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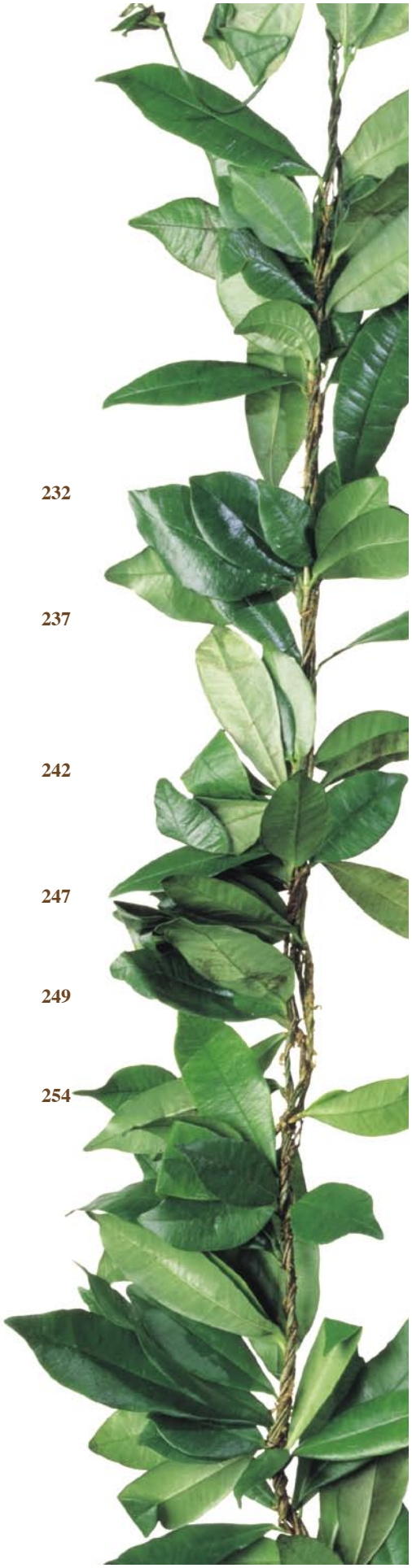

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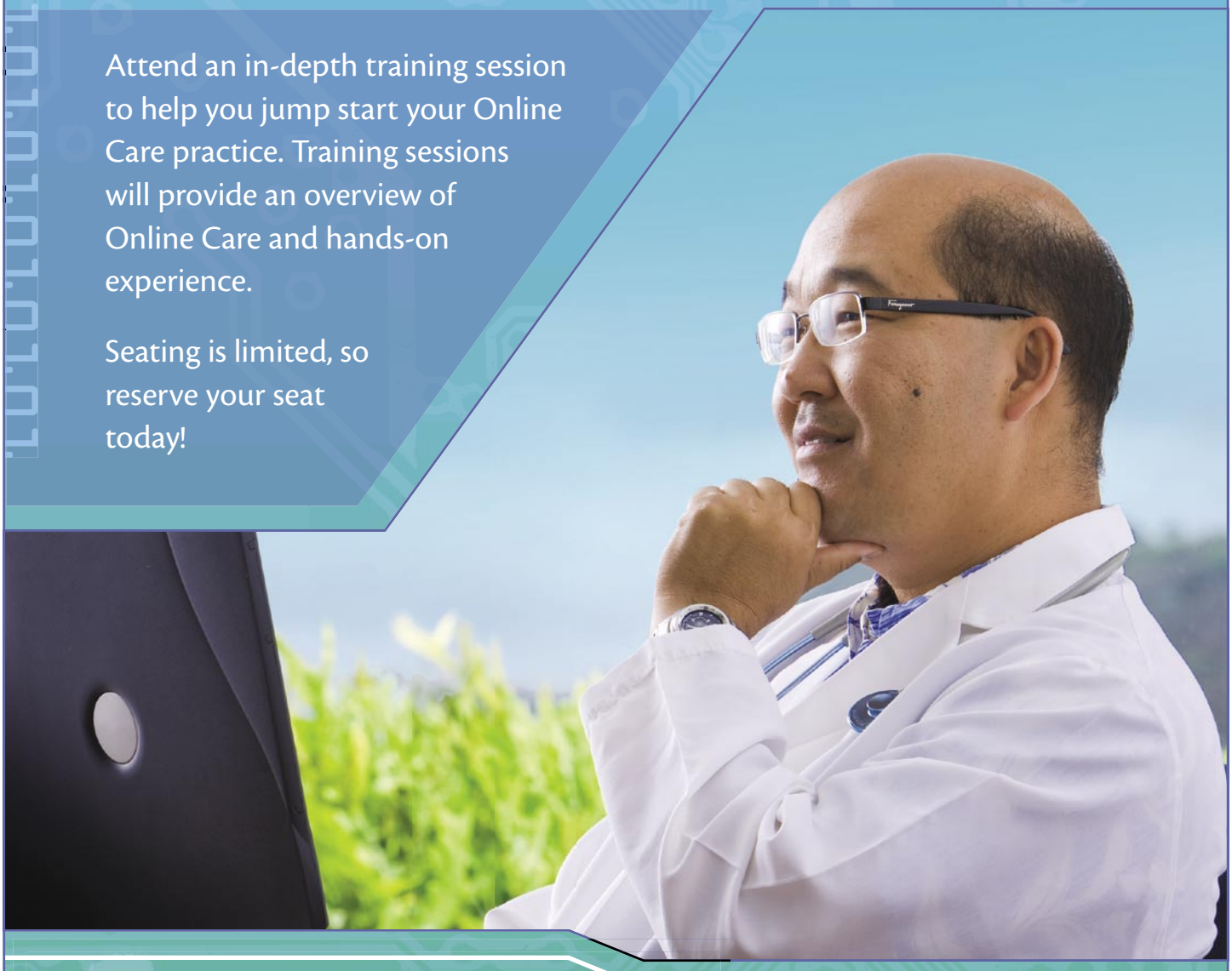

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Risk Factors for Community-associated Methicillin-resistant Staphylococcus Aureus Cellulitis – and the Value of Recognition

Thana Khawcharoenporn MD; Alan D. Tice MD; Andrew Grandinetti PhD; and Dominic Chow MD, MPH

Abstract

Objectives: To identify the risk factors for community-associated methicillin-resistant Staphylococcus aureus (CA-MRSA) cellulitis.

Methods: A review of risk factors for CA-MRSA skin and soft tissue infection in previously published literature was first performed. A retrospective cohort study was then conducted in a teaching ambulatory-care clinic of a tertiary medical center in Honolulu, Hawai'i.

Results: Of 137 cases with cellulitis diagnosed from January 2005 to December 2007, MRSA was recovered from 85 (62%) of patients who presented with either abscesses or skin ulcers. The recovery of MRSA was significantly associated with obesity (p=0.01), presence of abscesses (p=0.01), and lesions involving the head and neck (p=0.04). Independent risk factors by multivariate logistic regression analysis included the presence of abscesses [adjusted odds ratio (aOR) 2.72; 95% confidence interval (CI) 1.27-5.83; p=0.01] and obesity (aOR 2.33; 95% CI 1.10-4.97; p =0.03). Patients with CA-MRSA were less likely to receive an appropriate antibiotic (p=0.04) and were more likely to require antibiotic change at evaluation in one week (p=0.04) compared with patients infected with non-MRSA bacteria.

Conclusions: The presence of abscesses and obesity were significantly associated with CA-MRSA cellulitis. Empiric therapy with antibiotics active against MRSA should be guided by these risk factors.

Introduction

Methicillin-resistant *Staphylococcus aureus* (MRSA) has become a significant healthcare problem, especially in hospital settings over the last 40 years. In the past decade, this formidable agent has emerged with a new strain in the community known as community-associated MRSA (CA-MRSA). Outbreaks of CA-MRSA infections have been increasingly reported worldwide with skin and soft tissue as the most common manifestation.[1,2] In the United States, the prevalence of CA-MRSA skin and soft tissue infection (SSTI) have been reported to range from 15 to 74% of all SSTIs depending on the location.[3] Hawaii is recognized as a state with one of the highest rates of MRSA infections.[4,5] A study of 1,389 individuals hospitalized for MRSA infections in Hawai'i demonstrated that 28% were community-acquired and the incidence of CA-MRSA infections had significantly increased during a recent 2-year study period.[5]

Risk factors for CA-MRSA infections reported in previous studies include African-American ethnicity, men who have sex with men, military personnel, athletes participating in contact sports, close contact with persons who have MRSA, injection drug use (IDU), recent antibiotic use and prior hospitalization.[3,6-11] The relative importance of these risk factors and potentially other factors may depend on geographic and climate differences. Identification of risk factors is important in initial decisions about antibiotic selection as clinical outcomes are dependent on their activity with SSTIs.[12,13]

Methods

Literature review. A comprehensive search was performed for clinical studies published in the English literature using the Pubmed databases. Search terms included "risk factors," "methicillin-resistant *Staphylococcus aureus*" and "skin and soft tissue infection." Only the studies that included patients with SSTIs were reviewed.

Study population and setting. This retrospective cohort study included adult patients (age ≥ 18 years) with cellulitis who presented to the Queen Emma Clinic, a teaching clinic, which provides primary and specialty care to the underserved in Honolulu, Hawai'i. The study was conducted from January 2005 through December 2007. The study was approved by the Queen's Medical Center Institutional Review Board.

Study design and definitions. The study patients were identified from the clinic's electronic medical record system using the International Classification of Diseases (ICD-9) codes of 681 and 682. Only patients with a positive culture were included and those were divided into MRSA and non-MRSA categories. Demographic characteristics, clinical presentations, underlying conditions, general and microbiology laboratory data, treatment, outcomes data were collected. Obesity was defined as having a body mass index (BMI) ≥ 30. Patients were categorized as cigarette smokers, alcohol drinkers or IDUs if they were documented to be using these substances at evaluation. Patients identified their own ethnic group. Patients were documented as having chronic kidney disease (CKD) based on the K/DOQI clinical practice guidelines for chronic kidney disease (stage I = glomerular filtration rate (GFR) ≥ 90 mL/min/1.73m^2; stage II = GFR 60-89 mL/min/1.73m^2; stage III = GFR 30-59 mL/min/1.73m^2; stage IV = GFR 15-29 mL/min/1.73m^2 and stage V = GFR < 15 mL/min/1.73m^2).[14] Recent hospitalization was defined as being hospitalized within the past month. A cellulitis severity scale was created specifically for this study. A score was given for clinical presentations and laboratory data (Table 1). Patients were then categorized as having mild, moderate and severe disease severity if their calculated scores were 0-1, 2-3 and 4-6 respectively.

Treatment success was defined as clinical improvement or resolution of signs and symptoms of cellulitis when they returned for evaluation a week later. Cases were considered failures if there was a change in antibiotics, surgical intervention or hospitalization.

Table 1.— Clinical Presentations Used in Cellulitis Severity Scoring

Clinical Presentations	Score
Largest lesion >5cm. in a longest diameter	1
More than 3 affected areas	1
Concurrent ulcers and/or abscesses	1
Fever (temperature >38.0 ºC or >100.4 ºF	1
Leukocytosis (white blood cell >12,000 cells/mm^3 in male, >11,000 cells/mm^3 in female) or leukopenia (white blood cells <4,000 cells/mm^3 in both sexes)	1
Hypotension (systolic blood pressure <90 mmHg or 20 mmHg dropped from baseline)	1

Identification and susceptibility testing of isolates from infected sites were performed in accordance with the Clinical and Laboratory Standards Institute guidelines.[15,16]

Statistical analysis. Categorical and continuous variables were compared using the Pearson's χ^2 test, Fisher's exact test and student's t-test respectively. All tests were two-tailed with p value <0.05 considered significant. Logistic regression analysis was performed to identify independent risk factors for MRSA cellulitis. All statistical analyses were conducted using SPSS for Window software, version 15.0.

Results

A total of 462 episodes of cellulitis were identified during the study period. Three hundred and twenty-five episodes were excluded because no culture was done or no organism was recovered. The final cohort consisted of 137 patients with 137 independent episodes of cellulitis. Eighty-eight patients presented with abscesses while 49 patients had concurrent ulcers.

Patient characteristics. The mean age of the cohort patients was 48 years (range, 18-73). Eighty four (61%) were male. Self-identified race or ethnic groups included: 54% Pacific Islanders (PIs) (including Hawaiian, Chuukese, Samoan, American Samoan, Marshallese, and Tongan), 33% Caucasians, 9% Asians and 4% other groups. Fifteen percent were homeless. Comorbidities included obesity (45%), diabetes mellitus (36%), cigarette smoking (27%), alcohol excess (12%), CKD (stage III-V) (9%) and IDU (4%). The mean duration of symptoms before the presentations was 7 days (range, 1-30 days). Infections were located on the lower extremities in 47%, torso in 34%, upper extremities in 21% and head and neck in 8%. Forty-nine percent had mild-severity cellulitis and 51% had moderate cellulitis. There were no cases of severe cellultis.

Table 2.— Comparison of Demographic and Clinical Characteristics of Outpatients with Cellulitis Caused by Methicillin-resistant *Staphylococcus aureus* (MRSA) and Non-MRSA Bacteria

Characteristics	MRSA (n = 85)	Non-MRSA bacteria[a] (n = 52)	OR (95% CI)	p-value[b]
Age, mean years (range)	47 (18-70)	50 (18-73)	– – –	0.19[c]
Male sex	54 (64)	31 (60)	1.18 (0.58-2.39)	0.72
Ethnicity				
Pacific Islander	43 (51)	31 (60)	0.69 (0.35-1.39)	0.38
Caucasian	33 (39)	12 (23)	2.12 (0.98-4.56)	0.06
Asian	6 (7)	6 (12)	0.58 (0.19-1.82)	0.37
Homelessness	13 (15)	7 (13)	1.16 (0.44-3.04)	0.81
Underlying conditions				
Obesity (BMI ≥ 30)	45 (53)	16 (31)	2.53 (1.23-5.20)	0.01
Diabetes mellitus	25 (29)	25 (48)	0.45 (0.22-0.92)	0.03
Cigarette smoker	22 (26)	15 (29)	0.86 (0.40-1.85)	0.70
Alcoholic drinker	11 (13)	5 (10)	1.40 (0.47-4.09)	0.79
CKD (stage III-V)	6 (7)	7 (13)	0.49 (0.16-1.48)	0.24
Injecting drug use	5 (6)	1 (2)	3.19 (0.47-21.04)	0.41
Recent skin infections	10 (12)	5 (10)	1.25 (0.42-3.72)	0.78
Hospitalization within a month	6 (7)	5 (10)	0.71 (0.22-2.33)	0.75
Cellulitis presentations				
Head/neck involvement	10 (12)	1 (2)	6.80 (1.08-42.16)	0.04
Upper extremity involvement	21 (25)	8 (15)	1.81 (0.75-4.35)	0.28
Trunk involvement	32 (38)	14 (27)	1.64 (0.78-3.45)	0.26
Lower extremity involvement	33 (39)	32 (62)	0.40 (0.20-0.80)	0.01
Cellulitis with ulcers	23 (27)	26 (50)	0.37 (0.18-0.76)	0.01
Cellulitis with abscesses	62 (73)	26 (50)	2.70 (1.31-5.54)	0.01
Severity of cellulitis				
Mild	43 (51)	24 (46)	1.14 (0.57-2.27)	0.73
Moderate	42 (49)	28 (54)	0.84 (0.42-1.67)	0.73
Severe	0 (0)	0 (0)	– – –	– – –

Data are number (%) of episodes, unless otherwise indicated. [a]Include methicillin-sensitive Staphylococcus aureus (n=31), β-hemolytic streptococci (n=6), Pseudomonas aeruginosa (n=4), Klebsiella pneumoniae (n=3), Proteus mirabilis (n=3), Escherichia coli (n=2), Serratia marcescens (n=1) Acinetobacter baumanii (n=1) and Propionibacterium acnes (n=1). [b]Determined by the χ^2 test, unless otherwise indicated. [c]Determined by the student's t-test. Abbreviations: CI = confidence interval; BMI = body mass index; CKD = chronic kidney disease; I&D = incision and drainage; MRSA = methicillin-resistant Staphylococcus aureus; OR = odd ratios.

Therapy and microbiological data. Fifteen patients were hospitalized. Of the remaining 122 patients, 118 (97%) patients were empirically treated with oral antibiotics. Trimethoprim-sulfamethoxazole (TMP-SMX), cephalexin, and clindamycin were the three most commonly prescribed oral antibiotics (48%, 33% and 13% respectively). Other prescribed antibiotics included amoxicillin-clavulanate and cloxacillin. Cultures of the 137 patients revealed MRSA in 62%, methicillin-sensitive *Staphylococcus aureus* (MSSA) in 23%, β-hemolytic *streptococci* in 4%, *Pseudomonas aeruginosa* in 3%, *Klebsiella pneumoniae* in 2%, *Proteus mirabilis* in 2%, *Escherichia coli* in 1%, *Serratia marcescens* in 1%, *Acinetobacter baumanii* in 1% and *Propionibacterium acnes* in 1%.

Risk factors for MRSA cellulitis, treatment and outcomes. Patient characteristics, treatment and outcomes were compared between MRSA and non-MRSA-infected patients and are displayed in tables 2 and 3. Antimicrobial susceptibility data of MRSA was shown in table 4. Patients with MRSA cellulitis were significantly more obese ($p=0.01$), present with abscesses ($p=0.01$) and have lesions that involved the head and neck compared with those who had other bacteria ($p=0.04$). The non-MRSA group had more diabetic patients ($p=0.03$) and presented with concurrent ulcers ($p=0.01$) and lower extremity involvement ($p=0.01$) more often than MRSA patients. By multivariate logistic regression analysis (Table 5), independent risk factors for MRSA cellulitis were presence of abscesses [adjusted odds ratio (aOR) 2.72; 95% confidence interval (CI) 1.27-5.83; $p=0.01$] and obesity (aOR 2.33; 95% CI 1.10-4.97; $p=0.03$).

Choice of an antibiotic determined to be inactive by standard laboratory methodology was more likely in the MRSA group ($p=0.04$) and was associated with a change in prescription and continuation of antibiotics for an additional week ($p=0.04$) (Table 3).

Table 3.— Comparison of Treatment and Outcomes of Outpatients with Cellulitis Caused by Methicillin-resistant *Staphylococcus aureus* (MRSA) and Non-MRSA Bacteria				
Variables	**MRSA (n = 80)**	**Non-MRSA bacteria[a] (n = 42)**	**OR (95% CI)**	**p-value[b]**
Initial treatment				
Antibiotics	77 (96)	41 (98)	0.63 (0.09-4.56)	1.00
TMP-SMX[c]	40 (52)	17 (41)	1.53 (0.71-3.26)	0.34
Cephalexin[c]	25 (32)	14 (34)	0.93 (0.42-2.05)	1.00
Clindamycin[c]	6 (8)	9 (22)	0.30 (0.10-0.89)	0.04
Cloxacillin or amoxicillin-clavulinic acid[c]	6 (8)	1 (2)	3.38 (0.51-21.96)	0.42
Active antibiotics[c]	45 (58)	32 (78)	0.40 (0.17-0.93)	0.04
Outcomes				
Clinical success	51 (64)	33 (79)	0.48 (0.21-1.13)	0.09
Treatment change	30 (38)	10 (24)	1.92 (0.84-4.40)	0.16
Antibiotic change	20 (25)	4 (10)	3.17 (1.05-9.50)	0.04
Antibiotic change and additional I&D	3 (4)	1 (2)	1.60 (0.22-11.44)	1.00
Hospitalization	5 (6)	4 (10)	0.63 (0.17-2.31)	0.49

Data are number (%) of episodes. [a]Include Methicillin-sensitive Staphylococcus aureus (MSSA), β-hemolytic streptococci, Pseudomonas aeruginosa, Klebsiella pneumoniae, Serratia marcescens, Acinetobacter baumanii, Escherichia coli and Proteus mirabilis. [b]Determined by the χ^2 test. [c]Total patients with MRSA infection = 77; total patients with non-MRSA infection = 41
Abbreviations: CI = confidence interval; I&D = incision and drainage; MRSA = methicillin-resistant Staphylococcus aureus; OR = odd ratios; TMP-SMX = trimethoprim-sulfamethoxazole.

Table 4.— Antimicrobial Susceptibility Data of Methicillin-resistant *Staphylococcus aureus* Isolates[a]	
Antibiotics	**Number of susceptible isolates/number of tested isolates (%)**
Erythromycin	32/85 (38)
Clindamycin[b]	72/85 (85)
Levofloxacin	75/85 (88)
Tetracycline	82/85 (97)
Trimethoprim-sulfamethoxazole	85/85 (100)
Gentamicin	85/85 (100)
Rifampicin	85/85 (100)
Vancomycin	85/85 (100)

[a]All isolates were recovered from culture specimens obtained during outpatient visit or within 48 hours after hospitalization
[b]The double-disk diffusion test was performed routinely for all erythromycin-resistant Staphylococcus aureus isolates that were susceptible to clindamycin.

Table 5.— Independent Risk Factors for CA-MRSA Cellulitis by Multivariate Logistic Regression Analysis		
Characteristics	**Adjusted Odd Ratio (95% confidence interval)**	**p-value**
Presence of abscesses	2.72 (1.27-5.83)	0.01
Obesity (body mass index ≥ 30)	2.33 (1.10-4.97)	0.03

Discussion

Cellulitis is one of the most common infections encountered by physicians in outpatient settings and is usually treated with oral antibiotics. The increase in methicillin resistance among these organisms worldwide has made the treatment more complicated and challenging. Whether empiric antibiotic therapy needs to be active against MRSA is difficult to determine but evaluation of risk factors can help.[11,17] We found a high incidence rate of MRSA infection of 54% in our clinic, which increased significantly from 32% at the beginning of the study 4 years prior.[5] We believe the majority of our isolates should be considered CA-MRSA as they were recovered from outpatients and their susceptibility patterns were similar to those of isolates in other studies of CA-MRSA infections.[3,5,6] While obesity is a known risk factor for SSTIs,[18] the association between obesity and CA-MRSA-related SSTIs has not been established.[11,19] Another significant association identified in our study is the presence of abscesses. This may represent a manifestation of virulence factors such as Panton-Valentine Leukocidin or unique characteristics associated with the new CA-MRSA strains.[9] Together, obesity with abscess formation should lead to strong consideration of empiric therapy to include MRSA in an outpatient setting in our community.

This study is limited in that it is a retrospective study with a relatively small sample size. These factors may have been responsible for our failure to find a significant difference between MRSA and non-MRSA patients associated with ethnicity or injection drug use. The study also lacks information on history of close contact with

persons with skin infections which was shown to be a significant risk factor in previous studies.[3,8,10] Lastly, we did not perform molecular testing such as pulse-field gel electrophoresis, or typing of resistance and toxin genes on our isolates.

The clinical importance of active antibiotic treatment for CA-MRSA SSTIs has been recently established in the literature.[13] This study demonstrated a significantly higher rate of clinical failure in patients treated with antibiotics judged inactive by standard laboratory methods against MRSA.[13] In our study, patients with CA-MRSA were more likely than those with other bacteria to receive inactive empiric antibiotics (58% vs. 78%) and required antibiotic change at the follow-up visits (25% vs. 10%). These findings reflect that physicians might not be aware of the incidence and susceptibility of CA-MRSA as a cause of cellulitis in the community. Although statistical significance was not reached, there was a trend towards lower clinical success rate among CA-MRSA patients in comparison to other bacterial groups (64% vs. 79%) possibly as a result of inactive empiric antibiotic use.

In summary, our study suggests that presence of abscesses and obesity are strongly associated with CA-MRSA cellulitis. Physicians should be aware of the incidence and risk factors of CA-MRSA infections in their community and consider empiric antibiotics with MRSA coverage when indicated. Further studies are needed to determine the common risk factor of CA-MRSA infections and assess the outcomes of risk factors-defined empiric antibiotic therapy.

The choice of initial antibiotic therapy should depend on multiple factors including the individual, geographic area, local antibiotic susceptibility patterns, history of illness, prior antibiotic therapy, and physical examination. Our review of the literature highlights the most common risk factors for CA-MRSA SSTIs, which included being African-American and close contact with persons with skin infections (Table 6). However, most of the studies were conducted in North America, which has different ethnic factors and climate compared with Hawaii. We have identified obesity and abscess formation as important factors in Hawai'i and encourage others to assess the value of these measures in evaluating their patients elsewhere.

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Table 6.— Summary of Clinical Trials Demonstrating Risk factors for CA-MRSA Skin and Soft Tissue Infection

Study design, reference	Geographic area	Study setting	Study population (Total number)	Comparator	CA-MRSA Infection rate[a]	Risk factors for MRSA
Prospective, 3	11 cities, USA[b]	ED	SSTI (422)	Other bacteria[c]	59%	Antibiotic use in the past month, non-Hispanic African-American, reported spider bite, history of MRSA infection, close contact with persons with skin infection
Prospective, 6	Atlanta, GA, USA	OP, H	SA (389)	CA-MSSA	63%	Female gender, African-American, hospitalization within the past year
Prospective, 7	Chicago, IL, USA	ED, OP, H	CA-SA (1,222)	CA-MSSA	42%	Younger age, HIV infection and incarceration within the past year, African-American
Prospective, 8	Los Angeles, CA, USA	OP	MSM, HIV (111)	Control	NA	Sex partner with skin infection, methamphetamine use; routine hand-on contact with customers at work, frequent fingernail biting, routine use of a public hot tub or sauna
Prospective, 9	Vancouver, BC, Canada	ED	MRSA (190)	HA-MRSA	61%	Presence of abscesses or cellulitis, injection drug use
Prospective, 10	San Diego, CA, USA	OP	Military personnel (202)	Control	11%	Close contact with persons with skin infection, having family or friends working in healthcare settings
Prospective, 20	St. Louis, MO, USA	OP	Football players (53)	Non-SSTI	9%	Being the lineman or linebacker position, high BMI
Prospective, 21	New York, USA	OP	Residents in a religious community (175)	Non-SSTI	14%	Antibiotic use within 12 months, sauna use
Prospective, Our Study	Honolulu, Hawai'i, USA	OP	SSTI (137)	Other bacteria[d]	62%	Presence of abscesses, obesity (BMI ≥ 30)

[a]Denominators are total numbers of the study populations. [b]Includes 1) Albuquerque, New Mexico 2) Atlanta, Georgia 3) Charlotte, North Carolina 4) Kansas City, Missouri 5) Los Angeles, California 6) Minneapolis, Minnesota 7) New Orleans, Louisiana 8) New York, New York 9) Philadelphia, Pennsylvania 10) Phoenix, Arizona and 11) Portland, Oregon. [c]Includes methicillin-susceptible Staphylococcus aureus (n=71), Streptococcus spp. (n=30), coagulase-negative Staphylococci (n=12) and Proteus mirabilis (n=6). [d]Includes methicillin-sensitive Staphylococcus aureus (n=31), β-hemolytic streptococci (n=6), Pseudomonas aeruginosa (n=4), Klebsiella pneumoniae (n=3), Proteus mirabilis (n=3), Escherichia coli (n=2), Serratia marcescens (n=1) Acinetobacter baumanii (n=1) and Propionibacterium acnes (n=1). Abbreviations: BC = British Columbia; BMI = body mass index; CA = California; CA-MRSA = community-associated methicillin-resistant Staphylococcus aureus; CA-MSSA = community-associated methicillin-susceptible Staphylococcus aureus; CA-SA = community associated Staphylococcus aureus; ED = emergency department; H = Hospitalization; HA-MRSA = healthcare-associated methicillin-resistant Staphylococcus aureus; HIV = human immunodeficiency virus-infected; MO = Missouri; MRSA = methicillin-resistant Staphylococcus aureus; MSM = men who have sex with men; NA = not available; Non-SSTI = non-skin and soft tissue infected; OP = outpatient; SA = Staphylococcus aureus; SSTI = skin and soft tissue infection; USA = the United States of America.

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Pono: balanced, true

Diabetes Bingo: Research Prioritization with the Filipino Community

Anne R. Leake PhD, APRN-Rx, FNP; Tessie Oculto RN; Emilyn Ramones RN, BSN; and Cedric R. Caagbay RN, MS

Abstract

This community-based participatory research, conducted in partnership between a European-American academic researcher and a professional group of Filipino nurses, aimed to determine the diabetes research priority for the Filipino community on the island of O'ahu in Hawai'i, and to evaluate the multi-voting technique to seek input from the community. The study design was a qualitative, cross-sectional interactive process consisting of an educational presentation followed by data collection from the audience. Ten community presentations about the impact of diabetes on the Filipino community were conducted by a Filipino nurse with participants (N = 265). Following the educational session, the participants selected priorities for research using a multi-vote technique developed as a Diabetes Bingo card. Community voting results identified prevention and a focus on adults as important priorities for research. Based on the results of the multi-voting, the research partners were able to come to consensus on a research priority area of prevention of type 2 diabetes in adults. Multi-voting using a Diabetes Bingo card, preceded by an educational presentation by a Filipino nurse, was a culturally competent community-based participatory research method that gave voice to the participants and direction to the research partners for future projects. The multi-voting technique was readily accepted and enjoyed by participants.

Introduction

Community-based participatory research (CBPR) aims to involve community members in examining problems that are of high priority and then developing solutions that fit their own particular situations. Positive effects of using CBPR approaches on research quality and participation rates have been reported.[1,2] CBPR is normally conducted by partnerships between academic researchers and representatives of subpopulations experiencing disparities in health, income, education, housing, and other critical life domains. Typically, academic researchers come from cultural and/or socioeconomic backgrounds that differ from their community partners, making it imperative that they take special care to use culturally sensitive approaches and methods in order to gain an accurate view of community concerns and capacities and to maximize mutual understanding.

Filipinos in the United States are characterized by a variety of health disparities. Epidemiological studies of various Filipino subpopulations indicate exceptionally high prevalence rates of Type 2 diabetes (T2D) ranging from 10% to 33%, all above the national average.[3-6] The problem of T2D for Filipinos is particularly evident in Hawaii because Filipinos comprise about 19% of the state's population of about 1.2 million, a much higher proportion than for any other state.[7] The study reported here was conducted on the most populous island, O'ahu (with about three-quarters of the state's population), where the proportion of Filipinos is 22%. There is a high immigration rate from the Philippines of about 4,000 people per year[8] and about 47% of Filipinos in Hawai'i are foreign-born.[9] Filipinos in Hawai'i have a diabetes prevalence rate of 10%, surpassed only by Native Hawaiians at 13%.[5] Not surprisingly, Filipinos also experience among the state's highest prevalence rates of various diabetes-related health conditions, including cardiovascular disease[10] and metabolic syndrome.[6]

This article describes how a partnership between a European-American academic researcher and a Filipino nurses' organization successfully used CBPR to identify priorities for diabetes research within the Filipino community on O'ahu. A further objective was to evaluate the use of multi-voting as a technique to engage community participants to choose health-related research priorities from a large number of options.

Methods

CBPR Approach

A CBPR approach was used to facilitate a partnership between the academic researcher and the Philippine Nurses Association of Hawai'i (PNAH) as the foundation for current and future research.[11,12] The academic researcher recognized diabetes as a critical health problem for Filipinos as the result of practice as a nurse practitioner at a community health center in a neighborhood of urban Honolulu with a high proportion of Filipinos, including many recent immigrants. While a doctoral student in 2001 the academic researcher was appointed as an advisor to PNAH. She conducted a preliminary study on how to approach the Filipino community as a partner in diabetes research. As part of that study, she conducted key informant interviews with Filipino-American health professionals, including the president of the Oahu Filipino Community Council. As a result, she was invited to make a presentation to the Board of this Council, which recommended PNAH as the best potential partner for CBPR in the area of diabetes.[13] Diabetes had become a priority for the PNAH because many of its members were practicing in dialysis and rehabilitation centers and witnessing the impact of diabetes every day, and wanting to improve outcomes. This collaborative partnership developed the current study and planned for implementation. The partners agreed that: (1) results would be used as the basis for subsequent CBPR applications addressing priority areas identified by the community, and (2) all submissions for publication and presentation would be conducted in partnership.

Study Design

The academic researcher and the PNAH collaboratively developed the study design as a qualitative, cross-sectional interactive process consisting of an educational presentation followed by data collection from the audience. An interactive face-to-face educational session was selected as the best way to clarify complex information. Community members needed to complete a survey about priorities for diabetes research using a multi-voting technique. This data collection method was selected over a group consensus discussion to ensure that each individual had a voice in the prioritization process. The PNAH knew that the time available with intended audiences would typically be limited, so all activities were designed to be completed within 45 minutes. The study procedure was piloted with nursing graduates from the Philippines attending an NCLEX (nursing licensing exam) review class, and on this basis the design was modified to include less factual information in the educational presentation and more instruction for completing the multi-voting survey form.

Educational Presentation

The academic researcher developed the educational presentation in collaboration with a PNAH study advisory group for content and with the Filipino project coordinator for visual appeal, presentation style, and impact for Filipino audiences. The content included individual risk factors for developing diabetes across the life span and points where interventions could be made. Topic areas were childhood obesity, gestational diabetes, metabolic syndrome, impaired glucose tolerance, early diagnosis of diabetes, prevention of complications, and the impact of diabetes on the Filipino community. Also described were aspects of diabetes that could be studied in this community i.e., risk factors, obesity, pre-diabetes, diabetes control, and diabetes complications.

Multi-voting Technique

Qualitative approaches often used in research when there are many options for a large group to consider include the nominal group technique (NGT),[14] the Delphi technique,[15] and multi-voting.[16] These techniques ensure each voice is heard, either openly or confidentially, and avoid "group-think" where one dominant or influential person can sway the group. The nominal group process assumes that participants have at least some personal experience with the topic under consideration, and the Delphi technique is often used when the participants are experts.

The multi-voting technique has been shown to be effective when multiple different groups are trying to select the most important choice from a large number of options.[16] Multi-voting requires participants to select one-third of the total number of options without requiring a forced ranking, with one or more priorities usually emerging. Multi-voting was chosen because it is an efficient use of participants' time and would allow the PNAH to use the results in a subsequent consensus process. As a decision making method, multi-voting is less demanding on participants compared to forced rank ordering or Likert scales.[17] We did not expect the community participants to be diabetes experts, even after the educational session, so the multi-vote technique was identified as more appropriate than the other approaches. In addition, community participants can easily grasp the results because knowledge of statistical concepts is not required.

Sample

The partnership was able to involve a substantial number of community members in the CBPR process through its connections with Filipino community organizations. O'ahu has over 200 such organizations, primarily social, business and civic clubs providing networking and social support. The PNAH members recommended organizations to participate based upon their perceived receptivity, interest in the topic, and potential for participation in this and future research. The sites chosen were community centers (N = 3) and churches (N = 3) that provide space for Filipino groups to conduct meetings and events in the Kalihi and Lanakila neighborhoods of Honolulu and the towns of Aiea and Waipahu.

Presentations were made at two nursing licensure review classes, four seniors groups, two care home operators groups, and a Valentine's Day parish luncheon. These groups were selected to include a range of ages and gender in the sample, with more young adults in the nursing licensure review class, more middle aged participants in the care home operators group, and more retirees and elderly in the church groups and social clubs. All adults (age 18 or greater) in attendance were included. Lack of English proficiency was not an exclusionary criterion because bilingual PNAH members were available to interpret as needed, nor was being of non-Filipino heritage because all non-Filipino attendees were friends or family of Filipinos with first-hand experience of Filipino culture. In keeping with PNAH membership demographics, most participants were middle-aged and elderly, born in the Philippines, and with English proficiency sufficient to understand the diabetes presentation and the multi-voting procedure. Audience sizes ranged from 12 to 46 people. A total of 265 individuals participated compared to the target of 300.

Protection of Human Subjects

Approval for the study was obtained from the Committee on Human Subjects at the University of Hawai'i, Manoa. Prior to the start of each presentation, the Project Coordinator explained the study and read the informed consent to participants. According to our protocol a signed consent was waived because returning the study survey was deemed to indicate consent to participate in the study. However, a written copy of the informed consent was provided to those who chose to participate. No identifying information was requested on the survey. Participants placed their completed surveys in a sealed box to further insure privacy.

Diabetes Bingo Card

The partnership put special thought into the design of the multi-voting survey form to make it appealing and engaging for participants, based on the idea of fun or fiesta as a Filipino value. Social marketers have successfully based marketing campaigns on this value,[18] and health education "parties" have proven successful in encouraging Filipino women in Hawai'i to get screened for breast and cervical cancer.[19] Most Filipinos are familiar with Bingo and know it as a fun activity, so the survey form was developed as a grid with the title "Diabetes Bingo" (see Table 1, which shows the total number of responses by participants for each of the possible choices).

The ordering of the 12 research topics (displayed in the far left column in Table 1) was conceived by the academic researcher and reflects the typical natural progression of T2D which begins with obesity, followed by insulin resistance, then diabetes and complications. The ordering of the foci within each topic reflects the concepts of primary, secondary and tertiary prevention. Asking participants to choose among children, adults and elderly is another way to draw out cultural values, and also gives direction as to which age groups should be given priority when seeking funding for future research.

Procedures

All presentations were conducted in English by the project coordinator, a Filipino-American nurse. He was accompanied by the PNAH member who had recommended that particular group and gained its participation. The PNAH member would introduce the project coordinator, facilitate question-and-answer periods, and translate when needed. The presentation by the project coordinator included 21 PowerPoint slides and lasted about 20 minutes, followed by 10 minutes of questions and answers. This standardized

Table 1.— Participants' (N = 265) selection of priorities for diabetes related research in the Filipino community on "Diabetes Bingo" cards (participants were instructed to choose 12 out of 36 possible priorities, generated from 12 problems times three age groups).

Diabetes Bingo			
Problem	**Children**	**Adults**	**Elderly**
Obesity Prevention	174	131	44
Obesity Detection	116	113	36
Obesity Treatment	99	151	51
Impaired Glucose Tolerance Prevention	72	151	57
Impaired Glucose Tolerance Detection	51	152	43
Impaired Glucose Tolerance Treatment	37	131	77
Type 2 Diabetes Prevention	85	169	60
Type 2 Diabetes Detection	61	153	51
Type 2 Diabetes Treatment	29	131	76
Type 2 Diabetes Complications Prevention	68	150	80
Type 2 Diabetes Complications Detection	38	154	70
Type 2 Diabetes Complications Treatment	38	134	95

approach was designed to provide each audience with a similar knowledge base.

The project coordinator opened the presentation by stating the 2 objectives of the presentation: to describe the impact of diabetes for Filipinos in Hawai'i and to prioritize areas for future research. He then asked the audience to look at the Diabetes Bingo card and told them they would be learning about the potential research areas in the left column and the differences between children, adults, and elderly for these research areas. The audiences were presented with values to consider when selecting the population (children, adults or elderly) and focus (prevention, detection, or management) for future diabetes research within the Filipino community. Biasing the voting was avoided by making positive statements about each category of choice, e.g., If you believe the children are our future, you might want to select topics on diabetes research with children. If you think that preventing problems is better than treating problems, you would want to select research related to prevention. If you feel it is most important to help Filipinos who already have diabetes to stay as healthy as possible, then you would choose research topics related to complications of diabetes.

The presentation had three parts: the research process, the disease process that included a question and answer period, and the decision making process. The research process segment described the importance of including the community in deciding what to study, who to study, and how to study and tied this to the Diabetes Bingo card's columns (progression of diabetes and populations by age) and rows (level of prevention). The disease process segment explained the differences between type 1 and 2 diabetes, the symptoms of each, risk factors for T2D, and the progression of the disease and a question and answer period. In the decision making process segment, the project coordinator presented statistics about diabetes in Hawaii and its impact on the Filipino community, and explained how to complete the Diabetes Bingo card.

Question and Answer Period

Most questions sought advice about how to live healthier (e.g., how much to exercise a week, how high should the heart rate go while exercising). Many wanted to share their personal stories of family members living with diabetes. Some asked why Filipinos were developing diabetes more than other races. The project coordinator answered these questions as simply as possible with general recommendations.

Completion of Diabetes Bingo Cards

After the question and answer period, the audience was guided to complete the survey by marking X's in the 12 boxes they considered to be of highest priority out of the 36. Examination of the cards showed that some respondents marked fewer or more than 12 boxes (some who made more than 12 selections explained they felt all the areas were important and did not want to leave anything out). However, PNAH members advised against handing back cards to be properly completed as such a public procedure would likely offend the *amor proprio* (feeling of self-worth) of those participants.

Data Analysis

At the completion of each educational session, the Diabetes Bingo card votes were tabulated by the academic researcher. The results were not shared with other members of the research team to avoid biasing the continuing data collection.

Results

The presentations to 10 different groups yielded a total of 265 completed Diabetes Bingo cards. The gender breakdown of participants was 19% men and 79% women with 2% non-responders to the gender item. Age of respondents was 16% young adult (age 18 to 35 y.o.), 39% middle aged (36 to 64 y.o.), and 37% seniors (65 y.o. and above) with 8% non-responders to the age item. The majority of respondents (53%) were born in the Philippines, reflective of statewide demographics, and 23% were born in Hawai'i.

The multi-voting tally is displayed in Table 1. With each respondent selecting 12 boxes on their Diabetes Bingo card, there would be 3180 votes total. The majority (72%) of respondents complied with the multi-vote instructions and marked precisely 12 boxes. In total there were 3328 boxes marked, with 40 (15%) respondents choosing more than 12 boxes while 35 (13%) marked fewer than 12 boxes. All votes were counted in the tally. The research priorities receiving the most votes were prevention of obesity in children (174 votes) and preventing T2D in adults (169 votes). The elderly received the fewest votes as a population of interest for diabetes research (740 out of 3328 votes), with no single research area for this population receiving more than 100 votes. Children as a population of interest also received fewer votes than adults (868 out of 3328 votes), with 389 of their 868 votes (45%) cast in the problem area of obesity.

Consensus Process

To meet the objective of identifying priorities within the Filipino community for diabetes research, a consensus process was conducted to analyze the multi-voting results at a general PNAH membership meeting with 25 members attending. The members were provided with copies of Figure 1, and several remarked that this way of summarizing the results was easy to comprehend. The preponderance of votes for prevention and for research with adults caused the group to quickly focus the discussion toward these priority areas. Consensus was reached after about 30 minutes of discussion to select the research priority of prevention of T2D in adults, with the additional recommendation that interventions to be tested include a family focus that would also help to prevent obesity in the children of participating adults.

Discussion

The high number of votes for the focus area of prevention, and the outcome of the consensus process, are in keeping with Filipino health beliefs of balance and moderation, with imbalances believed to be caused by personal irresponsibility.[20-22] It is possible that the role of working-age adults as breadwinners leads to a higher valuation of disease prevention for this age group. In Hawai'i, the proportion of Filipinos holding more than one job is higher than the state average, and their median income is higher than other ethnic groups, reflecting the drive for economic prosperity that characterizes this community.[23] Interventions for diabetes prevention with adults, and future research in this area, would need to be held at places and times convenient for Filipino-Americans in the workforce.

The Academic-Community Health Partnership

The CBPR partnership process between the academic researcher and the Filipino nursing organization is a model that could be used with other communities with large Filipino populations. The Philippine Nurses Association of America (www.philippinenursesaa.org) is an international organization with 35 chapters across the United States. Included in their mission is the goal to "contribute to significant outcomes to health care and society" and this mission is aligned with the principles of CBPR. The external validity of this descriptive study can be rated for reach, representativeness and implementation.[24] Adequate reach was reflected in the age distribution and percentage of foreign-born participants similar to census data for the community of Filipino adults on O'ahu. Bringing the diabetes presentation to community groups, rather than inviting groups to a potentially less convenient special event, also extended the reach of this study. Representativeness is illustrated by the variety of groups who heard the presentation. Implementation was consistent across all sites, with the same person, a Masters prepared nurse with excellent speaking skills, making all of the educational presentations.

The sample of participants consisted of people who are active in Filipino groups, and would perhaps be more likely to participate in research studies than other Filipinos. This community-based approach of using social networks to inform community groups about an issue, and then asking for group members' opinions, provided a network of potential participants in future research who were directly involved in setting the research priority.

Multi-voting Technique with a CBPR Approach

The multi-voting technique fit well with the CBPR approach since it proved to be an efficient way to derive the overall priorities of a large number of community participants. Although a formal evaluation of participant use and acceptance of the Diabetes Bingo card was not done, all comments by participants were uniformly positive.

The technique's advantages include:

- multi-voting can be conducted in a way that seems like fun rather than work for participants;
- participants are readily able to understand the process and its outcomes; and
- participant confidentiality is protected since there is no need to collect names or other personally identifiable information.

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Conflicts Of Interest

The authors have no relationships that could be viewed as a conflict of interest.

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Po'okela: excellence as a constant standard

Quality Measure Study: Progress in Reducing the Door-to-Balloon Time in Patients with ST-segment Elevation Myocardial Infarction

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Abstract

Background: *Reperfusion therapy improves both mortality and morbidity in patients with ST-elevation myocardial infarction (STEMI). Timeliness of such reperfusion is an important factor in improving patient survival. For percutaneous coronary intervention (PCI), the American College of Cardiology has recommended a goal of <90 minutes from initial hospital contact to first balloon inflation.*

Methods: *The authors retrospectively reviewed 131 patients with a diagnosis of STEMI seen at a PCI capable hospital between January, 2006 and September, 2008, a period of time before and after implementation of a protocol aimed at reducing door-to-balloon time. Sixty-one percent of study population was Asian or Pacific Islander. This protocol was largely based on the identification by Bradley et al. of factors whose modification could shorten this time interval.*

Results: *Time to reperfusion was compared between groups before (n=57), and after (n=58) protocol implementation. Median door-to-balloon time for the former group was 133 minutes, interquartile range (IQRs), (25th, 75th percentile; 104.5, 147), and for the latter group 67 minutes, IQRs (56, 80) respectively (p<0.001). Prior to implementation of the protocol, a door-to-balloon time of <90 minutes was achieved in 17% of cases. By the third quarter of 2008, this goal was being met in 100%.*

Conclusion: *This observational study provides support for the use of the strategies described as a key for reduction in door-to-balloon time.*

Introduction

Over the past 25 years, the survival of patients with ST-segment elevation myocardial infarction (STEMI) has improved substantially, with the development of thrombolytic therapy, primary percutaneous coronary intervention (PCI), and improvements in adjunctive medical therapy. During the past decade, primary PCI has become the preferred treatment strategy when experienced operators and hospitals are available within an appropriate time frame.[1] For both primary PCI and thrombolytic therapy, analyses have consistently shown that timeliness of reperfusion is a major prognostic factor in improving patient survival.[2-4] For PCI, the American College of Cardiology has recommended a delay of no more than 90 minutes from initial hospital contact to first balloon inflation.[5] This goal has been difficult to achieve consistently[6-12] and, in a study that analyzed factors contributing to delay, Bradley et al. identified six strategies that were associated with a faster door-to-balloon time.[13]

1. Activating the cardiac catheterization laboratory on the basis of electrocardiography (ECG) performed while the patient is en route to the hospital.
2. Having emergency department (ED) physicians activate the catheterization laboratory rather than waiting for a cardiology consultation.
3. Activating the catheterization laboratory with a single call to a central page operator.
4. Expecting staff to arrive in the catheterization laboratory within 20 minutes of being called.
5. Having an attending cardiologist always on site.
6. Providing real-time (within 1 week) data feedback to staff in the ED and catheterization laboratory on each door-to-balloon time.

The aim of this study was to assess the impact of adopting these interventions as a means to improve the door-to-balloon time for patients undergoing primary PCI at our institution.

Methods

Study Site

The Queen's Medical Center, located in downtown Honolulu, Hawai'i, is a 505 bed private, non-profit, tertiary care teaching facility. Percutaneous coronary intervention has been performed there since 1980, with greater than 10,000 procedures to date.

Development of Primary PCI Protocol

A protocol to optimize timeliness of reperfusion therapy was developed in January 2007 and officially implemented in May 2007. Based on national recommendations and six specific interventions identified by Bradley and colleagues, the protocol was devised by a multidisciplinary team working closely together and meeting weekly. The group comprised senior nursing and administrative leadership from Cardiac Services, the Catheterization Laboratory, and the Emergency Department, together with interventional cardiologists, the chief emergency department physician, pharmacists, and clinical database and performance improvement coordinators. Consultation was also held with physicians and a supervisor from the Emergency Medical Service (EMS) of the City and County of Honolulu.

The protocol initially implemented 4 of the 6 recommended strategies in May 2007, with pre-hospital ECG acquisition formally implemented in May 2008, based on the need to develop formal collaboration with community collaborators, including the City and County of Honolulu. Based on medical staff feedback and the hospital's organizational structure, it was not felt to be possible to have an attending cardiologist always on site. However a call schedule was established with cardiologists committed to arriving at the hospital <20 minutes, and a back up of two cardiologists living within 5 minutes travel time from the hospital and willing to come in and initiate management in the event of delay in arrival of the primarily called individual.

A STEMI algorithm (Figure 1) was distributed and displayed in the ED. A labeled STEMI box and STEMI medication kit were installed in the ED. The STEMI box (basically a heavy plastic tool box) includes intravenous infusion fluids and supplies, vacuum containers for blood samples, a standardized consent form, and a large faced digital timer, ready to be set to count down from 90 minutes. The last stays with the patient as a constant reminder to all caregivers of the passage of time. The STEMI medication kit includes aspirin, clopidogrel, metoprolol, heparin, and nitroglycerin.

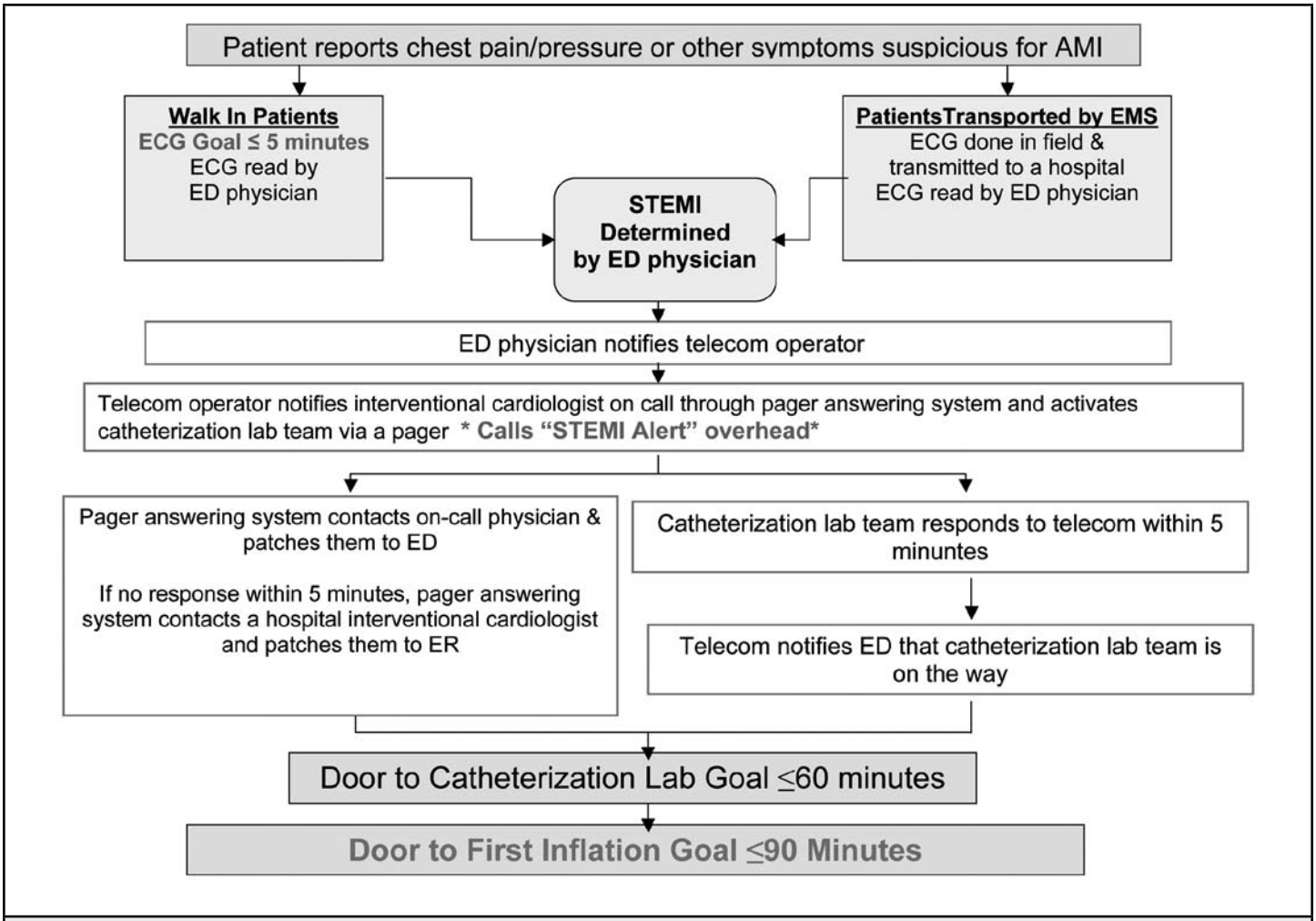

Figure 1.— STEMI Protocol at The Queen's Medical Center, Honolulu, Hawai'i

AMI: acute myocardial infarction; ECG: electrocardiography; ED: emergency department; STEMI: ST elevated myocardial infarction; EMS: emergency medical service

An extra ECG machine was obtained for the ED and additional staff trained in its use. Guidelines were established for patients needing immediate ECG on arrival and for time intervals within the overall door-to-balloon time. These included ECG recording not more than 10 minutes, and reaching the catheterization laboratory not more than 60 minutes, after arrival. The ability to record and transmit 12 lead ECGs by ambulance personnel prior to the ED arrival was established in May 2008, permitting preparations, including calls to the cardiologist and catheterization laboratory staff, to proceed ahead of arrival time.

Analysis

After obtaining the institutional review board (IRB) approval from the Queen's Medical Center, the authors retrospectively reviewed the records of 131 patients with a diagnosis of STEMI seen at our institution between January 2006 and September 2008. Information was obtained from a data base maintained to assess adherence to core measures established by the Centers for Medicare and Medicaid Services and the Joint Commission, and also directly from the subjects' medical records. The patients were included in the study if they had a discharge diagnosis of acute myocardial infarction (ICD9 code 410) with ST-elevation in keeping with established criteria: ST-segment elevation of at least 1 mm in two or more contiguous leads, were transferred to the catheterization laboratory within 12 hours after onset of symptoms, and underwent coronary intervention. Exclusion criteria included severe hemodynamic instability, need for cardiopulmonary resuscitation, transfer from other hospitals, and age under 18 years. The study population was divided into two groups, those arriving before (January 2006 to December 2006) and after (May 2007 to September 2008) protocol implementation in order to examine its effect on door-to-balloon time. Additionally, because the protocol development started in January 2007 and was officially implemented in May 2007, secondary analyses excluded patients who arrived between January 2007 and April 2007 (n=16) to minimize the impact of the transitional period between protocol development and implementation.

Continuous variables were expressed as mean ± standard deviation (SD) or median values with interquartile ranges (IQRs) (25th, 75th percentile), and compared using Student's t test or non-parametric Mann-Whitney test as appropriate. Discrete variables were expressed as percentages and compared using Fisher's test. In all tests the two-sided P value <0.05 was accepted as a statistically significant difference. Statistical analysis was performed using JMP statistical software version 5.1 (SAS Institute, Cary, NC).

Results

Patient Characteristics

Between January 1, 2006 and September 30, 2008, a total 136 patients with confirmed STEMI were assessed for study eligibility. One hundred thirty one were eligible for inclusion in the study. The reasons for exclusion were cardiac arrest in the ED (n=2) and an approved delay (n=3), such as code blue. Of those who met inclusion criteria, 57 arrived before, and 58 after, protocol implementation in May 2007. Baseline patient characteristics are shown in Table 1. The mean age of the patients was 61.9±14 years, and 72.2% were male. Sixty-one percent of study population was Asian or Pacific Islander. Inferior wall (48.7%) was the most common infarct location. Nearly 60% of patients arrived by ambulance, 36.5% came by car, and 4.3% walked in. Thirty-two percent of patients were admitted on a weekend with 47.8% of patients admitted during a day shift (7:00 to 14:59), 29.6% admitted during an evening shift (15:00 to 22:59), and 22.6% admitted during a night shift (23:00 to 6:59). The baseline characteristics of patients who were admitted before and after the protocol implementation were similar, except that more arrived by ambulance and fewer by car in the former group (Table 1).

Time Comparisons

With the implementation of a STEMI alert system, standardized processes of care were developed and provided from arrival to intervention. By the third quarter of 2008, achievement of the door-to-balloon time <90 minutes had improved from 17% to 100% (Figure 2). Median door-to-balloon time for the control group and the protocol implementation group were 133 minutes, IQRs (104.5, 147) and 67 minutes, IQRs (56, 80) respectively (p<0.001). A steady downward trend in median door-to-balloon time was observed following the protocol implementation (Figure 3). A pre-hospital ECG transmission system was implemented in May 2008. Median door-to-balloon times for with (n=18) and without (n=40) a pre-hospital ECG transmission were 60 minutes, IQRs (38.5, 68) and 72 minutes, IQRs (63, 86.75) respectively (p=0.009). In-hospital mortality numbers for the control group and the protocol implementation group were two and zero, respectively.

Discussion

This study confirmed that systematically implementing a standardized protocol largely based on the findings of Bradley and colleagues[13] was associated with a significantly reduced door-to-balloon time for this PCI capable hospital. After the protocol implementation, achievement of the door-to-balloon time <90 minutes reached 100% in seventeen months. Median door-to-balloon time was <90 minutes by the second quarter of 2007. It is of interest that there was a gradual, rather than abrupt improvement, whose onset seemed to precede the protocol implementation. This is attributed initially to changes in behavior occurring while information was available and being discussed among people responsible for patient care but the plan was still being formulated, and later by further behavioral modification as the team continued to meet regularly, review all STEMI cases, and work to improve adherence.

Table 1.— Patient Characteristics

Variable	Control Group (n = 57) January 2006 – December 2006	Protocol Group (n = 58) May 2007– September 2008	P Value
Age, year	63.1±13.4	60.2±13.9	0.85
Male, n (%)	44 (77)	39 (67)	0.29
Race			
Caucasian	19 (33)	16 (28)	0.55
Asian	25 (44)	27 (46)	0.85
Pacific Islander	8 (14)	10 (17)	0.79
Other	5 (9)	5 (9)	1.00
Hypertension, n (%)	35 (61)	40 (69)	0.66
Hyperlipidemia, n (%)	29 (51)	38 (66)	0.13
Diabetes, n (%)	18 (32)	14 (24)	0.41
Current Smoker, n (%)	20 (35)	24 (41)	0.57
Body mass index, kg/m^2	27.2±5.6	28.3±7.1	0.87
Initial heart rate, bpm	79.3±17.7	81.3±15.4	0.72
Initial systolic blood pressure, mm Hg	126.6±28.4	133.4±24.8	0.64
CHF on presentation, n (%)	10 (18)	8 (11)	0.62
Cardiogenic shock, n (%)	10 (18)	6 (10)	0.29
Creatinine, median (Q1, Q3)	1.1 (0.8, 1.3)	1.1 (0.9, 1.3)	0.59
Location of MI, n (%)			
Anterior	26 (42)	18 (31)	0.25
Lateral	8 (13)	9 (16)	0.79
Inferior	27 (44)	31 (53)	0.36
Aspirin or clopidogrel use, n (%) - ***Yes***	57 (100)	57(98)	1.00
_-Blocker use, n (%) - ***Yes***	51 (89)	53 (91)	0.76
Mode of transport, n (%)			
Ambulance	40 (70)	28 (48)	0.02
Car	15 (26)	27 (47)	0.03
Walk in	2 (3)	3 (5)	1.00
Weekend admission, n (%) - ***Yes***	16 (28)	21 (36)	0.43
Admission time, n (%)			
Day	30 (53)	25 (43)	0.35
Evening	13 (23)	21 (36)	0.15
Night	14 (24)	12 (21)	0.66

bpm: beat per minute; CHF: congestive heart failure; Q1: quartile 1; Q3: quartile 3; MI: myocardial infarction

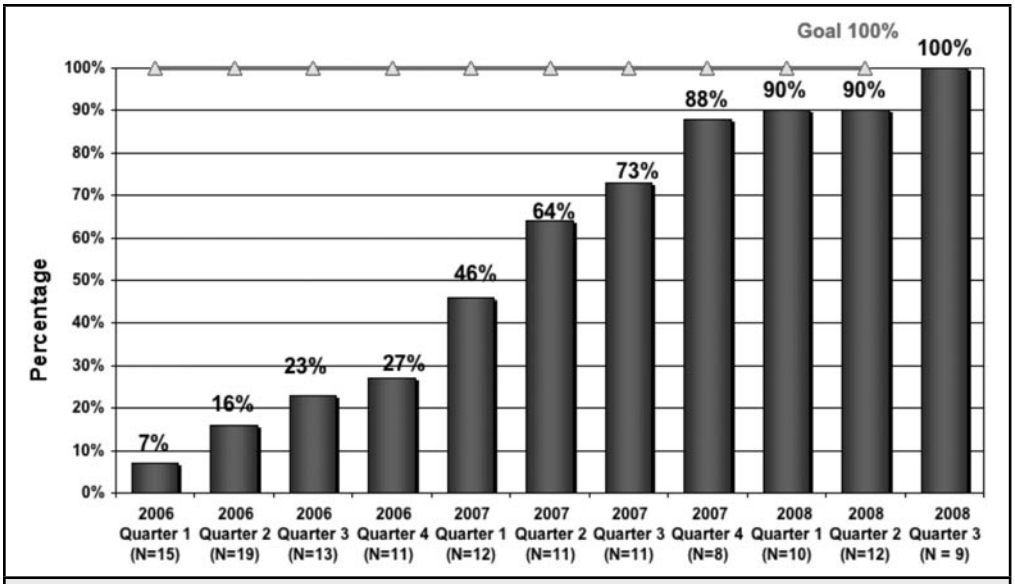

Figure 2.— Comparison of 90 minutes Patency Rates in Each 3-Month Period

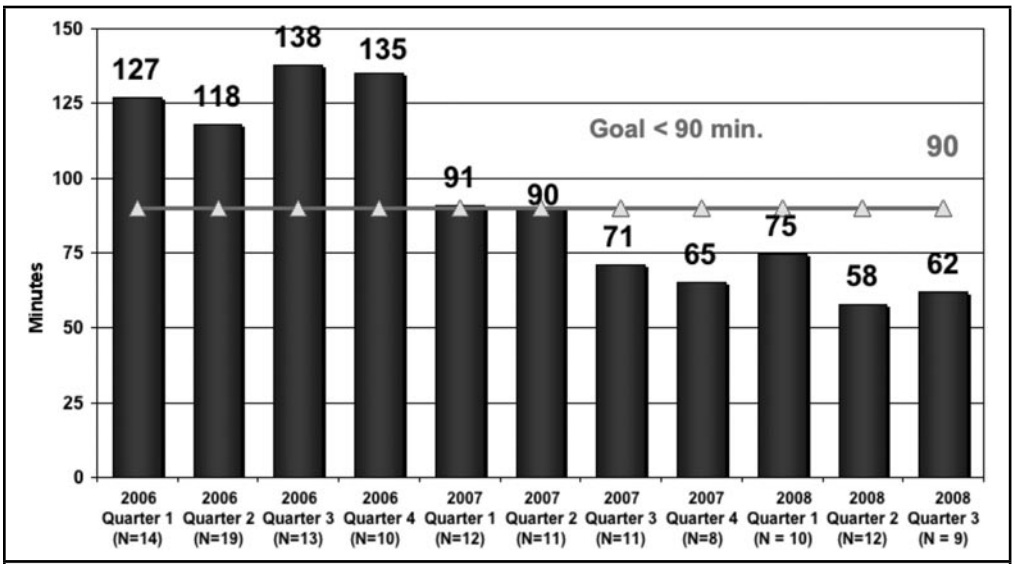

Figure 3.— Median Door-to-balloon Time in Each 3-Month Period

Other studies assessing the effect of a formalized protocol on door-to-balloon have shown success in reducing door-to-balloon time for STEMI patients. Ting et al. examined the impact of a similar intervention at a PCI center through coordinated systems with 28 regional hospitals without PCI capability located up to 150 miles away across 3 states.[14] They achieved door-to-balloon time and door-to-needle times that were close to or exceeded national recommendations. Le May et al. implemented regional strategies in the city of Ottawa, Canada, including trained paramedics who independently triaged and transported patients directly to a designated primary PCI center. Door-to-balloon times of <90 minutes were achieved in 79.7% of patients who were transferred from the field and in 11.9% of those transferred from EDs ($p<0.001$).[15]

The uniqueness of our study is a racial composition of the study population. Sixty-one percent of the study population was Asian or Pacific Islander.

Limitations

This study has several potential limitations. This is a retrospective observational study and lacks a randomized, contemporaneous control group. Additionally, while our study demonstrated a significantly shortened door-to-balloon time, we did not find an improvement in mortality and morbidity, although this was likely due to our limited study sample size. Moreover, other changes beyond the scope of our protocol may have affected our process of care and door-to-balloon times. Indeed, gradual improvement in door-to-balloon time was observed before the official protocol implementation, although substantial improvements were achieved and maintained once the protocol was in place.

Conclusion

Authors have confirmed that, using a multidisciplinary team approach, it is possible to achieve significant reduction in door-to-balloon time for STEMI patients. However, this practical application of these strategies and their effectiveness may not be generalized in other places.

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Addendum

Subsequent to the experience described in this manuscript, between October 2008 and June 2010, an additional 62 patients meeting the same inclusion criteria were reviewed. The median door-to-balloon time in this group was 64 minutes, with 94% meeting the 90 minute goal. Pre-hospital transmission of an ECG continues to have a major favorable effect, with time to arrival in the cardiac catheterization laboratory being 35 minutes, versus 64 minutes for those without a a prehospital ECG.

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Kuleana: privilege, responsibility

Team Based Learning: A Potential Addition to the JABSOM Curriculum

Claire Kendal-Wright PhD and Richard Kasuya MD, MSEd; John A. Burns School of Medicine, University of Hawai'i

Team Based Learning (TBL) is a teaching strategy that is increasingly utilized in medical education. TBL is described as the "bringing together of theoretically based and empirically grounded strategies for incorporating the effectiveness of small-group learning into large-group lecture-oriented sessions."[1] This method was first developed and described by Michaelsen et al., for large classes in business school.[2] It has three repeating phases.

Phase 1: learners read and study material independently outside of the classroom and complete an individual readiness assurance test.

Phase 2: learners convene in pre-assigned small groups of 5-7 students, review the study materials, and retake the readiness assurance test as a group. A consensus is formed about each answer and at this point, the instructor determines whether the students have mastered the core concepts for the class and are able to move onto phase 3.

Phase 3: all teams work on the same tasks at the same time and are provided the opportunity to apply their new knowledge. As the teams may arrive at different solutions, class discussion is promoted and this further maximizes the learning experience.

"Pure" TBL includes all three phases but there is room for flexibility. The instructor is allowed to selectively include one or more phases depending on the contextual demands of their course or a particular session. However, it appears the TBL process is more successful with closer adherence to Michaelsen's principles.

Currently there are three modes of instruction typically used in medical schools across the country: lecture based, problem based learning (PBL), and a combination of lectures with small group teaching. The University of Hawai'i John A. Burns School of Medicine currently has a curriculum comprised of a combination of PBL, didactic lectures, laboratory dissection, community health, and clinical experiences. Since the medical school opened in 1965, its curriculum has been constantly evolving so that the school remains at the leading edge of medical education reform. Originally introduced as a two-year program, it evolved into a four-year degree-granting curriculum in 1973.

A "pure" PBL approach was introduced in 1989, which has subsequently developed into the current hybrid approach. A traditional lecture-based curriculum is the most common strategy utilized by many US medical schools. This teaching method has been challenged over the years because of its passive form of learning. Although adding small group teaching, or PBL, to lecture-based programs increases active learning, it requires more faculty resources.

Studies have provided empirical evidence of favorable learning outcomes with TBL. However, its total effectiveness in medical education has not been extensively studied.[3] The measured benefits of TBL include: increased student engagement, higher-quality communication processes, increased National Board of Medical Examiners (NBME) shelf exam scores, and the fostering of active participation by providing incentives for pre-class preparation and in class group discussions.[4] In addition, student performance-focused studies have suggested that TBL may benefit academically "at risk" students the most. This is because these students are forced to study consistently throughout the course, are provided regular feedback, and are given the opportunity to develop their higher reasoning skills by problem solving. Similar to a PBL curriculum, students that usually study alone appreciate learning in teams during the TBL process, thereby developing the understanding and skills needed to work productively in task-groups. It is well known that truly effective learning teams will typically outperform their own best member and therefore improve learning for all members of the group. In addition, the requirement of having to keep up with the material, in contrast to the more usual mode of "cramming" before an exam, is also a benefit for those potentially struggling students, as pre-clinical students often feel overwhelmed by the volume of information to be absorbed through individual study. Michaelsen considers the peer assessment at the end of the process a key component for the TBL paradigm because it helps to ensure student accountability. Introducing TBL into a traditional lecture based curriculum can be difficult, as the concept of peer assessment may be unfamiliar and difficult for students. Many students report that initially they felt very uncomfortable with this new method. After course completion, it was clear that many students belonging to a traditional education approach were unskilled in team-work, which led to difficultly in convincing the students that TBL had a positive impact on their learning.[5]

An obvious benefit of TBL is that it allows a single instructor to manage multiple small groups simultaneously in one classroom. This eliminates some of the human resource issues associated with PBL and promotes active learning without requiring large numbers of small group facilitators. Unlike some forms of active learning, the instructor retains control of content and acts as a facilitator and content expert. TBL is a method of small group instruction that retains some of the benefits of traditional teacher-led instructional methods since it is learner centered but instructor led. Repeated use and faculty "buy in" of TBL are essential to improve both the student's and instructor's ability to perform the process. The introduction of TBL into curriculum also requires a highly coordinated effort to prevent over-burdening the students with multiple simultaneous tests and reading assignments especially during exam time.

Even though TBL has been used successfully in non-medical curricula for over 20 years, some medical schools have only recently adopted TBL as an instructional strategy. Encouragingly, faculty are often positively influenced to use TBL due to improvements in students' preparation and attendance, quality of in-class discus-

sion, and academic performance. Like PBL, TBL requires students to independently investigate multiple sources of information in preparation for group discussion. Working within small groups and obtaining regular feedback are documented benefits of both teaching methods. With increasing budget limitations and strained faculty resources in medical schools, the option of TBL, with a relatively high student to faculty ratio, may be attractive.

Although peer evaluation is an area that students have struggled with at schools that introduce TBL into their curriculum, students at JABSOM are more likely to be comfortable with this process due to their exposure to evaluation in PBL. After over twenty years of a PBL format, is it time for JABSOM to integrate TBL strategies into its medical student curriculum? Would this improve the student's learning experience, help improve academic scores, especially at the lower end, and solve budgetary constraint issues?

There are key differences between TBL and PBL. While both require students to work collaboratively and to be active learners, PBL starts with a case or "problem scenario" that leads to the identification of relevant learning topics while TBL begins with a teacher-assigned topic of study. In PBL, assessment of the mastery of learned material occurs through revisiting the case or scenario, while TBL utilizes readiness assurance quizzes. The PBL process can also directly promote clinical problem-solving skills, while TBL focuses on the application of assigned learning topics. Fortunately, the differences between PBL and TBL make them highly complementary rather than conflicting. JABSOM may be particularly well-positioned to introduce TBL in its medical education curriculum. The fact that JABSOM heavily utilizes PBL may better prepare students for the team-based aspects of learning and peer assessment required of TBL. Rather than introducing TBL from the starting point of a traditional lecture-based curriculum, JABSOM will have the benefit of introducing TBL to students who are already experienced in many of the learning skills that facilitate success in TBL.

TBL is increasingly being utilized in the teaching of anatomy. Because TBL shifts the instructional focus from knowledge transmission to knowledge application, it is an attractive strategy to adopt for medical anatomy. It requires students to learn anatomical facts, from which anatomical concepts for clinical problem solving are constructed. As an example, Wright State University School of Medicine has introduced TBL into the year 1 anatomy program and throughout the year 2 pathology program.[3] Student evaluations of TBL indicate that it was a viable alternative to their previous teaching strategy as it helped them understand anatomical concepts, encouraged clinical problem solving, and generated questions and discussion. In addition, the students felt TBL provided good content review and helped them study consistently. This study also confirmed that among students in the lowest academic quartile, there was less deterioration of knowledge after active learning with TBL. Learning to work constructively with peers during the pre-clinical curriculum may aid in developing teamwork skills that enhance student ability to participate effectively within patient care teams during the clinical years. The improvement of teamwork skills is a vital part of professional growth. As medical schools increasingly create integrated and interdisciplinary courses during the preclinical years, TBL can become an important instructional tool. This may become crucial if the NBME removes the USMLE Step 1 exam in preference of combining the Step 1 and 2 exams at the end of the medical degree, essentially merging pre-clinical and clinical examination.

In summary, TBL has many features that make it applicable to medical education courses in the preclinical sciences. It is an active learning process that promotes both the learning of factual material as well as higher-level cognitive skills. It uses small groups of teams and requires team members to work collaboratively. It requires fewer faculty than traditional small-group exercises or PBL. Due to the teaching style, faculty are engaged with the students compared to a traditional lecture format and they can quickly assess their student achievement. TBL also requires consistent student preparation and attendance, gives students an opportunity to learn about working within teams, and how to evaluate themselves. To remain in the forefront of medical education in the United States, the current PBL curriculum at JABSOM begs challenging. The integration of TBL may be a start. A specific area might be in the teaching of Anatomy where the TBL method has been shown to benefit medical students' learning of the subject.[3,4]

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Pa'ahana: diligent, focused

Genome-Wide Association Studies and Cancer

Eric Jorgenson PhD and Iona Cheng PhD, MPH

What is a Genome-Wide Association Study?

Genetic association studies examine the effect of inherited genetic variants on disease traits. For cancer, such traits include differences in the risk of developing cancer, response to therapy, disease progression and mortality. The most common study design involves comparing the frequency of a particular genetic variant in a group of cancer patients (cases) and a group of healthy subjects (controls). What makes genome-wide association studies unique is that they attempt to comprehensively examine all genetic variants in the human genome in one study.

Technology Behind Genome-Wide Association Studies

The power of genome-wide association studies was first recognized in 1996,[1] but it has taken a decade for advances in technology to make these studies possible and affordable. The first step in this process was the completion of the human genome project. This project sequenced the entire human genome and determined that it contains just over 3.2 billion basepairs (the smallest unit of DNA) and approximately 22,000 genes. In addition to the genes themselves, there are thought to be a large number of gene regulatory elements that control the activity of genes. If each gene were a light bulb, the regulatory elements would be light switches that turn the genes on and off. Variation in the genes or the sequences that regulate them can alter the risk of human disease.

The second step that has made genome-wide association studies possible is the identification of genetic variants across the genome. A number of projects that have followed the sequencing of the human genome have identified millions of genetic variants in multiple ethnically diverse populations.[2-4] The most common type of genetic variant is the single nucleotide polymorphism or SNP, which alters a single basepair in the DNA sequence. There are estimated to be more than 10 million SNPs in the human genome.[5] The International HapMap project (http://hapmap.ncbi.nlm.nih.gov) has genotyped and validated nearly 4 million SNPs in several ethnic groups that can be incorporated into genotyping platforms in genome-wide association studies.

The third step is the dramatic technological advances and corresponding decrease in the cost of genotyping these variants as a result of advances in DNA microarray technology. High throughput genotyping platforms that are designed to genotype hundreds of thousands to over two million SNPs are currently available from two companies, Affymetrix and Illumina, with some laboratories capable of genotyping >2,000 subjects per week. As it is possible to genotype these large sets of genetic variants at a low cost of approximately $500 per subject, it is estimated that the cost per genotype has reduced 2,000-fold in the past 10 years.[6] In addition, large populations from previous epidemiologic studies provide a readily available resource of subjects for genome-wide association studies, helping to limit the substantial cost of recruiting and phenotyping a large number of patients.

Assumptions Underlying Genome-Wide Association Studies

The success of genome-wide association studies will depend on several critical assumptions. For a genome-wide association study to detect an association between genetic variant(s) and human diseases, those variants must occur at a high enough frequency and have a strong enough effect on disease. The common disease-common variant (CDCV) hypothesis states that the majority of genetic variants that affect common human diseases will be frequent (or common) in the population and have small to modest effects on disease risk.[7] The rare variant (RV) hypothesis suggests that, because disease causing variants are likely to be disadvantageous to those who carry them and therefore be selected against, most disease variants will be rare with modest to large effects on disease risk. Genome-wide association studies will perform best under the CDCV hypothesis as they have good statistical power to detect genetic variants with small to modest effects as long as they are common.[8] Genome-wide association studies have limited power, however, when the genetic variants underlying disease are rare even when the increases in disease risk and sample size of a study are large.[9]

The second assumption underlying current genome-wide association studies is that the genetic variants that are genotyped on DNA microarrays will serve as proxies for those variants that are not genotyped. This is possible because of a phenomenon called linkage disequilibrium, where genetic variants that are not genotyped on the DNA microarray are captured due to their correlation with variants that are genotyped. Typically, the strongest correlation occurs between markers that are located in close physical proximity, allowing for localization of the causal variant. As a result, only a subset of genetic variants needs to be genotyped to capture the effects of all genetic variants. This type of genome-wide association study is referred to as an indirect association study, because potentially causal variants are examined indirectly through the variants that are genotyped.[10] The recently published results from genome-wide association studies have utilized DNA microarray genotyping platforms for indirect genome-wide association studies, which have consisted of up to 2.5 million SNP markers. The next generation platforms will be able to examine up to five million SNPs, still a considerable reduction from the more than 10 million SNPs thought to exist in the human genome.[11]

Potential Pitfalls in Genome-Wide Association Studies

Because genome-wide association studies rely on these assumptions, there are a number of factors that can decrease their effectiveness to detect genetic variants underlying human disease. For example, genome-wide association studies have much better statistical power to detect genetic variants that are common than those that are rare. For this reason, genotyping platforms have been designed to capture common variants, typically those that have a frequency of 5% or greater in the population under study, by utilizing linkage disequi-

librium. As a result, variants that occur less frequently will not be captured well (i.e., lack coverage), further decreasing the power to capture the effect of these variants on disease.[9] Many important variants may be missed as a result, including some that change the amino acid sequence of genes which often occur at frequencies below 5%.[11] In addition, as the identification of common genetic variants has relied on data from the International HapMap project, which initially focused on African, Asian, and European populations and more recently included Latinos and Native Americans, population-specific variants for less common groups such as Polynesians have yet to be characterized.

A great debate has been ongoing on the importance or self identified race/ethnicity in medical studies. The geographic origin of the population under study has important implications for genome-wide association studies. The extent of linkage disequilibrium in the human genome varies by population. Notably, populations of African descent have lower levels of linkage disequilibrium than those of European or East Asian descent.[12-13] African populations also have more genetic variants, including SNPs.[2-3] For these reasons, a genotyping platform would need to contain hundreds of thousands of additional SNPs to capture the same variants in African descent populations.

In the United States, this issue is further complicated by recent admixture in African-American populations between African and European populations. Studies that are focused on admixed groups need to be wary of the potential for population stratification, which can lead to false positive association signals when the frequency of genetic variants and the frequency of the disease under study differ across populations. For example, the incidence of prostate cancer is higher in African-American populations compared to European populations. Men with a greater proportion of African admixture are also more likely to have genetic variants that are more frequent in African populations. If African-Americans who have prostate cancer also have a greater proportion of African admixture compared to those who do not have prostate cancer, the variants that are more frequent in the ancestral African population can appear to be associated with prostate cancer in an African-American sample when they are not causal. There are a number of methods that are currently being used to address the problem of population stratification.[14-16] Conversely, admixture can also be used to map the location of disease causing variants in admixed populations by identifying a local region of increased or decreased admixture in disease subjects compared to healthy controls. A recent study used this type of admixture mapping to identify a second prostate cancer susceptibility locus on chromosome 8q24 that appears to explain some of the increased risk of prostate cancer in African-Americans.[17]

A final caveat in genome-wide association studies is the issue of allelic heterogeneity, where multiple variants in the same gene increase (or decrease) the risk of the disease under study. These variants are difficult to capture using linkage disequilibrium and so it may be necessary to take an alternative approach to study them. While we have outlined some of the possible pitfalls in genome-wide association studies, many of these issues can be handled using a careful and thoughtful approach to the design and analysis of these studies. In the future, technological improvements in genotyping even more variants at a decreasing cost are likely to make genome-wide association studies even more comprehensive and more powerful.

Genome-Wide Association Studies and Cancer

Over the past three years, a multitude of genome-wide association studies of cancer have identified and replicated numerous genetic variants associated with cancer risk and prognosis. Results from genome-wide association studies are summarized and updated in the National Human Genome Research Institute's "Catalog of Published Genome-Wide Association Studies" (http://www.genome.gov/gwastudies/). As of July 2010, this catalog includes 68 genome-wide association study publications on a wide array of cancer sites such as bladder, breast, colorectal, esophagus, lung, ovary, prostate, skin, and testes. In particular, there have been 11 genome-wide association study reports of prostate cancer, 10 for breast cancer, 10 for lung cancer, and 7 for colorectal cancer with the remaining for other cancer sites. From these genome-wide association studies of cancer, 197 distinct cancer-associated SNPs have been identified in 124 known genes and 31 non-genic (gene desert) loci. Above all, the most notable finding has been a non-genic locus on chromosome 8q24. This locus has been found to harbor SNPs that impact the risk of several cancer sites—bladder, breast, colorectal, prostate, and chronic lymphocytic leukemia—suggesting that chromosome 8q24 is acutely involved in the carcinogenic process. With no known genes at the 8q24 locus, mechanistic studies have focused on the proximal proto-oncogene, *MYC*, in which transcriptional enhancing interactions have been observed with the 8q24 SNP (rs6983267).[18-19]

In addition to illuminating novel genomic regions, genome-wide association studies of cancer have confirmed the involvement of key etiologic pathways. For example, genome-wide association studies of lung cancer[20-21] have identified a region of chromosome 15q25.1 as a susceptibility locus, harboring genes that encode for subunits of the nicotinic acetylcholine receptors, which also influence nicotine dependence.[22] It remains to be determined whether this association at 15q25.1 is attributable to primarily lung cancer or rather smoking behavior, the strongest risk factor for lung cancer. To disentangle this complex gene-smoking interaction, additional large studies with rigorous epidemiologic design and details are essential.

Because the statistical power of the genome-wide association approach is greatest for detecting common genetic variants, the majority of the newly identified risk variants are common and most impart moderate effects on risk of disease to those who carry them. At present, these risk variants capture only a small portion of the heritability of disease and are not useful for risk prediction. However, as additional genome-wide association study loci are found with new technologies and larger studies, it is expected that risk prediction will improve and have important implications in targeting those at greatest risk of disease.

Future Perspective

With the identification of over a hundred genetic variants associated with a multitude of cancers, the era of genome-wide association studies promises to greatly enhance our understanding of the genetic causes of human cancers. Genome-wide association studies will continue to become more comprehensive as genotyping platforms are being developed that will capture greater numbers of genetic variants and provide more complete coverage of the human genome. The 1,000 Genomes project (http://www.1000genomes.org) is currently in progress of sequencing the entire genome of at least one thousand subjects from a number of different ethnic

groups, providing an in depth resource of less common variants for association testing. Soon, genome-wide genotyping platforms will be replaced by genome-wide sequencing technology, making it possible to examine the entire human genome as part of any study of human disease.

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UPCOMING CME EVENTS

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

Date	Specialty	Sponsor	Location	Meeting Topic	Contact
November 2010					
11/1-11/5	AN	California Society of Anesthesiologists	Mauna Lani Resort & Spa, Kailua-Kona, Hawai'i	2010 CSA Fall Hawaiian Seminar	Web: www.csahq.org
11/20	Multi	Hepatitis Support Network of Hawai'i and Hawai'i Consortium for Continuing Medical Education	Queen's Conference Center	Viral Hepatitis in Hawai'i - 2010	Tel: (808) 538-2881 Web: www.hepatitis.IDLinks/symposium2010
January 2011					
1/24-1/28	AN	California Society of Anesthesiologists	Mauna Lani Resort & Spa, Kailua-Kona, Hawai'i	2011 CSA Winter Hawaiian Seminar	Web: www.csahq.org
February 2011					
2/13-2/18	R	University of California San Francisco School of Medicine	Fairmont Orchid, Kohala Coast, Hawai'i	Neuro and Musculoskeletal Imaging	Web: www.cme.ucsf.edu/cme
2/16-2/20	EM	University of California San Francisco School of Medicine	Marriott Ihilani Resort & Spa, O'ahu	High Risk Hawai'i 2011	Web: www.retinameeting.com
2/19-2/20	OTO	University of California San Francisco School of Medicine	Moana Surfrider Hotel, Waikiki, O'ahu	American College of Surgeons Thyroid and Parathyroid Ultrasound Skills-Oriented Course	Web: www.osnhawaiianeye.com
2/19-2/22	OTO	University of California San Francisco School of Medicine	Moana Surfrider Hotel, Waikiki, O'ahu	Pacific Rim Otolaryngology Head and Neck Surgery Update	Web: www.csahq.org
2/20-2/25	IM	University of California San Francisco School of Medicine	Fairmont kea Lani, Maui	Infectious Diseases in Clinical Practice: Update on Inpatient and Outpatient Infectious Diseases	Web: www.csahq.org
March 2011					
3/13/-3/18	Multi	Mayo Clinic	Mauna Lani Bay Hotel, Kohala Coast, Hawai'i	14th Mayo Clinic Endocrine Course	Web: www.mayo.edu/cme
3/20-3/23	GS	University of California San Francisco School of Medicine	Wailea Beach Marriott, Maui	Postgraduate Course in General Surgery	Web: www.cme.ucsf.edu/cme
April 2011					
4/3-4/8	IM	University of California San Francisco School of Medicine	Wailea Beach Marriott, Maui	Primary Care Medicine: Update 2011	Web: www.cme.ucsf.edu/cme
May 2011					
5/14-5/19	P	American Psychiatric Association	Hawai'i Convention Center, Honolulu	164th Annual Meeting	Tel: (703) 907-7300 Web: www.psych.org
October 2011					
10/24-10/28	AN	California Society of Anesthesiologists	Grand Hyatt, Poipu Beach, Kaua'i	2011 CSA Fall Hawaiian Seminar	Web: www.csahq.org
January 2012					
1/23-1/27	AN	California Society of Anesthesiologists	Hyatt Regency Maui, Ka'anapali Beach, Maui	2012 CSA Winter Hawaiian Seminar	Web: www.csahq.org
February 2012					
2/13-2/18	IM	University of California San Francisco School of Medicine	Grand Hyatt Kaua'i	Infectious Diseases in Clinical Practice: Update on Inpatient and Outpatient Infectious Diseases	Web: www.cme.ucsf.edu/cme
April 2012					
4/2-4/7	IM	University of California San Francisco School of Medicine	Wailea Beach Marriott, Maui	Primary Care Medicine: Update 2012	Web: www.cme.ucsf.edu/cme

Classified Notice

Kona, Big Island. Established Internal Medicine Practice: good patients' base, out patient cardiology, near to Kona Comm. Hospital. Available in 2011. Contact: Honalo Business Center, 797266 Mamalahoa Hwy Suite 2, Kealakekua, HI 96750 or call (808) 322-9324.

North Shore, O'ahu

THE WEATHERVANE

RUSSELL T. STODD MD, CONTRIBUTING EDITOR

❖ YOU CAN TELL HE'S A HARVARD MAN, BUT YOU CAN'T TELL HIM MUCH.

President Obama (he of the limitless credit card) sneaked an end-run appointment past the Senate when he made a "recess appointment" of Donald M. Berwick MD, a Harvard educated poobah who is the new head of the Centers for Medicare and Medicaid Services (CMS). Dr. Berwick began the Institute for Healthcare Improvement (IHI) in 1991, a Cambridge based think-tank of 100 or so professionals who want to spread their ideas, methods and philosophies to those who actually do the work. The truly ugly part of this appointment is that Dr. Berwick did not have to answer to the Senate of the United States about many of the revolutionary ideas he has offered. He wants to standardize health care, rationalize and control financing, (he stated, "About 8% of GDP is plenty for best known care.") He would place "standardization above clinician autonomy as a rule for care." Democratic chairman of the Senate finance Committee, Max Baucus, was shocked at Obama's action, and stated, "Senate confirmation of presidential appointees is an essential process prescribed by the Constitution that serves as a check on executive power." And we worried that Dubya was power mad! Do you miss him yet?

❖ HE LIVES ON ONLY BECAUSE SCOTLAND SAID IT WAS ILLEGAL TO KILL HIM.

It is difficult, if not impossible, to avoid anger at the release of the Lockerbie bomb terrorist who brought down the Pan American flight that ended the lives of 270 people and impacted their families for generations to come. In August 2009, the prisoner, Abdel Baset Al-Megrati, convicted of the bombing, pleaded that a consensus of physicians caring for his prostate cancer said he was on the brink of death, and would not survive beyond three months. In reality, no such agreement ever existed among his doctors. In fact, his release was the action of one physician who administers Scotland's prison health service. Andrew Fraser wrote the report that was the sole medical basis by which the minister of justice granted a "compassionate release" so the prisoner could return to Libya for his final days. In Dr. Fraser's report there is no evidence that Mr. Megrati's doctors agreed with a three month prognosis, and two urologists were not even consulted leading up to the release. This convicted mass murderer was welcomed back to Libya as a hero, is undergoing chemo-therapy and probably on the golf course laughing at those gullible Scots who never should have released him irrespective of his alleged infirmity.

❖ YOU WILL BUY INSURANCE! WE KNOW WHERE YOU LIVE.

The state of Virginia's law suit challenging Congress' health plan was allowed to proceed by clearing the first judicial hurdle. The Virginia Attorney General stated that the issue is not so much about health care but about liberty and the outer reaches of federal power in our constitutional system. He believes Congress over-stepped its authority to regulate interstate commerce by imposing the health care coverage mandate and affixing a penalty to it. In refusing to dismiss the suit Judge Henry Hudson wrote a 32 page decision including, "This regulation radically changes the landscape of health care in the United States." More than a dozen other state attorney generals have filed suits also, which are pending. The next legal go-round is scheduled for October 18, 2010.

❖ WHEN THE GOVERNMENT PUTS TEETH INTO A LAW THEY ARE NOT ALWAYS WISDOM TEETH.

A 73-year-old man had successful cancer surgery but, while recovering, a breathing tube accident occurred resulting in severe brain damage. When his condition stabilized he was discharged to a rehabilitation hospital and then a nursing home where he was weaned from the ventilator. After six months of immobility his kidneys were failing, and he was readmitted to the hospital, started on dialysis and re-intubated. He had no heart or lung damage, but did have hospital-acquired infection with deep bed sores. Hospital doctors advised the family that he was in a persistent vegetative state, that ongoing treatment was inhumane and futile, and life support should be terminated. The family disagreed and believed he was still responsive. They won a court order prohibiting the withdrawal of life-support without their consent. The hospital argued that the doctor is the medical expert and should have a place at the table for guidance, but New Jersey case law primarily has addressed the patients' right to refuse or withdraw medical treatment. The point is that for the first time the door was opened for the courts to address whether doctors must continue providing care they consider medically unwarranted or even unethical.

❖ THE OLDER YOU GET THE SLOWER YOU READ A CONTRACT.

The direct employment of physicians by hospitals has increased at a frightening rate in the past two years. The recession, declining reimbursements, and the complexities of managing a medical business office have caused many physicians to simply sign-on as hospital employees. One downside that has occurred is medical liability in which a case is settled by the hospital, and the hospital later has filed a claim against the physician employee. Apparently, these lawsuits are increasingly common for contract physicians and those who leave the hospital to pursue other employment. The issue has been brought to the attention of the American Medical Association (AMA) Board of Trustees and, according to new policy, the AMA will investigate the frequency of these suits. The policy also calls on the AMA to write model contract language for physicians to use to avoid such conflicts with a hospital employer. It is just one more pitfall when the doctor abandons his professional independence to become a number in the hospital directory.

❖ THE SNOOZE ALARM WENT OFF A YEAR AGO, BUT THE FAA IS STILL DOZING.

One year ago in May 2009 after a fatal airplane crash at Buffalo, New York, believed to be due to pilot fatigue, Federal Airline Administration (FAA) officials in the Obama camp promised to alter airline pilot regulations. Randy Babbitt, FAA administrator, convened an 18-member Airline Rulemaking Committee (ARC), and gave them the task of drafting new rules by September 2009. The ARC worked together with unions, airline industry representatives and the FAA. The ARC examined flight time, duty, rest limitations, fatigue, captain's authority and reserve. Scientists who specialize in fatigue, circadian rhythm and sleep opportunities made presentations. The ARC was diligent and completed their task by September 2009 and urged the FAA to jettison old rules and set uniform limits on how many hours pilots can fly. The FAA should dump ancient rigid requirements and allow flexible rules based on scientific studies about what causes fatigue. To date, FAA chief Babbitt has not responded and no changes have been recommended. A beltway insider said that the delay is due to a dispute between the FAA and the Office of Management and Budget which is quoted as stating, "The proposal's projected cost to airlines wasn't justified by the anticipated safety benefits." That sounds cynically like how much is a human life worth, anyway?

❖ PROGRESS IS A CONTINUING EFFORT TO MAKE THINGS AS GOOD AS THEY USED TO BE.

The US Census Bureau reported that the population of Hawai'i increased by 6.9% in the last decade. Metropolitan Honolulu grew by only 0.8%, but the Big Island increased by 19.6%, Maui County 13.3%, and Kaua'i 10.4% more residents.

❖ AND NOW FOLLOWING THE COW CHIP THROW...

At the annual cricket-spitting contest at the Jefferson (Wisconsin) County Fair, Mike Morateck hocked his cricket an amazing 21 feet 2 inches for the winning mark. His "scientific" secret is to select a large cricket and place it head first on expulsion so that when volleyed, the feet and wings don't deploy and reduce the distance. "You don't want the legs dragging on the way out."

ADDENDA

❖ The first recorded tonsillectomy was in 1,000 B.C.

❖ The design for the laptop was by computer scientist Alan Kay in 1968 and was called the Dynabook. Most of the technology necessary to build it had not even been invented.

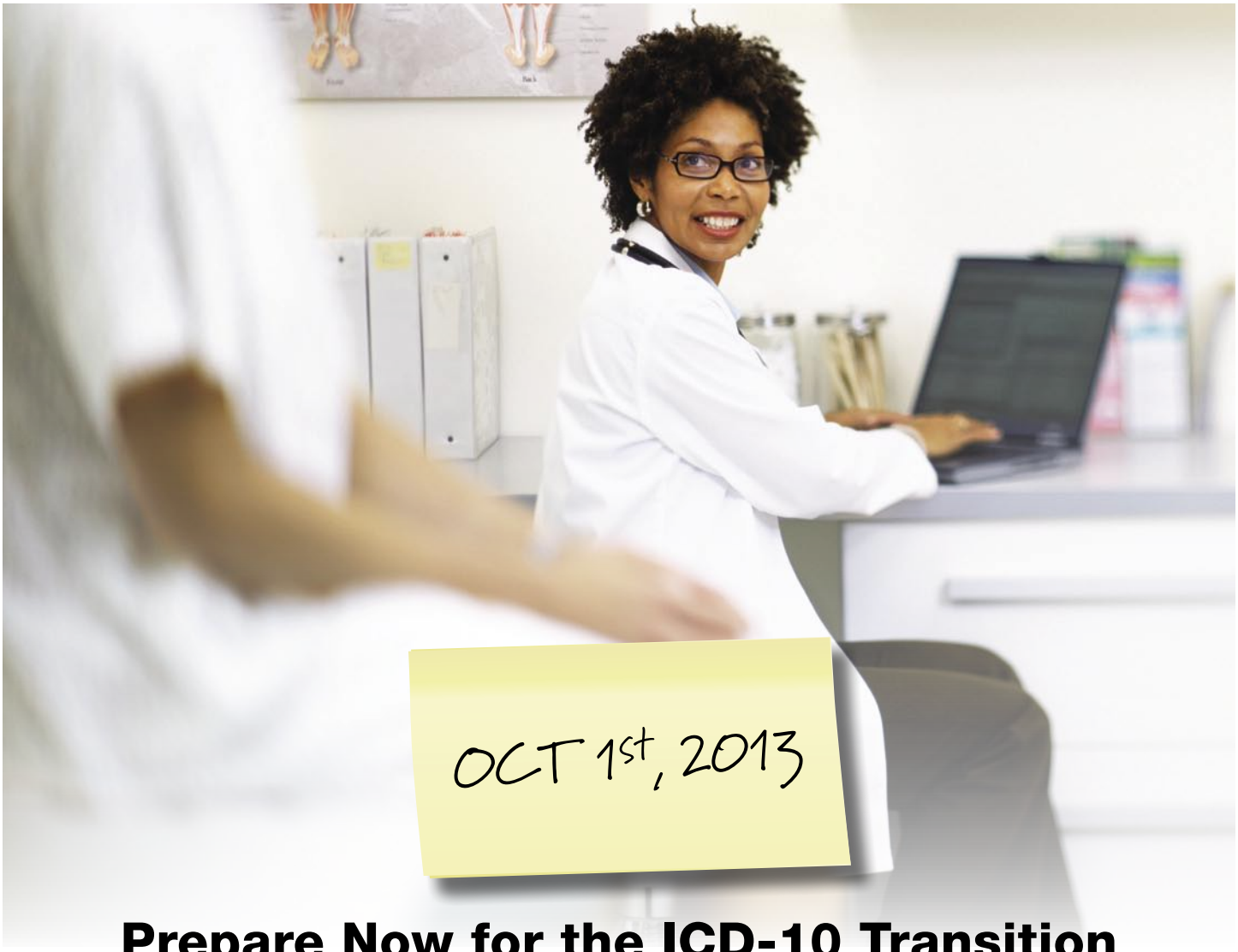
❖ A bartender is just a pharmacist with a limited inventory.

❖ Maui bumper sticker - "Jesus is coming. Look busy! He's really pissed."

❖ If you drink don't drive. Don't even putt.

ALOHA AND KEEP THE FAITH — **rts**■

(Editorial comment is strictly that of the writer.)



Prepare Now for the ICD-10 Transition

The change to ICD-10 codes takes effect on October 1, 2013. What do you need to get ready?

Providers will need to use ICD-10 diagnosis and inpatient procedure codes starting on October 1, 2013. And in preparation for ICD-10, starting January 1, 2012, all practice management and other applicable software programs should feature the updated Version 5010 HIPAA transaction standards.

Make sure your claims continue to get paid. Talk with your software vendor, clearinghouse, or billing service NOW, and work together to make sure you'll have what you need to be ready. A successful transition to ICD-10 will be vital to transforming our nation's health care system.

Visit www.cms.gov/ICD10 to find out how CMS can help prepare you for a smooth transition to Version 5010 and ICD-10.

CMS CENTERS for MEDICARE & MEDICAID SERVICES ICD-10

Official CMS Industry Resources for the ICD-10 Transition
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