke-free establishments (control sites). For Hawai'i, the sampling frame included sites that were both enclosed and partially enclosed. Since there were no available resources to conduct a standard study, aside from renting of the monitoring machine, volunteers from community tobacco coalitions were recruited to conduct the air quality monitoring tests and all took the online Air Monitoring Course prior to monitoring the venues.

Air quality was monitored using a TSI Sidepak AM510 Personal Aerosol Monitor[15] to sample and record the levels of RSPs in the air (particulate matter with a mass median aerodynamic diameter less than 2.5 μm, or $PM_{2.5}$). Particles of this size are referred to as "fine particles" and are released in large quantities from burning cigarettes and other sources of pollution such as car exhaust. As per the instructions, the SidePak device was calibrated to zero by Tobacco Prevention and Education Program staff prior to monitoring at both time periods (before and after the law). Two different Sidepak machines were used at the two time periods.

Volunteers were asked to place the SidePak in a convenient shoulder bag, computer case, or backpack and were asked to collect observational data during the air monitoring including descriptions of the venue(s) and any other pertinent observations (presence of no smoking signs, ashtrays, air filtration devices, fans or other ventilation, number of people in the venue, and number of burning cigarettes).[16] After air monitoring was completed at selected venues, the SidePak was either provided to the next volunteer or returned to the Tobacco Prevention and Education Program. When the device was returned, the data were then downloaded to a computer to check that the data were recorded.

A total of 15 sites were monitored during Friday and Saturday evenings (between 7pm to 2am), before the law in late June/early July 2006 and after the law in late April/early May 2007. A different restaurant with similar characteristics was selected as an alternate site in 2007 when a previous site closed during the interval period. The median length of time that the volunteers spent in the venues before the implementation of the ban was 42 minutes, and the range was from 30-60 minutes; after the implementation of the ban, the median length of time spent in the venues was 28 minutes with a range from 18 minutes to 49 minutes.

Results

The graphic results are displayed in Figures 1-4 for each island and the tabular data are summarized in Tables 1-3. The tabular data have been organized by the type of venue: enclosed, partially enclosed, or control sites. Prior to analysis, the first and last logged data points were removed and the remaining data points were averaged to provide the average concentration of $PM_{2.5}$ within each venue. The percentage change in $PM_{2.5}$ was calculated by comparing these averages before and after the law was implemented. The one outdoor smoking area was omitted from the statistical analysis (although it has been left on the graph). Two partially enclosed sites where smoking was allowed but not observed (pre-law) were treated as 'control sites'.

Regarding average temperature, average humidity, wind conditions, and outdoor air quality prior to and after the implementation of the new law (Table 1), there were no discernable differences found during the two different testing dates. Average particulate matter levels (based on $PM_{2.5}$ levels microgram per cubic meter: μg/m3) before the implementation of the law were higher in enclosed venues than partially enclosed venues (Table 2). The range of reduction in $PM_{2.5}$ for enclosed venues was from 85.2% to 94.8%, with an overall average level reduction of 90.1%. For partially enclosed and control sites, the average levels of $PM_{2.5}$ below the average EPA 24 hour (daily) average limit. The particulate levels at partially enclosed and control sites increased after the implementation of the law (with an average of 19% increase in the partially enclosed sites and a 73.6% increase in the control sites), but all remained at levels below the average EPA 24 hour (daily) average limit despite the increase. The graphic results (Figures 1-4) illustrate the before and after effects of reduced particulate matter at enclosed venues, along with consistent low-level particulate matter at partially enclosed and control sites. Results were consistent on both O'ahu and on the neighbor islands.

Regarding cigarette density, smoker prevalence, and the average number of patrons (Table 3), before the law at the enclosed sites, the 3 gay-friendly venues (Sites 3, 4, and 5) showed the highest level of cigarette density and smoker prevalence. Regarding smoker prevalence, the enclosed bars had the highest levels, with the 3 gay-friendly venues (Sites 3, 4, and 5) and an enclosed bar on the Big Island (Site 7) having various smoker prevalence levels slightly higher than the state average of 17.5% (and ranging from 19.3%-26.6%) but with an

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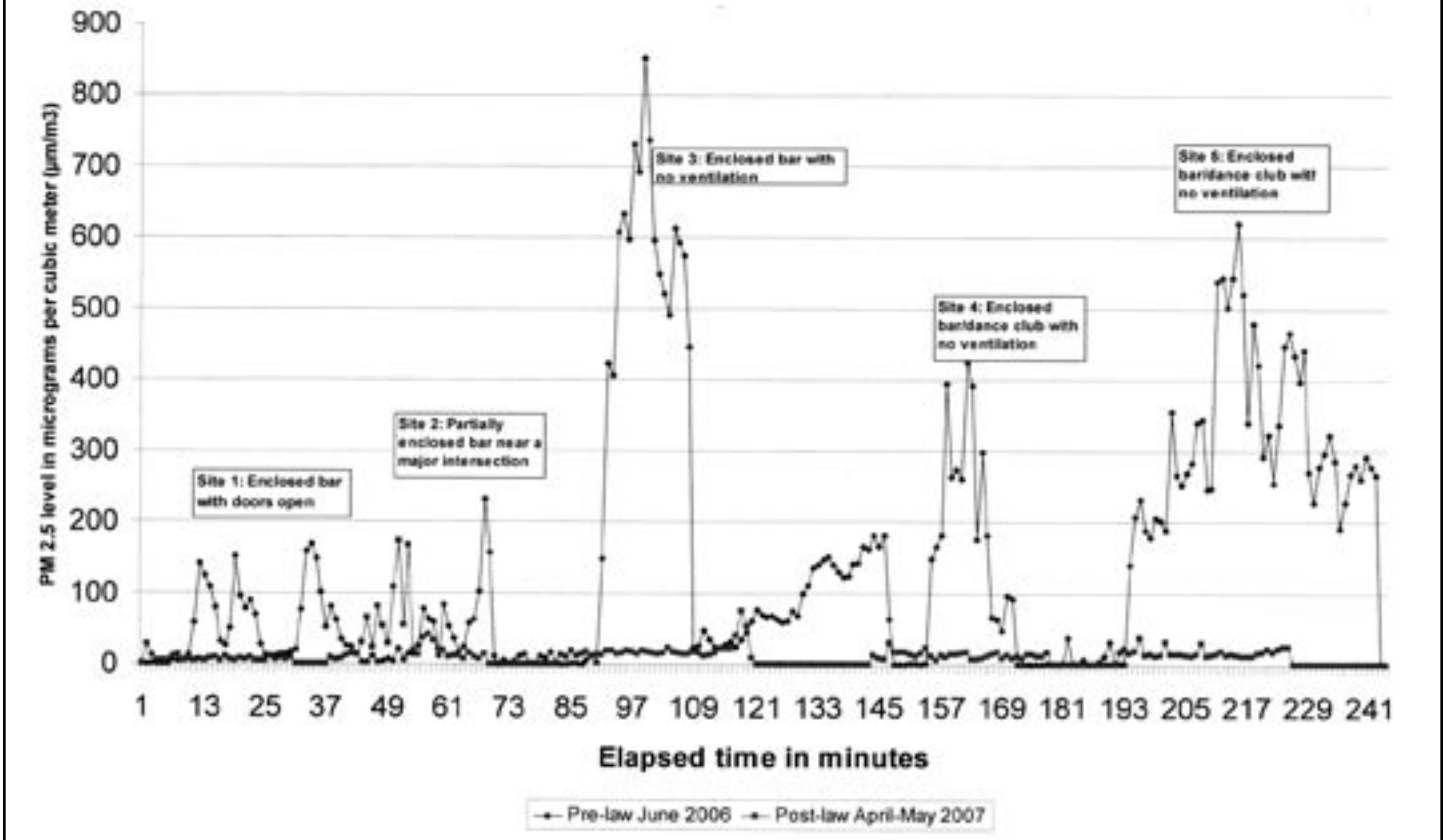

Figure 1.— Hawai'i Air Quality Monitoring Study: O'ahu Sites

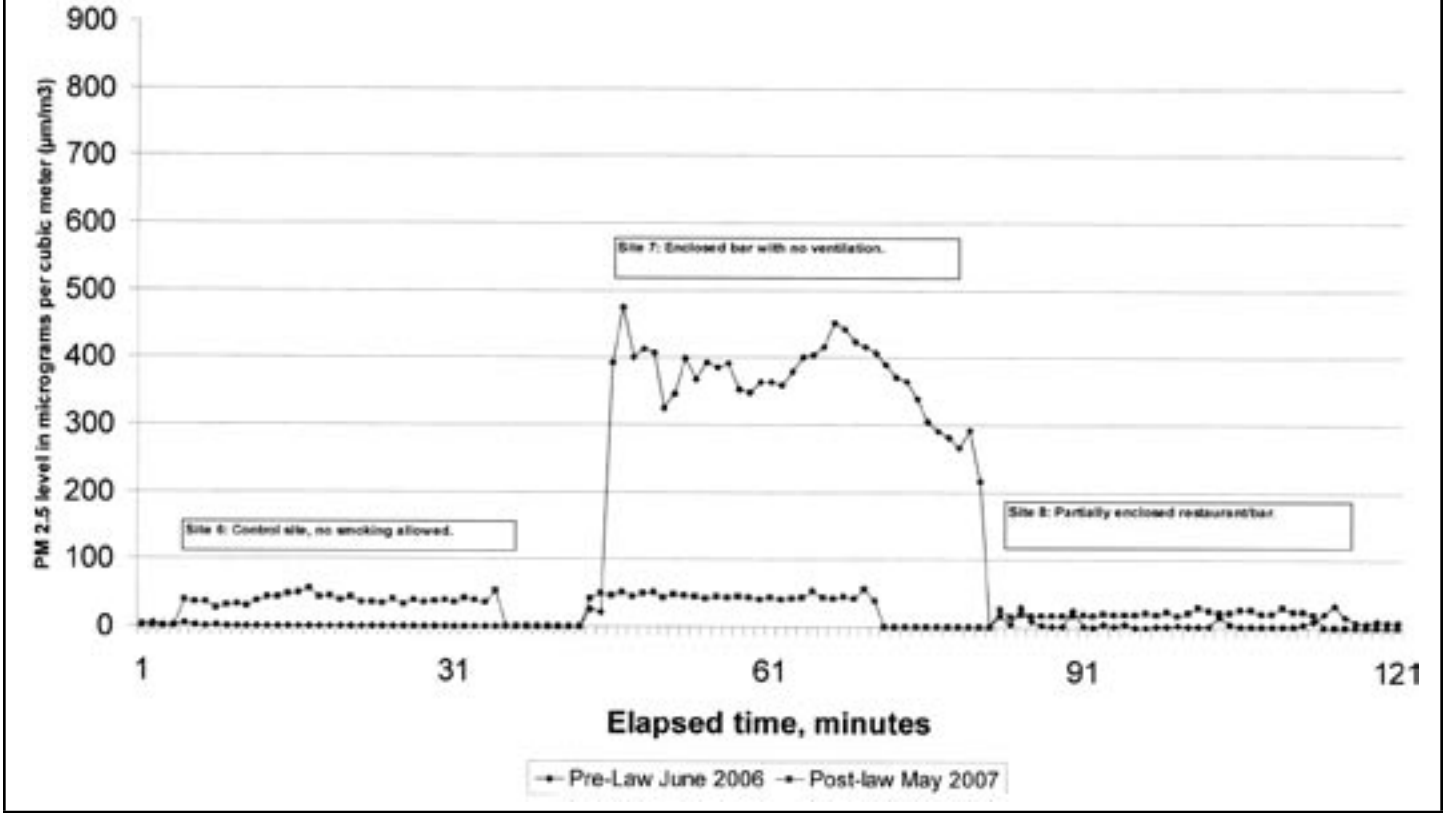

Figure 2.— Hawai'i Air Quality Monitoring Study: Hawai'i Island Sites

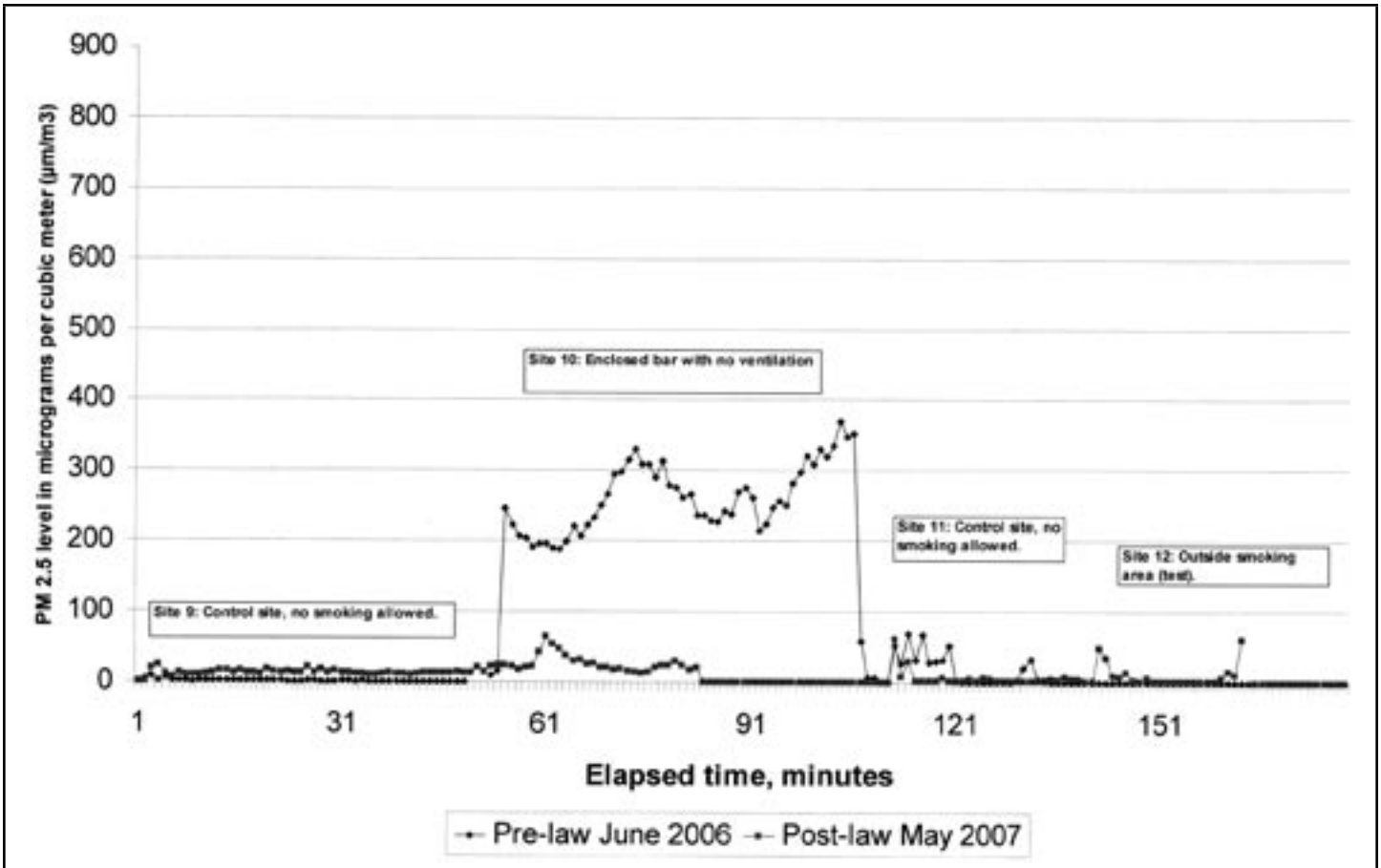

Figure 3.— Hawai'i Air Quality Monitoring Study: Maui Sites

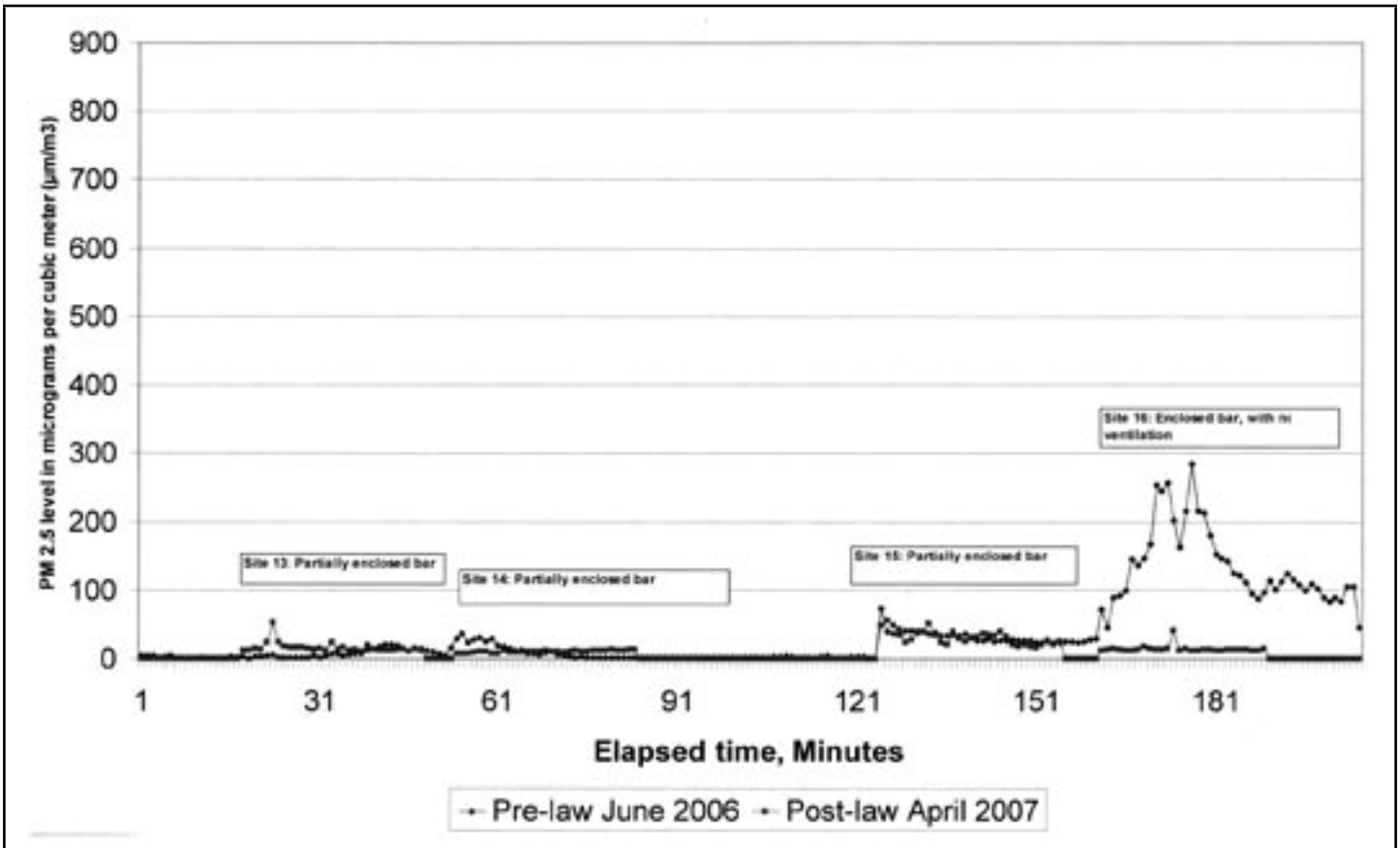

Figure 4.— Hawai'i Air Quality Monitoring Study: Kaua'i Sites

Table 1.— Hawai'i Sites for Air Quality Monitoring and Results-Venues, People, and Weather Conditions											
Site	**Type of venue**	**# of people at venue**		**Average temperature during date/time of measurement[1]**		**Average humidity during date/time of measurement**		**Wind speed (mph) during date/time of measurement**		**Daily average outdoor air quality PM 10 (µm/m3) during monitoring**	
		Before 11/06	**After 11/06**	**Before 11/06**	**After 11/06**	**Before 11/06**	**After 11/06**	**Before 11/06**	**After 11/06**	**Before 11/06**	**After 11/06[2]**
Site 1 (O'ahu-Honolulu)	Enclosed bar	15-20	11-15	78.1 F	75.0 F	62%	58%	ENE 12.7	E 16.1	9	19
Site 2 (O'ahu-Honolulu)	Partially enclosed restaurant/bar	80-120	100-110	77.0 F	75.0 F	66%	62%	ENE 11.5	E 16.1	9	19
Site 3 (O'ahu-Honolulu)	Enclosed bar	30	18-24	78.1 F	73.9 F	64%	66%	ENE 9.2	Var. 6.9	14	21
Site 4 (O'ahu-Honolulu)	Enclosed bar	200	150-200	75.0 F	73.9 F	69%	66%	NNE 6.9	ENE 9.2	14	21
Site 5 (O'ahu-Honolulu)	Enclosed bar	250-270	100-125	75.0 F	73.9 F	69%	64%	NE 8.1	E 4.6	14	19
Site 6 (Big Island-Kona)	Control site	28-36	25-32	79.0 F	77.0 F	64%	69%	Var 4.6	SSW 8.1	3	20
Site 7 (Big Island-Kona)	Enclosed bar	25-50	20-22	77.0 F	77.6 F	54%	61%	NE 9.2	WSW 5.8	3	20
Site 8 (Big Island-Kona)	Partially enclosed restaurant/ bar	40-45	23-28	82.0 F	82.0 F	58%	51%	SSW 6.9	S 15.0	3	20
Site 9 (Maui-Kahului)	Control site	7-20	4-18	79.0 F	82.0 F	64%	45%	ENE 21.9	NE 10.4	20	27
Site 10 (Maui-Wailuku)	Enclosed bar	40-50	66-69	76.5 F	78.1 F	73%	52%	NNE 12.7	ENE 13.8	20	27
Site 11 (Maui-Pa'ia)	Control site	18-27	37-49	78.1 F	81.0 F	68%	54%	NNE 12.7	NNE 5.8	14	22
Site12 (Maui-Pukalani)	Outside smoking area	4-8	3-4	80.1 F	75.9 F	62%	69%	NNW 6.9	NNE 16.1	19	70
Site 13 (Kaua'i-Hanalei)	Partially enclosed restaurant/bar	17-24	24-32	77.5 F	73.9 F	70%	71%	ENE 19.6	NE 13.8	18	—
Site 14 (Kaua'i-Kilauea)	Partially enclosed restaurant/bar	27-38	12-22	77.0 F	73.0 F	71%	81%	ENE 19.0	NNE 15.0	18	—
Site 15 (Kaua'i-Lihue)	Control site	8-12	51-60	77.6 F	73.9 F	73%	68%	NE 16.2	NNE 16.1	14	—
Site 16 (Kaua'i-Lihue)	Enclosed bar	19-23	9-13	77.0 F	73.9 F	71%	68%	NE 18.4	NNE 17.3	14	—

[1]Based on zip code of venue for each island: http://www.wunderground.com.
[2]Data for Kaua'i post-law were not available.

overall average at 16.3% (below the state smoking prevalence level). Partially enclosed bars and restaurants had much lower cigarette density and smoker prevalence than the enclosed venues monitored in this assessment. After implementation of the law, the average number of patrons at enclosed venues decreased at all sites. At partially enclosed sites, the average number of patrons decreased at 2 sites, and remained about the same at one and increased at another.

Discussion

Hawai'i is a diverse state in both its geography and demographics. Of the more than 1.2 million residents, there is no single majority ethnic group. The 2000 US Census estimated a resident population of 1,211,537 and a projected population of 1,285,498 in 2006.[17] The state's population is unevenly distributed among the islands, with the majority (72.3%) of the residents on O'ahu, 12.3% on Hawai'i, 4.8% on Kaua'i, and 10.6% in the tri-island county of Maui (Maui, Moloka'i, and Lana'i).

Data from the 2006 Behavioral Risk Factor Surveillance Survey[18] show that the overall reported smoking rate for the state stands at 17.5% (95% CI 16.3%-18.9%). Reported smoking among men was 19.2% (95% CI 17.1%-21.4%) and among women was 15.9% (95% CI 14.3%-17.6%) in 2006. Native Hawaiians continue to have the highest smoking rates in the state at 27.4% (95% CI 23.1%-32.2%). Health disparities continue, with increases from previous years among the unmarried, the unemployed, those with less education, and those with low income. Although 2006 rates are slightly higher on the Big Island (19.2% with 95% CI 16.7%-22.0%) and Maui (18.7% with 95% CI 16.0%-21.8%), than on Kaua'i (17.7% with 95% CI 14.4%-21.5%) and O'ahu (17.1% with 95% CI 15.4%-18.9%), all county rates show convergence in recent years.

Examining the data from the 15 relevant sites studied for this air quality monitoring assessment, the findings indicate that prior to the Smoke-Free Workplace and Public Places Law being implemented, air quality at 7 sites that were enclosed bars/restaurants where people were smoking all had high levels of $PM_{2.5}$ exceeding the EPA average daily limit of 65 ug/m3. Four sites that were partially enclosed bars/restaurants where people were smoking all had air quality $PM_{2.5}$ levels below the EPA 24 hour average daily limit. The 4 control sites (where smoking was not permitted or observed), did not show any discernable levels of particulate matter (i.e. had levels below the EPA average limit). After implementation of the law, air quality was again monitored at 14 of the relevant sites and 1 alternate site and findings indicate that all venues had air quality $PM_{2.5}$ levels below the EPA average daily limit. One partially enclosed bar next to a major intersection had fluctuating high and low particulate matter readings both before and after implementation of the new law, but with an average level below the EPA 24 (daily) average limit of 65µg/m3 (this site has since closed).

The results must take into consideration some degree of variation due to testing variables including differential equipment calibration (pre and post). Readings of levels of particulate matter at all sites after the implementation of the law show a slight (but consistent) increase in particulate matter readings, although still below the EPA average daily limit. This is likely the result of variables in the calibration of the two different instruments at the two different times, factors in either indoor or outdoor air quality at venues (e.g. cooking, VOG), or both. These observed post-law increases cannot be due to smoking. The discrepancy with regard to the apparent increase in $PM_{2.5}$ at some sites should not be taken to indicate that air quality actually worsened, but should be attributed to differential equipment calibra-

Table 2.— Hawai'i Sites for Air Quality Monitoring and Results-Cigarette Density and Changes in Air Quality ($PM^{2.5}$)							
Hawai'i Sites	**Type of venue**	**Size (m3)**	**Cigarette density***		**Average PM2.5 level in micrograms per cubic meter (µm/m3)**		**% reduction or increase in average PM 2.5**
			Before 11/06 (measured in June & July 2006)	**After 11/06 (measured in April & May 2007)**	**Before 11/06 (measured in June & July 2006)**	**After 11/06 (measured in April & May 2007)**	
Site 1 (O'ahu)	Enclosed bar/restaurant	1,270	0.18	0	64.0	6.7	-89.5
Site 3 (O'ahu)	Enclosed bar/restaurant	343	2.19	0	232.8	20.5	-91.2
Site 4 (O'ahu)	Enclosed bar	581	8.61	0	84.5	12.5	-85.2
Site 5 (O'ahu)	Enclosed bar	1,359	5.02	0	319.6	16.7	-94.8
Site 7 (Big Island)	Enclosed bar	2,537	0.32	0	360.9	45.5	-87.4
Site 10 (Maui)	Enclosed bar	2,243	0.11	0	240.8	26.2	-89.1
Site 16 (Kaua'i)	Enclosed bar	686	0.34	0	137.4	14.0	-89.8
Mean		**1,288**	**2.4**	**0**	**205.7**	**20.3**	**-90.1**
Site 2 (O'ahu)	Partially enclosed bar/ restaurant	1,338	1.05	0	31.6	42.0	+32.9
Site 8 (Big Island)	Partially enclosed bar/ restaurant	1,831	0.07	0	6.32	20.7	+69.5
Site 13 (Kaua'i)	Partially enclosed bar/ restaurant	1,223	.16	0	8.3	15.7	+47.1
Site 14 (Kaua'i)	Partially enclosed bar/ restaurant	3,200	0.07	0	5.8	10.1	+42.6
Mean		**1,898**	**.34**	**—**	**13.0**	**22.0**	**+40.1**
Site 6 (Big Island)	Control site, partially enclosed, no smoking allowed	—	0	0	.04	38.5	+99.9
Site 9 (Maui)	Control site, enclosed, no smoking allowed	—	0	0	.81	12.9	+93.7
Site 11 (Maui)	Treated as a control site (Partially enclosed bar/ restaurant, smoking not observed)	—	0	0	.18	37.3	+99.5
Site 15 (Kaua'i)	Treated as a control site (Partially enclosed bar/ restaurant, smoking not observed)	—	0	0	30.4	30.9	+1.2
Mean		**—**	**—**	**—**	**7.9**	**29.9**	**+73.6**

* Average number of burning cigarettes per 100 m3.

tion at pre and post-tests or other non-smoking variables post-law (e.g. cooking, candles). Any other conclusions based upon the above mentioned discrepancy would be unwarranted. Further studies are recommended to measure post-ban air quality.

Unlike other studies examining indoor air quality before and after implementation of smoking bans, this assessment used volunteers to conduct the air quality monitoring. However, the protocols for the actual monitoring with the SidePak machine were followed based on the instructions from the manufacturer, so this likely did not affect the data on actual air quality. Volunteers were not responsible for taking measurements of the different venues during testing (square footage and ceiling height); this information was obtained later through information provided by the County Liquor Commissions, by actual measurement and phone inquiries. Some of these measurements are rounded estimates, but are very likely accurate. Thus, one possible limitation regarding the sampling frame (selection of sites) may be inherent due to convenience sampling (selection bias) by volunteers. For the enclosed bars during pre-law monitoring, 3 of the 7 sites were well known gay-friendly bars, representing 3 of the 5 gay-friendly bars in the state (all on the island of O'ahu). Moreover, at two of these sites, Sites 4 and 5 on the date in question, both bars were very crowded. This, the volunteer pointed out, was due to the annual Gay/Lesbian pageant event earlier in the evening, and there was free entry to Site 5 with a pageant stub, so presumably, as noted by the volunteer, people went to the bar after the pageant. Further, Site 4, which is next to Site 5, closes at 2:00 AM, while Site 5 is open until 4:00 AM. So, the readings from these sites may have been unusually high because of these unique circumstances (e.g. smoking prevalence is higher among gays and lesbians).[19,20] Data from the Hawai'i 2006 Adult Tobacco Survey provide additional evidence on this with those who reported being non-heterosexual adults (homosexual, bisexual, or something else) were significantly more likely to smoke cigarettes (34.1%) than their heterosexual counterparts (13.1%).[21] The point is only to illustrate probable sources of sampling bias in the resultant total sample of venues where testing was conducted. Since the volunteers were members or leaders from the various county tobacco coalitions, this may have also have affected the nature of the data collection, particularly on the (less populated) neighbor islands (pre-law).[22]

Despite these limitations, the findings indicate that there is evidence that there was a definitive proportionate reduction in particulate matter at enclosed venues after implementation of the new law.

Table 3.— Cigarette Density, Smoker Prevalence and Number of Patrons, before and After Law								
Hawai'i Sites	**Type of venue**	**Cigarette density***		**Smoker prevalence (# smoking, of total # of patrons)**		**Average total number of patrons**		**% reduction or increase in average numbers of patrons**
		Before 11/06 (measured in June & July 2006)	**After11/06 (measured in April & May 2007)**	**Before 11/06 (measured in June & July 2006)**	**After11/06 (measured in April & May 2007)**	**Before 11/06 (measured in June & July 2006)**	**After 11/06 (measured in April & May 2007)**	
Site 1 (O'ahu)	Enclosed bar/restaurant	0.18	0	13.3	0	17.3	13	-24%
Site 3 (O'ahu)	Enclosed bar/restaurant	2.19	0	19.3	0	38.8	22.7	-41%
Site 4 (O'ahu)	Enclosed bar	8.61	0	25.0	0	200	174.3	-13%
Site 5 (O'ahu)	Enclosed bar	5.02	0	26.6	0	256.7	116.7	-55%
Site 7 (Big Island)	Enclosed bar	0.32	0	23.5	0	34	20.7	-38%
Site 10 (Maui)	Enclosed bar	0.11	0	5.3	0	47.3	6.7	-85%
Site 16 (Kauai)	Enclosed bar	0.34	0	1.3	0	20.3	10.7	-45%
Mean		**2.4**	**—**	**16.3**	**—**	**87.8**	**60.7**	**—**
Site 2 (O'ahu)	Partially enclosed bar/ restaurant	1.05	0	13.1	0	107	105	-2%
Site 8 (Big Island)	Partially enclosed bar/ restaurant	0.07	0	3.0	0	43.3	26.3	-40%
Site 13 (Kaua'i)	Partially enclosed bar/ restaurant	.16	0	8.8	0	22.7	27	+15%
Site 14 (Kaua'i)	Partially enclosed restaurant/bar	0.07	0	3.1	0	32.7	17.3	-48%
Mean		**.26**	**—**	**7**	**—**	**51.4**	**43.9**	**—**

* Average number of burning cigarettes per 100 m3.

This reduction was dramatic and illustrates that the Smoke-Free Work and Public Places law does protect people from secondhand smoke in enclosed bars and restaurants. However, there was no evidence that partially enclosed restaurants/bars had any dangerous level of particulate matter either before or after the law; all had air quality $PM_{2.5}$ levels at 30 or much lower, below the EPA average daily limit. Much more research is needed in the area of partially enclosed venues, particularly in light of the recent push for banning smoking in outdoor areas given the controversy over the purported and actual effects of secondhand smoke.[23-25]

Acknowledgements

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Substantial Systolic Improvement and Reverse Cardiac Remodeling in Elderly-onset Idiopathic Dilated Cardiomyopathy ≥ 65 Years of Age

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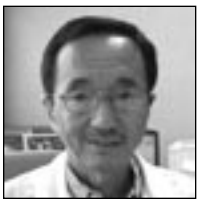

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Abstract

Significant systolic improvement and reverse remodeling in dilated cardiomyopathy (DCM) are well known, however they have been rarely described among elderly subjects. The authors retrospectively reviewed 86 patients with a diagnosis of DCM seen at a clinic during April-November 2005. The authors found 18 patients with elderly-onset idiopathic DCM (age of onset ≥ 65 years, mean age 71.8 ± 6.2 years), who had substantial improvement in left ventricular ejection fraction (LVEF) ≥ 20 units (%). During a mean follow-up of 8.6 ± 5.5 years, mean LVEF and left ventricular end-diastolic diameter improved from 30.6 ± 7.9% to 58.3 ± 6.5% (p<0.0001) and 57.5 ± 7.0 mm to 44.6 ± 5.5 mm (p<0.0001), respectively. Fifteen of the 18 patients (83%) had a history of hypertension. Systolic blood pressure at the initial referral clinic correlated with improved contractility (p = 0.0275, r = 0.52). The eighteen patients found in our small patient population suggest that substantial systolic improvement and reverse remodeling is seen in elderly patients with idiopathic DCM.

Introduction

The clinical course of dilated cardiomyopathy (DCM) is variable and affected by many factors including age, gender, etiology, functional class, and other co-morbidities.[1,2] Substantial spontaneous improvement in the left ventricular ejection fraction (LVEF) has been reported in 19-45% of patients with idiopathic DCM. However most reported patients were limited to the pediatric or middle-aged population, and it has been rarely described among elderly subjects.[3-9] The mechanism of left ventricular systolic improvement is not fully understood. Medical therapies such as beta-blockers and angiotensin-converting enzyme (ACE) inhibitors have been shown to promote reverse cardiac remodeling even in the elderly population.[10,11] However, substantial systolic improvement (increase in LVEF ≥ 20%) cannot be explained by a medication effect alone. An improvement in LVEF greater than 20% seems beyond the range medical therapies can reach, and LVEF improvement had been noted in patients before the current standard medical therapies for heart failure were introduced.[6,10,11] There is increasing evidence that some non-transplant therapies such as an implantable cardioverter-defibrillator (ICD) and cardiac resynchronization therapy are beneficial for selected patients with DCM, and there is no age limitation on such invasive procedures.[12-14] Therefore, it is important to explore the characteristics of such patients in elderly populations in order to choose appropriate therapeutic options for these patients. The present study is aimed to find patients with elderly-onset idiopathic DCM who had substantial improvement of LVEF and cardiac size, and describe their clinical and echocardiographic characteristics.

Methods

Study population and protocol

The authors retrospectively reviewed medical charts including clinical laboratory results, electrocardiography, and echocardiography reports, of 86 patients with a diagnosis of DCM seen at a private referral practice clinic (Honolulu, HI) between April and November 2005. The patients were included in the study if they fulfilled the following criteria: (1) a diagnosis of heart failure due to idiopathic DCM; (2) age at heart failure onset ≥ 65 years; (3) substantial improvement of LVEF ≥ 20 units (%) on follow-up echocardiography. The mean follow-up period was 8.6 ± 5.5 years. The patients were assessed with serial echocardiograms during the follow-up. The diagnosis of heart failure due to DCM was made in the presence of symptoms of exertional dyspnea or fatigue and evidence of a severely impaired LV systolic function (LVEF ≤ 40%), as assessed by echocardiography. The diagnosis of idiopathic DCM was made in the absence of significant coronary artery disease defined as having an abnormal Q wave on electrocardiography (ECG), luminal narrowing on coronary arteriography ≥ 50%, and inducible ischemia or infarct on myocardial perfusion imaging with either exercise or pharmacological stress. The other specific etiologies of cardiomyopathy such as primary restrictive, hypertrophic, valvular, drug-induced, tachycardia-induced cardiomyopathy, recent viral syndromes, heavy alcohol use, and thyroid disease were also excluded. Patients with a documented history of hypertension or diabetes were included in the study, as were the patients in previous studies. [6-9]

Echocardiography

Echocardiographic parameters to assess the severity of LV systolic and diastolic dysfunction were taken from routine echocardiography-reports. Complete M-mode, two-dimensional and color Doppler echocardiography were performed on every patient in the left lateral position. Hewlett-Packard, Sonos 5500 with 2.5 and 3.75 MHz transducers was used. Left ventricular end-diastolic and end-systolic diameters (LVEDD and LVESD), interventricular wall thickness (IVT), and left atrial diameter (LAD) were measured by M-mode echocardiography from the parasternal long-axis view, as recommended by the American Society of Echocardiography.[15] Left ventricular systolic function was quantitatively assessed using the modified Simpson method. Mitral flow velocities were recorded using an apical 4-chamber view; a 0.5-1.0 cm pulsed-wave Doppler sample volume was placed between the tips of the mitral leaflets, where the maximal flow velocity was recorded. E and A wave velocities (E max and A max) and their ratio (E/A) were measured. Deceleration time of the E wave (DtE) was measured as the interval (in ms) from the peak early mitral filling to an extrapolation of the deceleration to 0 m/s. Substantial systolic improvement was defined as a LVEF change from baseline values ≥ 20 units (%) during follow-up.

Statistical analysis

Continuous variables are expressed as mean ± standard deviation (SD) and compared using Student's t test. Discrete variables are expressed as percentages and compared using the chi-square test. Maximum changes of LVEF during the follow-up period were compared with initial systolic blood pressure (SBP) by linear regression analysis. In all tests the two-sided P value <0.05 was accepted as a statistically significant difference. Statistical analysis was performed using JMP statistical software version 5.1 (SAS Institute, Cary, NC).

Results

Baseline clinical and ECG characteristics

Eighteen patients met the study criteria. The mean follow-up period was 8.6±5.5 years. The baseline characteristics including demographics, ECG findings, and medications are shown in Table 1. The most common ethnicity of the patients is Japanese American (n=16, 89%). All patients presented with dyspnea as a chief complaint. Syncope was not an initial presentation. None of the patients required hemodialysis during follow-up. Seventeen patients (94%) presented with severe disease, New York Heart Association (NYHA) III or IV. There were 5 patients who showed nonspecific ST-T changes; however, no patient demonstrated abnormal Q waves, significant ST elevation, or depression.

Table 1.— Baseline Clinical Characteristics

Characteristics	Total number of patients: 18
Mean age (years old)	71.8 ± 6.2
Men (persons)	13 (72.2%)
Systolic blood pressure (mmHg)	122.9 ± 23.3
Diastolic blood pressure (mmHg)	72.6 ± 12.3
Heart Rate (bpm)	87.3 ± 20.0
Hypertension (persons)	15 (83.3%)
Diabetes mellitus (persons)	3 (16.7%)
Hypercholesterolemia (persons)	9 (50%)
History of smoking (persons)	11 (61.1%)
NYHA class (persons)	
II	1 (5.6%)
III	11 (61.1%)
IV	6 (33.3%)
BUN (mg/dL)	19.3 ± 4.5
Creatinine (mg/dL)	1.1 ± 0.3
ECG HR (bpm)	91.6 ± 23.7
ECG PR interval (ms)	161.8 ± 26.6
ECG QRS width (ms)	101.6 ± 28.6
ECG QT interval (ms)	354.1 ± 45.1
ECG QTc (ms)	427.3 ± 30.0
RBBB (persons)	2 (1.1%)
LBBB (persons)	2 (1.1%)
LVH voltage criteria	7 (38.9%)
Medications	
Beta blocker	14 (77.8%)
ACEI	14 (77.8%)
ARB	6 (33.3%)
Digoxin	13 (72.2%)
Coumadin	5 (27.8%)

NYHA: New York Heart Association, BUN: blood urea nitrogen, ECG: electrocardiography, LBBB: left bundle branch block, RBBB: right bundle branch block, LVH: left ventricular hypertrophy, ACEI: angiotensin converting enzyme inhibitor, ARB: angiotensin II receptor blocker

Table 2.— Echocardiography analyses

	Baseline	Follow-up	P value
LVEF (%)	30.6 ± 7.9	58.3 ± 6.5	< 0.0001
LVEDD (mm)	57.5 ± 7.0	44.6 ± 5.5	< 0.0001
LVESD (mm)	50.6 ± 6.7	31.3 ± 6.1	< 0.0001
IVT (mm)	11.2 ± 2.2	12.3 ± 1.7	0.12
LAD (mm)	48.5 ± 6.8	34.0 ± 9.5	0.0008
E (m/s)	0.71 ± 0.27	0.82 ± 0.34	0.34
E/A	1.16 ± 0.74	1.21 ± 1.71	0.93
DtE (ms)	134.29 ± 69.86	182.73 ± 82.83	0.10
Estimated PASP (mmHg)	45.4 ± 9.3	36.3 ± 10.7	0.021

LVEF: left ventricular ejection fraction, LVEDD: left ventricular end-diastolic diameter, LVESD: left ventricular end-systolic diameter, IVT: interventricular wall thickness, LAD: left atrial diameter, DtE: deceleration time of E wave, PASP: pulmonary artery systolic pressure

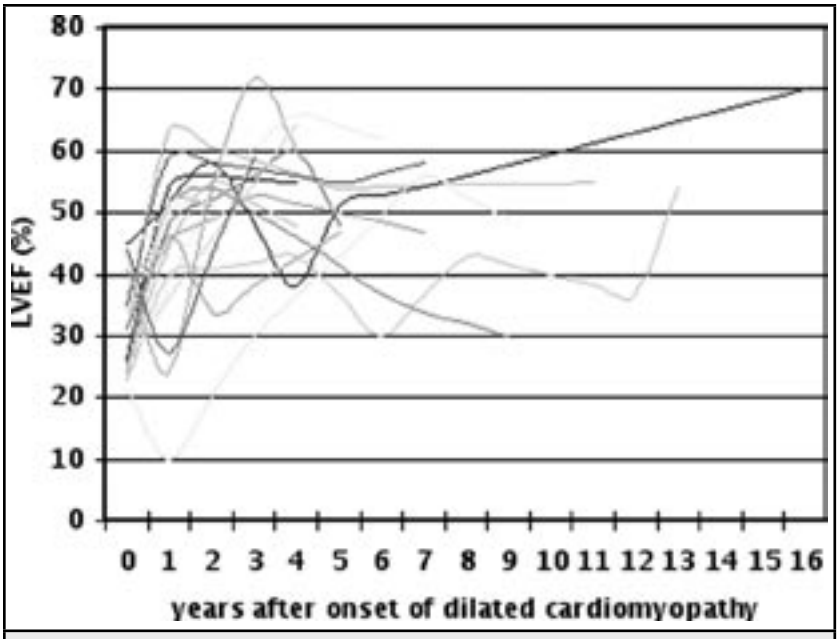

Figure 1.— Time Course of LVEF Changes

LVEF: left ventricular ejection fraction

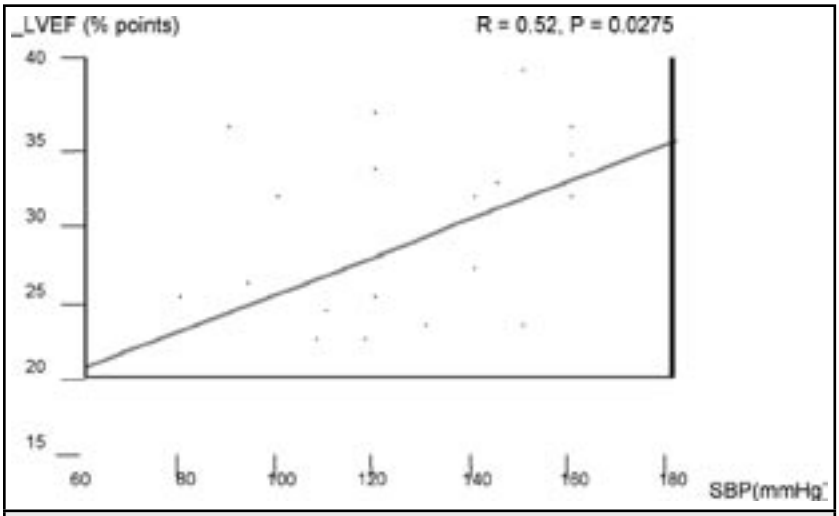

Figure 2.— Linear Regression Analysis of Baseline Systolic Blood Pressure and LVED Increase

Table 3.— Reported observations of improvement in left ventricular systolic function in elderly populations

Reference	Number of patients	Age (years)	Follow-up period	Improvement	β blocker therapy
10	48	71 ± 5	12 months	Yes	Yes
11	29	72 ± 7 (Losartan) 72 ± 7 (Captopril)	48 weeks	Yes Yes	Yes (46 %) Yes (25 %)
16	87	75 ± 6	17 ± 9 months	Yes (36 %)	Yes
17	243	75 ± 6 (DCM) 76 ± 6 (NDCM)	12 months	Yes (23 %) Yes (20 %)	Yes
18	124	75 ± 5	12 months	Yes (26 %)	Yes
19	9	80 ± 3.3	12 months	No	Yes

DCM: dilated cardiomyopathy, NDCM: nondilated cardiomyopathy

Echocardiography analysis

The authors compared the baseline echocardiography measurements and those at the time when LVEF peaked during follow-up (Table 2). There was statistically significant improvement in systolic function measurements including LVEF, LVEDD, and LVESD, while all other diastolic function measurements except for left atrium diameter (LAD) showed no significant change. Pulmonary artery systolic pressure estimated by tricuspid valve pressure gradient (estimated PASP) was significantly lower during follow-up surveillance. A thrombus in the left ventricular apex was detected in 1 patient. Figure 1 shows annual LVEF changes of each patient during follow-up. Many patients had dynamic changes in LVEF. Thirteen patients (72%) had improvement in LVEF within 1 year from the clinical onset of heart failure, and all patients improved within 3 years. Interestingly 7 patients (39%) had a substantial decrease in LVEF (> 10 % points) after their initial improvement. Logistic regression analysis revealed that systolic blood pressure at the initial referral clinic has a positive correlation with improvement in LVEF (LVEF changes = 10.20 + 0.13SBP, r=0.52, p=0.0275) (Figure 2).

Clinical course and complications

Cardiac resynchronization therapy with bi-ventricular pacing was considered for one patient with left bundle branch block on ECG. However, the procedure was not performed for this patient because LVEF improved significantly after the initial assessment. During follow-up, 3 patients developed chronic atrial fibrillation, 2 patients developed atrial flutter, and 1 patient developed multifocal atrial tachycardia. One patient was documented to have non-sustained ventricular tachycardia, but a cardiac defibrillator was not implanted. Only 6 patients required a single hospital admission for heart failure exacerbation. None of the patients required multiple admissions. Two patients developed a stroke during the follow-up period, however the etiology of the stroke whether thrombotic or embolic was unclear.

Discussion

Although there have been many studies describing reverse cardiac remodeling in adult DCM, most of the previous studies focused on relatively young patient populations, mean age 35-54 years, being evaluated and followed as cardiac transplant candidates in tertiary cardiovascular centers. [6-9] To the best knowledge, there have been only a few studies focusing on the elderly patient population.[10,11,16-19] (Table 3). Cioffi, et al reported that the prevalence of left ventricular systolic improvement (an increase in LVEF > 10%) in elderly DCM was 23 – 36% in their 3 clinical studies.[16-18] They showed higher baseline arterial blood pressure, absence of diabetes, predominant non-ischemic etiology, and more prevalent beta-blocker uses in patients with reverse

remodeling compared to those without reverse remodeling.[16,18] These findings are consistent with the present study findings, such as prevalent history of hypertension (83%), positive correlation between initial systolic blood pressure and increase in LVEF, low prevalence of diabetes (16%), and high frequency of beta-blocker use.

In the present study, there was a positive correlation between systolic blood pressure at initial referral clinic and LVEF improvement during follow-up, even though systolic blood pressure in most patients was not significantly elevated (mean 122.9 ± 23.3 mmHg). There is no clear explanation for this correlation; however, the authors can think of two potential reasons. First, patients with higher baseline blood pressure may have a higher tolerance for aggressive medical therapies. Second, the authors suspect that reduced systolic LV function and cardiac output might decrease the significance of hypertension and mask signs of hypertensive cardiomyopathy at the onset of heart failure. In the present study, a history of hypertension and left ventricular hypertrophy ≥ 11mm were very prevalent, 15 patients (83%) and 13 patients (72%), respectively. Hypertensive and truly idiopathic etiologies could not be distinguished in most of the previous studies because there is no standard definition of hypertensive cardiomyopathy and hypertension may become less significant as cardiac output decreases. For this reason, hypertensive cardiomyopathy might be under-diagnosed in both clinical and academic settings. In the present study, there is concern that the measured cuff blood pressures at the first office visit might contain information bias. However, the authors believe it is a non-differential misclassification.

Two randomized control trials showed ICD was beneficial for primary prevention of sudden cardiac death (SCD) in patients with non-ischemic DCM and LVEF ≤ 35%.[12,14] In a subsequent analysis, Kadish A, et al reported that patients with a recent cardiomyopathy diagnosis did not have any less ICD benefit than those with a remote diagnosis.[20] The current ACC / AHA / NASPE guideline does not discuss optimal timing of ICD placement for non-ischemic cardiomyopathy in contrast to that for ischemic cardiomyopathy.[21] On the other hand, the present and some previous studies revealed substantial improvement in systolic function and cardiac size in several non-ischemic DCM subjects, and it can occur beyond 1 year.[3-9,16-18] Such subjects exist in any population from pediatrics to geriatrics although the common background and actual mechanism may be heterogeneous in different age populations. Therefore, it still seems critical to elucidate predictors and the long-term prognosis of such reversible patients and to search for optimal timing of ICD placement for primary prevention of SCD in patients with non-ischemic DCM.

Strength and limitation

This study's focus on the elderly population with DCM is unique, and there have been only a few previous studies that have done serial echocardiograms. All the echocardiography tests were performed by 1 technician and read by 1 cardiologist throughout the follow-up period. LVEF was measured quantitatively using modified Simpson method. This study is a retrospective case series study with a small sample size, therefore the authors are unable to discuss the prevalence and predictors of substantial systolic improvement in elderly-onset DCM. Because there is no universal definition for substantial systolic improvement, the present study results may not be comparable with other studies. Compared to patients at community-based clinics, those at the tertiary care facilities are likely to have more severe disease presentations. Such heterogeneity of non-ischemic cardiomyopathy at different levels of facilities needs to be considered.

In conclusion, the authors found 18 elderly-onset idiopathic DCM patients with substantial systolic improvement and reverse cardiac remodeling in a small patient population seen at a single private clinic during a short period. In the study subjects, history of hypertension, beta-blocker use, and ACE inhibitor use were prevalent, while diabetes was seen in only 16.7% patients. A positive correlation between SBP at initial presentation and improved contractility during follow-up has not been described in previous studies.

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Abstract

Queen's Medical Center's Summer Research Internship 2007: Selected Abstracts

Transcriptional Analysis of Cardiac HIF-1

Shelby Takeshita; Chad B. Walton; and Ralph V. Shohet

Abstract

Hypoxia-inducible factor 1 (HIF-1) is a transcription factor that regulates gene response during hypoxia, including regulating angiogenesis, the formation of new blood vessels, and glycolytic metabolism. This heterodimeric protein is composed of HIF-1α and HIF-1α subunits and consists of a basic helix-loop-helix-PAS domain. HIF-1α is expressed constitutively, whereas HIF-1α is regulated by oxygen concentration and inducible by hypoxia. HIF-1α possesses an oxygen-dependent degradation domain, which causes it to be targeted for rapid proteosomal degradation during normoxia; hypoxia slows the destruction of HIF-1α. Since HIF-1 plays an important role in angiogenesis, it is a subject of interest in the heart where hypoxia occurs due to coronary artery disease, the leading cause of morbidity and mortality on the Western world. This research project involved the over expression of an oxygen-stable form of HIF-1α in the murine heart, to identify the genes regulated by HIF-1. In doing so we are able to determine how HIF-1 directly regulates angiogenesis and glucose metabolism. The study hypothesizes that HIF-1 promotes the expression of genes to stimulate angiogenesis and shifts the citric acid cycle from aerobic to anaerobic glycolysis. To identify the genes, mouse models, chromatin immunoprecipitation (ChIP) assays and other validation techniques, such as electrophoresis mobility shift assay (EMSA) gels and computational analyses were used. Bi-transgenic mice were used as animal models, with a cardiac specific promoter and a mutated form of human HIF-1α, under Tet-off control. The Tet-off system controls gene expression with the use of Doxycycline as an inhibitor to promoter complex binding, preventing the transcription of the transgene. A ChIP assay was used to identify DNA regions that are bound to transcription factors, thereby determining which genes are directly regulated. Since HIF-1α is being over expressed, the DNA sequence identified is composed of the promoter regions regulated by HIF-1. One gene of particular interest that was identified *via* ChIP analysis was pkc binding protein 1 isoform 2, which may play a role in the regulation of HIF-1. This gene has not been fully characterized, but has been implicated in HIF regulation previously. Genes will be further verified by using additional EMSA and computational analyses. Identifying the genes that HIF-1 directly binds to will give insight to the role that HIF-1 plays in ischemia and coronary artery disease. This will provide important information to assist in the development of HIF-1 gene therapy.

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Abstract

Queen's Medical Center's Summer Research Internship 2007: Selected Abstracts

Impact of Maternal Body Mass Index on Risk of Severe Perineal Laceration During Childbirth

Michael Tom; Mark Hiraoka MD; Bruce Kessel MD; and Todd B. Seto MD, MPH

Abstract

Hawai'i's 2003 severe perineal laceration rate (8%) is higher than the national benchmark (~3%). This retrospective study evaluated the association of pregravid BMI, race/ethnicity, and other independent predictors of severe lacerations in Hawai'i. Device-assistance, episiotomy, birth weight, and nulliparity were independently associated with severe lacerations. Correlation of BMI with severe lacerations is likely due to its relation with episiotomy and device-assisted deliveries.

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Queen's Medical Center's Summer Research Internship 2007: Selected Abstracts

Predictors of Methamphetamine Use in Native Hawaiians and Pacific Peoples with Heart Failure

Karynna K. Asao; Marjorie Mau MD, MSc; Todd Seto MD; and Jimmy T. Efird PhD, MSc

Abstract

Context: Methamphetamine use is a major problem in the United States. Previous studies and case reports have confirmed the association of methamphetamine and cardiomyopathy and heart failure.

Objective: To determine the association of risk factors that contribute to methamphetamine use in Native Hawaiians/Pacific Peoples with heart failure.

Design, Setting, and Participants: Case-control study based on interview and chart review of self-identified Native Hawaiians and Pacific Peoples with moderate to severe heart failure (EF≤40%); 21 years or older; enrolled in the Malama Pu'uwai Study (NCT00101465), a heart failure intervention program, between June 2006 and June 2007; and discharged from a tertiary care medical center (n=60). Cases included patients who had used methamphetamine in their lifetime. Controls included patients who had not used methamphetamine in their lifetime. Demographics, clinical measures, alcohol use, tobacco use, and co-morbidities were evaluated among the patients. Data were analyzed by odds ratios, 95% confidence intervals, and multiple logistic regression analysis.

Results: There were 17 cases and 43 controls. Twenty-seven percent of the patients had a history of methamphetamine use. Both groups had similar sex distribution, education, racial self-identification, blood pressure, pulse, BMI, alcohol use, tobacco use, and prevalence of atherosclerotic heart disease, diabetes mellitus, hypertension, and stroke. Age- and marital status-adjusted multiple logistic regression analysis showed that age (<40 OR=1.0; >50 OR =0.03, 95% CI, >0.01-0.30) and marital status (currently married OR=1.0; never married OR=12, 95% CI, 1.7-86; divorced or separated OR=24, 95% CI) were independently associated with methamphetamine use.

Conclusion: Predictors of methamphetamine use in Native Hawaiian/Pacific Islander heart failure patients were younger age and being divorced/separated or never married. Methamphetamine use in Native Hawaiian/Pacific People with heart failure occurs at younger ages and may be mitigated by being married. Future programs to reduce methamphetamine abuse in heart failure patients should focus on understanding how being married may influence the risk of methamphetamine-induced heart failure. Further studies are required to confirm these predictors to the general population.

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Medical Licensure in the United States: Past, Present, and Future

Mary Ann Antonelli MD, FACP, Professor of Medicine, Director, Office of Student Affairs, John A. Burns School of Medicine (JABSOM)

Medical licensing in the United States has gone through a few transitions since the National Board of Medical Examiners first came into existence in 1915.

In the past, certification to practice medicine in a state could be obtained by application and successful passage of state-specific board exams or NBME (National Board of Medical Examination), after completing the required accredited medical school curriculum. In the 1960s, many state board exams were replaced by "FLEX" (Federation Licensing Exam) examinations. In 1990 the FLEX exams and the NBME exams were replaced by USMLE (United States Medical Licensing Examination). USMLE is a program sponsored by NBME and Federation of State Medical Boards (FSMB). It is an examination system designed to assess ability to apply knowledge and skills important in health and disease, and constitute the basis of safe and effective patient care.

There are three parts, or "Steps", in the USMLE, which are typically taken at different points in the continuum of medical education. Step 1 focuses on knowledge that serves as the basic foundation for medical practice, and for the support of life-long learning. Step 2 (which now has two components, the second, a clinical skills exam, was begun in 2004) focuses on clinical science knowledge and clinical skills necessary for safe and effective patient care under supervision. Many medical schools require passage of Steps 1 and 2 to qualify for the MD degree. Others may only require that students sit for these exams, and a minority have no policy concerning USLME. Step 3 assesses knowledge and application of the biomedical and clinical sciences necessary for independent patient care. Step 3 can only be taken after a student completes Steps 1 and 2, has completed medical school, and must be applying for licensure in a US licensing jurisdiction (state). Passing scores on all components of all USMLE Steps is currently required by all US state medical licensing boards. Some states have additional requirements concerning acceptable number of repeat examinations and/or the time between first passage of Step 1 to passage of Step 3 examination. A trainee may not re-take a Step examination once it has been passed.

There are additional requirements through the Educational Commission for Foreign Medical Graduates (ECFMG) to take USMLE for students who have not graduated from a medical school accredited by the Liaison Commission for Medical Education (LCME) or by the American Osteopathic Association.

The philosophy behind these "steps" was to assure that a minimal level of competence in the areas assessed could be assured to the licensing boards. As students progress through the educational levels, they were assessed appropriately the expected knowledge and skills, culminating, with Step 3, to demonstrate that the trainees could now practice medicine independently.

In 1999, USMLE converted from paper-and-pencil testing to computer based testing, adding clinical simulations modules to Step 3. Except for the Step 2 Clinical Skills exam (see below), USMLE scores are reported in a three digit format, with a minimum passing score that is between 182 and 184. A two-digit score is still also reported, normalized to report a passing score of 75, since some state laws require this minimal passing score format.

In 2004, a multi-station standardized patient examination, called Step 2 Clinical Skills (CS) examination, was added (the multiple choice exam came to be known as Step 2 Clinical Knowledge). Five testing sites are available nationally (in Atlanta, Chicago, Houston, Los Angeles, and Philadelphia). These sites test all US medical students and foreign medical graduates who wish to be licensed in the United States. Step 2 CS uses standardized patients to test medical students and foreign medical graduates on their ability to gather information from patients, perform physical examinations, and communicate their findings to patients and colleagues. Examinees are scored in three separate subcomponents: Integrated Clinical Encounter (ICE), Communication and Interpersonal Skills (CIS), and Spoken English Proficiency (SEP). All must pass each component at one administration. The scores are reported as Pass or Fail.

In 2006, the USMLE (FSMB and NBME) began the "Comprehensive Review of USLME", and expects to issue a final report in 2009. This report may significantly alter the path to licensure in the United States. Under serious consideration is a two "gateway" approach. The first "gateway" decision point to be considered will be on entry into supervised practice (typically entry into postgraduate training); and, second, on entry into unsupervised practice (at the point of initial licensure). The USLME states, "It is important to note that the Gateways are intended as decision points; it is possible that each Gateway decision will be informed by the results of more than one assessment." Other emerging themes in this review include a "redesign of USMLE to better reflect the competencies important to medical practice, to the degree that such competencies can be measured in a valid, reliable, and practical manner," and a "reconsideration of the current, independent assessment of the basic sciences in favor of an integrative approach to the scientific foundations of medicine across all components of the USMLE program."[1]

As qualification assessment for *licensure*, there is consideration to change scoring systems to "pass-fail". However, many, medical schools use scores on the USMLE to assess students' meeting appropriate knowledge in their curriculum. Residency Programs use USMLE score in their selection process. NBME may consider the possibility of providing the educational community with new assessment tools, independent of USMLE, to fill any perceived "void" created by modifications to the licensing examination system.

Additional licensing issues that have come under review relate to predictors of disciplinary action by medical boards. In studying the

association of potential predictors of disciplinary actions by medical boards, Papadakis et al[2] found only slightly lower scores on USMLE in physicians who were disciplined than in a control group. The strongest predictor was unprofessional behavior in medical school, something that is not examined in the USMLE paradigm.

The University of Hawai'i John A. Burns School of Medicine compares favorably in exam performance on USMLE with the national means. In four of the past five years, the mean score on USMLE Step 1 exceeded the national score mean. More interesting is the distribution of scores that show a higher rate of scores in the higher ranges, offset with more in mean range, with some scores in the lower range (see Table). It has been shown that a significant predictor of USMLE Step 1 scores[3] is Medical School Admissions Test (MCAT) scores. JABSOM performance profile is remarkable when taking into account that JABSOM is committed to accept 15% of incoming students from educationally, economically, and socially disadvantaged populations with the premise that these students will be more likely to serve their communities. Additionally, JABSOM has maintained 90% of the incoming class from residents of Hawai'i, in the expectation that local residents are most likely to serve the local communities.

The faculty and staff at JABSOM believe that its Problem-Based Learning curriculum, which does not focus on exam scores but rather on problem-solving, self-directed learning, and integration of basic and clinical sciences, is training physicians who are competent to be licensed as physicians. They leave JABSOM with excellent clinical skills. The average JABSOM student performance is equivalent to the average of a student from a traditional, basic science lecture-based medical school, and the high performers may exceed those at other medical schools.

Licensure of physicians should be based on competency in knowledge, communication and clinical skills. Although testing paradigms may undergo evolutionary changes, licensure will continue to assure the US public of competency in scientific knowledge and skills of its physicians.

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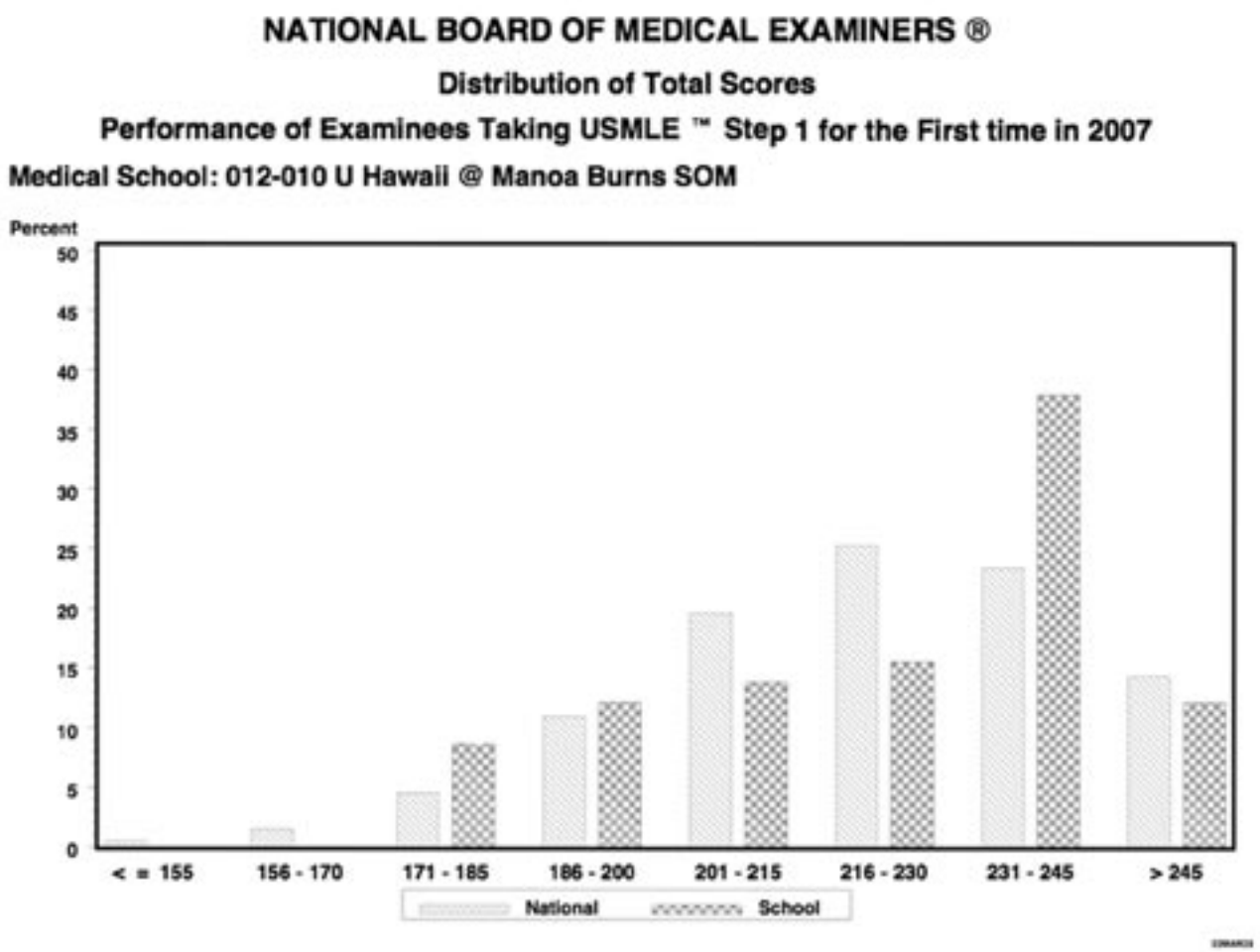
Table



The Hematologist's Approach to Myelodysplastic Syndrome

Jon S. Fukumoto MD, OnCare Hawai'i

Myelodysplastic syndrome (MDS) is a clonal stem cell disorder of the bone marrow characterized by ineffective hematopoiesis and peripheral blood cytopenias. Older terms for MDS such as "preleukemia", "subacute leukemia", or "smoldering leukemia" are no longer favored because the disease course is variable, and only about one-third of all cases will eventually evolve to acute myelogenous leukemia (AML). The standard of care for MDS patients has traditionally consisted of supportive measures such as blood transfusions. Recent advances in therapies have expanded the number of patients eligible for treatment, making it possible that MDS will increasingly become a more chronic and manageable disease. Because the incidence of MDS increases with age, with most patients diagnosed over age 60,[1] it is an important disease to recognize in internal medicine and geriatric practice and should particularly be considered in the differential diagnosis of anemia in the elderly.

Epidemiology

Epidemiological data for MDS has not been specifically tracked in US cancer registries until recently, but based on historical incidence rates from regional studies in Europe,[2,3] it might be speculated that on the order of 10,000 to 15,000 new cases or more will be diagnosed per year in the United States. In comparison, the incidence of chronic lymphocytic leukemia is 15,110, and the incidence of multiple myeloma is 19,920 new cases per year in the United States.[4] These figures suggest that the incidence of MDS ranks among the more common hematologic malignancies. As the US population ages, it is reasonable to expect that the overall number of new MDS cases will increase.

The majority of patients have *de novo* or primary MDS, although approximately 15% of cases can be defined as treatment-related, arising from prior exposure to alkylating chemotherapy or ionizing radiation.[5] The risk of developing treatment-related MDS after alkylating chemotherapy appears to be influenced by the cumulative dose and the specific type of agent used; for example, melphalan seems to have more leukemogenic potential than cyclophosphamide. Treatment-related MDS has a median latency period of about 4-5 years, and it is unlikely to occur more than a decade after exposure.[6]

Occupational exposure to benzene, which has been associated with development of AML in long-term cohort studies,[7-9] has also been implicated in secondary MDS, although less strongly. In a study of benzene-exposed workers in China, for example, 7 MDS and 23 AML cases were reported out of 74,828 exposed workers, versus 0 MDS and 4 AML cases out of 35,805 unexposed workers (Relative Risk = 4.1).[9] It is unclear whether any of the AML cases may have had a preceding MDS phase that escaped diagnosis before onset of overt AML. A case-control study of 178 patients with MDS showed an association with prior long-term exposure to organic solvents.[10] Other case-control studies, however, have not shown statistically significant associations with organic solvents.[11,12] Nevertheless, a history of significant occupational exposure to benzene or other solvents should raise the possibility of secondary MDS.

Diagnosis

Patients with MDS present with peripheral blood cytopenias of variable severity. Anemia is the single most common feature. The differential diagnosis for anemia is quite broad, but a basic initial workup might include serum iron studies, vitamin B12 and folate levels, reticulocyte count, erythropoietin level, and renal function tests. Serum protein electrophoresis (SPEP) to screen for monoclonal gammopathy should also be considered, especially in the elderly.

The peripheral blood smear is perhaps the most revealing evaluation in the initial workup of unexplained anemia. Morphologic dysplasia on the peripheral smear might include hypogranular platelets, giant platelets, red cell anisopoikilocytosis, hypogranular neutrophils, and neutrophils with inadequate nuclear segmentation (see Figure). These observations might suggest the possibility of MDS, but definitive diagnosis requires a bone marrow biopsy to assess for marrow dysplasia, blast count, and cytogenetics. While flow cytometry analysis of the marrow aspirate is not specifically required for diagnosis of MDS, it can be useful, in case the diagnosis unexpectedly emerges as AML or another malignancy in which immunophenotyping may be important.

Morphologic classification of MDS was formalized by the French-American-British (FAB) system of 1982[13] and modified by the World Health Organization (WHO) in 2001.[14] In normal bone marrow, blasts should comprise on the order of 1% of cells. In the FAB system, MDS was characterized by a marrow blast count ≤30%, whereas AML was defined as a marrow blast count >30%. The threshold for the transition from MDS to AML has been lowered in the WHO system to a marrow blast count of 20%.

Prognosis

Prognosis in MDS is assessed by the International Prognostic Scoring System (IPSS), which stratifies patients into four risk categories based on bone marrow blast percentage, number of peripheral blood cytopenias, and bone marrow cytogenetics (see Table).[15] Patients in lower risk categories of IPSS (Low and Int-1) can potentially have a prolonged disease course, although older age adversely affects prognosis. In contrast, patients in higher risk categories of IPSS (Int-2 and High) have decreased overall survival and greater frequency of transformation to AML; older age is relatively less significant in higher risk categories, as prognosis is more consistently poor. Treatment-related or secondary MDS also carries a poor prognosis, with the majority of cases having cytogenetic abnormalities,[16] and eventually transforming to AML.[6] Regardless of IPSS category, patients with treatment-related or secondary MDS should be considered to have higher risk disease.

Clinical decision-making

For most patients with lower risk MDS, who generally have a more prolonged clinical course, the goal of therapy is to ameliorate symptoms of disease, rather than pursue definitive cure. To date, bone marrow transplantation (BMT) is the only established therapy that can potentially achieve long-term cure in MDS, although it is not an ideal option for many patients, as it involves substantial risk of treatment-related mortality that increases with age. Furthermore, a Markov decision analysis on the optimal timing of standard BMT using an HLA-matched sibling donor showed that patients with lower risk MDS had improved overall survival when BMT was delayed until their disease progressed to higher risk, as opposed to transplantation early in the disease course.[17] Therefore, the treatment strategy for lower risk MDS includes supportive care with transfusions and hematopoietic growth factors. Recombinant erythropoietin can be used to treat anemia in patients who are generally early in their disease course. The response rate to erythropoietin is greater in patients with low endogenous serum erythropoietin levels (<200 mIU/L) and who are less dependent on RBC transfusions.[18] The addition of G-CSF can have a synergistic effect on erythropoietin and increase erythroid response rates.[19,20] Patients with the del(5q) cytogenetic abnormality are particularly responsive to lenalidomide (Revlimid®), an oral immunomodulatory agent. Lenalidomide can produce impressive erythroid responses, as well as cytogenetic remission,[21] raising the possibility that the underlying disease course could be favorably altered in these patients. Immunosuppressive therapy, such as antithymocyte globulin plus cyclosporine, can be of benefit in some lower risk patients, especially younger patients who are positive for HLA-DR15.[22,23] Antithymocyte globulin can also be used in hypoplastic MDS, which shares features with aplastic anemia.[24]

In patients with higher risk MDS, the critical decision is whether to pursue high intensity therapy with curative intent. Induction chemotherapy regimens similar to those used in AML can achieve complete remission rates of 50% or higher in MDS, although the duration of response tends to be short, and response generally does not translate into long-term survival.[25] For this reason, induction chemotherapy in MDS is usually not a stand-alone treatment option, but rather a means of achieving remission before proceeding to BMT. The hematologist must make a global assessment of the patient's age, performance status, comorbidities, availability of a transplant donor, as well as the patient's own goals for therapy. Patients younger than age 60 and in good physical condition may be candidates for high intensity therapy. Older patients can still be considered for BMT, usually in the context of a clinical trial using non-myeloablative or reduced-intensity conditioning protocols. Importantly, the patient must be highly motivated to undergo such intense treatment.

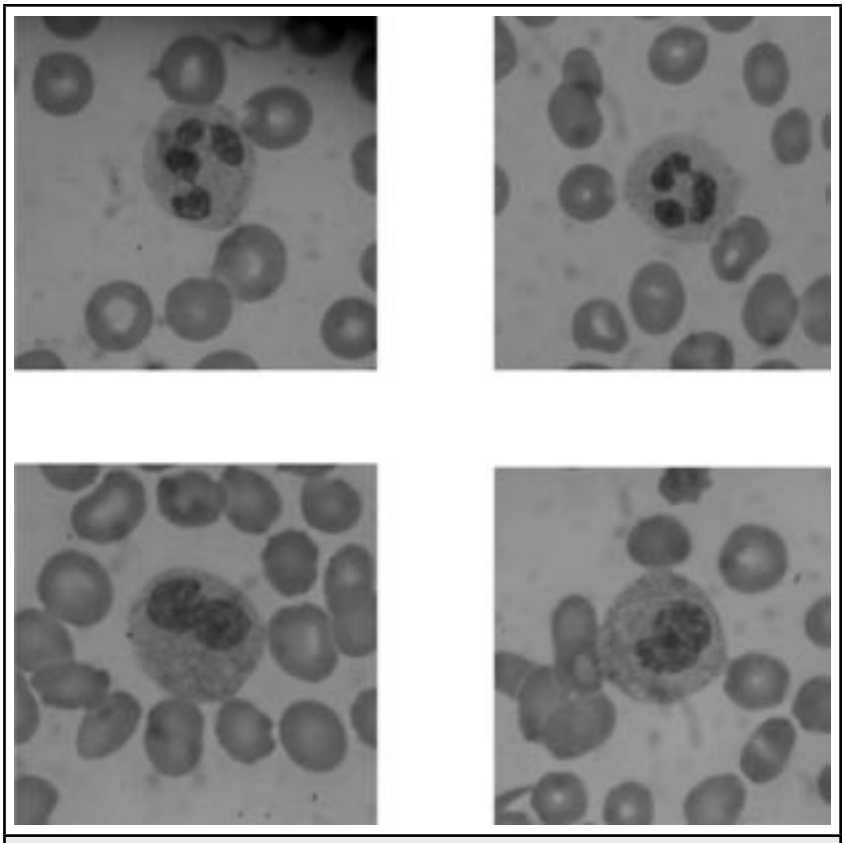


Figure.— Top row: Normal neutrophil morphology. Bottom row: Dysplastic neutrophils, with inadequately-segmented nuclei.

Recently, two hypomethylating agents were approved by the FDA for treatment of MDS. Azacitidine (Vidaza®) and decitabine (Dacogen®) inhibit DNA methylation and increase gene expression; their effect in MDS is thought to be related to increased expression of tumor suppressor genes.[26] In randomized studies, these agents have been shown to improve cell counts, delay progression to AML, and result in a modest survival benefit, compared to supportive care alone.[27,28] For patients with higher risk MDS who are ineligible for high intensity therapy, azacitidine or decitabine have become standard of care. A major toxicity of these agents is myelosuppression, although this may be less of a concern for higher risk patients who are already cytopenic and dependent on transfusions.

Conclusion

MDS is an important disease to recognize in the evaluation of anemia, especially in the elderly. Prognosis is quite variable, but patients can be broadly divided into lower risk and higher risk groups, based on the IPSS. Lower risk MDS patients should be treated supportively with growth factors and transfusions, whereas higher risk MDS patients can be considered for high intensity therapy such as induction chemotherapy followed by BMT. Hypomethylating agents are approved for use in all MDS patients, and they can be particularly useful in higher risk patients who are not candidates for high intensity therapy.

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Continues on next page

Table.— International Prognostic Scoring System (IPSS)

	Score Value				
	0	0.5	1.0	1.5	2.0
Bone marrow blast %	< 5	5–10	-	11–20	21–30
Cytogenetics	Good	Intermediate	Poor		
Number of cytopenias	0–1	2–3			

Cytogenetics: **Good** = normal, del(Y) only, del(5q) only, del(20q) only; **Intermediate** = trisomy 8, single miscellaneous, double abnormalities; **Poor** = complex (≥ 3 abnormalities), chromosome 7 abnormality

Cytopenias: Hb < 10 g/dL; ANC < 1800/mm3; Plt < 100,000/mm3

Risk Group	Score
Low	0
Int–1	0.5–1.0
Int–2	1.5–2.0
High	≥ 2.5

Age-related survival and AML evolution of MDS patients within the IPSS risk categories

	Low	Int–1	Int–2	High
Median survival, years				
Age: Overall	5.7	3.5	1.2	0.4
≤ 60	11.8	5.2	1.8	0.3
> 60	4.8	2.7	1.1	0.5
≤ 70	9.0	4.4	1.3	0.4
> 70	3.9	2.4	1.2	0.4
Median time to 25% AML evolution, years				
Age: Overall	9.4	3.3	1.1	0.2
≤ 60	> 9.4 (NR)	6.9	0.7	0.2
> 60	9.4	2.7	1.3	0.2
≤ 70	> 9.4 (NR)	5.5	1.0	0.2
> 70	> 5.8 (NR)	2.2	1.4	0.4

NR = Not reached. This research was originally published in Blood: Greenberg P, Cox C, LeBeau MM, et al. International Scoring System for evaluating prognosis in myelodysplastic syndromes. Blood. 1997;89:2079-88. © American Society of Hematology.

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

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Issues in Medical Malpractice XXIV

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Question:
An unconscious man was brought to the Emergency Department in vascular collapse. He had been thrown off his motorcycle and ruptured his spleen. The surgeon recommended emergency surgery but no next-of-kin was readily available to give consent. A card in his wallet indicates that the patient is a Jehovah's Witness, and that he should never receive a blood transfusion. Which of the following is (are) correct?

A. No consent for the operation is necessary as this is an emergency.
B. No consent for blood transfusion is necessary as this is an emergency.
C. If he desperately needs a blood transfusion, one should be given to him, otherwise he will die.
D. If his spouse can be located, and she gives consent for the transfusion, then it's okay.
E. Operate on the patient, but respect his disavowal of blood.

Answer to Question: A, E are correct
An emergency is an exception to the informed consent doctrine, but only if the wishes of the patient are unknown and the next of kin cannot be readily found. Here we have a true emergency and time is of the essence. Performing surgery under the facts of this case is therefore permissible despite the absence of explicit consent. Forcing the patient to receive blood is a different matter. The facts suggest that he does not want blood because of his religious beliefs. It is true that denying him blood may lead to an otherwise preventable death, but the courts have repeatedly ruled that this is a situation where patient autonomy trumps beneficence as well as the state's interest in preserving life. If patient denial of blood is undisputed, then spousal consent is still insufficient to override the patient's firmly held treatment preference.

Blood Transfusion in Jehovah's Witnesses

A physician generally has no authority to treat absent consent. However, most state statutes on informed consent provide for emergency treatment, so long as

> *"the obtaining of consent is not reasonably feasible under the circumstances without adversely affecting the condition of the patient's health."*[1]

The assumption here is that all patients would want life-saving measures, and the physician is simply acting in the patient's best interest. However, where there is known opposition by the patient, treatment without consent may be forbidden even in an emergency situation.

The best-known example is the refusal of blood transfusions by Jehovah's Witnesses. The majority of Jehovah's Witnesses believe that blood is sacred and that Biblical teaching forbids its transfusion. This includes most components of blood such as platelets or plasma, but there is less unanimity regarding some plasma fractions.[2] Most doctors acquiesce to their patient's choice, but some complain that by refusing blood, Jehovah's Witnesses render their work riskier and more difficult ("having to operate with one hand tied behind their back").[3] There is therefore the temptation to resort to subterfuge, e.g., transfusing without informing the patient, or waiting until the patient becomes comatose and is no longer able to refuse. However, such deceptive practices are unethical because they override patient autonomy and disregard sincerely held religious beliefs.

One should make sure that the patient has indeed chosen to forgo blood. Thus, an old wallet card with the words "Jehovah's Witness" may not be as dispositive as a definitive statement by the patient that he or she does not want blood notwithstanding the known risk of such refusal. A statement in a card may not have been made freely or with full understanding of risks and benefits.[4] Some commentators have urged that wherever possible, physicians should speak privately to Jehovah's Witnesses to ascertain their true wishes. Others have employed the approach of asking the patient to be guided by a court's decision. In general, courts have resisted forcing transfusions in competent adults, holding that Jehovah's Witnesses' religious right to refuse blood is more compelling than the state's interest in preserving life.[5] However, some courts have ordered blood transfusions in children against parental wishes, or where there is a third-party at issue, e.g., in an advanced pregnancy with a viable fetus.[6]

It is worth noting that surgeons are increasingly adept at using relatively bloodless surgical techniques to bypass the need for transfusions. As a result, morbidity and mortality outcomes may not dramatically worsen, even for major operations such as open-heart surgery.[7]

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

References

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6. *John F. Kennedy Memorial Hospital v. Heston*, 279 A.2d 670 (N.J. 1971); *Applications of the President and Directors of Georgetown College Inc.*, 331 F. 2d 1000 (1964); *Jehovah's Witnesses v. King County Hospital*, 278 F. Supp. 488 (1968); *Raleigh Fitkin-Paul Morgan Memorial Hospital v. Anderson*, 201 A.2d 537 (N.J. 1964).
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7/13-7/18	IM, FM	Kaiser Permanente	Hapuna Beach Prince Hotel	17th Kaiser Permanente National Internal & Family Medicine Symposium	Tel: (510) 527-9500 Web: www.meetingsbydesign.com
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
7/26-8/2	Multi	Queen's Medical Center	Tahiti & Society Islands Cruise	The Queen's Medical Center Summer Medical Practice Seminar - "Carpe Diem - 'Seas' the Day! II"	Tel: 808-537-4406 Web: www.queens.org/cme.html
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
8/19-8/21	Multi	Stanford University School of Medicine	O'ahu	3rd Annual Complex Cardiovascular Patient Management	Tel: (650) 724-9549 Web: www.cme.stanfordhospital.com
8/30	Multi	Honolulu County Medical Society	Dole Cannery Ballrooms, Honolulu	How to Select and Implement an HER	Tel: (808) 536-6988 Email: info@hcmsonline.org
October 2008					
10/9-10/11	Multi	Hawai'i Primary Care Association	Hilton Hawaiian Village, Honolulu	2008 HPCA Annual Conference & Learning Session	Tel: (808) 536-8442 Web: www.hawaiipca.net
10/11-10/15	OPH	American Society of Retina Specialists	Grand Wailea Resort, Wailea, Maui	26th Annual Meeting	Web: www.asrs.org
10/14-10/17	ON	American Association for Cancer Research	JW Marriott Ihilani Resort & Spa at Ko'Olina	Chemical and Biological Aspects of Inflammation and Cancer	Tel: (215) 440-9300 Web: www.aacr.org
10/20-10/22	PD	Stanford University School of Medicine	Mauna Lani Resort and Spa	Popular Pediatric Clinical Topics 2008	Web: www.cme.lpch.org
10/22-10/25	Multi	University of California - Davis	Hyatt Regency, Maui	28th Annual Current Concepts in Primary Care Cardiology	Tel: (866) 263-4338 Web: www.ucdmc.ucdavis.edu/cme/

10/25-10/29	PS	American Society of Plastic Surgeons	Hawai'i Convention Center, Honolulu	Plastic Surgery 2008	Tel: (847) 228-9900 Web: www.plasticsurgery.org
10/25-10/31	PD	American Academy of Pediatrics, California Chapter & University Children's Medical Group	Grand Hyatt Kaua'i	Aloha Update: Pediatrics 2008	Tel: (808) 354-3263 Web: www.ucmg.org
10/26-10/30	OBG	University of California - Davis	Ritz Carlton, Kapalua	25th Annual UC Davis Obstetrics and Gynecology Conference	Tel: (866) 263-4338 Web: www.ucdmc.ucdavis.edu/cme/
10/27-10/31	AN	California Society of Anesthesiologists	The Mauna Lani Bay Hotel, Kohala Coast, Hawai'i	CSA Hawaiian Seminar	Web: www.csahq.org
10/31-11/2	ORS	Department of Surgery, John A. Burns School of Medicine, University of Hawai'i	Sheraton Kaanapali Hotel, Kaanapali, Maui	Wrist Injury Course -- Trauma to Reconstruction	Email: joann.sakuma@wristcourse.org Web: wristcourse.org/maui08home.html
November 2008					
11/3-11/6	Multi	Methodist Healthcare	Fairmont Orchid, Kona	Advances in Medicine	Tel: (901) 516-8933 Web: www.methodistmd.org
11/4-11/7	R	Duke University Medical School, Department of Radiology	Hyatt Regency, Maui	Muskuloskeletal MRI in Maui	Tel: (800) 222-9984 Web: www.dukeradiologycme.org
11/9-11/14	RNR	Department of Radiology, Mayo Clinic	Fairmont Kea Lani, Maui	Neuroradiology: Practice to Innovation	Tel: (866) 242-1581 Web: www.mayo.edu/cme/radiology.html
December 2008					
12/7-12/12	EM	Institute for Emergency Medical Education, American College of Emergency Physicians	Wailea Marriott, Wailea, Maui	Annual Current Concepts in Emergency Care	Web: www.ieme.com
January 2009					
1/9-1/11	N	American Society for Peripheral Nerve	Grand Wailea Resort, Wailea, Maui	ASPN 2009 Annual Meeting	Web: www.peripheralnerve.org
1/10-1/13	Multi	American Society for Reconstructive Microsurgery	Grand Wailea Resort, Wailea, Maui	2009 Annual Meeting	Web: www.microsurg.org
1/19-1/23	AN	California Society of Anesthesiologists	Hyatt Regency Maui, Ka'anapali Beach, Maui	CSA Hawaiian Seminar	Web: www.csahq.org
1/25-1/30	R	Department of Radiology, Mayo Clinic	Mauna Lani Resort	Tutorials in Diagnostic Radiology w/Advanced Radiology Life Support	Tel: (866) 242-1581 Web: www.mayo.edu/cme/radiology.html
1/27-1/31	R	NYU School of Medicine Department of Radiology	The Four Seasons Hualalai	NYU Radiology in Hualalai	Web: www.radcme.med.nyu.edu

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THE WEATHERVANE

RUSSELL T. STODD MD, CONTRIBUTING EDITOR

Russell T. Stodd MD

❖ **NOTHING IS SO GOOD AS IT SEEMS BEFOREHAND.**

In recent years horror stories relating to problems with Lasik eye surgery have been circulating in magazine articles and on the internet. The great majority of patients are very happy following the refractive procedure but about 5% have serious difficulties which are hard to remedy. Dissatisfied patients complain of dry eyes, headache, blurred vision or double vision not correctable with glasses, facial pain, migraine headaches, depression, and suicidal thoughts. Some have had to alter their life style or change occupations while others feel they have been abandoned by surgeons who refuse to believe their problems are real. In an attempt to bring an objective evaluation of these complaints, the Food and Drug Administration has recruited the National Eye Institute to study how patients' quality of life has been affected by laser eye surgery other than vision correction. The American Academy of Ophthalmology and the American Society of Cataract and Refractive Surgery have agreed to participate with the National Eye Institute, and each organization will contribute $500,000 to the program. As with other elective cosmetic procedures such as face lifts, lipo-suction, breast augmentation, botox injections, etc., perfection is the expectation, but sometimes it just doesn't happen.

❖ **COME ON OVER. WE'LL INHALE A MARTINI TOGETHER.**

Spirit Partners Inc., bought the U.S. rights to a British invention that vaporizes liquor so that it can be inhaled rather than drunk. They had almost no sales, no advertising budget, and the future appeared bleak. Then a Kentucky politician came to the rescue by trying to ban the device. NBC picked up the story and did a segment on the Today show where an addiction expert claimed that the device might send alcohol directly to the brain producing a faster high. Overnight sales of the device ($299) called AWOL (alcohol without liquid) jumped off the board. Several states are considering restrictive laws and Wyoming banned the device although legislators didn't know if anyone had even seen it. In Maryland a legislator publicly compared AWOL to crack cocaine, and the liquor industry began pushing hard for laws to ban the device. "There's no way we could buy that kind of advertising," said the CEO of Spirit Partners. In fact, the device does away with the hangover, but it takes so long to vaporize liquor that it is useless for quick intoxication. For those wanting an alcohol buzz "they would be better off drinking a beer," according to one tavern owner who tried it with his wife. Meantime, until that word gets out the cash register is ringing at Spirit Partners.

❖ **THE CAR WAS INVENTED AS A CONVENIENT PLACE TO SIT OUT TRAFFIC JAMS.**

Hybrid cars are vehicles that operate on battery-powered electric motors when idling and traveling at low speeds with internal combustion engines kicking in when the cars speed up. One of the pluses is how quiet they are in slow traffic or at intersections. This is not necessarily a good thing according to the National Federation of the Blind (NFB). Studies indicate that at slow speeds the hybrid must be 40% closer to pedestrians than combustion-engine cars before they can be heard. While no injuries have been reported preliminary results indicate that hybrids pose a risk to blind pedestrians. Perhaps these green vehicles should be equipped with loud external rap music when approaching intersections. Oh, yuk!

❖ **HEY! I THOUGHT THE POLE TAX WAS DEAD.**

In Texas, legislators are creative in their efforts to get additional tax money. A proposal in 2004 would have provided for a tax on strip clubs to fund public schools, which opponents called "tassels for tots." The measure died in committee. More recently Texas lawmakers planned to raise $44 million annually for rape prevention and treatment and to provide medical care for the uninsured by charging patrons $5 at the door of strip clubs where nude exotic dancers perambulate around poles. No, not according to District Judge Scott Jenkins who ruled that the right to perform such visual erotica is protected by the first Amendment. Moreover the state could not explain why adult nightclubs and their guests should be singled out to fund health care. After all, don't strippers do enough for society already?

❖ **HE'S A HARD DOG TO KEEP UNDER THE PORCH.**

Now perhaps America will see some action from Congress on a thorny social-financial issue. Jack Kevorkian, MD the former pathologist who served 8 years of a 10 to 25 year sentence for second degree murder, was released on parole in June 2007. He is running to be the Representative of the 9th Congressional District in Michigan. The doctor claims to have taken part in 130 assisted suicides, so if elected he may offer some interesting ways to thin the herd of sick elderly Medicare patients, perhaps even some in Congress.

❖ **LIVING WITH A CONSCIENCE IS LIKE DRIVING A CAR WITH THE BRAKES ON. LEARN FROM YOUR PARENTS MISTAKES. USE BIRTH CONTROL.**

In November 2007, the American College of Obstetricians and Gynecologists (ACOG) formulated policy for their members regarding ethics and morality of women's reproductive rights. "Although respect for conscience is important, conscientious refusals should be limited if they constitute an imposition of religious or moral beliefs on patients…All health care providers must provide accurate and unbiased information so that patients can make informed decisions…Physicians and other health care providers have the duty to refer patients in a timely manner to other providers if they do not feel that they can in conscience provide the standard reproductive services that patients request." Okay, that appears clear and reasonable, right? Well, no, not to Health and Human Services Secretary Michael Levitt who takes the Bush agenda and joins Gene Rudd, vice president of the Christian Medical and Dental Associations and Joe DeCook, vice president of the American Association of Pro-Life Obstetricians and Gynecologists. They claim they could lose their board certification (not according to the ACOG President Kenneth Noller, MD nor the executive director of the Ob-Gyn Board.). Why does it appear that the most outspoken moralists on issues of women's rights are males?

❖ **HOW STRANGE THAT ONCE IN AWHILE IT ALL SEEMS WORTH IT.**

A study reported in the *New England Journal of Medicine* (NEJM) found that death from heart disease in the United States was cut in half between 1980 and 2000. According to a statistical analysis it was found that 47% of the reduction was due to medical measures of improved treatment with drugs to reduce blood pressure and serum cholesterol, and 44% of the improvement resulted from lifestyle improvements such as better diet, smoking cessation, and exercise. These pluses were partly offset by weight gain and higher incidence of diabetes. Obviously, the life style changes are much cheaper than medical intervention, and provide still more improvement with better health education campaigns.

❖ **YOU CAN LEAD A HORSE TO WATER, BUT NOT THE INTENSIVE CARE UNIT.**

Nobody ever said that Wilcox Memorial Hospital on Kaua'i wasn't a patient-friendly place to recover. A drunken man decided that the way to cheer up his sick friend was to bring his horse in for a visit. He got the animal into the hospital, on to the elevator and up to the third floor before security decided to intervene. Hospital personnel brought the patient out to visit his drunken buddy and the horse, but alas, "That's not my horse**!**" Sometimes, the best laid plans of mice and men ....

❖ **DROP KICK ME, JESUS, THROUGH THE GOAL POSTS OF LIFE.**

In Brooklyn, N.Y., a 26-year-old man robbed a bank. He escaped and changed his clothes a short distance away, piling the old clothes on the sidewalk. Unfortunately, he also left his wallet, which contained his ID card with photograph, his social security card, his birth certificate, his welfare benefits card, and a pay stub with his name.

❖ **PLEASE ADD SOME CHLORINE TO THIS GENE POOL.**

In Columbiana County, Ohio, sheriff's officers responded to an accident call involving an all-terrain vehicle (ATV). Two witnesses were following the ATV when the driver sped off rapidly, crashed into a tree and was killed. They told police that the dead man was blind and that they all had been drinking. What a surprise!

ADDENDA

- ❖ News headline, "Hatred of Hillary is likely the result of gender stereotypes." Right! Unscrupulous politics is still a man's job.
- ❖ Amount of time it takes for blood to circulate in a healthy human body is 23 seconds. Exxon-Mobil profit in that same time is $28,000.
- ❖ In 1958 Princeton professor John W. Tukey coined the term *software*.
- ❖ Percentage of Democrats who consider themselves in excellent mental health is 38% while Republicans claim 58%.
- ❖ "Right hand, left hand. It doesn't matter. I'm amphibious." NBA basketball star.

ALOHA AND KEEP THE FAITH — rts■

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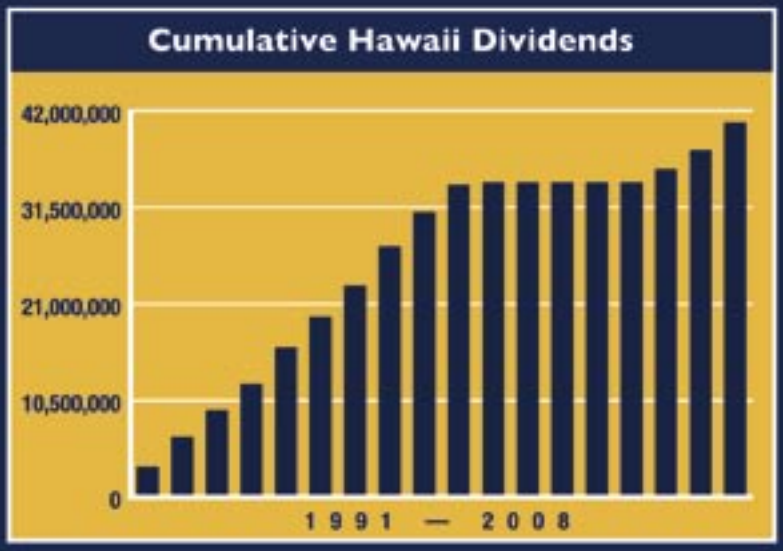

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