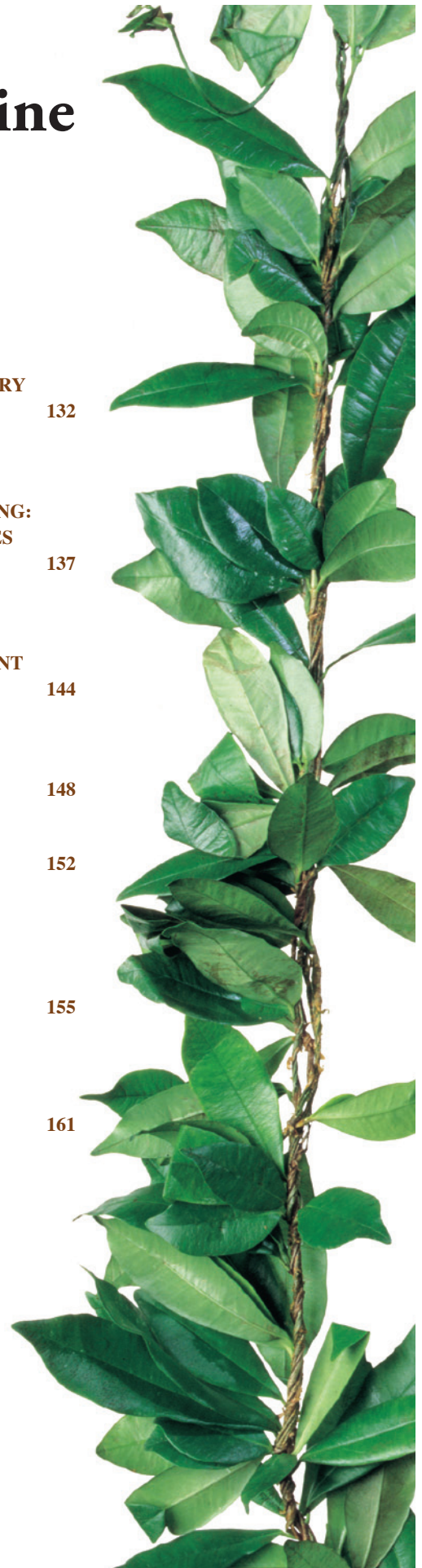


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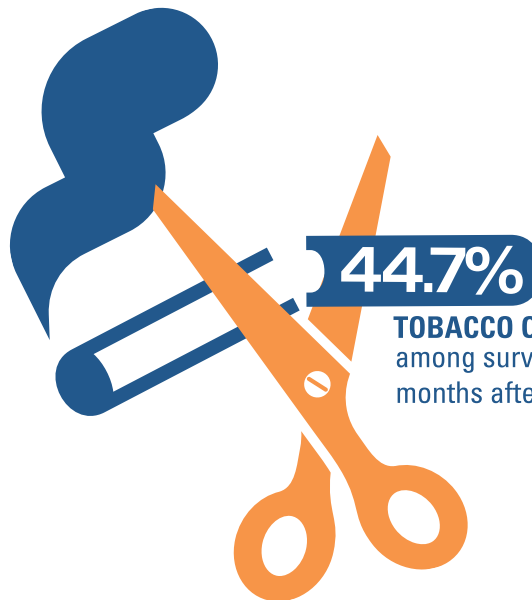
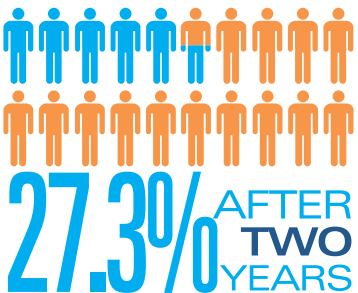
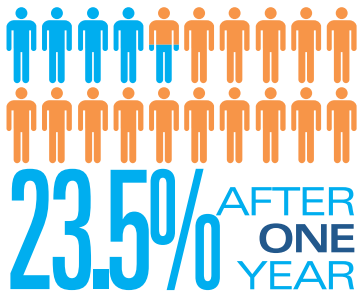
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Pediatric Falls from Buildings: Defining the Burden of Injury in Hawai'i

Joy Sarkar MD; Stacey Q. Wolfe MD; Cora Speck MS; Elizabeth Woods MD; Michael B. Lustik MS; Kurt D. Edwards MD; and Mary J. Edwards MD

Abstract

Falls from buildings, including houses, are an important cause of childhood injury in the United States; however, no study has previously examined the impact of this problem in Hawai'i. The objective of this study is to categorize the demographics and injury circumstances of pediatric falls from buildings in Hawai'i and compare to other US cities. Patients age 10 and under who were injured in nonfatal accidental falls from buildings in Hawai'i between 2005 and 2011 were identified retrospectively from a statewide repository of hospital billing data. The Hawai'i death certificate database was searched separately for deaths in children age 10 and under due to falls from buildings, with data available from 1991 through 2011. Data was reviewed for demographics, circumstances surrounding the injury, and level of hospital treatment. During the 7-year period for nonfatal injuries, 416 fall-related injuries were identified in children age 10 and younger. Of these, 86 required hospitalization. The rate of nonfatal injury in Hawai'i County was twice that of Honolulu and Maui Counties, and three times that of Kaua'i County. There were 9 fatal falls over a 21-year period. The population based incidence for nonfatal injuries was three-fold higher than that reported in the city of Dallas. The rate of hospitalizations following building falls was more than twice as high as the national average, and that of New York City, but similar to that of California. Strategies for education and environmental modification are reviewed, which may be helpful in reducing the incidence of pediatric falls from buildings in Hawai'i.

Introduction

Falls are the leading cause of nonfatal unintentional injury in children.¹ Each year in the United States, falls from the windows of buildings account for approximately 8 deaths and 3,300 injuries in children age 5 and under.² Falls from buildings can result in serious consequences for children, including fractures, lacerations of the liver/spleen, and permanent neurological impairment.^{3,4} In several US cities, educational initiatives and legislation pertaining to the installation of window guards have been very successful in significantly decreasing, and in some cases nearly eliminating, the number of falls from windows involving children.⁵ This study sought to define the risk of similar fall related injuries to children in Hawai'i, in order to determine if such preventive strategies are worthy of consideration locally.

Methods

Fatal and nonfatal injuries were analyzed separately. For data regarding fatal falls, the Hawai'i Department of Health Death Certificate Database was searched for the underlying cause of death of unintentional falls from 1991 to 2011. Deaths due to falls from buildings in children age 10 and under were included, and information on whether the fall was from a window or balcony was identified.

For data regarding nonfatal falls, the Hawai'i Health Information Corporation (HHIC) database and the Hawai'i Trauma Registry (HTR) were searched for records of patients 10 years of

age or younger whose reason for visit was identified as "injury-related" (ICD-9 800-995.85), with the E-code E882 ("Fall from or out of building or other structure) from 2005-2011.

The HHIC database receives information from all but one of the hospital-based emergency departments (ED) in the state and all of the admitting hospitals. Patient county of residence was also recorded in this database. Records of patients who died in the hospital or were transferred to another hospital or hospice facility at discharge were excluded to prevent double-counting. The HHIC data did not provide detailed information regarding if the fall was from a window or a balcony.

The HTR was also searched for cases, using the 882 E-code and a subsequent search of a narrative text field that described the cause of injury. The HTR includes data from a smaller subset of patients: those who met criteria for a Trauma Activation — the assembly of a rapid response team consisting of ED physicians, trauma surgeons, and ancillary staff prepared to care for trauma patients — upon arrival to the ED. From 2009 to 2011, the HTR was expanded to include data from eight facilities throughout Hawai'i; prior to 2009, only data from the major trauma center in the state, Queen's Medical Center, was included. The HTR provides more detailed information on injury circumstances among patients who were admitted to the hospital, and for most patients, information surrounding the circumstances of the fall (from the window, lanai, etc).

Statistical Analyses

Population denominator data for annual injury rate calculations were obtained from the US Census.⁶ In order to compare the incidence rates in this study with published rates, age-specific incidence rates reported in the literature were converted to weighted averages using the Census 2000 US population data for Dallas County, the State of California, and the US population respectively. Poisson regression analysis was used to compare the incidence rate of pediatric falls among counties and over time in the state of Hawai'i, and to compare rates between Dallas County, Texas, and Honolulu County, Hawai'i. All analyses were conducted using SAS software version 9.2 (SAS Institute, Inc., Cary, North Carolina), with statistical significance defined as $P < .05$.

Results

Nonfatal Injuries

During the 7-year investigation period, there were 416 total nonfatal injuries attributable to falls from buildings or other structures in the state of Hawai'i among children aged 10 years

or younger. Fourteen of these patients were non-residents of Hawai'i, and were excluded from injury rate calculations. There were a total of 264 boys and 152 girls, with a nearly 2:1 male to female ratio. Over half of the patients (217, or 52%) were 1-3 years of age, with the number of patients decreasing with increasing age. Most (328, or 79%) of the injuries were treated in the ED setting (Figure 1). There was no statistically significant trend in falls from one year to the next ($P > .05$ by Poisson regression). From 2005 through 2011, the average annual injury rate was 39 per 100,000 children age 10 or younger statewide (Figure 1), and 34 per 100,000 children in Honolulu County alone (Table 1), with no significant trend from one year to the next. While there was no statistically significant difference in the average annual injury rate between the counties of Honolulu, Kaua'i, and Maui, the rate of injury in Hawai'i County was twice that of Honolulu (70 vs 34 per 100,000, $P < .001$) and Maui (70 vs 30 per 100,000, $P < .001$), and three fold greater than the injury rate in Kaua'i (70 vs 23 per 100,000, $P < .001$) (Table 1). In each year from 2005 to 2011, with the exception of 2009, the injury rate in Hawai'i County was higher than that of the other counties (Figure 2).

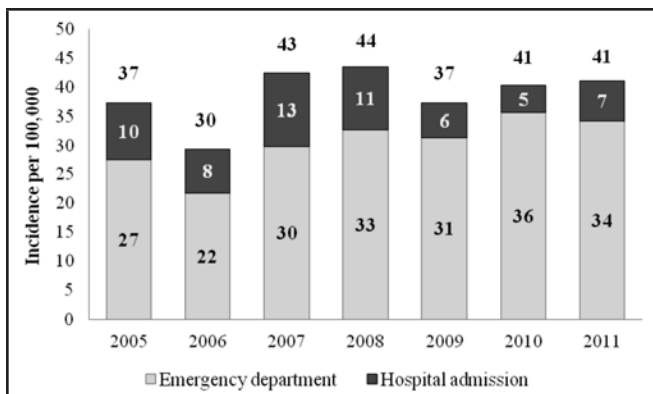


Figure 1. Nonfatal injuries from unintentional falls in the entire state of Hawaii among children ≤ 10 years of age, 2005-2011. Incidence is reported per 100,000 children 10 years of age or younger. Incidence data was taken from the Hawai'i Health Information Corporation (HHIC).

A total of 77 relevant hospitalizations were identified separately from the HTR. More than half (58%, or 45) of the injuries resulted from falls out of windows, 16% (12) were from balconies, 8% (6) from roofs, and specific information was not provided for the remaining 14 falls (18%) (Table 2). About half (40/77, or 52%) of the patients were under age 3 (data not shown). Based on the HHIC data, the average annual incidence rate for children age 10 and under requiring admission to the hospital following a fall from a building in the state of Hawai'i was 8.6 per 100,000 children. For children under age 3, the incidence rate was 10.8 per 100,000 children.

While the demographics and injury circumstances of Hawai'i pediatric falls from buildings are similar to that in other US cities, the annual injury rate was significantly higher than that for similarly-aged children in at least one other urban area. Istre, et al, reported in 2003 that the annual injury rate due to falls from buildings in Dallas County, TX, was 15.4 per 100,000 for children aged 0-4, and 1.5 per 100,000 for children aged 5-9⁹ (weighted average = 8.7 per 100,000) (Table 3). In contrast, the average annual injury rate in Honolulu County for the 0-10 year olds was 34, over a three-fold difference ($P < .001$).

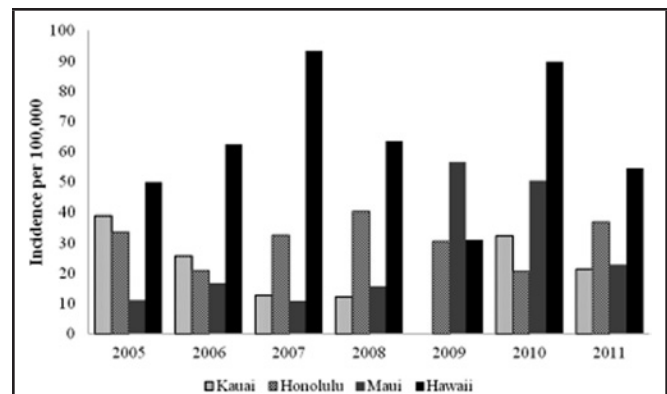


Figure 2. Incidence of nonfatal injuries due to unintentional falls from buildings among children ≤ 10 years of age, by county, 2005-2011. There were no falls in Kauai' in 2009. Incidence data was taken from the HHIC.

County	Population*	Total Injuries [†]	Annual Average Injuries [‡]	Rate per 100,000 [§]
Honolulu	106,874	252	36	34
Hawai'i	20,614	101	14	70 [¶]
Kaua'i	7,605	12	2	23
Maui	17,753	37	5	30

[†]Total number of injuries over the 7-year study period. [‡]Average annual number of injuries. [§]Annual rate per 100,000 children in the studied age group. [¶]Hawai'i County had a significantly higher annual injury rate compared to Honolulu, Kaua'i, and Maui counties ($P < .001$ by Poisson regression).

Site	No. (%)
Total falls	77 (100%)
Falls from windows	45 (58%)
Falls from non-window sites	18 (24%)
Balcony	12 (16%)
Roof	6 (8%)
Not documented	14 (18%)

Table 3. Calculated averages of published rates, combining two or more age groups.						
Author, Year	Age	Published Rate (per 100,000)	Population*	Location	Weighted Average	Rate in Hawai'i State
Injury Rate from Building Falls						
Istre, et al ⁹ , 2003	0-4	15.6	181,951	Dallas County, TX	8.7 [†]	30.7 [†]
	5-9	1.5	175,763			
Hospitalization Rate from Building Falls						
Pressley, et al ⁷ , 2005	0-4	4.6	19,176,154	United States	3.2 [†]	6.9 [†]
	5-9	1.98	20,549,855			
Agran, et al ¹² , 2003	0	1	483,140	California	10.7 [‡]	10.8 [‡]
	1	14	486,582			
	2	17	489,335			

*Population of each age group obtained from 2000 US Census. [†]Calculated average annual rate for children ages 0-9. [‡]Calculated average annual hospitalization rate for children ages 0-2.

The annual rate of hospital admissions following a fall from a building in Hawai'i was over two times higher than the national average for the same age-group as reported by Pressley, et al, in 2005 (8.6 per 100,000 vs 3.2 per 100,000)⁷ (Table 3), and by extension, higher than the incidence in New York City which was reported by the authors to be half of the national rate among children 0-17.⁷ Among children under 3 years of age hospitalized after falling from a building, Hawai'i rates were comparable to those reported in California in 2003 (10.8 per 100,000 vs 10.7 per 100,000)¹² (Table 3).

From 1991 to 2011, there were nine pediatric fatalities resulting from falls from buildings in Hawai'i. All victims were under 5 years of age. The annual number of fatalities varied from none to four, with only one death occurring after 2006.

Discussion

The demographics of pediatric fall victims in Hawai'i are similar to those previously reported in the literature. In concordance with published data, the male-to-female ratio approximated 2:1.^{3,7,8} Ninety one percent of patients admitted as a result of falling from a window were younger than 5 years of age; the percentages reported in other geographic areas in the literature vary from 60 to 90%.^{1,4,9-11} Also, the number of patients treated for fall-related injuries decreased with age, similar to previous reports.^{1,3,7} The majority of falls from buildings occurred from windows (58%), similar to prior studies reporting a range of 36-62%.^{3,8,9}

Environmental factors which are unique to Hawai'i may contribute to the higher rate of unintentional falls from windows and balconies. Several reports from other major cities have documented a higher incidence of injuries among children during the warm summer months, likely reflecting increased falls during seasons when the windows are left open for temperature regulation.^{3,4,7,8,11} In cities with less temperate climates, residents may be more likely to leave windows closed, instead using central heating or air conditioning for temperature control. In contrast, the warm weather year round in Hawai'i favors leaving windows open for tradewinds and energy conservation. The

relative abundance of high-rise residential structures with lanais/balconies in Hawai'i may also be a contributing factor. The comparable incidence of building falls among children under 3 years of age in Hawai'i and California may reflect similarly moderate climates and a tendency to use natural ventilation instead of air conditioning for climate control.

In other US cities, legislation mandating the use of window safety devices has significantly reduced the morbidity and mortality of window falls among children. In 1976, the New York City Board of Health passed a law requiring owners of multiple dwellings to provide window guards in apartments housing children 10 years and younger.⁵ This resulted in an average decrease in window fall incidents by 50%, and a 35% reduction in deaths attributable to falls from windows.¹³ A Boston voluntary ordinance which encouraged landlords to install window guards resulted in an 83% decrease in window falls in the two years following its initiation.⁵ In 2009, the Minnesota Senate passed a window fall prevention law known as Laela's Law which requires the State Building Code to be updated to mandate fall-prevention devices on windows that are used in residences.

The 2006 International Building Code (IBC), which has been adopted by the counties of Honolulu, Hawai'i, Maui, and Kaua'i, requires window safety devices on floors more than 5 feet above the ground with windows less than 42" from the floor, but also states that guards are not required in windows with installed "insect" screens.¹⁴ Historically, in the majority of window fall incidents nationwide (55-82.8%),^{3,4,9,11} a window screen is present prior to the fall, but splits or falls as a result of the child's weight. Although the IBC specifies that rail spacing cannot be greater than 4" (which should protect most children over age 1)^{1,15} with the overall railing height at least 42", an amendment to the code exempts older buildings — some with guardrails spaced 6" apart or greater.¹⁶ It has been shown that most children under the age of 6 years can fit through a 6-inch opening, and few over 1 year can fit through a 4-inch opening.^{1,15,16} Without detailed knowledge of these codes, exemptions, and the age of their building, caregivers of children living in older

buildings may be unaware of the risk of fall-related injuries in their particular dwelling. Additionally, current building codes do not regulate window height, window depth or placement directly over concrete.

The finding of significant county-level differences in average annual injury rates within the state suggests that the problem is not limited to high-rise tenements or urban areas. The incidence in Hawai'i County, a predominantly rural community with few high-rise residences, was twice that of Honolulu and Maui, and three times that of Kaua'i. However, county differences were based almost entirely on ED visits, and the number of patients who required hospitalization were too few to calculate county-specific differences. Additionally, due to socioeconomic differences between counties, the higher incidence of ED visits in Hawai'i County may reflect a tendency for patients in this rural area to access the ED for more routine care. As noted earlier, all four Hawai'i counties in this study have adopted similar building code legislation based on the 2006 IBC.

Given the morbidity and mortality associated with these injuries, and a history of very successful prevention strategies in other communities, experts have advocated for public awareness, caregiver education and environmental modifications as a method of reducing the incidence of fall injuries in several publications.^{1,4,5,9,11} The American Academy of Pediatrics made several recommendations in 2001 regarding pediatric falls from heights, to include constant adult supervision of children, discouraging children from playing near windows/roofs/balconies, installation of window safety devices to prevent window openings greater than 4 inches, placement of furniture away from windows and balconies, and planting grass/shrubbery at the base of windows to soften falls (Table 4).⁵ Window safety devices fall into two categories: stops and guards. Window stops prevent sliding windows from opening wider than 4 inches. Window guards consist of removable bars with 4" spacing which fit over the window and allow the window to be fully open or closed. In some communities, fire protection professionals have expressed concern that fixed window bars could prevent egress in the event of a fire. However, a follow-up study performed in New York City 20 years after window guard legislation showed that rates of fire-related deaths did not increase over this time.¹⁷

Table 4. Key educational points for parents and caregivers regarding fall prevention. Recommendations by the American Academy of Pediatrics, 2001.⁵

KEY EDUCATIONAL POINTS

- Close adult supervision at all times
- Discourage children from playing on fire escapes, roofs, and balconies
- Window screens are not sufficient protection against falls
- Keep windows closed and locked when not in use
- Double-hung windows, if installed, should be opened from the top
- Avoid placing furniture under or near windows
- Install safety devices into windows
 - o Window guards that block the open window
 - OR
 - o Window stops to prevent the window from opening more than 4 inches
- Consider planting grass/shrubbery underneath windows to break falls

Study Limitations

This study is a retrospective analysis of three prospectively collected databases, and as such, the data was not recorded specifically to fulfill the objectives outlined in this paper. Therefore, the study's data are subject to inconsistencies and deficiencies in recording which are difficult to quantify. The practice and accuracy of E-coding may also vary across facilities and may therefore have influenced the county rate comparisons. Patients who were not seriously injured may have either not presented for care at all or presented to an outpatient clinic instead of an emergency department. Additionally, Hawai'i has a relatively high annual rate of tourism compared to other urban areas, which affects the accuracy of reported rates in two ways. First, the number of patients who were injured and did not seek treatment may be higher than in other areas, due to parents waiting until getting home to present the child for care. Also, the large transient population at any given time is not reflected in the numbers reported by the US Census Bureau, which only captures the number of residents in each area; therefore, the actual population may be much larger than reported.

Since the HTR only reported data from one facility prior to 2009, statistics for patients admitted between 2005 and 2008 is most likely an underestimation of the actual number of injuries. Additionally, bias may have been introduced if the eight trauma facilities included since 2009 were not representative of the entire Hawai'i State population. In this analysis of injury circumstances (ie, percentage of patients who fell from a window versus a lanai or rooftop), we used a subset of data from the HTR, examining only records of patients who required admission. However, in this database, information on whether a patient was discharged from the ED after a Trauma Activation was only available from 2008 forward. Therefore, numbers from 2005 to 2007 obtained from the Trauma Registry may include patients who were seen in the ED via a Trauma Activation and then discharged.

A limitation in comparing injury rates in Hawai'i to those of reported elsewhere is incidence rates in the literature are only available for 0-4 and 5-9 year age groups, but Hawai'i's injury data also included children 10 years of age. The US Census provides a Hawai'i State population estimates for each year of age, so in order to obtain the most accurate denominator for rate calculations, we extrapolated the population of 0-10 year old children in each county based on the percentage of 10 year olds in the entire state. Bias may have been introduced if the percentage of 10-year-old children varied significantly among counties.

Due to variations in reporting strategies and target demographics, the authors were limited in their ability to make incidence comparisons with injury rates of other major areas reported in the literature aside from Dallas, New York City, and California.^{4,7,12} Studies that included children older than 10 without analyzing age groups individually (eg, 0-4, 5-9, etc) were could not be directly compared to the data in this study, as the inclusion of older children lowers the average rate,^{7,11} precluding a valid comparison. Also, a restriction which prevented comparison

of injury rates in other major cities was the unavailability of population data at the city/town level for the specific age groups examined in this study. Another limitation is the small sample size in the Hawai'i data; hospitalization rates are based on very small numbers, particularly when stratified by age (eg, under 3 years).

Finally, the study assumed that all patients given an E code of "fall from a building or structure" sustained a non-intentional injury. It is certainly possible the some of the falls were due to violent crimes. It is also possible that some of the falls identified in the HHIC data were from structures other than buildings, eg, walls, bridges, etc. However, a review of the open text field describing the fall in the HTR suggests this is a relatively rare occurrence (approximately 5%), at least at the hospital admission level.

Conclusions

Pediatric falls from buildings are preventable occurrences which may result in serious injury and, occasionally, death. This study reveals a burden of injury from this mechanism which is significantly higher for the children of Hawai'i than for the city of Dallas, and among patients hospitalized after building falls, higher than the published national average and for New York City. Within the state of Hawai'i, the rate of nonfatal injury in Hawai'i County was twice that of Honolulu and Maui Counties, and three times that of Kaua'i County. Preventive measures should be considered, including increasing public awareness, caregiver education on window safety, and use of appropriate window safety devices and balcony guardrails. Consideration should also be given to legislative strategies that have shown success in other US cities and states.

This manuscript addresses a public health issue. The views expressed in this manuscript are those of the authors and do not reflect the official policy or position of the Department of the Army, Department of Defense, or the US Government.

Conflict of Interest

The authors have no disclosures nor conflicts of interest to report.

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Disparities in Intimate Partner Violence Prenatal Counseling: Setting a Baseline for the Implementation of the Guidelines for Women's Preventive Services

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Abstract

Prenatal health care counseling is associated with positive health outcomes for mothers and infants. Moreover, pregnant women are considered a vulnerable population at risk of being victims of intimate partner violence. Pregnancy provides a unique opportunity to identify and refer women experiencing intimate partner violence to community resources; however, in prior research, most women reported that their prenatal care providers did not talk to them about intimate partner violence. Given the importance for providers to offer prenatal health care counseling on intimate partner violence, it is concerning that there is scant knowledge on Asian, Native Hawaiian, and other Pacific Islander mothers' experiences in this area. The study's objectives were (a) to determine the proportion of mothers who received prenatal health care counseling on intimate partner violence; and, (b) to examine racial differences of those who received prenatal health care counseling on intimate partner violence. Hawaii's Pregnancy Risk Assessment Monitoring System (PRAMS) data from 2004-08 were analyzed for 8,120 mothers with information on receipt of intimate partner violence prenatal health care counseling. Overall, 47.7% of mothers were counseled on intimate partner violence. Compared to Whites, Native Hawaiians, Japanese, Chinese, and Koreans were significantly less likely to report receiving prenatal health care counseling in intimate partner violence, but the opposite association was observed for Samoans. Intimate partner violence continues to be a significant problem for women, thus, this study's findings may be used as important baseline data to measure the progress made given the implementation of the new Guidelines for Women's Preventive Services in intimate partner violence screening and counseling.

Keywords

Asian; Native Hawaiian; Pacific Islander; intimate partner violence; prenatal health care counseling

Pregnant women are considered a vulnerable population at risk of intimate partner violence (IPV). In one study of pregnant women, the rates of physical IPV by their male partners 12 months prior to and during their pregnancy were 7% and 5%, respectively.¹ Another review reported the prevalence of violence to be as high as 20% during pregnancy.² Additionally, studies have demonstrated that women who experience IPV both prior to and during pregnancy are at risk for numerous poor health outcomes;³⁻⁸ furthermore, the adverse mental health consequences of IPV can be long-term and debilitating.^{9,10} A 2001 systematic review and meta-analysis paper reported that pregnant women experiencing IPV were 1.4 times more likely to have a low birth weight baby, compared to pregnant women who did not experience IPV.¹¹

Given these statistics, it is imperative that screening for IPV occur during prenatal health care (PNC) visits in order to promote positive health outcomes for the mothers and infants. Pregnancy provides a unique opportunity to identify and refer

women experiencing IPV to community resources; however, a population-based study found that 61-78% of the women reported that their prenatal care providers did not talk about physical IPV with them.¹² The American Congress of Obstetricians and Gynecologists (ACOG) guidelines recommend that physicians screen *all* patients for IPV. Pregnant women in particular should be screened throughout the course of the pregnancy because it may take more than one screening before a woman discloses her experience with IPV.¹³ The ACOG guidelines have recently been supported by a new mandate. On August 1, 2011, the US Department of Health and Human Services (DHHS) adopted additional Guidelines for Women's Preventive Services. Included in these guidelines are free screening and counseling for interpersonal and domestic violence for all women beginning August 2012 for all new health plans.¹⁴

An examination of the literature yielded inconsistent rates of screening and counseling for IPV during prenatal visits. For example, Horan and colleagues surveyed 189 obstetrician-gynecologists and found that while approximately 68% reported screening for patients for IPV when they suspected IPV, only 39% routinely screened for IPV at the first prenatal visit.¹⁵ However, in a recent report, only prenatal care providers who received prompts and cues for assessing IPV risk were found to actually have a provider-patient IPV discussion with pregnant women with a known history of IPV.¹⁶ A study using the 1996 and 1997 Pregnancy Risk Assessment Monitoring System (PRAMS) data from 14 states (Alabama, Alaska, Arkansas, Colorado, Florida, Georgia, Maine, Michigan, New York, North Carolina, Oklahoma, South Carolina, Washington, and West Virginia) reported that 22.4% to 38.5% of women discussed physical IPV with their physicians during their prenatal care visits. Women who were more likely to be counseled were Black, Hispanic, young (<20 and 20 to 29 years old), had a high school education or less, or paid for prenatal care with Medicaid.¹²

There is a particular knowledge gap, however, regarding the receipt of PNC counseling on physical IPV among Asian American, Native Hawaiian, and other Pacific Islander (NHOPI) mothers. Small sample sizes of Asian Americans and NHOPIs in some studies resulted in Asian Americans and NHOPIs being combined into one group or being excluded from data analyses.¹⁷ However, it is important that efforts be made to address these understudied groups, especially knowing that these populations are rapidly expanding in the United States. For instance, the Asian American population grew by 46% from

2000 to 2010, making it the fastest-growing racial group in the United States.^{18,19} The NHOPI population has also experienced a growth of 40%. In total, there are approximately 18.5 million Asian Americans and NHOPIs in the United States.^{16,17}

The state of Hawai'i has a large population of Asian Americans and NHOPIs. In fact, Honolulu County is the only county in the United States with an Asian American majority (57%).¹⁹ According to the 2010 US Census, there were more than 1.36 million persons residing in Hawai'i.²⁰ To complicate matters, nearly 24% of persons in Hawai'i report more than one federal race group.²¹ There is quite a difference in the population estimates between those who only report a single race (NHOPIs - 10%, Asians - 38.6%, and Whites - 24.7%) from those who report their race in combination with one or more races (NHOPIs - 26.2%, Asians - 57.4%, and Whites - 41.5%). Even this categorization of federal race groups into distinct Asian and NHOPI race groups does not recognize the known heterogeneity of Asian Americans and NHOPIs within each race group in regards to language, culture, and nativity.^{22,23}

Given the racial diversity and the population growth of Asian Americans and NHOPIs, it is important to examine differences in screening rates by race-ethnicity to determine if there are specific populations that are being underserved in screening, and thus, target resources to such populations. To the authors' knowledge, no studies have directly examined the prevalence of and racial differences in receiving PNC counseling on IPV among Asian American and NHOPI mothers. Thus, the specific aims of this study were to; (a) determine the proportion of mothers who received PNC counseling on IPV; and (b) examine racial differences of those who received PNC counseling on IPV. The study results may be utilized as baseline data to measure the impact of the DHHS Guidelines for Women's Preventive Services among a diverse Asian American and NHOPI population. Moreover, this study addresses a specific goal of *Healthy People 2020* to "improve the health and well-being of women, infants, children, and families."²⁴

Methods

Data Source

This study analyzed existing de-identified data from Hawai'i's PRAMS for the years 2004-08 (N=8,120 respondents). PRAMS is a project of the Centers for Disease Control and Prevention and state health departments. PRAMS is an ongoing state- and population-based surveillance system that monitors selected maternal behaviors and experiences among women before, during, and after a pregnancy that resulted in a live birth. The PRAMS data is weighted to reflect the resident population of births in the State of Hawai'i through adjustment for sampling design, noncoverage, and nonresponse.

Response Rates

The original sample size was 8,490 mothers, but 370 (4.2%) mothers reported that they did not receive prenatal health care, thus, were excluded from the analyses. The total sample size

for this study was 8,120. The overall response rate was 76.1%, of which 79.7% completed the survey by mail in the first phase and the remaining 20.3% completed the survey by phone. For persons who responded in the mail phase, 73.4% did so in the first mailing. At the time the mothers completed the survey, the infant's mean age was 17.4 weeks (range 10-39 weeks). Out of the 8,120 mothers in this study, the proportions of respondents in the overall sample for each year were 20.6% (2004), 20.1% (2005), 21.3% (2006), 21.6% (2007), and 16.5% (2008).

Dependent Variable

Receipt of PNC counseling on IPV was categorized as yes or no based on response to a question in which mothers were asked if a doctor, nurse, or other health care worker talked with them during any of their PNC visits about IPV by their husbands/partners.

Independent Variables

Race

Mothers are able to self-report as many racial groups as they want on the birth certificate. The Hawai'i birth certificate collects information on all racial/ethnic groups entered, but these are converted to one of 22 single racial groups by an algorithm implemented by the Office of Health Status Monitoring (OHSM) in the Hawai'i Department of Health.²⁵ This conversion to a single race group places all women into a single race and thus precludes the ability to analyze as a separate group the approximately one third of the mothers who have a live birth in Hawai'i reporting more than one race.²⁶ Single race groups, provided by OHSM, were categorized into Native Hawaiian, Samoan, and other Pacific Islander (Guamanian; other Pacific Islander), Filipino, Japanese, Chinese, Korean, and other Asian (Vietnamese; Asian Indian; other Asian), White, and the remainder were put into an all others category (Puerto Rican; Portuguese; American Indian; Black; Cuban; Mexican; all others).

Having Experienced IPV

Having experienced IPV was defined as reporting physical violence from a current or former husband or partner before and/or during pregnancy. There were four individual questions with two referring to the "12 months before you got pregnant" and the other two referring to during their "most recent pregnancy." The questions were equivalent with each being asked in the two time periods:

- Did an ex-husband or ex-partner push, hit, slap, kick, choke, or physically hurt you in any other way? (yes/no); and,
- Were you physically hurt in any way by your husband or partner? (yes/no).

For the purpose of this analysis, these questions were combined into a composite variable and having experienced IPV was determined by a yes response to either question in the two time periods.

Other Socio-demographics Variables

Maternal age was a continuous variable. The household income categories included: < \$10,000, \$10,000-24,999, \$25,000-49,999, and \$50,000+ with income missing in about 7.4% of records. Maternal education was based on total number of years of education as reported on the birth certificate and categorized as “<High School” for mothers with <12 years, “High School or Equivalent” for mothers with 12 years, “Some College” for mothers with 13–15 years, and “College Graduate” for mothers with 16 or more years. Marital status was parsed into “married” and “not married.” For geography, comparisons were made by County and further grouped into urban and rural classification with all counties in Hawai‘i considered rural except for Honolulu County which was classified as urban, as the majority of the population in Honolulu County live in a federally designated urban area, and there is no finer delineation of geography in PRAMS than at the county level.

Respondents were asked, “Are you currently in school or working outside the home?” Therefore, employment/school was a binary variable (yes/no). Health insurance status was categorized as having private insurance, Medicaid, or being uninsured.

Data Analysis

The analysis included descriptive statistics and Chi-squared tests. Bivariate and multivariate logistic regressions of any experience with PNC counseling in IPV (yes; no) were conducted. There were two variables, maternal residence and region, that were found not to be significantly related to any experience with PNC counseling in IPV (at the 0.05 threshold) in the bivariate logistic regressions, and were therefore excluded from the multivariate logistic regression models. However, some variables remained in the analyses if they were deemed theoretically important based on prior research including socioeconomic status, health insurance, and experience with physical IPV. Models were adjusted for age, marital status, health insurance, education, employment/in school, household income, and experience with physical IPV. In the adjusted analyses, an interaction between mothers’ race and experience with IPV was explored. Stata version 11.1 (College Station, TX: StataCorp LP) was used to conduct the data analyses, and the “svy” commands were used to account for the complex sampling design in order to provide accurate variance estimates.²⁷

Human Subjects Protection

This study was approved by the Committee on Human Research at the University of Hawai‘i at Manoa. A data sharing agreement was completed with the Hawai‘i PRAMS program within the Hawai‘i State Department of Health.

Results

Descriptive Analyses

The weighted distribution of mothers by race was 20.2% White, 27.9% Native Hawaiian, 3.0% Samoan, 18.6% Filipino, 12.3% Japanese, 3.5% Chinese, 1.6% Korean, 1.8% other Asian, 5.0%

other Pacific Islander, and 6.3% all others (Table 1). The mean age of the mothers was 28.0 years, approximately 65% were married, less than half were employed or in school (45.2%), and most had public or private health insurance (86.7%). Nearly 18% had an annual household income of less than \$10,000, 23.2% of \$10,000-24,999, 25.1% of \$25,000-49,999, and 34.1% of \$50,000 or more. More than one in four mothers had at least completed a college education (26.6%), 25.1% some college, and 48.3% high school or less. Less than three out of ten mothers resided in rural areas (28.5%) with the remaining in urban areas. Most mothers resided in Honolulu County (71.5%) while the remaining mothers resided in Hawai‘i County (12.7%), Maui County (10.9%), and Kaua‘i County (4.9%).

Overall, less than half of the mothers were counseled on IPV during prenatal care (47.7%), and almost 1 in 16 women who had a live birth reported having experienced IPV in the prior year from a current/former husband or partner (6.4%). The weighted proportions for receipt of PNC counseling on IPV, by race were: 47.5% White, 51.5% Native Hawaiian, 69.1% Samoan, 51.6% Filipino, 25.1% Japanese, 30.0% Chinese, 35.3% Korean, 43.4% other Asian, 63.5% other Pacific Islander, and 56.5% all others (Figure 1).

Logistic Regression Analyses

In the crude models, Samoan, Native Hawaiian, Filipino, other Pacific Islander, and all other mothers were significantly more likely to report receiving PNC counseling on IPV compared to White mothers (Table 2). Japanese, Chinese, and Korean mothers were less likely to report receiving PNC counseling in IPV. In the final models adjusted for age, marital status, health insurance, education, employment/school, household income, and having experienced IPV, Samoan mothers were still more likely to have received PNC counseling in IPV, whereas Japanese, Chinese, and Korean mothers were less likely to have received PNC counseling in IPV compared to White mothers. However, in the adjusted analysis, Native Hawaiian mothers became less likely to report receiving PNC counseling in IPV compared to White mothers. This reversal from the unadjusted analysis was present when education, income and marital status were each individually added to the model with just race. The initial differences seen in Filipino, other Pacific Islanders, other Asian, and all others were no longer significant in the fully adjusted models.

In the adjusted models, age, marital status, employment and experience with IPV were found to be non-significant in mothers reporting receiving PNC counseling in IPV. The adjusted analyses also revealed that compared to mothers with private health insurance, mothers who had Medicaid were significantly more likely to report receiving PNC counseling in IPV; however, there was no significant difference compared with the uninsured mothers. Furthermore, the adjusted analyses showed that compared to mothers who were college graduates, mothers who received less than a high school education or some college were significantly more likely to report receiving PNC counseling in IPV. Additionally, compared to mothers with a household

Table 1: Sample Characteristics of Study Population: Hawai'i Pregnancy Risk Assessment Monitoring System, 2004–2008		
	Unweighted Number	Weighted percentage (95% CI)
Received prenatal health care counseling in intimate partner violence, %	8,120	47.7 (46.6, 48.8)
Race		
White	1,541	20.2 (19.9, 20.5)
Native Hawaiian	1,771	27.9 (27.6, 27.9)
Samoan	196	3.0 (2.6, 3.4)
Filipino	1,559	18.6 (18.4, 18.7)
Japanese	960	12.3 (11.7, 12.8)
Chinese	835	3.5 (3.4, 3.7)
Korean	371	1.6 (1.5, 1.7)
Other Asian	130	1.8 (1.5, 2.1)
Other Pacific Islander	307	5.0 (4.5, 5.5)
All Other	432	6.3 (5.8, 6.9)
Age (years), mean (SE)	8,120	28.0 (0.1), (27.9, 28.2)
Marital status, %		
Married	5,602	64.6 (63.2, 65.3)
Not married	2,518	35.4 (34.7, 36.8)
Health insurance (%)		
Private insurance	5,757	67.5 (66.4, 68.5)
Medicaid	1,346	19.2 (18.3, 20.1)
Uninsured	1,033	13.3 (12.5, 14.1)
Education, %		
College Graduate	2,515	26.6 (25.3, 27.2)
Some college	2,099	25.1 (24.0, 26.1)
High school or equivalent or less than a high school education	3,384	48.3 (47.5, 49.7)
Employed/In school %	3,668	45.2 (44.0, 46.2)
Household income (%)		
<\$10,000	1,170	17.6 (17.0, 18.8)
\$10,000-24,999	1,666	23.2 (22.1, 24.1)
\$25,000-49,999	1,878	25.1 (24.1, 26.1)
\$50,000+	2,889	34.1 (32.9, 35.0)
Region, %		
Urban	6,001	71.5 (70.6, 72.6)
Rural	2,118	28.5 (27.4, 29.4)
Maternal residence, %		
Hawai'i County	930	12.7 (12.0, 13.5)
Honolulu County	6,002	71.5 (71.0, 72.6)
Kaua'i County	371	4.9 (4.3, 5.3)
Mau'i County	817	10.9 (10.1, 11.5)
Experienced intimate partner violence from current/former husband/ partner before/during pregnancy, %	464	6.4 (5.9, 7.0)
Number of prenatal health care visits, mean (SE)	7,921	11.1 (0.1)
Total sample, no.	8,120	100.0

Note: Percentages might not equal 100% due to rounding.

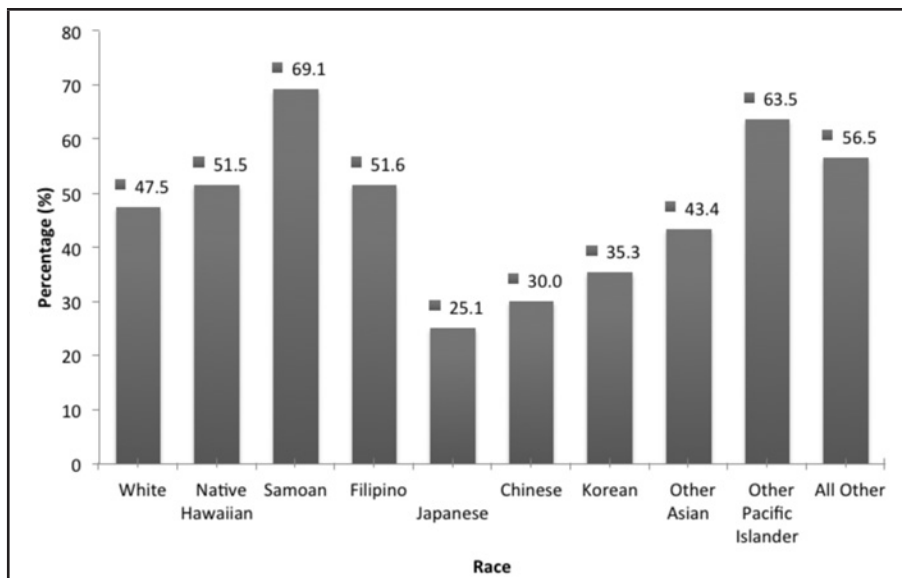


Figure 1. Weighted Percentages of Receipt of Prenatal Health Care Counseling in Intimate Partner Violence, by Race.

Table 2. Multivariate Analyses of Receipt of Prenatal Health Care Counseling in Intimate Partner Violence Among Mothers in Hawai'i, Pregnancy Risk Assessment Monitoring System, 2004–2008.

	Crude OR [95% CI]	Multivariate AOR [95% CI]
Race (White[†])		
Native Hawaiian	1.18 (1.02, 1.35)	0.82 (0.70, 0.96)
Filipino	1.18 (1.02, 1.36)	1.06 (0.90, 1.24)
Japanese	0.37 (0.21, 0.44)	0.44 (0.36, 0.53)
Chinese	0.47 (0.39, 0.57)	0.56 (0.46, 0.69)
Korean	0.60 (0.47, 0.77)	0.69 (0.53, 0.90)
Samoan	2.48 (1.80, 3.42)	1.51 (1.08, 2.12)
Other Asian American	0.85 (0.59, 1.22)	0.78 (0.51, 1.18)
Other Pacific Islander	1.92 (1.49, 2.49)	1.20 (0.89, 1.61)
All Other	1.44 (1.16, 1.78)	1.21 (0.95, 1.54)
Age		
	0.94 (0.93, 0.95)	0.97 (0.96, 0.98)
Marital status (Married[†])		
Not married	1.70 (1.54, 1.87)	1.00 (0.88, 1.14)
Health insurance (Private[†])		
Medicaid	2.40 (2.11, 2.72)	1.46 (1.23, 1.73)
Uninsured	1.58 (1.37, 1.82)	1.07 (0.91, 1.27)
Education (College Graduate[†])		
Some college	2.05 (1.81, 2.33)	1.43 (1.24, 1.65)
High school or equivalent or less than a high school education	3.30 (2.94, 3.71)	1.96 (1.69, 2.27)
Employed/In school (Yes[†])		
	0.80 (0.73, 0.88)	0.91 (0.81, 1.01)
Household income (\$50,000+[†])		
<\$10,000	2.80 (1.67, 2.15)	1.49 (1.23, 1.80)
\$10,000-24,999	2.54 (2.23, 2.90)	1.52 (1.29, 1.78)
\$25,000-49,999	1.90 (1.67, 2.15)	1.34 (1.17, 1.54)
Experienced intimate partner violence before/during pregnancy (Yes[†])		
	1.24 (1.02, 1.50)	0.95 (0.77, 1.18)

Notes: AOR = adjusted odds ratio; results significant at the $P < .05$ level are italicized. Models were adjusted for age, marital status, health insurance, education, employment/in school, household income, and experience with physical IPV. [†]Reference group.

income of \$50,000 or more, mothers with a household income of less than \$50,000 were significantly more likely to report receiving PNC counseling in IPV.

Discussion

Fewer than half of the mothers (47.7%) discussed IPV with their provider during at least one of their PNC visits. Unadjusted analyses revealed that Samoan, Native Hawaiian, Filipino, other Pacific Islander, and all other mothers are more likely to report receipt of prenatal counseling on IPV than White mothers, but after controlling for a number of factors, the direction of association among Native Hawaiians changed. Thus, adjusted analyses revealed that compared to White mothers, Native Hawaiian, Japanese, Chinese and Korean mothers were significantly less likely to report receiving PNC counseling on IPV. Adjusted analyses revealed that Samoans were significantly more likely to report receipt of PNC counseling on IPV, while other associations became statistically insignificant. The reasons for these observations warrant further explorations, as universal counseling on IPV should be conducted similarly across all racial populations.

While overall, 6.4% of recent mothers reported experience with IPV, and the crude OR (1.24, 95% CI (1.02-1.50)) indicated those who experienced IPV were more likely to be counseled, the adjusted analysis indicated that there was no relationship between a mothers' experience with IPV and mothers' reporting having received PNC counseling on IPV. This study demonstrated that Native Hawaiian, Korean, Chinese, and Japanese mothers were all less likely than Whites to report receiving prenatal counseling for IPV during pregnancy. Many of these groups have higher prevalence estimates for experiencing IPV compared to Whites with Native Hawaiians (10.0%), Samoan (8.0%), and Filipino (6.2%) having higher estimates, while Chinese mothers (2.3%) having lower estimates compared to White mothers (3.9%) in Hawai'i (PRAMS, 2004-2008).²⁸ This highlights the need to provide appropriate counseling for those most at risk for IPV. Furthermore, Native Hawaiians are more likely to experience IPV, yet less likely to be screened for IPV in PNC visits. Though Chinese mothers reported lower rates of having experienced IPV, they are also less likely to receiving PNC counseling on IPV compared to White mothers. The reasons for these observations warrant further explorations, as universal counseling in IPV should be conducted similarly across all racial populations.

Strengths

PRAMS is a population based surveillance system that collects important data on many maternal and child health issues. Hawai'i PRAMS collects detailed sub-population data, which is unique given that data on Asian Americans and NHOPI are often reported as an aggregate in many national analyses due to sample size constraints. Hawai'i PRAMS includes large sample sizes of some of these subgroups. Therefore, this dataset offers researchers the distinct opportunity to investigate racial differences for some of these subgroups which, in turn, allows

a more in-depth understanding of these subgroups' health status and experiences with health care.

Since the DHHS guidelines regarding free screening and counseling for interpersonal and domestic violence for all women takes effect August 2012 (for all new health plans), this study's findings may be utilized as baseline data to assist in the evaluation of the effectiveness of the adoption of the new guidelines in Hawai'i.

Limitations

As with many surveys, PRAMS data are self-reported. PRAMS are administered after the delivery of a live infant; thus, mothers are asked to recall their experiences including whether they have received advice at any point during pregnancy related to IPV. Moreover, PRAMS asks women about their experience with physical IPV but not emotional abuse, which is an important IPV type that deserves equal merit, particularly because prior research has demonstrated that emotional abuse results in similarly poor health outcomes as physical abuse.²⁹ Tiwari and colleagues, for instance, reported that psychological IPV was more common among Chinese women.³⁰ Furthermore, the experience of physical IPV is likely under-reported even in this primarily mail-based survey.

Another limitation of this study described in the methods section is that race categorization is limited to the single race reported in the Hawai'i birth certificate data. Due to the large proportion of mothers who are of multiple race groups in Hawai'i, the ability to generalize these results is limited when considering those reporting more than one race. Other race groups including specific Asian American (eg, Vietnamese) and NHOPI subpopulations (eg, Guamanian) occur in small proportions in the State and thus are not sufficiently represented in the Hawai'i PRAMS sample. The Hawai'i PRAMS is also provided only as an English survey so women who do not feel comfortable with English may not complete the survey and thus, may be under-represented.

A final limitation is that PRAMS only surveys women with pregnancies that result in a live birth. Rates for PNC counseling in IPV may be different among women who experienced spontaneous or induced abortion and this may vary by race/ethnicity.

Study Implications/Next Steps

While this study analyzed racial differences in receiving PNC counseling in IPV among mothers, it is also important to be aware of issues related to barriers in accessing prenatal health care. For example, a previous study utilized the 2004-07 Hawai'i PRAMS data to determine the association between IPV and PNC access by race. This study reported that the experience with IPV was significantly associated with NHOPI and Asian Americans reporting one or more barriers to accessing prenatal health care.³¹ This finding suggests that these populations encounter more barriers (ie, logistical; financial/health insurance; personal) and, thus, may have fewer opportunities to receive PNC counseling.

Future health services intervention research should include a focus on both women who experience high rates of IPV as well as those women that are less likely to receive appropriate counseling in IPV during prenatal care. Additional research related to particular Asian American and NHOPI subpopulations is needed to gain a better understanding of the PNC experience in regards to IPV screening and counseling.

In addition to research, findings from this study will have important programmatic implications. For example, because more than half of the mothers in this study reported that their providers did not talk to them about IPV during any of their PNC visits, it may be appropriate to provide training for providers regarding the importance of screening for risk as well as providing appropriate treatment and/or referral. While it is highly likely that many health care institutions would inform their providers of the new DHHS guidelines to screen and counsel for IPV, some providers may require training if they have not conducted such screenings on a regular basis prior to the implementation of the new guidelines. Changes in health practices that facilitate provider-patient IPV discussion (ie, prompts and cues to assess for IPV risk) may be required if routine assessments are to actually occur. Finally, it is important to state that asking women about IPV does not increase the risk of harm to the woman's health or safety;³² rather, asking women about IPV is a first and necessary step to ensure the safety of the women, a healthy pregnancy and quality of life.

Conflict of Interest

None of the authors identify a conflict of interest.

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The Impact of a Longitudinal Curriculum on Medical Student Obstetrics and Gynecology Clinical Training

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Abstract

Clinical training in most medical schools consists of separate rotations, based out of tertiary-care facilities, across the core medical disciplines. In addition to a traditional clinical curriculum, the University of Hawai'i offers a longitudinal clinical curriculum as an option to medical students. The longitudinal curriculum provides students with an innovative, alternative educational track to achieve their educational goals in clinical medicine. The objective of this study was to describe the obstetrics and gynecology procedural experiences of third-year medical students who participated in a longitudinal curriculum versus a traditional block clerkship. The number of procedures reported by third-year medical students who participated in a non-traditional, longitudinal clerkship was compared with the number of procedures reported by students who participated in the traditional block third-year curriculum between July 2007 and June 2009. National Board of Medical Examiners (NBME) subject scores, clerkship grade and chosen residency specialty were also compared. The mean number of pelvic exams (longitudinally-trained 36 [SD 33] versus block-trained 8 [SD 6], [t=4.3, P<.01]) and pap smears (longitudinally-trained 28 [SD 26] versus block-trained 7 [SD 3] [t=4.4, P<.01]) was significantly higher for longitudinally-trained students compared to block-trained students. No significant differences in overall clerkship grades or NBME shelf scores emerged.

Keywords

obstetrics, gynecology, clerkship, medical student, curriculum

Introduction

In the United States, a medical student's third-year of training usually consists of separate rotations across the basic clinical disciplines of medicine including Obstetrics and Gynecology, Surgery, Internal Medicine, Family Medicine, Pediatrics, and Psychiatry. Rotations typically last for four- to eight-weeks and are based out of tertiary-care facilities in urban settings. Medical educators have criticized this traditional curriculum for its lack of continuity and focus on hospital-based care¹⁻³

Instead of a traditional third-year clerkship, medical students at the University of Hawai'i John A. Burns School of Medicine can participate in a longitudinal curriculum in which students spend six continuous months in the ambulatory setting and six continuous months in a hospital-based setting. During the ambulatory portion of the clerkship, students spend one half-day each week with a preceptor in each of the major disciplines including Family Medicine, Internal Medicine, Obstetrics and Gynecology, Pediatrics, Psychiatry, and Surgery. During the hospital-based portion of the rotation, longitudinal students participate in abbreviated focused rotations in all of the above disciplines except Family Medicine.⁴

The longitudinal curriculum seeks to more accurately mimic the actual practice of physicians, particularly primary care physicians. Previous studies at other institutions have demonstrated that students who participate in this type of curriculum are

more likely to choose a career in primary care and establish a practice in a rural setting.^{1,6}

The longitudinal curriculum emphasizes patient- and learner-centered education.^{3,5} In the longitudinal curriculum, students follow patients over six months allowing them to better understand chronic illness and patient-physician relationships.¹ Preceptors in the longitudinal curriculum also interact with students over six months which is hypothesized to result in greater trust in the students' abilities and greater investment in their education.

Although the number of medical schools offering a longitudinal curriculum is increasing, no studies have compared the procedural experience of students who participate in a longitudinal curriculum versus a traditional curriculum.⁶ Some studies have shown that longitudinally-trained students score similarly on clinical evaluations compared to their traditionally block-trained counterparts.^{4,6} The objective of this study was to describe the obstetrics and gynecology procedural experiences of third-year medical students who participated a traditional block clerkship versus a longitudinal curriculum.

Study Design

This study was granted exempt status from the University of Hawai'i Institutional Review Board. A de-identified database of all third-year medical students rotating through the obstetrics and gynecology clerkships at the University of Hawai'i (Honolulu, HI) between July 2007 and June 2009 was used for analysis. All third-year medical students are required to record the number of pelvic examinations, obstetric deliveries, and surgical procedures they participate in during their rotation. Students can either log procedures through a personal digital assistant (PDA) program or via an online computer program.

The primary objective was to compare the number of pelvic examinations performed by students in the longitudinal curriculum to students in the traditional block curriculum. Pelvic examination was selected as the primary outcome because it was thought to be the most important clinical tool for medical students to learn while on rotation. Although vaginal deliveries and hysterectomies are critical surgical procedures for Obstetrician, Gynecologists, many different kinds of physicians including Internists, Family Medicine Physicians, Emergency Department Physicians, and Pediatricians may be required to perform pelvic examinations in their clinical practice. Secondary objectives were to compare the number of Pap smears collected and the number of vaginal deliveries, Cesarean sections, hysterectomies and laparoscopies that students participated in.

Demographic data, clerkship grades, National Board Medical Examiner (NBME) shelf scores and eventual residency specialty were also compared.

Approximately twice as many students participate in the traditional block curriculum compared to the longitudinal curriculum. Thus, unequal group sizes were anticipated. A difference of 5 pelvic examinations was deemed to represent a clinically significant difference and a standard deviation of 5.0 based on previously calculated procedural averages was anticipated. Sample size calculations determined 50 students in the block-trained group and 22 students in the longitudinally-trained group were needed to demonstrate this difference (80% power, significance of 0.05). In order to fulfill the sample size calculation, data for two consecutive academic years (2007-08; 2008-09) was used. T-tests were used to compare procedural numbers and test scores between longitudinally-trained versus the block-trained students. Prior to analysis, a natural log transformation was applied to non-normally distributed data to address distributional assumptions. Chi-Square Tests and Fisher's Exact Tests were used to determine the significance of association for categorical variables. All analyses were performed with SPSS version 16.0 (Chicago, Illinois).

Results

Twenty-eight students completed the longitudinal curriculum and 94 completed the block curriculum. The longitudinally-trained and block-trained groups were similar in terms of age and gender (Table 1). The mean age for the longitudinally-trained group was 27 (SD 3) years compared to 27 (SD 3) in the block-trained group ($t=0.59$, $P=.95$). More than half of students in both groups were female, including 52% of students in longitudinally-trained group and 60% of students in the block-trained group (Chi Square=0.64, $P=.55$). All continuous variables with the exception of pelvic examinations and

pap smears were normally distributed. Longitudinally-trained students performed significantly more pelvic examinations (36 [SD 33]) than block-trained students (8 [SD 6]), ($t=4.3$, $P<.01$) (Table 2). They also performed more Pap smears (longitudinally-trained 28 [SD 26] versus block-trained 7 [SD 3], $t=4.4$, $P<.01$). Students who participated in traditional block rotations participated in more vaginal deliveries, (block-trained 18 [SD 7] versus longitudinally-trained 15 [SD 4], $t=-3.4$, $P<.01$) and cesarean deliveries (block-trained 11 [SD 4] versus longitudinally-trained 8 [SD 2], $t=-4.5$, $P<.01$). We found no difference in the number of hysterectomies (block-trained 4 [SD 2] versus longitudinally-trained 5 [SD 3], $t=1.1$, $P<.5$) and laparoscopies, (block-trained 5 [SD 3] versus longitudinally-trained 6 [SD 4], $t=0.4$, $P=.70$). No significant differences emerged in NBME shelf scores or in the clinical grades emerged (Table 2). Students who participated in the traditional curriculum varied significantly in regards to subsequent career choices compared to students who participated in the longitudinal curriculum (Table 1). Overall, 8% of students who participated in the traditional block curriculum entered a residency in Obstetrics and Gynecology as compared to 4% of longitudinal students. One quarter of the longitudinal students chose to pursue a career in Family Medicine compared to 3% of traditional students. A similar proportion of students (32% in both groups) went into other primary care specialties (Internal Medicine, Pediatrics). About half of the block-trained students chose to pursue a non-primary care specialty as opposed to 29% of longitudinally-trained students.

Discussion

Longitudinally-trained students performed more pelvic exams and Pap smears than their block-trained counterparts. Potential reasons for this difference include a longer amount of time spent in the ambulatory care setting and a longer amount of

Table 1. Demographics, Clinical Scores, NBME Shelf Exam Scores, and Career Choices for Block-trained and Longitudinally-trained curriculum students, 2007-2009. University of Hawai'i, Honolulu, HI.			
	Block Mean (SD), n (%)	Longitudinal mean (SD), n (%)	P-value
Nn	94	28	
Age (years)	27 (3)	27 (3)	.55
Gender*			
Female	49 (52)	17 (61)	.42
Male	45 (48)	11 (39)	
Clinical Scores	83 (7)	84 (7)	.72
NBME Shelf Exam Scores	75 (8)	74 (8)	.93
Career choices**			
Obstetrics/Gynecology	8 (9)	1 (4)	<.01
Family Medicine	3 (3)	7 (25)	
Other Primary Care	30 (32)	9 (32)	
Non Primary Care	46 (49)	8 (29)	

*Chi-Square Test. **Fisher's Exact Test, total n for this category is different because some students did not apply for residency.

Table 2. Number of Procedures Performed by Block-trained and Longitudinally-trained curriculum students, 2007-2009. University of Hawai'i, Honolulu, HI.			
	Block Mean (SD)	Longitudinal Mean (SD)	P-value
n	94	28	
Pelvic Examination	8 (6)	36 (32)	<.01
Pap Smear	7 (3)	28 (26)	<.01
Vaginal Delivery	18 (7)	15 (4)	.01
Cesarean Section	11 (4)	8 (2)	<.01
Hysterectomy	4 (2)	5 (3)	.32
Laparoscopy	5 (3)	6 (4)	.53

time spent with a single preceptor which could result in the preceptor giving the student more opportunities to perform examination procedures. In addition, block-trained students received their ambulatory experience at resident clinics while longitudinally-trained students were at ambulatory sites that did not have residents present. This difference may have also resulted in more opportunity for the longitudinally-trained students to perform office procedures. The standard deviations for these outcomes were large, indicating a large variation in the number of pelvic exams and pap smears performed by different students. This could be related to the abilities of the students themselves, the preceptors' comfort with supervision or the clinical volume of the different ambulatory sites. Despite the abbreviated hospital-based experience of longitudinally-trained students, there was no difference in the number hysterectomies or laparoscopies, though there was a difference in the number of vaginal deliveries and cesarean sections. In addition, this study confirmed findings from previous studies by finding similar clinical grades and NBME shelf scores for these two groups.⁴

Longitudinally-trained students were more likely to pursue primary care specialties such as Family Medicine. If the number of pelvic exams and pap smears performed by students during their third year clerkship is a reflection of the quality and clinical exposure gained during this year, one could hypothesize that an improved ambulatory experience resulted in more students selecting a primary care specialty. A limitation of this study is that assignment to the longitudinal or block curriculum, however, was not random. Students applied and were selected to participate in the longitudinal program. The default was participating in the traditional block curriculum. Therefore, it is possible that students who were interested in primary care purposefully selected to participate in the longitudinal curriculum.

Interestingly, more block-trained students pursued a career in Obstetrics and Gynecology. Other studies suggest students selecting Obstetrics and Gynecology have different personality types than those selecting Family Medicine, Internal Medicine and Pediatrics.⁶ The increased ambulatory experience may not have the same impact on students that choose Obstetrics and

Gynecology versus other primary care specialties. Block-trained students also performed more in-patient procedures such as vaginal deliveries and Cesarean sections. It is possible this more robust in-patient experience led to more students in the traditional curriculum selecting Obstetrics and Gynecology. Similar to our findings in primary care fields, students with an established interest in Obstetrics and Gynecology may have purposefully chosen to participate in the traditional block curriculum. Many medical schools are motivated to increase interest in certain specialties depending on the needs of their community. Future studies should assess students' intended residency prior to their third year of medical school to determine whether the different curriculums have influenced a student's eventual career choice.

The study design does not allow comment on whether the longitudinal or traditional curriculum is better for the clinical education of medical students in general. As mentioned before, students self-selected into traditional or longitudinal groups which can introduce selection bias. Students who complete the longitudinal curriculum may be more interested in primary care thus more motivated or adept at office-based care than their traditional counterparts. Thus, the difference in procedural experience may be the result of this difference in motivation instead of the difference in the curriculum itself. Additionally, procedure numbers are self-reported by students and the motivation to log procedures may vary among students, which could result in reporting errors. The authors suspect errors in reporting would not be different between students participating in a traditional versus a longitudinal curriculum resulting in non-differential reporting errors which would bias our results towards the null hypothesis. As residency training begins to incorporate milestone based evaluations, students will need to achieve a certain level of competency prior to starting clinical training. This may allow future studies to investigate how these differences in experience translate into preparing students for residency.

This study is also unable to comment on whether all medical schools should integrate a longitudinal curriculum. The longitudinal curriculum adds logistical complexity and possibly increased cost if students travel to a rural location during the six month ambulatory portion of their rotation.^{1,7} Additionally, a longitudinal program requires a large number of physician preceptors. The University of Hawai'i depends heavily on non-paid community physicians who volunteer to precept longitudinally-trained students in the ambulatory setting. Not all medical schools would be able to implement such a program.

The landscape of obstetric and gynecologic practice is continually evolving. Pap smear guidelines have changed dramatically in the last few years and screening for chlamydia and gonorrhea no longer requires a pelvic examination.⁸ These revised guidelines may result in fewer female pelvic exams in general. Additionally, robotic surgery and non-surgical interventions for menorrhagia have decreased the overall number of abdominal and vaginal hysterectomies being performed.⁹ Therefore, findings from 2007 to 2009 may not be generalizable to future groups of medical students as guidelines and practice patterns continue to change.

To the authors' knowledge, this is the only study to describe procedural differences between students who participate in a longitudinal versus a traditional block third-year curriculum. The findings suggest students who select a longitudinal curriculum gain more exposure to office-based gynecologic clinical examination skills such as pelvic examination. These skills are especially important for those students who ultimately pursue non-obstetric and gynecologic specialties, since they may rely heavily on the gynecologic skills learned during their medical school training.

Conflict of Interest

None of the authors identify a conflict of interest.

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Variable Conduction System Disorders in Takotsubo Cardiomyopathy: A Case Series

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Abstract

Takotsubo cardiomyopathy is an acute cardiac condition characterized by transient systolic dysfunction of the left ventricular apex and mid-ventricle. Documented EKG presentations for Takotsubo cardiomyopathy include ST-segment elevation or T-wave inversion. These EKG presentations are included in the diagnostic requirements for Takotsubo cardiomyopathy. This paper presents two cases of atypical EKG presentations, both conduction system disorders, and their possible mechanisms. Changes to the diagnostic criteria for Takotsubo cardiomyopathy should be considered to include these variant EKG presentations.

Introduction

Takotsubo cardiomyopathy (TCM) is classically characterized by transient systolic dysfunction of the mid-to-apical segment of the left ventricle mimicking myocardial infarction, but without obstruction of the coronary arteries. Typically, patients present with ST-segment elevation on EKG, elevated cardiac biomarkers, and apical ballooning shown on echocardiography or left ventriculography.¹ This paper describes two cases of atypical EKG presentations of TCM, both conduction system disorders. Each patient presented to Kuakini Medical Center in Honolulu with suspected acute myocardial infarction, but were diagnosed with TCM by cardiac angiography and left ventriculography.

Case Reports

Patient 1

An 80-year-old woman of Japanese ancestry with a history of atrial fibrillation, hypertension, hyperlipidemia, and pulmonary fibrosis was scheduled for elective right rotator cuff repair. The patient was anxious and uneasy during pre-operative right shoulder nerve block and suddenly complained of substernal chest pain and difficulty breathing. Rhythm on the monitor revealed monomorphic ventricular tachycardia. She also had elevated blood pressure. She was immediately intubated for airway protection, given esmolol for blood pressure control, and amiodarone for conversion to sinus rhythm. EKG at that time revealed new onset left bundle branch block (Figure 1). Creatine Kinase isoenzyme MB (CK-MB) levels remained within normal range, however troponin-I was elevated at 0.2 ng/mL (normal <0.10 ng/mL) on admission and peaked at 0.35 ng/mL four hours later. She was immediately taken to the cardiac catheterization laboratory. There was no evidence of coronary artery disease, however ejection fraction was depressed at 40%. Left ventriculography was performed and revealed basal hyperkinesis with anterior dyskinesis and hypokinesis of the apex and base (ie, apical ballooning), consistent with TCM (figure 2). Her treatment was supportive and she was discharged five days later in good condition.

Patient 2

An 80-year-old woman of Japanese ancestry with history of dementia and hypertension presented to the emergency department with acute onset of chest pain associated with dyspnea. Two weeks prior to admission, the patient noted gradual onset of bilateral lower extremity edema. One week prior to admission, she noted occasional chest pressure without radiation lasting five to ten minutes, associated with intermittent palpitations. The patient's older sister passed away five months previously, leaving the patient as the last remaining sibling. Since then, she appeared depressed, had been eating less, and had decreased interest in her hobbies and activities. In the ER, the patient presented with a blood pressure of 220/62 and heart rate of 49. An EKG showed third-degree AV block and anteroseptal infarction (Figure 3). The patient's Troponin-I was elevated at 0.15 ng/mL (normal <0.10 ng/mL) and peaked at 1.63 ng/mL four hours later. CK-MB was 2.8 ng/mL (normal <5.0 ng/mL) at presentation but peaked at 9.3 ng/mL four hours later. Brain natriuretic peptide was also elevated at 807 pg/mL (normal <100 pg/mL). Urgent cardiac catheterization was performed and coronary angiography showed no significant coronary obstructive lesions. However, left ventriculography showed apical ballooning, consistent with TCM (figure 4). A temporary transvenous pacemaker was placed at this time, and permanent pacemaker inserted the next day. The patient was started on a heart failure regimen. She was discharged to home four days after admission in good condition.

Discussion

TCM was first described in 1991 in Japan and was named after the round-bottomed narrow neck Japanese fishing pot used for trapping octopus. It is also known as apical ballooning syndrome, broken heart syndrome, and stress-induced cardiomyopathy. As the latter two names indicate, TCM is frequently caused by intense emotional or physical stress, as seen in patient 1.¹ The exact pathophysiology of TCM is unknown, but the following has been proposed: multivascular coronary vasospasm, abnormalities in coronary microvascular function, and catecholamine-mediated cardiac toxicity.²

The vast majority of TCM patients are post-menopausal women. TCM most commonly presents as chest pain; however other symptoms include dyspnea, syncope, and shock. More serious complications include tachyarrhythmias and bradyarrhythmias, mitral regurgitation, cardiogenic shock, and heart failure. Troponin and CK-MB levels are elevated in 86.2% and 73.9% of patients, respectively.² EKG abnormalities are most commonly ST-segment elevation and T wave inversion,

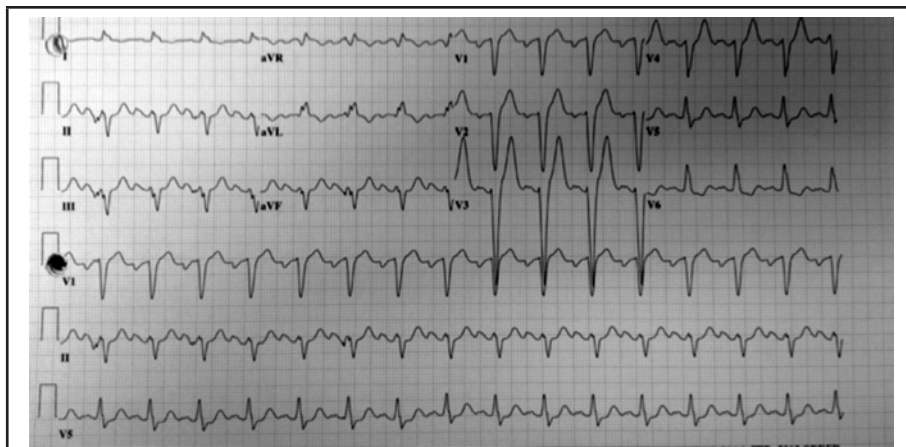


Figure 1. EKG of patient 1 reveals new-onset left bundle branch block.

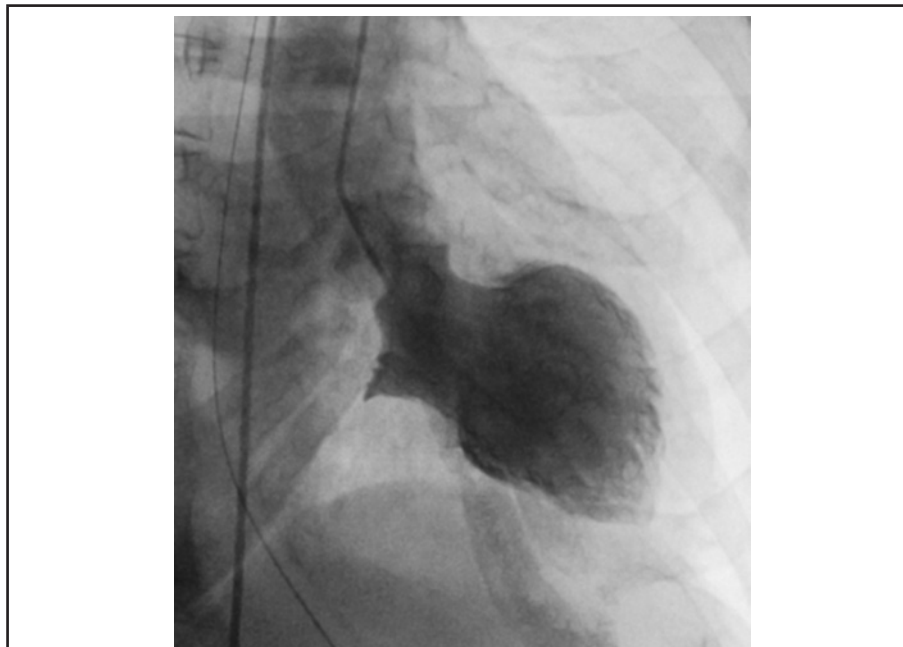


Figure 2. Left ventriculography of patient 1 reveals hyperkinesis of the base while the remainder of the left ventricle is dyskinesic, giving the typical appearance of Takotsubo cardiomyopathy.

in 81.6% and 64.3%, respectively.² ST-segment elevation is thought to be due to the dyskinesis of the apical segment just as a left ventricular aneurysm may cause persistent ST-segment elevation.³

The recommended Mayo clinic diagnostic criteria for TCM include four requirements: “(1) Transient akinesis or dyskinesis of the left ventricular apical and mid-ventricular segments with regional wall-motion abnormalities extending beyond a single epicardial vascular distribution, (2) Absence of obstructive coronary disease or angiographic evidence of acute plaque rupture, (3) New EKG abnormalities (either ST-segment elevation and/or T-wave inversion) or modest elevation in cardiac troponin,

and (4) Absence of pheochromocytoma or myocarditis.”⁴

These diagnostic criteria were developed from seven case series.^{1, 5-10} Although these studies mention that Takotsubo patients can present with non-ST elevation EKG changes, six of the seven studies^{1, 5-9} excluded patients that did not present with ST-elevation. Thus, non-ST elevation EKG changes such as conduction abnormalities were not fairly represented in creating the diagnostic criteria for Takotsubo cardiomyopathy.

As seen in the two patients presented in this paper, TCM can present as conduction abnormalities. Patient 1’s EKG revealed left bundle branch block (LBBB) while patient 2’s EKG revealed complete AV block. TCM uncommonly presents with LBBB,

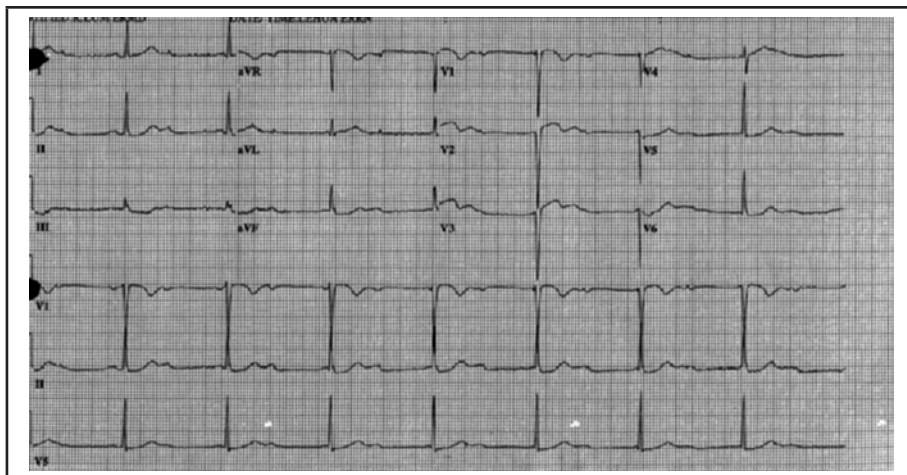


Figure 3. EKG of patient 2 reveals new-onset third-degree AV block and anteroseptal infarction.

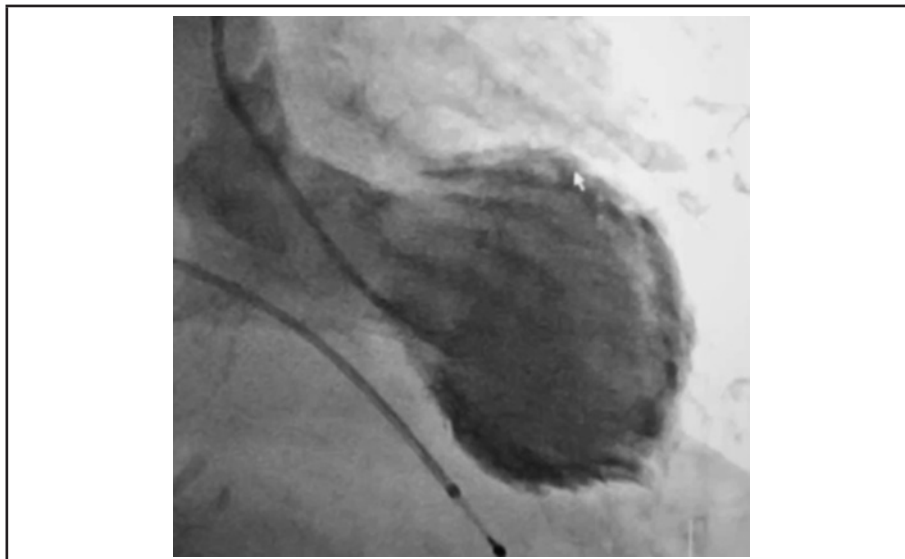


Figure 4. Left ventriculography of patient 2 reveals apical ballooning, the typical appearance of Takotsubo cardiomyopathy.

however it is estimated to occur in 9% of patients.¹¹ Even less common is complete heart block, seen in fewer than 5% of TCM patients.¹²

Mechanisms of TCM causing conduction system disorders have been proposed. First, the deterioration of blood flow secondary to left ventricular dyskinesia may decrease coronary blood flow to the conduction pathway. This may lead to conduction block.¹³ A second mechanism involves the catecholamine excess that is thought to trigger TCM. Catecholamines may induce coronary vasospasm, which decreases coronary blood flow to the conduction pathway (particularly the right coronary artery and its branches).¹⁴ A third mechanism proposes that continual ischemia may result in conduction pathway fibrosis, causing permanent conduction block. Additionally, age-related damage

to the conduction pathways may be a contributing factor.¹²

Conclusion

ST-segment elevation and/or T-wave inversion are the EKG hallmarks of TCM and are part of the current recommended Mayo clinic diagnostic criteria. However, as seen in this paper, TCM can be diagnosed in cases that do not have these hallmark features. However, six of the seven studies used to originally create these diagnostic criteria only include EKGs with ST-elevation, despite mentioning a variety of EKG presentations. Perhaps it is time to expand the diagnostic criteria to include various EKG presentations, such as conduction abnormalities as seen in these two patients.

Conflict of Interest

None of the authors identify a conflict of interest.

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MEDICAL SCHOOL HOTLINE

John A. Burns School of Medicine's Office of Information Technology — Services Beyond Technical Support

Kathleen Kihmm Connolly PhD; Tracy Lum BBA; Steven Chun MS; and Henry Glaspie MS

The Medical School Hotline is a monthly column from the John A. Burns School of Medicine and is edited by Satoru Izutsu PhD; HJMPH Contributing Editor. Dr. Izutsu is the vice-dean of the University of Hawai'i John A. Burns School of Medicine and has been the Medical School Hotline editor since 1993.

Introduction

Information technology (IT) is an essential part of today's organization. From personal computers, the Internet, and communication technology to specialized software and hardware applications, leveraging IT solutions reduce costs and increase the quality, efficiency, and innovation of an organization.¹ Examples of technology trends include the proliferation of mobile devices, cloud environments, social media, virtual environments, interactive content, and administrative business applications. In a medical school environment, technology is a vital resource in increasing academic productivity, enhancing teaching and learning modalities, and facilitating research by providing technical solutions to enable innovation.

As the sophistication and application of such technology increase, careful strategic planning is needed for successful integration, implementation, and sustainable usage. For IT to be leveraged optimally, a synergistic combination between other organizational resources must be established.¹ This is especially true in the academic environments, where time and resource constraints on faculty and staff may not afford the training and knowledge needed to take full advantage of available technological opportunities.²

In facilitating the information technology needs of an organization, the IT department is an essential component in both support and application development. Areas in which a medical school's IT department is vital include the following: web-based educational programs; simulation and virtual technology; evaluation tools; technology to support administrative tasks and procedures; library support; databases for information storage, networking and communications infrastructure; portals for faculty and staff information and training; technical support both on the user and administrative ends; and security for both data and physical infrastructures.

The John A. Burns School of Medicine's (JABSOM) Office of Information Technology (OIT), under the Office of Administration, Finance, and Operations, is the IT backbone for the school of medicine. OIT supports the educational mission of JABSOM by providing information technology to faculty, staff, and students. The job of OIT is to provide technical support and application development services needed by departments and

programs. The Director, Henry Glaspie, is now well versed in JABSOM's technological needs. His vision on the sustainable future for IT at JABSOM includes:

- Upgrading the networking infrastructure
- Consolidating of the IT infrastructure, both on campus and off campus locations
- Enhancing the physical security of buildings (ie, video cameras and emergency communication systems)
- Ensuring data security and compliance to security policies
- Facilitating data management and storage
- Developing a new up-to-date website
- Offering IT solution services to JABSOM departments and programs
- Training staff to maintain competency and learn opportunities in the evolving IT world

Following are examples of projects that JABSOM's OIT has been working on to support the needs of specific departments and programs. This includes the development of applications to streamline and add efficiency, as well as, improve the infrastructure by increasing bandwidth and Internet connectivity both to and across locations outside of the main medical school campus at Kaka'ako.

Clinical Skills Examination System (CSES)

The Clinical Skills Examination System is a web application developed by JABSOM's OIT in partnership with the school's Center for Clinical Skills (CCS). In an effort to enhance JABSOM's mission of educating future healthcare professionals, CCS sought a collaborative venture with OIT to utilize technology to translate effectively the center's paper-based examination and related processes into an electronically-driven solution. The objective was to provide medical students with an exam experience that is aligned more closely with the United States Medical Licensing Examination (USMLE). Additionally, it was anticipated by CCS that an electronic approach would alleviate some cumbersome administrative procedures that are included in the exam process.

Prior to the joint undertaking with OIT, the Center for Clinical

Skills had worked initially with an independent contractor to develop the CSES. However, this initial endeavor was unsuccessful. It was discarded due to a disparity between the contractor's deliverables and CCS's expectations. To prevent this problem from recurring, OIT determined that it was paramount to take an iterative development approach during the business process discovery for a cohesive analysis. This methodology included a cycle system of conceptualization and design with incremental changes developed during each iteration. At each release phase, work was modeled around the respective context, workflow and activities within the examination lifecycle such that each stakeholder group could assess progress.

The collaboration resulted in four primary impacts that fostered system adoption: (1) medical student examinees embraced the ability to type their assessments into an online mechanism. This replaced having to hand write responses on paper, and is a preparatory exercise for the USMLE; (2) administrative staff duties were reduced significantly from efficiencies attributed to the electronic collection, organization, distribution, workflow notification and storage of exam data; (3) standardized patients operated CCS-issued iPads to submit their evaluations electronically thereby allowing automatic data validation for completeness and monitoring; and (4) content of three physical documents employed during the practice were integrated into a single comprehensive interface whereby faculty graders scored examinations electronically. This procedure alleviated the need to decipher handwritten assessments.

Willed Body Database (WBD)

There are instances when a project is directed by OIT and not by a department or program within JABSOM. An example is the development of the Willed Body Database web application. The initiative was prompted when the school's Willed Body Program (WBP) requested the upgrade of both their donor and cremated databases, which were established in FileMaker Pro. This led to the discovery of sensitive Protected Health Information (PHI), which needed to be stored and secured. Although it was beyond the scope of WBP's initially identified need, OIT recommended a broadened solution to include data security.

After this assessment WBP recognized that it was imperative to protect the sensitive data, which included the community of anatomical donors. OIT proposed transitioning WBP's existing database into a Structured Query Language (SQL) database solution that would leverage and be safeguarded by OIT's infrastructure. OIT also gathered information about WBP's processes for the expressed purpose of automating the program's database-related activities into a new system. OIT also converted variables into standardized inputs to increase efficiency and organization of data.

The resulting system included data security through the implementation of encrypted Security Socket Layer (SSL) channel transmissions, authentication and authorization at the individual account level, and Internet Protocol (IP) restrictions that confined application visibility to only WBP and OIT internal subnets. The new Will Body Database is facilitated by

cleansed, parsed, and standardized data. The WBP now utilizes the product, which provides authorized personnel the ability to access simultaneously the database from their workstations, independent of the underlying operating system. A consolidated entry point incorporated elements from their two previous FileMaker Pro databases, which included notation and task tracking, and workflow and report generation.

Non-Compensated Faculty Renewal System

The Non-Compensated Faculty Renewal system is based on the initiative of the former Department Chair of Surgery, Dr. Danny Takanishi. The department was currently using a paper-based system that incorporated sections of the Annual Faculty Report as well as human resource (HR) forms for review and renewal. The problem was that the Department had over 200 non-compensated faculty members spread across several hospitals and shifts. Obtaining signatures for all of the forms that needed to be processed, or to locate the status of a renewal was cumbersome. Dr. Takanishi felt that an on-line system would help facilitate these issues and enlisted the help of JABSOM OIT.

In six months, the Department of Surgery staff, JABSOM HR, and IT Staff, worked together to produce an initial prototype web application that was launched in late-2009 for the December 2009 faculty renewals. This new system automatically queried which faculty members needed to be renewed by linking itself to University of Hawai'i (UH) at Manoa's HR database, to which digital signatures could be applied. This allowed faculty members, as well as the department staff, to determine the status of each and every renewal and update when necessary. Over the next few years, enhancements were made to this system, which included adding the Departments of Psychiatry and Pediatrics. Currently, there is an initiative to create a unified JABSOM-wide renewal system, in which over 1,200 non-compensated faculty members would participate.

Hospital Network Upgrades

JABSOM has departmental offices located at Queen's Medical Center, Kuakini Medical Center, and Kapi'olani Medical Center for Women & Children. In the past the networks for these locations were separated from the JABSOM network and offered limited wireless services. Over the past six months, OIT initiated a \$700,000 network upgrade project that will increase the bandwidth at the hospital locations and integrate the networks with JABSOM and UH. This upgrade will enhance data security and disaster recovery. Data traveling between the locations will be encrypted and allow for off-site storage and replication. Additionally, the network integrations will permit JABSOM to offer UH wireless networking. The wireless networking upgrade will be critical to medical education as students, faculty, and staff access data more often through mobile devices.

OIT into the Future

The projects discussed above are some of the initiatives in which OIT is currently involved and supports. As OIT moves into the future, information technology to support the education,

research and infrastructure needs will continue to be a mission, with the aim to improve the current system. For example, an area of exploration is the use of “cloud computing.” Cloud computing uses shared resources, such as email services, data storage, or software applications, that are accessible over the Internet. Technology such as document sharing in the cloud allows the ability for students, faculty, and staff to share, collaborate and access documents from any location, at any hour of the day. Another example is supercomputing and/or distributed computing that allows researchers to crunch and analyze data. In the past this capability would have been difficult, costly and time consuming.³ With the completion of the University of Hawai‘i Information Technology Center, access to high performance computing, data storage, analysis, and visualization services will be available to all members of the University of Hawai‘i System. How these resources can be optimally utilized by JABSOM and supported by OIT will be explored both by the individual users and departmental levels.

Challenges for information technology management include the trend in decentralized computer technology. Threats and dangers not only include hardware failures, but issues of data protection, intellectual property rights, poor security management practices, and misallocation of resources.⁴ Recognizing these threats, data security, and proper storage of data will remain at the forefront of OIT in all aspects of IT management. As a standard practice for OIT, network communication and software updates are monitored heavily, as well as procedures to ensure that all computers on JABSOM’s networks include anti-virus software and are backed-up on a weekly basis. JAB-

SOM faculty, staff and student training on the protection of data, such as health information or sensitive data, is currently under development. Although no system connected to the Internet can be 100% secure, OIT strives to put in place best practices to avoid compromises and proper procedures to safely and efficiently recover if such compromises do occur.

The future of information technology will be broader and more complex as technology becomes more advanced and ubiquitous in daily life. As the World Wide Web this year celebrates its 25th anniversary, most students entering medical school do not remember not being able to access the Internet or send an email. The technological expectations of students and faculty will not only see technology as a tool, but as a necessity for communication, collaboration, and innovation. JABSOM’s OIT will continue to assess, plan strategically, and serve the needs and requirements of the school.

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The Hawai'i Home Visiting Network: Evidence-Based Home Visiting Services in Hawai'i

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Insights in Public Health is a monthly solicited column from the public health community and is coordinated by HJMPH Associate Editors Jay Maddock PhD from the Office of Public Health Studies at John A Burns School of Medicine and Donald Hayes MD, MPH from the Hawai'i Department of Health in collaboration with HJMPH Manuscript Editors Tonya Lowery St. John MPH and Ranjani Starr MPH from the Hawai'i Department of Health.

Abstract

Home visiting services are cost-effective and improve the health of children and families among those at increased risk. From 1985-2008, home visiting services in Hawai'i were provided primarily through state funding of the Hawai'i Healthy Start Program, but the program was severely reduced due to the economy and state budget changes over the past decade. The Maternal and Child Health Branch (MCHB) in the Family Health Services Division responded to these changes by seeking out competitive grant opportunities and collaborations in order to continue to promote home visiting services to those children and families in need. In 2010, the MCHB was awarded a federally funded Maternal, Infant and Early Childhood Home Visiting (MIECHV) grant for home visiting services to promote maternal, infant, and early childhood health, safety and development, strong parent-child relationships, and responsible parenting. In 2011, the MCHB was also awarded a competitive MIECHV development grant that funded the re-establishment of the hospital Early Identification program. Families in need of additional support identified through this program are referred for family strengthening services to a network of existing home visiting programs called the Hawai'i Home Visiting Network (HHVN). The HHVN is supported by MIECHV and a small amount of state funds to assist programs with capacity building, training, professional development, quality assurance, and accreditation/certification support. The MIECHV grant requires that programs are evidence-based and address specific outcome measures and benchmarks. The HHVN provides home visiting services to families prenatally through 5 years of age that reside in specific at-risk communities, and is aimed at fostering positive parenting and reducing child maltreatment using a strength-based approach by targeting six protective factors: (1) social connections, (2) nurturing and attachment, (3) knowledge of parenting and child development, (4) parental resilience, (5) social and emotional competence of children, and (6) concrete supports for parents. This article provides an introduction to the HHVN as a diverse network of evidence-based home visiting programs with services currently available on all islands, and highlights aspects of home visiting programs that support the Family-Centered Medical Home (FCMH) model. The HHVN provides important services to families at risk and uses evidence-based practices to yield positive results. Health care professionals can support this network to promote the health of children and families by being aware that these home visiting services exist and encouraging families at-risk to participate. Continued collaboration and expanded partnerships with health providers can help strengthen the home visiting network and improve outcomes for children and families in Hawai'i.

Background

Home visiting services are effective in addressing the needs of families at-risk including reducing child maltreatment, improving maternal and child health, increasing school readiness,

and increasing knowledge of child development and positive parenting.¹ One case of child abuse is estimated to result in a lifetime cost of over \$210,000 for the surviving victim.² These costs include medical costs, productivity losses, criminal justice costs, and special education, and are estimated at \$124 billion in the United States annually for confirmed child abuse and neglect cases; so efforts to prevent the occurrence of child abuse have the potential to realize significant cost savings as well as improve health. In addition to preventing child abuse or neglect, home visiting programs have the opportunity to promote health across families and have a large impact on those they serve by offering education on safe sleep, accident prevention, healthy nutrition, breastfeeding, and other important areas of child health. Overall home visiting services have recently been estimated to save from \$1.80 to \$5.70 for every dollar invested.³ These savings are actualized by investing in home visiting programs that increase positive outcomes for families at-risk and reduce the dependence on public resources to address such things as child abuse and neglect, poor birth outcomes, poor school readiness, and attenuated academic achievement. To establish and clarify the effectiveness of home visiting programs to improve child health and reduce child maltreatment, the Department of Health and Human Services (DHHS) initiated the Home Visiting Evidence of Effectiveness (HomVEE) review of randomized clinical trials and quasi-experimental designs of home visiting models.¹ HomVEE results indicated that 12 home visiting models demonstrated positive effects and met the DHHS criteria for designation as an evidence-based model.⁴

Since starting as a pilot in one site in 1985 with expansion to a statewide system in 2001, the home visiting services funded through the MCHB in the state of Hawai'i have been implemented in a para-professional service model with goals to improve family functioning, promote child health and development, and prevent child abuse and neglect through the Hawai'i Healthy Start (HHS) Program.⁵ In 2007, HHS had a statewide home visiting program on all six (6) islands with a total of 17 sites and served 4,553 families statewide. In 2009, when the economy experienced a severe downturn, HHS closed all but two program sites, and discontinued its Early Identification (EID)

component in all birthing hospitals. The number of children enrolled in home visiting dropped significantly to just 227 and 295 children in 2010 and 2011, respectively. In 2010, The State of Hawai'i Department of Health, Family Health Services Division, Maternal and Child Health Branch received grant funds from the Maternal, Infant, Early Childhood Home Visiting (MIECHV) program, administered by the Health Resources and Services Administration (HRSA) to resume evidence-based home visiting services in the State of Hawai'i, resulting in the establishment of the Hawai'i Home Visiting Network (HHVN). This funding continues through FY2015 with possible expansion of home visiting services following this period based on available federal funds as determined by Congress.

Hawai'i Home Visiting: Practice Models

The HHVN is comprised of 4 of the MIECHV evidenced-based home visiting models identified through HomVEE: Early Head Start (EHS),⁶ Healthy Families America (HFA),⁷ Home Instruction of Parents of Preschool Youngsters (HIPPY),⁸ and Parents As Teachers (PAT),⁹ and two culturally specific promising practice home visiting models: *Pulama I Na Keiki*, "Cherish the Children" (PINK)¹⁰ and *Kulia I Ka Nu'u*, "Strive for the Highest Peak."¹¹ The HRSA MIECHV funds allowed the HHVN to support implementation of home visiting on all islands using the variety of evidence-based and culturally specific promising practices to address the varied needs of Hawai'i's diverse community. The multiple models assist the home visiting programs to best address the varied needs of those receiving services. The HHVN was created via a competitive application process for programs implementing evidence-informed or evidence-based home visiting models. As a result, ten non-profit community based organizations established the HHVN, which is supported by state and federal (HRSA MIECHV) funds and are providing home visiting services in specific communities on all islands throughout the state.

HHVN Evidence-Based Home Visiting Models

The four evidence-based home visiting models provided via the HHVN and their service areas are described below. Table 1 also shows a listing of the home visiting model and service areas for each community based organization.

EARLY HEAD START (EHS): "EHS targets low-income pregnant women and families with children from birth through age 3, most of whom are at or below the federal poverty level or who are eligible for Part C services under the Individuals with Disabilities Education Act in their state. The program provides early, continuous, intensive, and comprehensive child development and family support services. EHS home-based services include weekly 90-minute home visits and two group socialization activities per month for parents and their children."⁶ EHS program services provided through the HHVN are available on the islands of Hawai'i, Maui, and O'ahu (Table 1).

HEALTHY FAMILIES AMERICA (HFA): "HFA goals include reducing child maltreatment, increasing utilization of prenatal care, improving parent-child interactions, and promoting chil-

dren's school readiness. HFA programs offer hour-long home visits at least weekly until children are 6 months old, with the possibility for less frequent visits thereafter. Visits begin prenatally or within the first three months after a child's birth and continue until children are between 3 and 5 years old. In addition, many HFA sites offer parent support groups and father involvement programs."⁷ HFA program services provided through the HHVN are available on the islands of Hawai'i, Kaua'i, Lana'i, and O'ahu (Table 1).

HOME INSTRUCTION FOR PARENTS OF PRESCHOOL YOUNGSTERS (HIPPY AGE 3-5YEARS): "HIPPY aims to promote preschoolers' school readiness and support parents as their children's first teacher by providing instruction in the home. HIPPY offers weekly, hour-long home visits for 30 weeks a year, and two-hour group meetings monthly or at least six times a year. The home visiting paraprofessionals are typically drawn from the same population that is served by a HIPPY site, and each site is staffed by a professional program coordinator who supervises the home visitors."⁸ HIPPY program services provided through the HHVN are available on the islands of Hawai'i, Maui, and O'ahu (Table 1).

PARENTS AS TEACHERS (PAT): "The goal of the PAT program is to provide parents with child development knowledge and parenting support, provide early detection of developmental delays and health issues, prevent child abuse and neglect, and increase children's school readiness. The PAT model includes one-on-one home visits, monthly group meetings, developmental screenings, and a resource network for families. Parent educators conduct the home visits using structured visit plans and guided planning tools."⁹ PAT program services provided through the HHVN are available on the islands of Hawai'i, Maui, Moloka'i, and O'ahu (Table 1).

Culturally-Specific Promising Practices

In addition to the 4 evidence-based home visiting models, MIECHV funds allow for home visiting models that have yet to demonstrate evidence of effectiveness but are deemed a promising practice. In Hawai'i, there are two (2) culturally-specific promising practices in the HHVN, *Kulia I Ka Nu'u* and *Pulama I Na Keiki*. These two promising practices do not receive implementation funds directly through the HHVN, but are members of the HHVN and are provided with training and technical assistance to support their journey to becoming an evidence-based home visiting model.

Kulia I Ka Nu'u works with families with children age 2.5-5 years old and integrates a Montessori approach with Native Hawaiian culture. This program aims to support parents to ensure their child's school readiness and school success. Parent educators work with mothers and fathers to learn more about Native Hawaiian values and practices and incorporate these cultural values into the curriculum, which covers literacy, math, art, social studies, and science.¹¹ *Kulia I Ka Nu'u* provides services only on the island of O'ahu (Table 1).

Pulama I Na Keiki (PINK) provides services to Native Hawaiian families prenatally until the child turns 3 years old and

Table 1. HHVN members providing home visiting services by model, program name, organization, and service area (as of January 2014).			
Model	Program Name	Name of Organization	Service Area
Early Head Start	Early Head Start	Family Support Hawai'i (FSH) - Kona	Kona / Census Tract 214-215
Early Head Start	Early Head Start	Maui Family Support Services (MFSS)	Maui Island
Early Head Start	Early Head Start	Parents and Children Together (PACT) Early Head Start	Kailua, Kaneohe, Waimanalo, Central O'ahu
Healthy Families America	Healthy Start	Child & Family Service (CFS) - Kaua'i	Lihue / Census Tract 404-405
Healthy Families America	Healthy Start	Child & Family Service (CFS) – O'ahu	Central Oahu, Leeward Oahu, Waianae
Healthy Families America	Healthy Start	Maui Family Support Services (MFSS)	Lana'i
Healthy Families America	Healthy Start	Parents and Children Together (PACT) Early Head Start	Downtown – Kalihi / Census Tract 46-62
Healthy Families America	Healthy Start	Young Women's Christian Association (YWCA)	East Hawai'i Island Puna
Home Instruction for Parents of Preschool Youngsters	HIPPY	<i>Keiki O Ka 'Aina</i> Family Learning Centers of Hawai'i (KOKA)	Ewa – Kalaeloa / Census Tract 83-85, 9803 Kapolei – Makakilo / Census Tract 86, 115 Kona / Census Tract 214-215 Wailuku / Census Tract 306-313
Parents as Teachers	PAT	<i>Keiki O Ka 'Aina</i> Family Learning Centers of Hawai'i (KOKA)	Ewa – Kalaeloa / Census Tract 83-85, 9803 Kapolei – Makakilo / Census Tract 86, 115 Kona / Census Tract 214-215 Wailuku / Census Tract 306-313
Parents as Teachers	Ho'ala	The Institute for Native Pacific Education & Culture (INPEACE)	Waianae / Census Tract 99-100 Moloka'i
Promising Practice	<i>Kulia I Ka Nu'u</i> Strive for the Highest Peak	<i>Keiki O Ka 'Aina</i> Family Learning Centers of Hawai'i (KOKA)	Ewa, E. Honolulu, Koolaupoko, W. Honolulu, Wahiawa, Waianae
Promising Practice	<i>Pūlama I Na Keiki</i> Project (PINK) Cherish the Children	Alu Like	Hawai'i Island (Captain Cook, Holualoa, Kailua-Kona, Kealahou, Honaunau) Maui (Kahului, Kihei, Kula, Makawao, Pukalani, Paia, Puunene, Wailuku) O'ahu (Aiea, Ewa Beach, Haleiwa, Honolulu, Kahuku, Kaneohe, Kapolei, Mililani, Pearl City, Wahiawa, Waiāluā, Waianae, Waimanalo, Waipahu)

assists families in identifying and learning more about their cultural traditions and the value of strengthening these cultural aspects within their family life. PINK acknowledges the rich cultural diversity of families in Hawai'i, such that, in addition to Hawaiian cultural values, the cultural values of parent's family of origin are also supported and integrated into the curriculum. Parent educators provide culturally based information about prenatal health, childbirth, child development, and child rearing.¹⁰ *Pūlama I Na Keiki*, provides services on the islands of Hawai'i, Maui, and O'ahu (Table 1).

These programs highlight and celebrate the cultural diversity of families living in Hawai'i by strengthening not only Native Hawaiian values and cultural traditions, but, also the cultural values, traditions and practices of each parent's family of origin. As members of the HHVN, the goal is to develop a base of evidence supported by data to demonstrate model fidelity and positive outcomes for families and children. The HHVN

will continue to provide technical assistance in preparing for and conducting evaluations to establish effectiveness of these culturally-specific home visiting models.

Hawai'i Home Visiting: Priority Populations and Benchmarks

In an effort to improve outcomes for families at-risk and to reduce costs of providing services to address the needs of families at-risk, the HRSA MIECHV program identified 8 priority populations to provide evidence-based home visiting services supported by MIECHV funding. In alignment with this vision, the HHVN provides services to these 8 priority populations:

- Families at-risk or in at-risk communities (eg, families of children with low birth weight, families with a history of infant mortality, communities with high levels of poverty, high school dropout, unemployment, receiving high rates of governmental assistance, and those with a high rate of child abuse and neglect)

- Low-income families
- Pregnant women under age 21
- Families with a history of child abuse or neglect
- Families with a history of substance abuse
- Families that have users of tobacco in the home
- Families who have or have had a child/children with low student achievement
- Families who have a child/children with developmental delays or disabilities
- Families that include individuals who are serving or formerly served in the Armed Forces, including such families that have members in the Armed Forces who have had multiple deployments outside of the United States

All families who enroll in a voluntary evidence-based home visiting program within the HHVN are provided with weekly home visits for at least the first 6 months, after which, in collaboration with the family, the frequency of home visits is adjusted to one or two times per month. Home visitors provide families with information about a child's social and emotional needs, tools for supporting healthy child development, and also assess the child's or children's development using a standardized screening tool with the Ages and Stages Questionnaires (ASQ-3 and ASQ-SE).^{12,13} Home visitors guide parents in a variety of parent-child interactions that are a key element in fostering healthy attachment between parents and children. Home visiting programs support parents to increase their confidence in being a parent. The family's needs are assessed during each home visit and appropriate supports are provided to assist families, such as referrals to programs like the Special Supplemental Nutrition Program for Women, Infants and Children (WIC), Temporary Assistance Needy Families (TANF) and Supplemental Nutrition Assistance Program (SNAP). Help is also provided in obtaining active insurance coverage, conducting reviews to ensure that all child-well visits are completed and immunizations are up to date, and screenings/appropriate referrals for domestic violence and post-partum depression are made.

The HHVN currently aims to:

- Address the diverse needs of children and families living in at-risk communities by offering a diverse array of evidence-based home visiting program experiences;
- Extend services beyond 3 years of age, up to age 5 years with the inclusion of the HIPPPY Program;
- Provide services on all islands through the state;
- Develop a training institute to ensure home visitor competencies are supported across home visiting models;

- Integrate the HHVN into a comprehensive, early childhood system through participation with Executive Office of Early Learning, Early Childhood Community of Educators, and integration with the Family-Centered Medical Home (FCMH);
- Represent diverse models and varying interests of families with the potential to engage and retain families from a variety of backgrounds and communities.

As part of the expansion of evidence-based home visiting services supported by MIECHV funds, the HHVN aims to address six legislatively-mandated benchmark areas identified by HRSA MIECHV:

- Improve Maternal and Newborn Health
- Reduce child injuries, abuse, neglect or maltreatment, and reduce emergency department visits
- Improve School Readiness and Achievement
- Screen for Domestic Violence
- Increase family economic self-sufficiency
- Coordinate referrals to community resources and supports

In addition to addressing these benchmark areas, the HHVN is committed to providing ongoing training and technical assistance to local agencies within the HHVN through the development of a home visitor training institute and the integration of Continuous Quality Improvement (CQI) processes within each implementing agency, within each home visiting model and across the HHVN.

In 2013, the HHVN provided home visiting services to 410 families and 444 children and completed 4,816 home visits, which is approximately a 50% increase from the number of children served in 2011 prior to receiving MIECHV federal funding. As a result of program development, home visiting services provided by the HHVN are expected to increase dramatically in 2014, potentially increasing enrollment by 25%-30%.

Home Visiting Network: Collaborations and Partnerships

Early Identification (EID) Program

As the HHVN expands the availability of home visiting services, the system for identifying potentially eligible families for home visiting services through the Early Identification (EID) program is expanding as well (Table 2). The EID program under the HFA model focuses on screening within birthing hospitals. Under the expansion of this EID in HHVN, efforts are made to reach families earlier through outreach to pregnant women as well as in birthing hospitals. EID providers use different approaches on each island to reach pregnant women, such as participating in community fairs and events, building relationships with community health centers, and direct community outreach (eg, door-to-door). EID screens pregnant women and families with newborns for risk factors using a 15-point screen and determines

MIECHV/HHVN program eligibility. EID also serves as liaison between families and other resources to support families in the community. Within birthing hospitals, the EID program identifies individuals living in communities at higher risk. In 2013, EID screened 4,928 families of which 66% were eligible and offered home visiting services. Families not eligible or not interested in receiving home visiting services were connected to other resources in the community. Currently, EID services located in birthing hospitals are provided at Kapi'olani Medical Center for Women and Children on O'ahu, Hilo Medical Center, Kona Community Hospital, Maui Memorial Medical Center, and Wilcox Memorial Hospital on Kaua'i (Table 2). These hospitals accounted for 51.7% of births in hospitals in Hawai'i in 2008-2010, which represents about 9,900 births annually.¹⁴

Collaboration with Executive Office of Early Learning

The HHVN also aims to build collaborative relationships with other agencies, providers, and communities across the state to support maternal and child health across a spectrum of systems. The HHVN is actively involved with the Executive Office of Early Learning with the goal of developing a comprehensive early childhood system within the state, which consists of various public and private partnerships to support the healthy development of families and children. The HHVN is working with the Early Childhood Educational System with the goal of implementing a standardized child development assessment tool, which will assist providers and agencies within the state to have consistent communication and assessment of a child's development as the child transitions through the various educational settings: home, preschool, pre-kindergarten, and kindergarten.

Collaboration with the Family-Centered Medical Home (FCMH)

In addition to providing home visiting services, the HHVN also supports the FCMH model as home visitors work with families to build communicative and supportive relationships with their pediatricians and develop collaborative processes for sharing relevant information that will assist families who are often engaged in different childhood systems.

One of the specific benchmarks within the HHVN is to ensure that all children enrolled receive all of their immunizations and complete their child well-visits. Therefore, home visitors aim to work in collaboration with the family pediatrician to monitor and support families in the completion of these visits. Additionally, home visitors administer a standardized screening tool, the Ages and Stages Questionnaire (ASQ) that parents are able to complete themselves in advance of seeing a health care provider, which has been shown to identify and help parent's articulate concerns they may be having about their child's development. Home visitors administer and review the results of the ASQ with parents and provide parents with referrals to address any potential developmental delays, as well as provide some basic enhancements for parents where possible. In 2013, 99% of children enrolled in HHVN services received at least one development screen. The HHVN offers training and technical assistance to administer the developmental screening test and works in collaboration with the Early Childhood Educational System and the Executive Office of Early Learning to establish a consistent method for assessing child development across the state.

Home visitors also monitor other benchmarks such as the frequency of emergency department visits by caregivers and children as well as their insurance status with the goal of reducing the number of non-emergency visits to the emergency department and connecting all families to health insurance coverage.

The HHVN is actively involved in building relationships with community health centers and providers as another strategy to reach prenatal families at risk through the EID program. The HHVN began collaboration with the American Academy of Pediatrics, Hawai'i Chapter in late 2013 to evaluate and assess the best methods for communication and building relationships between pediatricians and home visitors. Information is collected through focus groups and open discussion forums in order to identify and address any challenges and obstacles to establishing a FCMH for each family. Health care providers are encouraged to support prenatal families in receiving home visiting services when they are approached in the hospital

Name of Organization	Contact Information	Hospital	Service Area
Catholic Charities Hawai'i (CCH)	808-527-4680 808-527-4690	Kapi'olani Medical Center for Women and Children	Central O'ahu, Leeward O'ahu, Waianae / Census Tract 99-100 Downtown – Kalihi / Census Tract 46-62 Ewa – Kalaeloa / Census Tract 83-85, 9803 Kapolei – Makakilo / Census Tract 86, 115
Child & Family Service (CFS) - Kaua'i	808-245-5914	Wilcox Memorial Hospital	Lihue / Census Tract 404-405
Family Support Hawai'i (FSH) - Kona	808-334-4127	Kona Community Hospital	Kona / Census Tract 214-215
Young Women's Christian Association (YWCA)	808-930-5746 808-930-5719	Hilo Medical Center	Hilo / Census Tract 201-211, 219-221
Maui Family Support Services (MFSS)	808-242-0900	Maui Memorial Medical Center	Wailuku/ Census Tract 306-313

following the birth of their baby or they may contact the EID program during pregnancy for those families that may benefit from these services (Table 2).

Summary

The HHVN aims to address the diverse needs of families and children residing in at-risk communities across the state through the implementation of four evidence-based home visiting models: EHS, HFA, HIPPY, and PAT and two locally developed culturally appropriate interventions. Investment in evidence-based home visiting models has been shown to reduce costs by \$1.80 to \$5.70 for every dollar invested in home visiting programs.³ In addition to these benefits, the HHVN also strives to embed itself within the context of multiple early childhood systems, such as the Early Childhood Educational System, by collaborating with educators and providing training on a standardized child development tool to support children and families as they transition from home visiting programs into the educational system. The HHVN is also building relationships with pediatricians and exploring ways to enhance communication in support of a FCMH model. Additionally, the HHVN EID program continues to reach out to community health centers to increase enrollment of pregnant women.

With the goal of continued expansion and sustained support for the HHVN, braided funding from State and Federal resources will allow the HHVN to continue to grow and increase home visiting services by expanding into additional at-risk communities and establishing EID programs in more birthing hospitals across the state. The HHVN provides important services to families at risk and uses evidence-based practices to yield positive results. Health care professionals can support this network to promote health of children and families through being aware that these

home visiting services exist, and encouraging families at-risk that are approached by HVHN outreach workers to participate. Continued collaboration and expanding partnerships with health providers could help strengthen the home visiting network and improve outcomes for children and families in Hawai'i.

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TWO STEPS FORWARD, ONE STEP BACK.

Perhaps stimulated by ophthalmologists using ultra-sound to break cataracts into fragments, gynecologists devised electric uterine “morcellation.” This method of mincing up benign uterine tissue allows for removal by laparoscopy. The intent is small-incision surgery with less morbidity and shorter hospital stay. Of the half million hysterectomies annually in the United States, estimates are as many as 16% are by morcellation. However, there is rising concern about the procedure because of the potential to spread cancer in rare cases. The issue went big time when Amy Reed, a Boston anesthesiologist, learned she had advanced stage 4 cancer. Morcellation potentially worsened the prognosis for spreading her malignancy. Medical centers are setting rules on how doctors should handle hysterectomies. So far, no mention has been made of morcellation for kidney, spleen or pancreas surgery.

WHEN WALKING INTO AN OVEN (OR FREEZER) MAKE IT KNOWN TO OTHERS.

In October 2013 Jose Melena, a 62 year-old man with 5 years experience at the Bumble Bee tuna plant in Southern California, was ordered to load an oven. He parked his pallet jack at the door and entered the oven, apparently to adjust a chain. A second employee came by, noticed the pallet jack parked at the oven, and assumed Melena had gone to the rest room. He rolled the pallet in and sealed the door. After Melena was missed, a thorough search failed to find any trace of him. An employee suggested that the last oven loaded be checked. The lifeless roasted body of Jose Melena was found at the “exit” side of the oven. The company stated safety is a top priority and they are cooperating with authorities including Cal/OSHA.

IN OPHTHALMIC RESEARCH, A DOUBLE-BLIND STUDY DOESN'T MEAN WHAT IT SOUNDS LIKE.

A long-term, randomized, double-blind study, was conducted by Division of Aging, Department of Medicine Brigham and Women's Hospital and Harvard Medical School. The intent was to determine the effect of multivitamin supplement for incidence of cataract and macular degeneration (AMD). The population studied was 14,641 physicians age 50 and beyond. After 11.2 years the data analysis revealed that daily multivitamin use modestly decreased the risk of cataract but had no effect on visually significant AMD. Not much for Bausch and Lomb to boast about in their direct-to-consumer ads.

MORE WOMEN SMOKERS: A TRUE MEASURE OF GENDER EQUALITY.

A study (JAMA 2014) of tobacco patterns reports that more men than women smoke in every country except Sweden. But smoking is on the rise among women in some countries, especially in the Middle East and Eastern Europe. The biggest increases in smoking among women from 1980 to 2012, were in Saudi Arabia, the United Arab Emirates and Tunisia. Globally, smoking rates declined over the last 30 years, dropping from 41% to 31% in men and from nearly 11 to 6 per cent in women. However, because of population growth, the total number of daily smokers increased from 721 million to 967 million. (The cigarette makers are not in trouble.)

ONE EYE TURNED? A MINOR COSMETIC PROBLEM. NOT!

Experienced eye surgeons know that obvious strabismus (eye muscle deviation) is a cosmetic problem, frequently accompanied with psychological overlay. A team of Swiss researchers examined 31 healthy volunteers with magnetic resonance imaging (MRI) to assess and compare their reactions to images of both strabismic and normal eyes (Ophthalmology 2013). The observers denied any negative

response, but the MRI led to significant activation of the amygdala and hippocampus in 30 of 31 volunteers. (The one with no reaction was an ophthalmologist.) Earlier studies have shown that amygdala activations play an important role in processing negative emotions. The intent of the study is to convince reluctant insurers to pay for eye muscle surgery. Moreover, the team wants family physicians to take strabismus more seriously on the grounds that it is not merely a cosmetic concern.

HAND ME MY CANCER-SPOTTING GLASSES.

When surgeons remove a tumor, diseased tissue can be difficult to distinguish where it blends with normal margins. At Washington University in St. Louis investigators found they could inject trace amounts of a fluorescent marker into a patient's bloodstream. A peptide in the tracer gets trapped inside cancer cells. After four hours the tracer will flow out of healthy tissue, and the fluorescent marker can be seen with infra-red light. Wearing special goggles, the surgeon can define the tumor in real time to reduce or eliminate the need for follow up surgeries. The technology is not new, but the scheme is. Research funds are being provided by the National Institutes of Health and the Department of Defense.

MEDICAL CARE BY INTERNET: THERE MUST BE STRICT GUIDELINES.

The Florida legislature is considering a bill that would allow unlicensed out-of-state physicians and practitioners to not only practice telemedicine, but also prescribe drugs and controlled substances over the internet. The Florida Medical Association is strongly opposed, and trying to mobilize voters. A non-scientific poll was taken that found 70% of respondents (602) were against the bill. This should be a no-brainer, but politicians are not noted for using “little grey cells.”

I HURT MY BACK SHOVELING SNOW, DOC. I NEED A TOKE OR TWO.

In the state of Colorado one ounce of recreational marijuana sells for \$300 to \$350 plus tax. Meanwhile with prescription, a like amount of the same marijuana at the medical store is priced at \$200 and no sales tax. The prescription line is forming at the pharmacy.

COULD SOMETHING ELSE GO WRONG?

Robert Williams, age 42, was charged with robbing the PNC bank in Laurel, Maryland, in February. Starring in a surveillance video, Williams twice spilled his entire loot on the bank floor. He was able to scoop up the bills and attempted to flee in his pick-up, but Police punctured his tires. He ran from his truck, fell on ice and broke his head open. Not a good day.

ADDENDA

- Americans spend twice as much each year for kids' athletic shoes as they do for kids' books.
- The largest fossilized dinosaur dropping ever found measures 22" x 8" x 7.5".
- Men are ready to barbecue. If danger is involved we like to do it.
- The most effective birth control ever devised is a toddler with croup and diaper rash.
- Men always scratch their asses when they're thinking, because that's where their brains are.

ALOHA AND KEEP THE FAITH *rt*

(Editorial comment is strictly that of the writer.)

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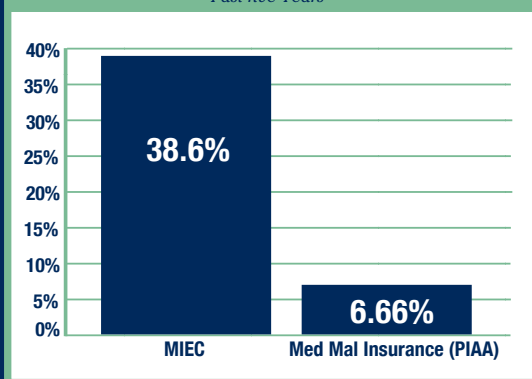
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