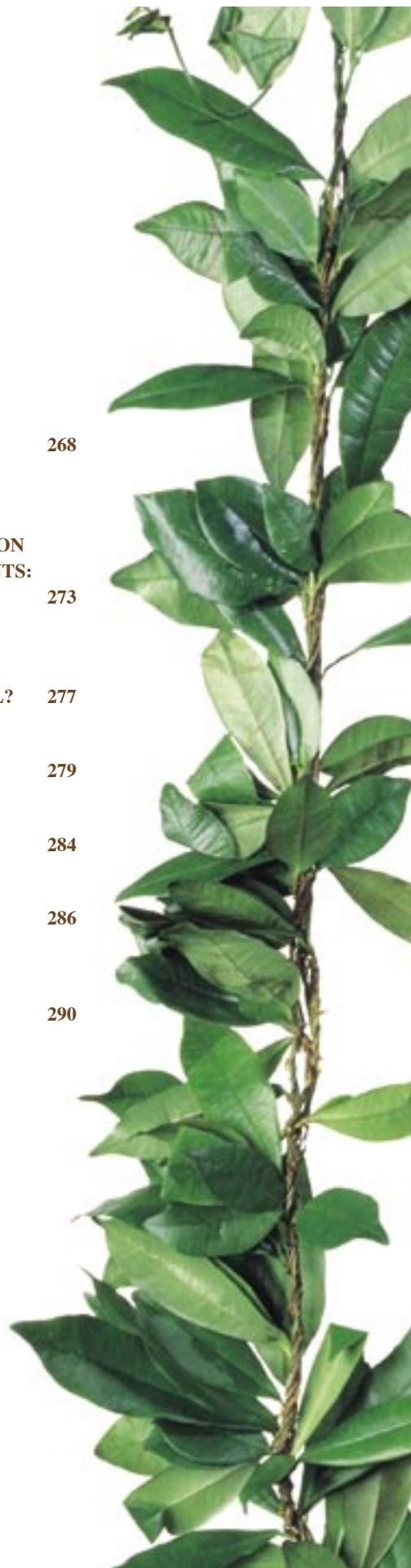


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- HAWAI'I ISLAND HEALTH WORKFORCE ASSESSMENT 2008** 268
Kelley Withy MD, PhD; January Andaya BA; Sharon Vitousek MD;
and David Sakamoto MD, MBA
- HOSPITAL PSYCHIATRIC INTERVENTIONS AND ITS POSITIVE EFFECT ON
DISPOSITION OF NON-ACUTE, LONG-TERM-CARE WAITLISTED PATIENTS:
A CASE SERIES** 273
Russ S. Muramatsu MD and Junji Takeshita MD
- VARICELLA ZOSTER VIRUS INFECTION IN PATIENTS TAKING
THE TNF-ALPHA INHIBITOR, ETANERCEPT: COINCIDENCE OR CAUSAL?** 277
Allan Izumi MD
- VISITOR INJURIES IN HAWAI'I** 279
Hao Chih Ho MD; Cora S.R. Speck MS; and Jennifer Kumasaki BS
- SLIPPERS AND A WHITE COAT? (HAWAI'I PHYSICIAN ATTIRE STUDY)** 284
Ravi Reddy MD
- MEDICAL SCHOOL HOTLINE** 286
The Role of Simulation at JABSOM
Joseph W. Turban MD
- WEATHERVANE** 290
Russell T. Stodd MD





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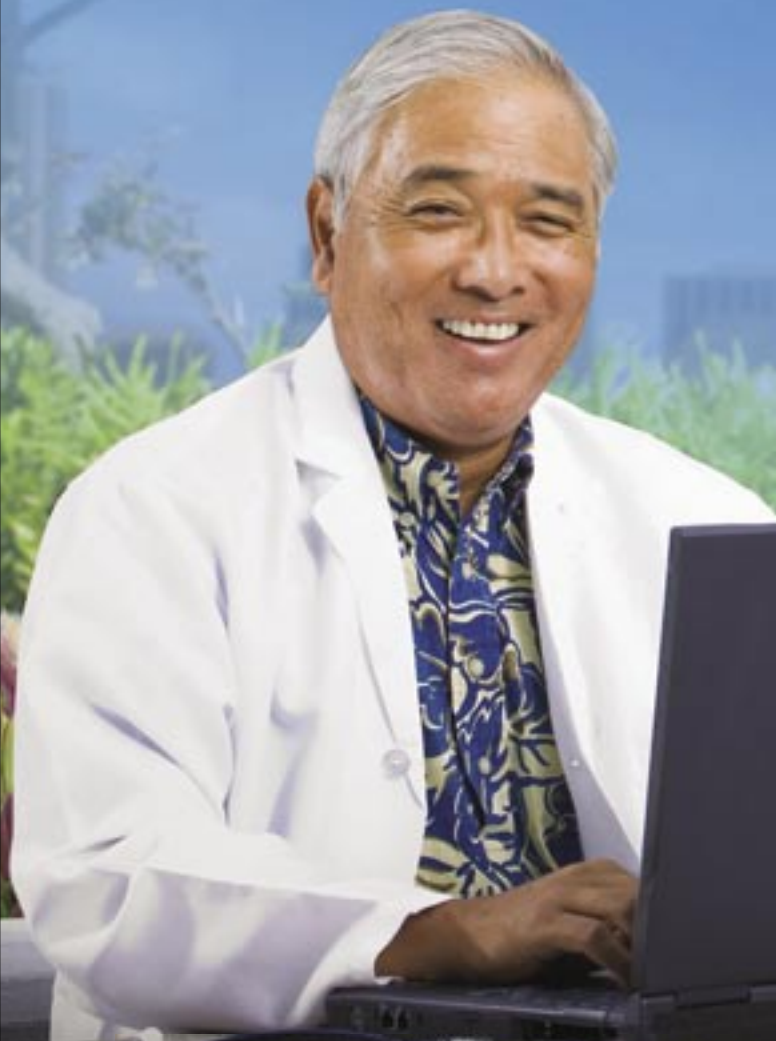
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Hawai'i Island Health Workforce Assessment 2008

Kelley Withy MD, PhD; January Andaya BA; Sharon Vitousek MD; and David Sakamoto MD, MBA

Abstract

Background: Anecdotal reports of a doctor shortage on the Big Island have been circulating for years, but a detailed assessment of the health care workforce had not previously been accomplished.

Methods: The Hawai'i Island Health Workforce Assessment used licensure data, focus groups, telephone follow up to provider offices, national estimates of average provider supply and analysis of insurance claims data to assess the extent of the existing medical and mental health workforce, approximate how many additional providers might be effectively utilized, develop a population-based estimate of future demand and identify causes and potential solutions for the challenges faced. **Results:** As of February, 2008, the researchers were able to locate 310 practicing physicians, 36 nurse practitioners, 6 physician assistants, 51 psychologists, 57 social workers and 42 other mental health providers. Based on national averages, claims analysis and focus groups, the Island could use approximately 45 additional medical professionals to care for the 85% of the population that is medically insured; a larger number to care for the entire population. Ascertaining a complete roster of mental health professionals was not possible using this methodology.

Discussion: The researchers compared the current supply of physicians with the national average of physicians to population and the number of visits to different specialists for the year 2006 and found specific regional shortages of providers. The focus groups concentrated on solutions to the workforce crisis that include the formation of a well-organized, broad collaboration to coordinate recruitment efforts, expand and strengthen retention and renewal activities, and reinvigorate the health profession pipeline and training opportunities. The researchers recommend collaboration between the community, government, business, health center care providers, hospitals and centers to develop a plan before the tenuous state of healthcare on the Big Island worsens. In addition, continued surveillance of the health workforce is vital to tracking the impact of interventions. This could be accomplished through community informants and data collected at the time of professional relicensure to include practice location and practice intentions for future planning estimates.

Introduction

Underserved rural communities across the nation struggle to attract and retain healthcare workers.¹ Research has demonstrated rural shortages of primary care, mental health and specialty providers throughout the fifty states.² In 2006, the federal government's Health Resources and Services Administration (HRSA) released a report that forecasts a nationwide 10-20% across the board physician shortage by 2020.³ National organizations, such as the Association of American Medical Colleges and the College of Graduate Medical Education, have called for an expansion of every medical school's enrollment in the United States by 30%.⁴

Nationally, factors contributing to an inadequate supply of healthcare providers include an insufficient number of students entering health professions, a reduction in worker productivity based on gender,⁵ age and workload preferences,⁶ technological changes,⁷ the possible emergence of "concierge medicine"⁸ and the potential mass retirement of providers of the "baby-boomer" generation.⁹ The inability to recruit and maintain an adequate supply of providers in any given location can be attributed to compensation and

cost of living issues; workload requirements and after-hours call; preference for a metropolitan environment; professional isolation, threat of litigation, a lack of community support and family issues, including spousal employment, parental care requirements; and limited education choices for children.¹⁰ Providers choosing a rural practice location also face challenges less frequently seen in urban medical communities, including the need for a sufficient caseload (i.e. population size) to provide a financial base competitive with other opportunities; enough interesting cases/procedures and sufficient peer interaction to provide professional satisfaction; and a balanced caseload with reasonable frequency of call and adequate vacation/off-time coverage.¹¹

Despite constraints in workforce size and composition, the demand for health services continues to rise, principally due to population growth, aging, changes in expectations of medicine, increasing prevalence of lifestyle-related chronic diseases and the impact of new technology. The Health Resources and Services Administration (HRSA) has projected future need for physicians to rise 50-60% in specialties that care for the elderly and similar shortages of nurses and mental health professionals by 2020.¹² To address impending nationwide healthcare provider shortages, it will take a collaborative effort to recruit and train students, as well as create methods to keep healthcare professionals working longer, introduce technological changes and implement innovative models of care.

Methods

Assessment of Supply

The researchers assessed the supply of medical and mental health providers by first obtaining a complete listing of the licensed medical and mental health workers on the Big Island from the Hawai'i State Department of Commerce and Consumer Affairs. This information was supplemented by all available public resources to identify the practice locations of these healthcare professionals. Community contacts were also queried regarding providers present in their communities. Finally, the research team telephoned providers' offices to confirm the practice location(s), provider specialty and hours worked per week at each location. Provider supply data was then mapped using geographic mapping software, ArcGIS 9.2.

Types of professionals studied:

- Medical Doctor
- Doctor of Osteopathy
- Physician Assistant
- Advanced Practice Nurse Practitioner or Registered Nurse (APRN)
- Psychologist
- Social Worker
- Other mental health worker (Mental Health Counselor, Marriage and Family Therapist)

Assessment of "Demand"

To assess the utilization of healthcare services on the Big Island, the researchers obtained 2006 claims data from three large, local health insurance companies whose enrollment represented 63% of the Big Island population. Using public insurance (Quest) data and age-matched data for senior citizens, the researchers extrapolated from the existing data set to represent 85% of the Big Island population. The remaining 15% Big Island population is thought to be uninsured (>10%) or insured by carriers with small market share (<4%). The total number of visits (representing 85% of the BI population) was multiplied by 1.03 to adjust for a three percent increase in population in 2007. The product was divided by the average number of visits per year for each specialty, based on national averages. For example, a primary care physician in the United States conducts an average of 4,000 outpatient visits per year, therefore if the number of visits to primary care physicians in a region totals 100,000, this indicates the need for 25 primary care providers. The island was divided into three medical service areas for research purposes. Total physician demand for each specialty in the three regions (Hilo, Kona and North Hawai'i) was calculated. For comparison purposes and for mental health services, the calculated average number of providers per population based on average US figures is provided for each Big Island region as well.

One fundamental caution with this methodology is that the national calculations of physician to population ratio and productivity numbers, such as the 4,000 outpatient visits per year noted above, are averages that have wide variations.¹³ If physicians in a geographical area routinely see more than 4,000 outpatient visits per year, or patients are seen outside of that area, then in that area a smaller number of physicians would suffice. A second caution is that utilization rates are impacted by available services; therefore they do not represent the actual 'need' for services, only the rate by which services are used. Therefore, the estimated number of physicians the researchers derived should be considered a guideline, rather than an attempt to establish a norm. When the number of physicians per population or the visits per physician per year deviate farther and farther from the national averages, there is increasing cause for concern.

In addition, four focus groups were held on the Big Island, three with practicing physicians and one with business leaders to elucidate the challenges and gather information on meeting the healthcare challenges. The comments were transcribed and compiled by theme for assistance in plan development. The information was used to develop the solutions offered in this publication.

Projections of physician demand through the year 2020 were made to determine the influence of population growth and aging on demand for services on the Big Island. The researchers applied the claims data to the population estimates provided by the State Department of Business, Economic Development and Tourism (DBEDT). The researchers assumed that the healthcare delivery system, economy, technology, number of providers and all other factors will remain constant.

Results

Project results identified 310 Physicians, 36 Nurse Practitioners, 6 Physician Assistants, 34 Psychologists, 48 Social Workers and 27 other mental health workers actively practicing on the island as of 1/31/08. Claims data for medical visits in the year 2006 was compiled

for a total of 607,630 visits. The number of visits by specialist by region was used to estimate how many specialists would be needed to meet the current utilization patterns. As a comparison, the average number of physicians per population in the United States as a whole served as a proxy benchmark and was used when claims data was not available. Using conservative estimates of demand, it is estimated that the Big Island would benefit from an additional 45 physicians, approximately 30 psychologists and many social workers.

The barriers to recruiting and retaining health professionals described by the focus group participants include financial insecurity (low income and high cost of living), the limited professional community resulting in excessive call burden and less subspecialty backup, lack of up-to-date facilities, difficulties in transferring patients to hospitals with the necessary services and specialties, family issues that include inadequate spousal employment opportunities, parental care support and educational options for their children. They also expressed frustration with the medical malpractice environment in Hawai'i, inadequate training/preparation for rural practice, a lack of mentoring by established practitioners in the community, and not having a voice in the healthcare system.

The overall demand for physician services on the Big Island is estimated to increase by 40% by 2020. Most of this increase can be attributed to the projected population growth (35%). The aging of the population, however, will have a significant impact on the specialties that care for the elderly (i.e. Cardiology, Urology and Ophthalmology), which may see an increase in demand in the 50% range within the same span of years. Projections for mental health were not performed due to limitations of the data set.

The intervention strategies for meeting workforce challenges are numerous with collaboration being the central theme. One such solution to any shortage of healthcare providers involves a collaborative approach to recruitment involving an island-wide recruitment effort beginning with a simple vacancy survey (for employed providers), expanded web-based advertising, the development of attractive recruitment packages and a community effort to welcome potential candidates. Such a recruitment package would include increased reimbursement, loan forgiveness, housing assistance, and help with finding jobs for spouse and education supplementation for children. For the providers already working on the Big Island, increasing insurance reimbursement and speeding the payment process or employment of physicians was strongly recommended. Recognition of the hard work the providers do and their ability to have a voice in the health care system would be important for bolstering morale. Such support could include the initial assisting with the creation of physician groups and providing a forum for providers to voice their concerns.

The creation of new provider training programs on the Big Island is an important part of the recruitment and retention picture and should be encouraged through expanded partnerships with educational institutions locally, on Oahu and on the mainland. The John A. Burns School of Medicine's (JABSOM) Hilo Family Medicine Residency, with its interdisciplinary team-oriented clinical training, stands out as a potential model for the entire state. Coordinating, advertising and supporting local workforce development and student pipeline efforts is integral to building the future health workforce and can be accomplished through collaboration with providers, community and academia to increase local awareness of healthcare careers and

resources. Strengthening the public education system on the Big Island, possibly through new enrichment programs and/or magnet schools that excel in science and math, remains a challenge that will require an infusion of significant state resources.

The long term solution for meeting primary care needs on the Big Island will very likely include the adoption of a new model of healthcare that relies on the skills of a diverse and interdisciplinary healthcare team. Preferably this would follow the "Medical Home" model, which emphasizes patient ownership of his/her health, patient education, coordinated care and efficient use of information technology that will allow for sharing of health information between professionals, telehealth and "electronic visits."

First steps

The researchers identified initial low cost or no cost options to help meet the workforce challenges as outlined below:

1. Form collaborative recruitment groups and compile a listing of paid position openings.
2. Create community profiles for web based advertising (i.e. 3RNet).
3. Identify all resources available to optimize the recruitment package, to include local lodging, practice space and community involvement.
4. Actively welcome and 'embrace' new providers by facilitating community connections, subsidizing office space, encouraging professional mentoring and providing positive reinforcement.
5. Support physician group development across the island, provide recognition of hard working physicians and non-physician clinicians and assist with having their concerns heard by industry, government and community.
6. Work with the Community Health Centers to pilot test a partnership for providing space and malpractice protection for retired or visiting physicians willing to contribute their time to care for the population at a free or reduced rate.
7. Encourage insurers to make their payment schedules transparent and accessible to all.
8. Collaborate with and advertise existing health careers recruitment programs to increase knowledge of opportunities and student participation.
9. Provide support for students pursuing health careers, to include academic support, mentoring and possibly small scholarships.
10. Facilitate the expansion of training opportunities for health professions students on Big Island by encouraging preceptors to take students, providing transportation and housing and advertising an attractive experience.

Solutions of greater cost and/or complexity

1. Coordinate all Big Island recruitment efforts to form a unified recruitment effort for the entire county.
2. Contract with a professional recruitment service as needed and/or hire a local recruitment coordinator.
3. Organize physician group(s) for recruitment, call sharing/coverage, cost sharing, care coordination, quality improvement, and fee negotiations.

4. Support legislation that will increase health resource allocations for rural areas, increase provider reimbursement, provide tax incentives, increase the use of telemedicine, increase local student and residency training and promote wellness activities that will decrease demand.
5. Develop a formal marketing plan for physician recruitment and retention.
6. Increase reimbursement for rural and/or rural inpatient service.
7. Create centers of excellence (or magnet hospitals) to regionalize care as appropriate.
8. Develop a loan repayment and/or scholarships program for providers choosing Big Island.
9. Provide fully staffed and equipped office space with business support for providers.
10. Develop a demonstration project for implementing a medical home model of patient-centered care.
11. Strengthen and expand hospitalist programs, possibly to include specialties such as Obstetrics and General Surgery.
12. Expand and better coordinate the fly-over physician system.
13. Reinvent call (create nurse call center, urgent care centers, islandwide electronic medical records).
14. Implement an "exit interview" system for departing physicians (managed by the recruitment coordinator).
15. Implement enrichment programs in the public schools.
16. Implement tort reform legislation to improve the medical malpractice environment.

Study Limitations and Methodological Considerations

Demand assessment limitations

The data available to the researchers required that a number of assumptions be made. Extrapolation from 63% of the population to 85% of the population was performed to approximate the utilization of services by insured residents of the Big Island. Consequently, one quarter of the results are extrapolated based on age-matched subjects. Because of the methods used, the tourists, visitors, uninsured, self-insured and those with less common insurance coverage are not accounted for in the demand assessment. Therefore, the need for services, particularly primary care, emergency services and surgery are underrepresented in this analysis and the number of providers needed will be higher than estimated in this report. Because the average number patient visits performed by a specialist in the United States is not currently documented, all approximations of utilization are based on outpatient visit rates by specialty, except for Infectious Disease specialists for whom the rates are estimated based on inpatient activities as these are more common in this specialty. Surgical specialties may be particularly underrepresented because the researchers based the analysis on number of outpatient visits instead of surgical and inpatient visits. Utilization of mental health services was difficult to assess due to variations in recording of visit type and provider type between different insurance carriers, therefore mental health needs were approximated using national averages of providers per population instead of utilization data. Also, it must be emphasized that utilization rates do not indicate actual need for services, but have been used in this case as a proxy measure. Utilization is known to be driven in large part by access and economic

SPECIALTY	ESTIMATED UNMET NEED
Primary Care	13 (8 in Hilo, 4 in Kona, 1 in North Hawaii (NH), all do call)
Allergy/Immunology	0.6 (.5 Hilo, .1 in NH fly-overs possible)
Cardiology	5 (3 in Hilo, 1 in Kona and 1 shared with NH)
Dermatology	1 for the island, (can use telemed)
Endocrinology	1 for the island (based in Hilo but goes to Kona and North Hawai'i once a week)
Gastroenterology	2 (1 in Hilo, 1.0 FTE shared Islandwide or fly-overs)
General Surgery	2 (1 Hilo, 1 split Kona/NH, or call support for all areas)
Oncology/Heme	1 (Hilo)
Infectious Disease	1 (shared Islandwide with telemed or fly-overs)
Nephrology	1 (shared Islandwide or fly-overs)
Neurology	1 (shared between NH and Kona) and possibly additional in Hilo
OB/Gyn	6 (4 in Hilo, 1 in Kona, 1 in NH all deliver)
Otolaryngology	.2 NH (fly over or shared)
Orthopedics	2 (Hilo)
Psychiatry	5*
Pulmonology	2 (1 Hilo, 1 Kona)
Rheumatology	1 shared across the Island or fly overs for at least .6 FTE
Urology	.5 in NH
Psychology	30*

*Need based on national averages¹⁴ only as claims data incomplete for mental health.

	2010	2015	2020
Population Growth	11.70%	24.90%	35.20%
Cardiology	14.10%	32.80%	54.00%
General Surgery	12.70%	27.40%	42.30%
OB/Gyn	12.50%	23.60%	33.20%
Ophthalmology	13.70%	31.30%	51.90%
Orthopedics	12.00%	25.50%	39.50%
Primary Care	12.70%	27.20%	41.30%
Psychiatry	10.40%	19.70%	29.40%
Urology	14.10%	32.50%	53.70%

factors, whereas true need relates to health status, disease prevalence rates and prudent use of care, data which were not available to the researchers. Unexplained findings include the low utilization of cardiologists in the Kona region and the low utilization of general surgeons and other surgical specialties across the Island. There are a number of possible explanations including: 1) because outpatient visits was the measurement used instead of surgical procedures, the numbers do not adequately reflect the surgical requirements of the Big Island; 2) tourist insurance data and uninsured individuals are not taken into account; 3) medical services in other regions of the United States may be over utilized in comparison. The latter explanation is consistent with the Dartmouth Atlas' Supply-Sensitive Care Hypothesis, which states that "Resource capacity has a direct influence on the patient's experience of medical care. The greater the supply of the resource, the more of that particular kind of care patients will

get." Finally, derived demand estimates for primary care should be validated by survey data on the area residents' ability to find a personal physician and to schedule timely appointments.

Supply assessment limitations

Locating fly over physicians, employed providers, particularly social workers and providers who work very little was difficult with the methods utilized. In addition, there are regular changes as a result of providers moving or leaving that will not be reflected after the completion of data collection. Furthermore, the researchers did not have access to complete information on provider demographics which would help predict retirement rates and productivity. Additionally, the provider assessment assumes the same level of care and productivity per provider and also bases a full time week on 40 hours, neither of which are the case in actual practice. Provider level of call and inpatient care was not assessed and was found to be one of the key frustrations reported in focus groups. Provider specialties are based on self report or on medical directory specialties; board certification or specialty training was not confirmed by the researchers. There are at least five specialties that were not assessed because there is no information on comparable demand, however these specialties also impact the services provided: Hospitalists, Urgent Care, Radiology, Pathology and Occupational Medicine. Specialties such as Hospitalists and Urgent Care can have a significant impact on call burden for physicians if regions had a critical mass of physicians providing these services.

Limitations of projection models

The only factors considered in the projection model are average visits to specialists per age group and projected population growth of that age group through 2020. The state of the economy, new technologies, healthcare reform and other influences were not included in the model. In addition, the projections relate only to demand, with the provider number staying the same (no influx or exit of providers).

Conclusion

The big island is facing a significant and growing health workforce shortage. The consequences of this shortage impact residents, visitors, businesses and government, as inadequate health workforce leads to delayed and more costly care. Addressing this critical issue will require broad collaboration. The people of the Big Island have already taken the initial steps to improving the health workforce by identifying the problems, creating collaborative partnerships and examining the feasibility of solutions. The next tasks are to more clearly document the cost of this health workforce shortage, select the solutions of choice, prioritize activities, identify activity leaders, organize action groups, pursue appropriate funding and develop a timeline for meeting objectives.



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Continued research of the existing health workforce will assist the Big Island in monitoring the success of interventions implemented. Standardized methods for assessing provider location and a mechanism for performing anonymous exit interviews will be important to the success of future efforts.

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Hospital Psychiatric Interventions and Its Positive Effect on Disposition of Non-Acute, Long-Term-Care Waitlisted Patients: A Case Series

Russ S. Muramatsu MD and Junji Takeshita MD

Abstract

Psychiatric interventions in hospital patients have been shown effective in reducing length of stay and costs. Its effectiveness and benefits in regard to the growing problem of disposition of non-acute, long-term-care, waitlisted hospital patients have not been characterized or described in the literature. The authors present several cases of waitlisted patients that demonstrate direct and indirect psychiatric interventions can play a significant role overcoming barriers and contributing to timely and appropriate disposition of these patients. Future prospective studies should be done to expand upon these findings to prepare for the aging of the population in Hawai'i.

Introduction

Over the next several decades people over age 65 will account for about 20 percent of the country's population, or one in five US residents.¹ Older adults with mental illness alone are projected to account for almost 15 million people in 2030.¹ Hawai'i has one of the fastest growing elderly populations in the United States. Between 1990 and 2005, the number of elderly aged 75 and older increased, 38 percent nationally compared to a 111 percent increase in Hawai'i.² According to 2005 census data, 13.7 percent of Hawai'i's population are 65 years or older. Life expectancy in Hawai'i is also among the highest in the United States with state estimates for the year 2000 being 80 years.³ Hawai'i, as well as the rest of the nation, is quickly approaching a crisis in terms of unmet needs of the elder healthcare consumer unless something is done to address this. For example, long-term care bed capacity is an issue in our state. Rural Hawai'i has fewer than 18 beds per 1,000 population over age 65, compared with an average of 62 beds in rural areas across the Mainland. Urban Hawai'i has 23 beds per 1,000 population over age 65, while the US Mainland average is 47 beds.^{4,5} A 2006 American Association of Retired People (AARP) study found Hawai'i was 48th in the nation in a long-term care beds ranking.⁶ This has resulted in a large number of non-acute, waitlisted patients clogging acute care beds in our hospitals.^{4,5,7} Waitlisted patients have been defined as: patients who are deemed medically ready for discharge from acute care services but cannot be discharged and, therefore, must remain in the higher cost hospital setting.⁷ Non-acute patients cost hospitals money and prevent hospitals from providing much needed acute care to many others in the community. Waitlisted Medicare patients are not reimbursed separately from the Diagnostic Related Groups (DRG) payment for the acute stay and waitlisted Medicaid patient days are reimbursed at approximately 20-30% of cost [Health Care Association of Hawai'i]. In FY 2007, Oahu hospitals logged a total of 54,750 wait-list days up from 50,005 two years prior.⁷ In certain hospitals at any one given time up to 13% of acute beds are used by wait-list patients.⁶ Estimated uncompensated costs for waitlisted patients for FY 2006 were between eighty to ninety-five million dollars.⁷ In addition to the shortage in beds, barriers and risk factors preventing discharge of non-acute patients include age, antibiotic resistant infections, long-term intravenous antibiotic treatment,

insulin injections, requirements for specialty care such as ventilation and dialysis, and psychiatric diagnoses and behavioral problems.⁸ Finally, clinical experience indicates that lack of insurance and finances, untimely completion of and the length of processing of forms such as the Level II Pre-admission and Screening Resident Review (PASRR) forms and Level of Care Determination Form, and the time consuming process of applying for and securing non-emergent guardianship also contribute to delays in discharge and placement.

Mental disorders including mood and anxiety disorders and dementias with associated behavioral problems are common amongst the elderly and are even more prevalent in nursing home residents where mental disorders are estimated to range from 60 to more than 90 percent.⁹ The prevalence of comorbid psychiatric disorders in medical and surgical patients treated in general hospitals can be as high as 45% of patients.¹⁰ A lack of timely psychiatric consultation has been shown to have implications for increased length of stay (LOS) and financial losses.¹¹ Meanwhile, psychiatric consultation and intervention has been shown to save money,^{12,13} with earlier consultations predicting a shorter length of stay.¹⁴ Despite this data, the percentage of patients receiving consultation is less than 6% of all admissions,¹⁰ and the provision of specific diagnoses and treatments by CL services occur in only 1 to 5% of admissions.¹⁵ Furthermore, consultations are typically not requested in a timely manner with requests initiated an average of 7 days from the time of hospital admission.¹⁶⁻¹⁸ The benefits of psychiatric intervention in non-acute, waitlisted hospital patients in terms of addressing barriers to long-term care placement ultimately resulting in reduced lengths of stay and cost-savings have not been formally characterized or described in the literature. The primary purpose of this study is to characterize a series of patient cases encountered throughout the hospital in order to gather evidence for and to highlight the benefits of psychiatric intervention in the disposition of non-acute, long-term care waitlisted patients in an acute hospital setting. The longer term objective is to use this information to design a future retrospective study of this type of patients with the ultimate goal of improving the systems of care for this vulnerable population.

Methods

This study is a series of case reports consisting of brief descriptions of selected clinical cases encountered during geriatric psychiatry consultation on the medical-surgical and inpatient psychiatric wards in a private, non-profit, urban hospital in Honolulu, Hawai'i over a one year period. Inclusion criteria included inpatient hospitalization, non-acute level of care (i.e. SNF, ICF), psychiatric consultation request, and positive outcome that highlighted the topic issue. This project received Institutional Review Board (IRB) approval through both the University of Hawai'i and The Queen's Medical Center committees.

Results

Case 1

The first case is of 73-year-old woman with history of insulin dependent diabetes mellitus and chronic renal insufficiency admitted to the surgical intensive care unit (SICU) with septic shock. Psychiatry was consulted because the patient was restless, agitated, unable to sit still and constantly yelling or calling out for help. These behaviors interfered with her ability to cooperate and engage in physical therapy and she was eventually dropped to intermediate care facility (ICF) level. She was unable to sit still during dialysis, such that the outpatient dialysis facility had great concern. She remained with a significant deficit from premorbid condition in terms of cognitive ability and physical functioning. Long-term placement was pursued as the husband could not care for her any longer however, he was under a great deal of psychological distress and initially resisted the plan. Both his difficulty accepting the situation as well as her yelling and inability to sit still were primary barriers to placement. She was diagnosed with a delirium on top of a vascular dementia and treated with psychotropic medications to control the behavioral symptoms. As her delirium resolved and her cognitive deficits improved, so too did all her symptoms. We worked with her husband providing psychoeducation and support. She was discharged to a short-term rehabilitation facility for retrial of physical therapy with subsequent placement in a community foster family home. Length of stay=251 days.

Case 2

The second case is a 92-year-old difficult-of-hearing, non-English speaking woman who, seven years earlier prior to her husband's death, was fully ADL independent living in her own home. She eventually declined in function, developed problems with cognition, behavior, and psychosis and subsequently was placed in a nursing facility. She had multiple acute hospitalizations both medically and psychiatrically. At baseline she was sometimes uncooperative with care and would refuse medication; overall she was pleasant and content to be left alone. Her pattern, however, was that she would decompensate and become acutely suspicious, physically aggressive, and refuse to take any medications at all, usually related to a coexisting acute medical problem such as a urinary tract infection or constipation. She was always rapidly stabilized back to baseline with appropriate medical treatment and adjustment of her psychiatric medications. She was diagnosed with a vascular dementia and a likely comorbid depressive disorder. Despite access to outpatient clinic geriatric psychiatry services, the nursing facility grew increasingly wary of the ongoing situation and did not feel they could provide safe and adequate care for her, showing little interest in taking her back, and ultimately leading to the exploration of alternative dispositions. During her last two admissions to the in-patient psychiatric ward, the long-term care psychiatry team worked closely with the in-patient social workers and attempted to bridge the gap in psychiatric services within the long-term care community by offering to provide outreach psychiatric consultations through a home visit. This collaboration allowed her to be successfully placed in a foster family home. Unfortunately this only lasted one night as she did not adjust well to the new environment. Subsequently, another nursing facility accepted her because of access to long-standing ongoing psychiatric consultations that our long-term care psychiatry team

provides to their facility and a guarantee that we would readmit if she decompensated again. LOS one = 48 days. LOS two = 30 days. LOS three = 13 days.

Case 3

The third case is a 66-year-old homeless man with a history of polysubstance dependence and possible history of a mood disorder who was found lying on the street, brought to the hospital disoriented and diagnosed with an acute ischemic stroke. Psychiatry was initially consulted for an assessment of decisional capacity in light of a delirium. He was found to lack decisional capacity. Because of the absence of family or friends who could act as surrogate decision makers, pursuit of formal incompetency and legal guardianship was discussed. Soon, however, his confusion resolved and he remained with minimal executive functioning, memory, or attention deficits. He regained physical functioning with physical and occupational rehabilitation. By all accounts, he was independent in ADLs and managed to successfully survive on the streets. He had a monthly check which he picked up regularly. He had declined medications and services in the past valuing his independence and autonomy and consistent with his life long dislike of being dependent on medications. He made it clear that he would like to go back to live on the streets, did not want assistance with placement and would refuse to go if a place was found. Over the course of several visits, his decisional capacity was reassessed. In conjunction with new collateral information which confirmed his reports and was consistent with his wishes he was determined to have regained decisional capacity to be able to care for himself and live independently. Pursuit of public guardianship of the person, a timely and costly prospect, was avoided. He was subsequently discharged back to the streets, sent by taxi to his previous "home," but with case management involvement to which he agreed. LOS=29 days.

Case 4

The fourth case is a 57-year-old woman with history of chronic schizophrenia and nasopharyngeal cancer admitted with new lower extremity weakness and the inability to walk. Work up revealed compression of the spinal cord by a mass - metastasis of the cancer. Psychiatry was initially consulted for determination of decisional capacity to consent to surgery. Ultimately radiation therapy was given and she was downgraded to ICF level of care. Long-term care placement options were sought as her previous home was not equipped for her needs and her husband and family did not feel they could provide care. She was irritable and aggressive, although these symptoms improved with adjustment of her antipsychotic medication. She remained, however, quite suspicious, most strikingly towards long-term care caregivers who came to assess her for acceptance in their facilities. She would not cooperate and subsequently could not be discharged from the hospital. She was in denial about her condition, her needs and situation, and verbalized only wanting to go back home. The long-term care psychiatry team continued to adjust her medications as well as gently broached the topics significant for their impact on her psychological well being. Over a month or two she improved significantly to the point she recognized that going home was not appropriate, she sought out the social worker to discuss placement options, and eventually was able to tolerate caregiver interviews and in fact did remarkable well. Ultimately she was ac-

cepted by a foster family home that met the standards of the patient, the family, and the primary care physician. LOS=215 days.

Case 5

The fifth case is a 65-year-old male with schizophrenia and metastatic colon cancer. The oncologist felt that there were no other options available for medical treatment and recommended referral to hospice. The patient refused hospice but did not want to leave the hospital. Psychiatry was consulted to “manage schizophrenia” but the clear aim was to manage this impasse. The patient on examination exhibited clear hallucinations which he stated had lasted for years. He did not wish to take medications and alluded to a bad experience with chlorpromazine. Additionally when the issue of “hospice” came up, the patient initially refused to speak with the psychiatrist. On subsequent daily visits, the patient admitted that he thought that hospice meant that he would not get any pain medications and that he would die without medical care. The psychiatric team spoke at length with the patient on successive visits regarding the advantages of hospice and provided reassurance. Eventually the patient was agreeable and was discharged to the hospice. LOS = 10 days.

Discussion

These cases all highlight the effective role that psychiatric interventions, in the form of direct patient care such as medication management and supportive psychotherapy and indirect services such as acting as a liaison between and with patients, family members and hospital staff and providing assistance with arrangement of community services can play in overcoming barriers and contributing to timely and appropriate disposition of non-acute, long-term care waitlisted patients from the acute care setting.

Direct Interventions and Services

Pharmacologic and non-pharmacologic treatments of psychiatric disorders in the elderly, including behavioral and psychological symptoms of dementia (BPSD), are recommended well accepted practices with known levels of efficacy and effectiveness.^{19,20} Sometimes, these interventions alone are sufficient to allow a patient to return to a previous long-term care facility or to be transitioned to a new one. For example, appropriate treatment and management of symptoms with psychotropic medications by a general psychiatrist, either alone or in conjunction with geriatric psychiatry consultation, in a patient previously not receiving such care may be a relatively quick and easy solution. At other times there are additional contributing issues that require specialized knowledge and interventions on a more systems level of care.

Indirect Interventions and Services

Psychosocial factors, as opposed to medical condition and physical need, have been identified as being a major influencing force on the utilization of health care services and resources at every phase of the illness episode, affecting the need for admission to the ability to discharge.¹³ Although hospital case managers have become commonplace, their effectiveness in regards to reducing length of stay and readmission in a general hospital population has been questioned.²¹ Their inability to function as a clinician with independent authority to offer solutions to the problems is a limitation. Furthermore, as it relates to patients with psychiatric issues a major limitation is their

lack of experience with and training in behavioral health. There is some evidence that intervention by a CL psychiatry nurse, in the form of assistance with the organization of post-discharge care, has a beneficial effect on decreasing LOS in elderly patients.²² In other words, as demonstrated in at least one of the cases, creating a solution to the lack of easily available and assessable outpatient psychiatric services that contributes to the difficulty accessing long-term care placement can have a significant impact on appropriate and timely discharge from the hospital. Forging a strong, close working relationship between a hospital and independent community long-term care facility that is built on mutual trust and shared values and goals is a necessity to develop an equitable and functioning solution, to at least begin to chip away at the barriers preventing discharge, allowing patients with psychiatric and behavioral problems needing long-term care to be accepted and placed in the community. Desensitizing nursing home administration and staff, either formally through education or informally through prolonged clinical service would be an important step in developing such a model that allows for the free flow of patients in and out of the hospital.

Implementation of a systematized and structured practice in dealing with issues such as pursuing non-emergent guardianship, applying for state-Medicaid and Social Security benefits and completing PASRR and level of care forms that is performed early on in the hospitalization and consistently for each patient would go a long way in increasing efficiency and decreasing unnecessary days spent in the hospital. External factors that involve processes beyond the psychiatrist's and hospital's influence, such as waiting for outside agencies to process paperwork, could best be addressed by working collaboratively with state and community agencies to create better solutions.

More formal, objective studies could be done to better elucidate the specific interventions and factors that have the most impact or effectiveness on getting patients out of the hospital. With increasing focus on quality measures and outcomes in an complex economic environment this sort of data is critical to ensure the implementation of best-practice models of service that will provide excellent patient care and increase cost savings at the same time.

Finally, it might be helpful to have a dedicated consultant psychiatrist identified to focus on long-term care issues, a “champion,” who has the capability to be flexible in various roles and across service lines and specialties since these patients and their issues often are not fully appreciated or “attractive” to the general team in that opportunities for timely and appropriate transition throughout the levels of care and facilities can get lost in the shuffle of day to day acute hospital care. This only makes sense as, after all, acute care is the hospital's focus and should remain so.

The findings and conclusions of this study do not necessarily represent the views of The Queen's Medical Center, Honolulu, HI.

The views expressed in this abstract/manuscript are those of the author(s) and do not reflect the official policy or position of the Department of the Army, Department of Defense, or the US Government.

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Varicella Zoster Virus Infection In Patients Taking the TNF-Alpha Inhibitor, Etanercept: Coincidence or Causal?

Allan Izumi MD

Introduction

Ninety percent of varicella infections are seen in children under the age of ten and usually follow a benign clinical course with complete resolution of symptoms in one to three weeks. Herpes zoster, an acute vesicular eruption due to the varicella-zoster virus (VZV), occurs mostly in adults. Biologic agents include tumor necrosis factor alpha (TNF- α) inhibitors that have significantly impacted the treatment of autoimmune and inflammatory conditions. Therapy with TNF- α inhibitors poses a potential risk of serious infections secondary to their immunomodulating properties; however multiple studies have demonstrated acceptable safety and tolerability profiles. A case of documented VZV infection (varicella) in an adult receiving the TNF- α inhibitor etanercept is described here.

Case Report

A 52-year-old Japanese immunocompetent man presented with a one-week history of varicella that was associated with low-grade fevers, myalgias, and headache. He denied taking any new medications, had not been ill recently, and denied any recent exposure to varicella or herpes zoster. His past medical history was significant for psoriasis and psoriatic arthritis, for which he was receiving 50 mg subcutaneously per week of the TNF- α inhibitor PCR etanercept for the last five to six years. The patient was not taking any other medications.

Clinical examination revealed an afebrile, otherwise healthy appearing man with extensive hemorrhagic varicella on his face, torso, and extremities. There was no evidence of oral lesions, palmer-plantar pustules or psoriatic lesions. A Tzanck smear was positive for the presence of multinucleated keratinocytes. A four mm punch biopsy revealed features of varicella, more specifically multicocular microvesicular intraepithelial blisters with mixed inflammatory spongiotic infiltrate and acantholytic keratinocytes. Scattered keratinocytes displayed multinucleated nuclei and a dense perivascular lymphohistiocytic dermal infiltrate consistent with a viral blister. Further hematologic work-up revealed a positive IgG VZV antibody, positive DFA VZV Fluorescence, and VZV nucleic acid detected, thereby confirming the diagnosis of varicella. Immunocompetence was confirmed by a normal CD4 lymphocyte count of 927×10^6 cells/L. The following laboratory tests were normal: CBC and differential blood count, urinalysis, Prostate-specific antigen, cholesterol, triglycerides, glucose, BUN, creatinine, electrolytes (Na, K, Cl, CO₂), calcium, SGOT, SGPT, alkaline phosphatase, total bilirubin, total protein, albumin, and globulin.

The patient was treated with acyclovir 400 mg three times daily for ten days and etanercept was temporarily discontinued. He improved on antiviral therapy and experienced complete resolution of lesions. Etanercept was restarted after the clearing of the lesions and he has continued to do well on therapy without sequelae.

Discussion

The course of immune-mediated inflammatory diseases has been greatly modified by the relatively recent introduction of biologic medicines. TNF- α inhibitors have been efficacious in the treatment of

inflammatory processes involved in rheumatoid arthritis (RA), active resistant polyarticular-course juvenile idiopathic arthritis, ankylosing spondylitis, plaque psoriasis, psoriatic arthritis and inflammatory bowel disease. TNF is a naturally occurring cytokine involved in initiating the body's defense response to local injury, however, at high concentrations TNF can lead to excess inflammation and organ damage. The role of TNF in certain immune-mediated inflammatory diseases is thought to be a result of increased expression of the cytokine in affected tissues, which leads to pathogenic induction of additional inflammatory mediators and eventual tissue destruction. The strong clinical efficacy of TNF- α inhibitors is a result of their ability to prevent TNF from binding to and inducing cell surface TNF receptor-mediated functions. These functions are thought to include cell activation, cell proliferation, cytokine and chemokine production, which mediate cell recruitment, inflammation, immune regulation, angiogenesis and extracellular matrix degradation.¹

The overall safety profiles of TNF- α inhibitors have been subject to extensive scrutiny in randomized trials and are generally accepted as well tolerated and safe. An open, monocenter, long-term prospective study designed to report adverse events in 163 Juvenile Idiopathic Arthritis (JIA) patients treated with TNF- α inhibitors demonstrated that TNF- α inhibitor agents, specifically etanercept and infliximab, are associated with only a few serious, but all reversible adverse events. Serious but uncommon adverse events include infections, malignancies, heart failure, demyelinating disorders, autoimmunity induction, and lupus-like diseases.²

One of the main concerns associated with the use of TNF- α inhibitors is their association with serious infections. Bacterial infections such as reactivation tuberculosis, pneumonia, cellulitis and osteomyelitis, are seen more commonly than the rare viral and fungal opportunistic infections. Viral infections such as varicella, cytomegalovirus and herpes simplex have been reported, but their association with TNF- α inhibitors is unclear.³ TNF- α inhibitor therapies affect host defenses against infections by their mediation of inflammation and modulation of cellular immunity. However, clinical trials studying the effects of etanercept in patients with rheumatoid arthritis found no evidence of depression of delayed type hypersensitivity, depression of immunoglobulin levels, or changes in enumeration of effector cell populations.⁴ Recent data from controlled clinical trials showed no increased risk of overall serious infections for patients treated with TNF- α inhibitors compared with conventional disease modifying anti-rheumatic drugs (DMARDs), although skin and soft tissue infections were increased in the TNF- α inhibitor group.⁵ However, there are increasing reports of reactivation of latent pulmonary tuberculosis in patients taking TNF- α inhibitors. As a result, there are currently recommended guidelines which include a baseline tuberculosis skin test prior to starting and annual testing thereafter when taking etanercept.⁶ Furthermore, vaccinations using live virus (ie. varicella and herpes zoster vaccines) are not recommended while on etanercept whereas most guidelines agree that attenuated viral vaccines (ie. influenza,

hepatitis A and B, and pneumococcal vaccine) can be given to patients taking etanercept when indicated.⁷

Conflicting evidence from post-marketing surveillance and observational studies in patients taking the TNF- α inhibitors infliximab, adalimumab, and etanercept, have shown severe and some fatal infections.^{8,9} The failure of clinical trials to detect an increased risk may be due to the small numbers of patients enrolled, relatively short follow-up periods, and enrollment of relatively healthy patients in comparison to patients with the same disease who do not participate in trials. Observations taken from a German registry study in which 512 patients with rheumatoid arthritis were treated with etanercept and followed for up to one year showed the numbers of serious infections per 100 patient-years were 6.4 (95% CI 4.5 to 9.1) compared with 2.3 (95% CI 1.3 to 3.9) for those treated with conventional DMARDs.³ Serious infections included viral, fungal, mycobacterial, and bacterial infections. A systematic review and meta-analysis of rare and harmful effects of infliximab and adalimumab, excluding etanercept, in rheumatoid arthritis patients revealed that infections were more common in patients treated with higher doses compared to those who received lower doses. However, the difference was not statistically significant (OR, 1.4 [95% CI, 1.0-2.0]).¹⁰

Etanercept is a soluble dimeric fusion protein linking the ligand-binding portion of the p75 TNF receptor to the fragment (Fc) portion of human immunoglobulin G1 (IgG1). Etanercept targets circulating and membrane-bound TNF- α and TNF- β thereby blocking TNF receptor mediated functions. It is specifically indicated for the treatment of moderate to severe rheumatoid arthritis, polyarticular-course JIA, psoriatic arthritis, ankylosing spondylitis, and plaque psoriasis. Adverse events seen in children treated with etanercept have been similar in type and frequency to those reported in adults. The rate of severe infections in controlled trials is 0.04 infections/patient-year of exposure to etanercept.¹¹ The incidence of severe infections with etanercept has not been shown to be higher than that in the general population despite five years of continuous treatment in a population of 1960 patients.¹¹ However, post-marketing studies have reported serious infections, including sepsis and death in patients taking etanercept alone and in combination with other immunosuppressive agents. Etanercept when used in combination with other immunosuppressive agents has been shown to significantly increase the risk of infection. A marked increase in the development of serious infections, (3.7%), was found when etanercept and anakinra, an interleukin 1 receptor antagonist, were evaluated for potential synergistic efficacy in patients with rheumatoid arthritis.¹²

The safety of etanercept in patients with varicella infection has not been studied. There has been concern regarding the effect of biologics in children exposed to or who develop varicella infections. Data from the previously mentioned study designed to monitor AEs in patients with JIA taking either etanercept or infliximab reported 4 cases of varicella infection out of 127 patients on etanercept.² These cases were deemed unrelated to treatment with TNF- α inhibitors. Additional data from a German registry designed to monitor the safety and efficacy of etanercept in children with JIA reported varicella zoster in one out of 334 patients representing 592 patient treatment-years.¹³ Additionally, a multi-center, open-label, extended treatment trial of 58 children with polyarticular juvenile rheumatoid arthritis reported a case of aseptic meningitis secondary to VZV infection in a 13-year-old boy receiving etanercept 0.4 mg/kg.¹⁴ Finally, in a review of the use of biologic agents in juvenile rheumatoid arthritis, 3 cases of varicella were reported in patients on etanercept (two of whom developed aseptic meningitis), and the recommendation

was that children on TNF- α inhibitors exposed to varicella should be evaluated and treated in the same way as an immunosuppressed individual.¹⁵

Conclusion

In summary, review of the use of etanercept in patients with auto-immune and inflammatory conditions appears to be well tolerated and safe. Ongoing debate still remains regarding whether TNF- α inhibitors truly increase the risk of infection. Current data suggest that association between etanercept and increased rates of infection appear to be dose-dependent. While the relationship between the development of varicella in patients taking etanercept remains unclear, current evidence does not show an increase risk of varicella infection in these patients. Therefore, it is highly probable that the development of varicella described in this case was unrelated to his use of etanercept. Patients prescribed TNF- α inhibitor therapy require close monitoring, especially in combination with other immunomodulating therapy, because of the complexity of the interaction between these patients' underlying disorders and the potential for immunosuppression, which may together influence the risk of infection. Ultimately, the decision to use TNF- α inhibitors is an individual one based on the unique clinical features risk profile pertaining to a given patient.

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Visitor Injuries in Hawai'i

Hao Chih Ho MD; Cora S.R. Speck MS; and Jennifer Kumasaki BS

Abstract

Background: Over seven million tourists visit the Hawaiian Islands each year. Popular visitor activities such as surfing, scuba diving, ocean kayaking, parasailing, bicycle tours and hiking each have risks of serious injury. This study reviews visitors' activities that led to serious injuries requiring treatment at the state's only trauma center while vacationing in Hawai'i.

Methods: A retrospective electronic medical record review was conducted of all visitor and resident trauma patients admitted to The Queen's Medical Center (QMC) from January 2002-December 2006. Patient demographics, injury type and severity, mechanism of injury, and discharge status were collected and analyzed.

Results: A total of 8244 patients were admitted to QMC for major traumatic injuries over the five year study period. Of these, 466 (5.7%) were visitors. The most common mechanisms of visitor injuries were falls (23.6%), water-related injuries (22.8%), motor vehicle crashes (18.7%), motorcycle, moped, and recreational vehicle crashes (12.2%), assaults (7.3%), and bicycle crashes (4.0%). A disproportionate number of visitors sustained serious injuries while engaging in water-related activities: Visitors account for only 12.6% of the population on any given day, yet comprise 44.2% of the total admissions for Hawai'i's water-related injuries. Head and spine injuries make up over two-thirds (68.2%) of these water-related visitor injuries.

Conclusions: As a general category, falls were responsible for the highest number of visitor trauma admissions. Of the recreational activities leading to high numbers of trauma admissions, water-related activities are the leading causes of serious injuries among visitors to Hawai'i. Water-related injury rates are significantly higher for Hawai'i's visitors than residents. Water safety education for visitors should be developed in multiple languages to educate and protect Hawai'i's visitors and visitor industry.

Introduction

Tourism forms the basis of Hawai'i's economy.^{1,2} The State of Hawai'i Department of Business and Economic Development of Tourism reported a 8.7% increase in visitors, from 6.9 million in 2004 to 7.5 million in 2006.¹ The majority of visitors arrived from the Western US (48%), and 64% of all visits were to the island of Oahu. In 2006, 184,930 visitors were in Hawai'i on a typical day, accounting for roughly 12.6% of the people on the islands.^{2,3}

Despite the number of visitors to the Hawaiian Islands and the importance of the visitor industry, little information has been collected on visitor injuries and fatalities. Popular visitor activities can be fraught with risk of injury and death, and these risks may be further exacerbated by the inexperience of the participants and relaxed mindset of vacationers.

Data from the Hawai'i State Department of Health's Injury Prevention and Control Program reports that on average, 7,286 injured visitors received treatment in Emergency Departments (ED), 668 visitors were hospitalized for injuries, and 74 died each year as a result of injuries sustained while in Hawai'i.⁴ About half of visitor deaths occurred in Honolulu County, with the remaining deaths equally divided among the other counties (Figure 1 and Table 1). The mean annual fatality rate (/100,000 visitor years) was highest in Kaua'i county (62.2), followed by Hawai'i County (51.1), O'ahu (33.3) and Maui County (22.9). Maui had significantly lower rates of visitor injury than any other county, while O'ahu had significantly lower rates than Hawai'i or Kaua'i counties. Rates for the latter two counties were statistically comparable. Many of Hawai'i's injured visitors were not treated at QMC because the injuries occurred in

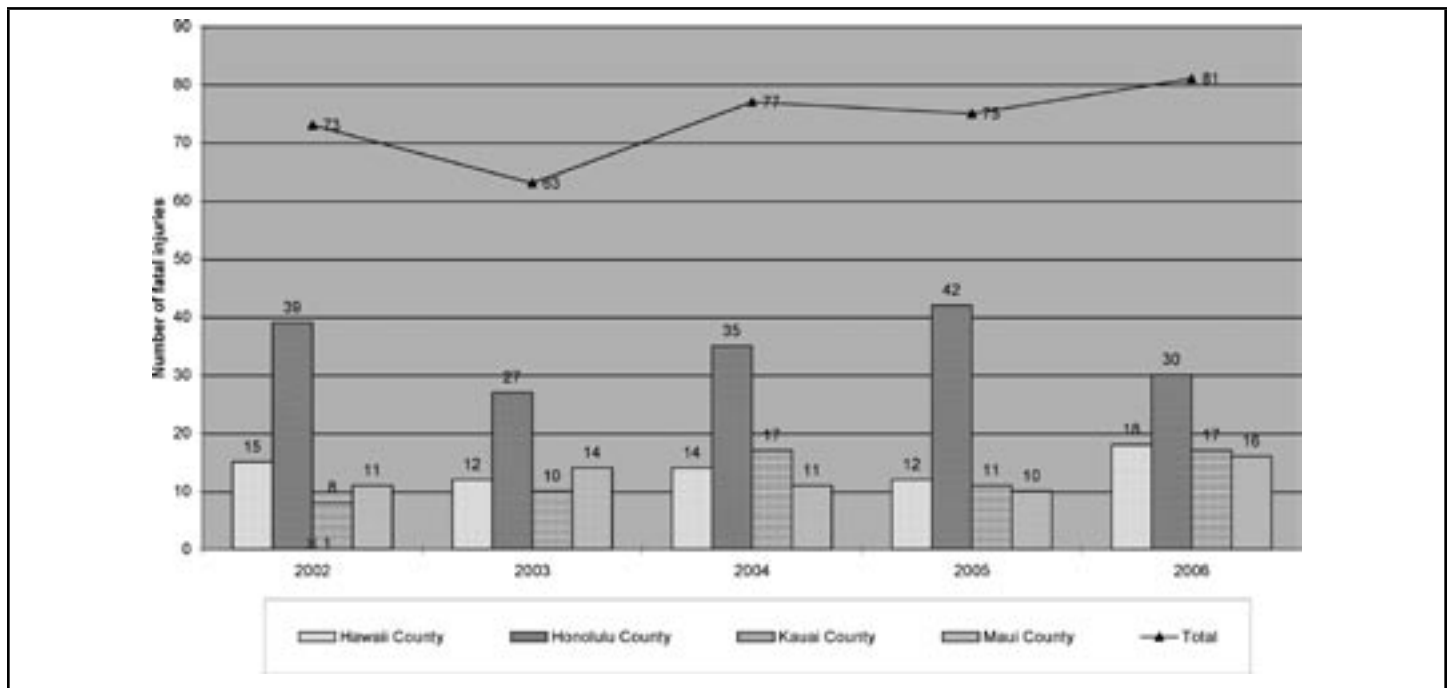


Figure 1.— Annual number of fatal injuries among Hawai'i's visitors, by county, 2002-2006.*

*Data for Figure 1 from Injuries in Hawai'i: 2001-2006.⁴

Table 1.—Numbers of Statewide Visitor Injuries Contributing to ED Visits, Hospitalizations, and Deaths in Hawaii, 2001-2006.⁴

	ED Visits Only*	Hospitalizations	Deaths
Falls	2062	216	29
Water-related	354	94	196
MVC occupant	377	49	43
MVC-Motorcycle, moped, recreational vehicle	101	25	7
Assault	207	23	7
MVC-Pedestrian	28	12	10
Bicycle	184	23	8
Other	480	17	13
Other Transportation (Aircraft, water transport)	125	26	7
Suicide	17	18	41
Undetermined intent	119	4	22

*Patient numbers recorded in the ED Visits Only column are limited to those who were treated and discharged from the ED.

Kaua'i, Hawai'i, or Maui counties, were treated at neighbor island hospitals, or were pronounced dead on the scene.⁴ Injured visitors who were not treated at QMC were not included in this study.

As Hawai'i's only trauma center, The Queen's Medical Center (QMC) has been active in injury prevention efforts, participating in the Injury Prevention Advisory Committee, Hawai'i Falls Consortium, Think First, and the Keiki Injury Prevention Coalition. The Hawai'i Department of Health Injury Prevention and Control Program has made efforts to institute injury prevention education as part of Hawai'i's Health Education standards in Hawai'i's schools as well as in the community.⁵ Efforts are also being made to reduce the incidence of water-related incidents by providing current information on beach conditions via a beach rating system.⁵ Unfortunately, current injury prevention initiatives are geared toward Hawai'i residents and have limited impact on visitors.

The purpose of this study was to examine the differences in the common injuries sustained by visitors compared to Hawai'i residents and to use this information for the targeted development of visitor injury prevention programs. A literature and internet search of injury prevention programs for visitors or tourists yielded numerous recommendations to create tailored programs;⁶⁻¹¹ no reports or reviews of existing programs were found.

Methods

This retrospective study reviewed electronic medical records from the QMC Trauma Registry for trauma admissions from January 1, 2002 through December 31, 2006. During this time, 8,244 trauma patients were treated, of which 466 were visitors (5.7%). Data were collected from electronic medical records, then analyzed and compared between visitors and residents.

Results

Visitors seriously injured in Honolulu County (the island of O'ahu) were most often taken to the state's only trauma center, QMC. Following treatment, the majority of visitor patients were discharged home (67.3%); however, 11.8% of patients were discharged to skilled nursing facilities, while 15.5% were discharged to rehabilitation facilities or to a hospital in their home state, requiring follow-up

care. The mortality rate of visitor trauma patients at QMC was 2.7%. Other findings of this study include:

Gender

Visitor males comprised 68.8% of visitor trauma admissions (Figure 2) compared to 72.2% Hawai'i resident trauma admissions. Visitor males had higher mean Injury Severity Scores (14.2) compared to visitor females (11.0); visitor males also had higher mean Injury Severity Scores than resident males (12.1) and resident females (11.2).

Age

The mean age of visitor patients admitted to the QMC was 39.5 years; however, the majority of patients admitted were between the ages of 18-29 years. Figure 2 shows the age and gender distribution of visitors admitted from 2002-2006.

Foreign visitors' countries of origin

7.3% of visitor trauma admissions were citizens of foreign countries. Of the foreign visitors, 38.2% were from Japan, 29.4% were from Canada, and 8.8% were from England. The remaining patients were from the Pacific Basin, Peru, China, Korea, Germany, and Spain. Japanese and Spanish were the two leading foreign languages of QMC trauma patients.

Domestic visitors' states of origin

Almost all (92.7%) visitors treated for injuries at the QMC were from the US Mainland (including Alaska). Nearly half (47.7%) of injured visitors from the United States resided in states in the Pacific Time Zone, 10.0% from Mountain Time Zone, 17.1% from Central Time Zone, and 20.8% from the Eastern Time Zone. The states with the highest number of trauma admissions were California (136 patients), Washington (33 patients), Texas (16 patients), and Illinois (13 patients). Fifteen visiting military patients were also admitted during this time period.

Mechanisms of injuries

The most common mechanisms of visitor injuries requiring admissions were falls (23.6%), water-related injuries (22.8%), motor vehicle crashes (18.7%), motorcycle, moped and recreational vehicle crashes (12.2%), assaults (7.3%), and bicycle crashes (4.1%) (Table 2 and Figure 3).

Discussion

Injury Demographics

It is often said that trauma is a young man's disease.^{8,12} Indeed, the leading predictors of visitor injuries in Hawai'i were male gender and age. Visitor males accounted for the majority of every type and mechanism of injury, including 94.4% of intentional injuries (assaults and attempted suicides), 84.0% of water-related injuries, and 71.4% of jumping injuries. Male visitors were injured more severely than their female counterparts (Injury Severity Scores of 14.2 vs 11.0). The mean age of visitors and residents admitted to QMC were 39.5 and 37.8 years, respectively. Further examination into the age of visitor trauma patients reveals that males age 20-29 years were responsible for nearly one-third (32.0%) of visitor male trauma admissions.

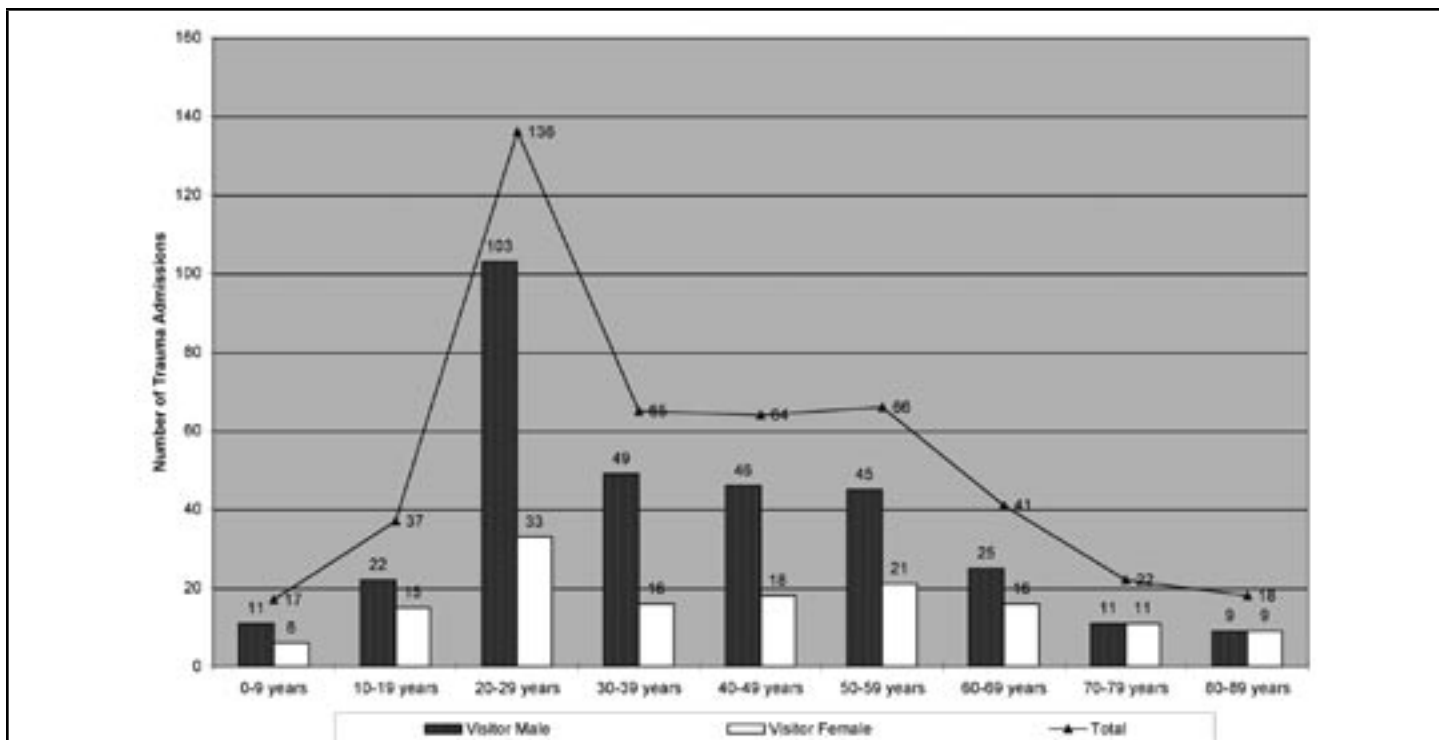


Figure 2.— Visitor trauma admissions to QMC by age and gender, 2002-2006.

Table 2.— Injury categories contributing to visitors' admissions to QMC, 2002-2006.

Activity	# Visitor Admissions (%)	% Male	# Visitor Fatalities	% Total Visitor Fatalities
Falls and Jumps	117 (25.1%)	70.0%	7	50.0%
Fall	110 (23.6%)	59.1%	6	42.9%
Jump	7 (1.5%)	71.4%	1	7.1%
Transportation-related activities	192 (1.2%)	59.9%	5	35.7%
Motor vehicle crash	87 (18.7%)	59.8%	1	7.1%
Motorcycle/moped/recreational vehicle crash	57 (12.2%)	57.9%	2	14.3%
Pedestrian vs. motor vehicle	25 (5.4%)	60.0%	1	7.1%
Bicycle crash	19 (4.1%)	68.4%	1	7.1%
Plane crash	4 (0.9%)	75.0%	0	0.0%
Water-related injuries	106 (22.8%)	84.0%	2	14.30%
Body Surfing	24 (5.2%)	95.8%	0	0.0%
Hit by wave	20 (4.3%)	70.0%	0	0.0%
Surfing	17 (3.7%)	88.2%	0	0.0%
Boogie Boarding/Body Boarding	16 (3.4%)	81.3%	0	0.0%
Diving/Jumping	12 (2.6%)	100.0%	0	0.0%
Boat/motorized water craft	9 (1.9%)	55.6%	1	7.1%
Drowning/Other	4 (0.9%)	100.0%	1	7.1%
Shark bite	1 (0.2%)	100.0%	0	0.0%
Snorkeling	1 (0.2%)	100.0%	0	0.0%
Parasailing	1 (0.2%)	100.0%	0	0.0%
Riding in flume	1 (0.2%)	0.0%	0	0.0%
Intentional injuries	36 (7.7%)	94.4%	0	0
Assaults	34 (7.3%)	97.1%	0	0.0%
Self-inflicted	2 (0.4%)	50.0%	0	0.0%
Unknown	2 (0.4%)	100.0%	0	0.0%
Other	13 (2.8%)	84.6%	0	0.0%
TOTAL	466 (100.0%)	-	14	100.0%

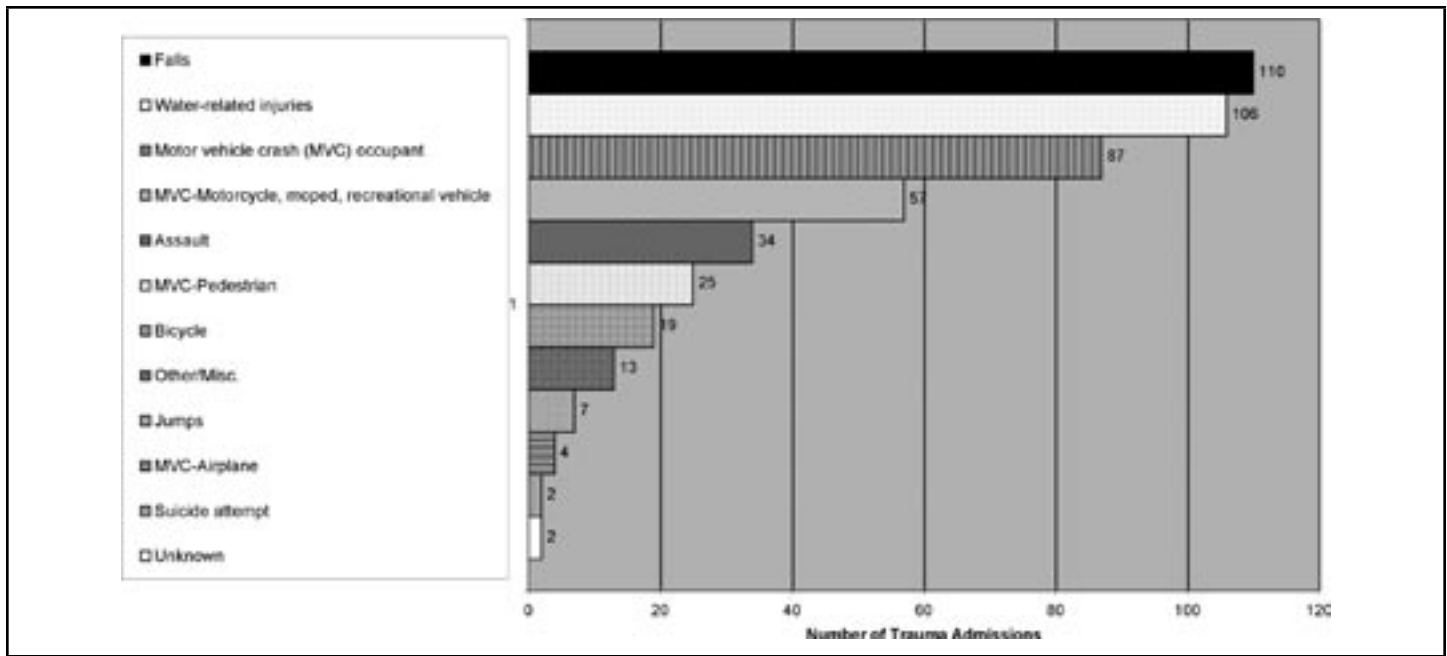


Figure 3.— Visitor admissions to QMC by injury category, 2002-2006.

Less than 10% of visitors admitted to QMC were from foreign countries. Language barriers were unlikely to account for many types of visitor injuries from non-English speaking countries, but may have contributed to seven water-related injuries. For example, it is unlikely that translations of injury prevention messages would have prevented two injuries due to marathon running, two pedestrians walking on a sidewalk and being hit by a tour bus, having a seizure near a pool, experiencing an airplane crash, or falling asleep while driving. However, translations of water safety information and/or warning signs posted in Japanese and Spanish might have prevented seven serious cases of water-related injuries from body surfing, boogie boarding, surfing, and diving into shallow water.

Mechanisms and Sequelae of injuries

Falls and jumps

For Hawai'i's visitors and residents alike, falls were responsible for the highest number of trauma admissions. However, the circumstances surrounding visitors' falls were different from those leading to residents' falls. Visitors' fall- and jump-related injuries and deaths occurred most often while participating in outdoor activities such as skydiving, hiking near cliffs, waterfalls, and piers, whereas fall-related injuries among residents occurred primarily in homes. There were a total of seven fall and jump-related deaths: Two each involving stairs and high rise buildings, and one each involving skydiving, whalewatching, and a pre-existing health condition. The distribution of fall-related trauma injuries by age group peaked in 20-29 year olds but there were no deaths in this age category. More than half (54.5%) of the visitors admitted to QMC for fall- or jump-related injuries had injuries to the head and/or spine. Of these patients, 8.1% did not survive and only 64.2% were able to be discharged home. The remaining 27.7% were transferred to rehabilitation facilities and other hospitals in their home states.

Water-related injuries and deaths

On average, visitors account for approximately 12.6% of Hawai'i's

population² but account for 44.2% of all water-related trauma admissions at QMC. This disproportionate number of injuries could be due to a higher number of visitors enjoying Hawai'i's beaches, visitors' lack of awareness of Hawai'i's ocean conditions, or a combination of both factors. Ocean safety recommendations for visitors include swimming only in designated, lifeguard patrolled areas, making a feet-first entry into all bodies of water, using Personal Flotation Devices, and becoming educated in activities such as SCUBA, boating, and swimming prior to vacationing.¹⁰

National data that report statewide drowning rates do not include visitor drownings. For example, if a visitor from California drowns in Hawai'i, that incident is recorded as a drowning for California but not Hawai'i. Hawai'i residents have the second highest incidence of death due to drowning nationwide with an age-adjusted rate of 2.53 deaths per 100,000 for 2006, above the 90th national percentile.¹³ When visitor drownings are included in Hawai'i's count, Hawai'i ranks first in the nation for drowning deaths.⁴ Visitors make up more than half of these water-related fatalities; in 2004, 39 visitors drowned while vacationing in Hawai'i.⁴ The majority of these drowning and near-drowning victims were males, and the majority of these events (79.0%) occurred in the ocean rather than pools or streams.⁴ During the study period, only two visitors who were drowning or near-drowning victims were admitted to QMC. The remaining patients were treated at the scene, brought to other hospitals, were not found, or were pronounced dead at the scene.

Among visitors, surfing incidents (including body surfing, boogie boarding, kite boarding, and surfing) were responsible for 57 (53.8%) water-related injuries, while wave-related incidents (i.e. being hit by a wave when exiting from water) were responsible for 20 (18.9%), and diving or jumping into shallow water caused 12 (11.3%) injuries. Only one visitor was treated for a shark bite during this period.

Injuries to the spinal cord (25.0%) and vertebral column (22.0%) were the most common results of water-related incidents. In total, 70 of the 105 visitor patients admitted for water-related injuries

sustained injuries to the head and/or spine. Of these patients, only 62.5% were able to return home, while 27.5% were discharged to rehabilitation facilities or another hospital, and 6.3% to skilled nursing facilities.

Transportation-related injuries

Transportation-related injuries caused 192 visitor admissions to QMC and contributed to five deaths. Motorcycle, moped, and recreational vehicle crashes caused 57 visitor injuries, and two deaths. The available data did not list possible contributing factors to these crashes (such as intoxication, distraction, or limited knowledge of the English language). One recommendation to reduce visitor motor vehicle crash injuries is to provide education on Hawai'i's traffic safety laws when visitors rent cars, motorcycles, mopeds, all-terrain vehicles, and bicycles. The information provided to visitors should include education on Hawai'i's laws regarding seatbelts, driving while intoxicated, the use of cell phones, and stopping for pedestrians in crosswalks. Recommendations should also be made to wear helmets, even though Hawai'i Statutes do not require the use of helmets while riding bicycles, motorcycles, or mopeds.

From 2002-2006, 25 pedestrian visitors were injured (one fatally), many of whom were in crosswalks or on sidewalks at the time of injury. All visitors should be aware that although Hawai'i law gives right-of-way to pedestrians, drivers often do not obey the law, and therefore visitors should not assume that they are protected by a crosswalk. Bicycle crashes resulted in 19 visitor injuries and one death. Similarly to pedestrians, visiting bicyclists should take every safety precaution while riding because many of Hawai'i's drivers do not share the road, and shoulders on Hawai'i's roadways are often narrow or non-existent.

Four patients were non-fatally injured in three separate airplane or glider incidents during the study period. Other passengers and/or pilots killed in such incidents were not brought to a trauma center and thus were not included in this study.

Intentional injuries

From 2002-2006, 34 visitors were admitted after being assaulted (7.3% of total visitor trauma admissions). Although toxicology screening results were not included in this study, anecdotal evidence suggests the majority of these assaults involved alcohol. Visitors should be reminded that even on vacation, awareness of personal safety and surroundings is still necessary. Two self-inflicted stab wounds were also reported during this time period.

For nearly every injury mechanism, many more people are treated and discharged from the ED than are admitted to a hospital for further treatment, and even fewer people are fatally injured. The one exception to this general rule is suicide: Statewide data on visitor injuries (Table 1) report that a greater number of people were fatally injured in a suicide attempt (41) than were hospitalized for suicide attempts (18), than were treated in Emergency Departments (ED) (17).⁴ When suicidal patients are brought to an ED, they are more likely to be admitted to a hospital than other injured patients because they often sustain more serious injuries and receive an in-patient psychiatric evaluation.

Summary

This retrospective study examined the activities leading to serious injuries sustained by Hawai'i's visitors. The primary limitation of

this study is that data was only collected from a single institution (QMC). Although QMC is the only trauma center in Hawai'i, many patients were admitted to other hospitals, especially on the neighbor islands.

The majority of visitor injuries reviewed in this study could have been prevented through enforcement of existing traffic safety laws, the use of personal safety equipment, and awareness of ocean safety practices. The long term aim of this study is to utilize the findings to guide the creation of targeted visitor injury prevention programs. To this end we propose partnering with the Hawai'i Department of Health, Hawai'i Tourism Authority, airlines, hotels, car rental agencies, and businesses that rent motorcycles, mopeds, bicycles, and surfboards.⁵ Videos and pamphlets that specifically address water safety and traffic safety for visitors could be distributed through the abovementioned businesses. Since the majority of Hawai'i's visitors arrive on airplanes, brief safety videos could be created for this captive audience and could include voiceovers in English, Japanese, and Spanish. Future research will report on the effectiveness of injury prevention programs designed to reduce visitor injuries in Hawai'i.

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Slippers and a White Coat? (Hawai'i Physician Attire Study)

Ravi Reddy MD

Abstract

Objectives: To ascertain patient preference regarding physician attire in Hawai'i, based on a sampling of patients at the Physician Center at Mililani (PCM), and to compare the findings with studies of patients in the continental United States.

Methods: Fifty patients were randomly given a questionnaire by front desk staff at PCM. The questionnaire asked if the participant felt it was acceptable for their physician to wear slippers, scrubs, short pants, blue jeans, and asked if they preferred their physician to wear a white medical coat. The second part of the questionnaire utilized a rating scale to measure levels of trust/confidence in their physician based on the previously noted items of attire.

Results: Patients generally approved of scrubs and blue jeans, but disapproved of slippers and shorts, as acceptable physician attire. By a very small majority, patients preferred their physician NOT to wear a white coat. Regardless of their preferences, trust and confidence in the physician was not greatly affected by physician attire, according to this survey, with the exception of the white coat – those who preferred their physician to wear a white medical coat bestowed a high degree of trust and confidence on this article of attire.

Conclusions: Patients in Hawai'i, according to this small study, differ in many respects from their mainland counterparts. More casual forms of dress are generally accepted, and the white medical coat is actually NOT preferred, by a small majority. More extremes in casual attire, such as shorts and slippers were not approved as appropriate physician attire by the majority of Hawai'i patients in this study.

Introduction

After completing residency and practicing Family Medicine for several years in California, I returned to Hawai'i, where I had grown up and attended medical school, to accept a faculty position in the department of Family Medicine & Community Health at the University of Hawai'i, John A. Burns School of Medicine (JABSOM).

Physician attire was among the many changes that I would experience in the practice of medicine upon returning to the islands.

In California, like other residents and attending physicians, I had always worn a necktie and white coat while seeing patients, just as I had done during medical school at JABSOM. The male attending physicians in California who did not wear a white coat usually wore business suits.

The more tropical climate, and distance from the US mainland, has resulted in a more casual dressing style in Hawai'i. For the general public, slippers (zoris) are often worn in lieu of covered shoes, and short pants and tee shirts are seen more frequently than long pants and collared shirts. Physicians in Hawai'i tend to favor "Aloha wear"-- usually an "Aloha shirt" (or print dress for women), slacks (or skirt), and shoes, generally eschewing the more formal necktie and often abandoning the traditional white coat as well.

Studies on patient perceptions of physician attire performed in the US mainland have shown that, in general, most patients prefer their physician to wear a white coat, with a visible stethoscope and name tag being other generally preferred items of physician apparel. Another general finding is that older patients and physicians themselves tend to prefer "formal attire" more than younger

patients. For example, a 1987 study done at teaching hospitals in Boston and San Francisco found that although a third of patients had no preference regarding physician attire, among those who had a preference 65% believed that white coats should be worn, while only 7% felt that they should not.¹ Thirty-four percent of patients preferred that female physicians wear a skirt or dress during the encounter, especially if the patient was older than 55 years. Blue jeans and tennis shoes were disapproved of by 53% and 27% of patients, respectively. Of 74 resident physician respondents, 67 (91%) never wore blue jeans and 42 (57%) never wore sneakers when seeing patients. Forty-four (85%) always wore a tie, and 57 (77%) sometimes (36 [49%]) or always (21 [28%]) wore a white coat. Physician attire tended to be more formal on the East Coast: ties were more commonly worn in Boston (33 [97%] of 34 male physicians vs. 11 [61%] of 18 male physicians), whereas blue jeans were more often worn in San Francisco (6 [20%] of 30 physicians vs. 1 [2%] of 44 physicians). Nineteen (86%) of 22 female physicians always (2 [18%]) or sometimes (15 [68%]) wore a skirt or dress. Regardless of geographic location, older patients tend to be more conservative in their expectations of what constitutes proper professional attire.

In a 1991 study conducted in 2 family practice settings in Ontario, Canada, most patients felt that physician dress influenced their trust and satisfaction and believed that a physician should dress "professionally."² Sixty percent of patients felt that trust and confidence were inspired by a male physician wearing a tie, dress suit, and white coat, followed by only 16% who felt the same way if the white coat was not worn. For female physicians, the same level of trust and confidence was associated with formal dress, green scrubs and white coat. Many patients in this study felt that green scrubs were most defining for a female physician and best inspired their trust and confidence by avoiding the potential confusion with a secretary, dietician, nurse, or social worker.

In a 1987 Pediatric Emergency Department study in Alberta, Canada, formal dress was preferred at a highly significant level when photographs of physicians dressed in varying attire were shown to child-parent groups.³ In this study, attire preference and perception of competence were less common in parents with a university education and those who had not previously had a hospitalized child than in parents with less schooling or those who had had a hospitalized child. In a 1994 pediatric study in Birmingham, Alabama, male and female physicians in casual dress were rated most friendly and gentle, but of lesser competence.⁴

A review of the literature finds no similar studies on patient perception of physician attire done in Hawai'i, which is geographically isolated from, and both climactically and culturally distinct from the US mainland. With its warmer, humid climate, and Asian-Pacific cultural backdrop, more casual dressing styles are commonly accepted in Hawai'i. This small study explores patient preference of physician attire in a community clinic in Mililani, a suburb in the central part of the island of O'ahu, the most populous of the Hawaiian Islands.

Methods

Fifty (50) patients were randomly given a questionnaire by front desk staff at PCM. The first part of the questionnaire asked if the participant felt it was acceptable for their physician to wear slippers, scrubs, short pants, or blue jeans, and asked if they preferred their physician to wear a white medical coat. The second part of the questionnaire utilized a rating scale to measure levels of trust and confidence in their physician based on the previously noted items of attire. At no time were the patients identified by name, date of birth or chart number.

Results

Patients generally approved of scrubs (81% approval) and blue jeans (74% approval), but generally disapproved of slippers (57% disapproval) and shorts (69% disapproval), as acceptable physician attire (Table 1). By a very small majority, patients preferred their physician NOT to wear a white coat (52% did NOT prefer the white coat). Regardless of their preferences, trust and confidence in the physician was not greatly affected by physician attire, according to this survey, with the exception of the white coat – those who preferred their physician to wear a white medical coat conferred a high degree of trust and confidence with this article of physician attire (Table 2).

	Yes, acceptable attire	No, not acceptable attire
Slippers	43	57
Scrubs	81	19
Shorts	31	69
Jeans	74	26
White Coat	48	52

Are you less likely to trust your doctor or follow his/her advice if he/she were wearing slippers in the clinic?	
NO, NOT LESS LIKELY	1 2 3 4 5 YES, MUCH LESS LIKELY
1 = 38%, 2 = 4%, 3 = 20%, 4 = 12%, 5 = 10%	
Are you less likely to trust your doctor or follow his/her advice if he/she were wearing scrubs in the clinic?	
NO, NOT LESS LIKELY	1 2 3 4 5 YES, MUCH LESS LIKELY
1 = 50%, 2 = 2%, 3 = 16%, 4 = 4%, 5 = 12%	
Are you less likely to trust your doctor or follow his/her advice if he/she were wearing short pants in the clinic?	
NO, NOT LESS LIKELY	1 2 3 4 5 YES, MUCH LESS LIKELY
1 = 32%, 2 = 16%, 3 = 8%, 4 = 10%, 5 = 16%	
Are you less likely to trust your doctor or follow his/her advice if he/she were wearing blue jeans in the clinic?	
NO, NOT LESS LIKELY	1 2 3 4 5 YES, MUCH LESS LIKELY
1 = 36%, 2 = 14%, 3 = 20%, 4 = 6%, 5 = 4%	
Are you more likely to trust your doctor or follow his/her advice if he/she were wearing a white medical coat in the clinic?	
NO, NOT MORE LIKELY	1 2 3 4 5 YES, MUCH MORE LIKELY
1 = 34%, 2 = 8%, 3 = 12%, 4 = 8%, 5 = 26%	

Discussion

Because Hawai'i differs from the US mainland, both in terms of culture and climate, differences in patient preference of physician attire were expected.

Patients in Hawai'i, according to this small study, differ in many respects from their mainland counterparts. More casual forms of dress are generally accepted, and the white medical coat is actually NOT preferred, by a small majority. More extremes in casual attire, such as short and slippers were not approved as appropriate physician attire by the majority of Hawai'i patients in this study. How to account for these differences in patient preference? One could speculate that wearing a white coat in Hawai'i, where dress is generally more casual, might represent an undesired level of excessive formality, "stiffness," or may be interpreted as an unwanted statement of physician superiority or power. However, many of these studies in the US mainland were published more than a decade ago, and general patient perceptions on physician attire may have changed during that time, especially since the advent of the information technology/computer age, with many people dressing more casually at work, and many working from home.

It is important to not overstate the importance of physician attire. Although many studies indicated certain patient preferences for physician attire, in most of them, nearly all patients considered a warm, caring attitude in a physician to be much more important than attire, when the question was asked.⁵

For example, in a 1998 emergency clinic study in Springfield, Mass., health care providers wore a white coat with surgical scrubs on even days and a white lab coat with formal attire (shirt, tie, and slacks for men and a dress or blouse and slacks for women) on odd days. A questionnaire did not reveal any difference that was attire related for the providers' courteousness, concern for the patient's problem and comfort, or the medical skill and knowledge of the provider. The authors of that study felt that attitude, mannerism, and professionalism of the treating physician have more of an influence on patient satisfaction than does physician attire.⁶

For the physician in Hawai'i, following the aforementioned patient preferences might improve patient perception and might translate into better adherence to physician advice based on improved trust and confidence. However, this study is limited by its small sample size from which statistical significance cannot be drawn.

Although physician attire is important to patients, it is secondary in importance to their competence and compassion in the overall context of the patient-physician encounter.

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The Role of Simulation at JABSOM

Joseph W. Turban MD; Coordinator, Simulation in Medical Student Education, Office of Medical Education, John A. Burns School of Medicine, University of Hawai‘i

Why Have Simulation?

As we progress into the new millennium, technological advances affect nearly every aspect of our lives. Medical education is no exception; improvement in the fidelity of medical simulation have opened new arenas, be it 3D virtual reality, total immersion simulation, highly sophisticated task trainers, or management of complex patient conditions utilizing interactive human patient simulators. The use of medical simulation at JABSOM is helping to train and develop our latest generation of future physicians.

Clinical skill, the ability to recognize and treat medical conditions, is an important component of medical education. Like many skills, practice is essential for its development. However, multiple factors such as shorter hospital stays, decreased student workloads, and an increased lack of tolerance for mistakes, have decreased the opportunity for medical students to participate in patient care. Medical students' role at the bedside has evolved into being an observer rather than a participant. At JABSOM, the implementation of simulation into the medical school curriculum, commencing in 2007, has afforded a unique opportunity for students to practice clinical skills in a controlled, safe, and user-friendly environment.

Medical simulation entails utilizing high fidelity mannequins (manikins) to mimic patient examination findings and responses to therapy. The many advantages of simulation are:

- It offers the ideal platform for trainees to practice rare, high acuity events that will not tolerate a poor performance
- Students can practice common events prior to being placed in the clinical environment. Patients are more likely to allow students to perform procedures if there was previous simulation training¹
- Less patient contacts decrease opportunities for exposure to various physical findings and diseases. Simulation can augment clinical experience, and foster a more uniform exposure
- Control of the environment allows precipitated planned events for a consistent experience across trainee populations
- Provides a standardized environment, with control of variables, for a uniform assessment and demonstration of competencies in a clinical scenario
- Increases training opportunities for students across the learning spectrum with respect to pace of learning
- Provides a safe environment where students are free to practice knowing they cannot harm any patients

- Enables team training opportunities that cross multidisciplinary borders
- Helps polish intrapersonal skills, such as interviewing, recommending treatments, and delivery of bad news
- Newer technologies such as the increased used of fiber optic scopes and robotics require unique training, to which simulation is ideally suited

It also...“boosts learner self-confidence and perseverance, affective educational outcomes that accompany clinical competence.”² Deliberate practice, focused, goal oriented repetitive training to acquire a specific skill has been shown to be superior to bedside teaching in a clinical setting.^{2,4}

Simulation at JABSOM

At JABSOM, SimTiki, the medical school simulation center, is in its third year of operation. Currently, there are 15 opportunities for student exposure to simulation, commencing from the first month of medical school, and continuing into Senior Seminars, the final block of the senior year (see Fig 1).

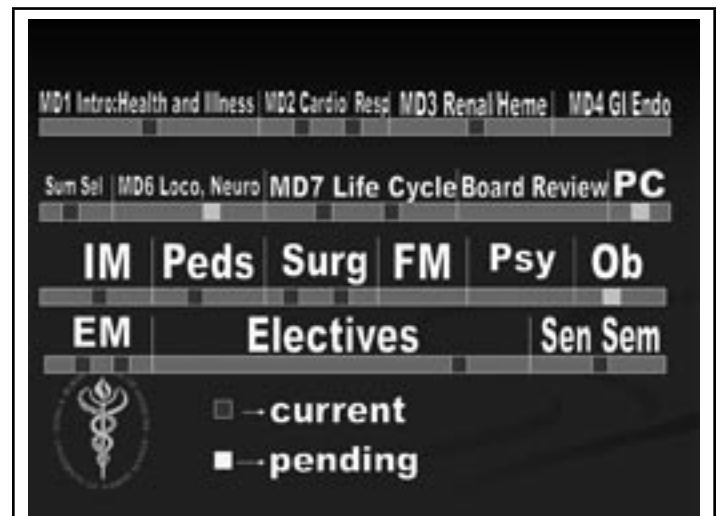


Figure 1.— Simulation in the JABSOM Curriculum
Each of the 4 lines represents a year in the JABSOM curriculum

PC=Preclinical Course, IM=Internal Medicine, Peds=Pediatrics, Surg=Surgery, FM=Family Medicine, Psy=Psychology, Ob=Obstetrics and Gynecology, EM=Emergency Medicine, Sen Sem=Senior Seminars.

In the preclinical (first and second) years, the emphasis is on demonstrating clinical effects of basic sciences principles on patients. The scenarios are relatively simple, but require deductive reasoning

to reach a proper assessment. For example, a patient who had been having vomiting and diarrhea may be manifesting low blood pressure and a high heart rate. The student would conclude the patient is dehydrated, and order intravenous fluids, after which the patient exhibits marked improvement. In the clerkship (3rd year) and the 4th year, more patient management opportunities are afforded, with highly complex cases requiring multiple management strategies. For example, in the Surgery clerkship, the students are tested on their ability to manage a complex multi-trauma scenario. In an effort to prepare the graduating seniors for internship, the SimTiki staff developed "Night on Call." In this course, the students practice common conditions they may be called upon to manage urgently while taking overnight call during their internship year.

A valuable feature of SimTiki is the video debrief (evaluation), the capability for full video playback of the entire scenario. Not only is the center wired for audio and video capture, but the computer-based manikins record an event log that time stamps specific, predetermined interventions as they occur (or don't occur). It is a recognized phenomenon that time perception is warped in a high anxiety environment, and the event log displays an objective record of recognition and response times. Observing one's performance is a powerful evaluating tool. Having the students perform their own evaluation based on preset criteria makes for a greater impact, compared to a passive debrief.

There is a wide variability in implementing a simulation course. The instructor or facilitator can be at the bedside, relaying clinical information, interacting with the group, as well as operating a bedside COWs (computer on wheels) that controls the manikin. This modality is effective for an educationally based objective, with a less formal debrief. At times, the facilitator can simulate other health care professionals such as nurses, respiratory technicians, or medical technicians that assist the students as they run through the scenario. An advantage of the facilitator at the bedside is the ability to suggest helpful hints if the students appear to be struggling.

In other simulation scenarios, the facilitator is in the control room, where he/she can observe and monitor the proceeding by remote camera and direct visualization through a one way mirror. A computer in the control room operates the manikin, and the head of the manikin speaks from a microphone, also located in the control room. This format is utilized for a more formal assessment, and performance feedback is provided by a video debrief displayed on a screen by an overhead projector. All scenarios can also be captured on DVDs for further study and evaluation at a later time.

Challenges of Incorporating Simulation into the Curriculum

A major challenge had been the implementation of simulation into the Problem Based Learning (PBL) curriculum in ways that are meaningful and productive. Student focus is often driven by anxiety about and desire to pass upcoming board exams. Integrating simulation into the curriculum with this objective in mind has increased student acceptance of this modality. In the PBL format, the curriculum is divided into units based on organ systems, such as cardio-respiratory and gastrointestinal, instead of subjects (anatomy, physiology, pharmacology). For the student to "buy in," the simulation experience must compliment the goals and objective of that particular unit. For example, as students study and learn about

congestive heart failure, they may be exposed to a scenario where they can observe the manikin being short of breath, and listen to lungs sound found in this condition. In this way, simulation helps "bring to life" medical and clinical concepts with which the students can interact and manipulate.

The complexity of the simulation experience must be appropriate to the year of training. Matching the complexity of the simulation scenario with the level of training makes for a more rewarding and less intimidating experience. In addition, although simulation is an excellent assessment tool, it is only used as a practice platform for most of the preclinical years. Only the last simulation encounter in the second year involves a formal assessment of performance.

Because the locations of the clerkship year training sites are diverse (no central university hospital setting), scheduling simulation training in the 3rd year is challenging. Students must leave the hospital and other clinical site and return to the Kakaako Medical School Campus. Finding instructors willing to make this excursion is challenging, as well as convincing staff and instructors to allow students time away from the sites.

There is often inertia against a new technology, or a change in the status quo. Most instructors and staff had not utilized manikins in their medical training, so many may not appreciate its importance.

Student Feedback

Student feedback regarding their simulation experience has been overwhelmingly positive. Students express appreciation for faculty taking time to teach in small groups, for the opportunity to practice clinical management not typically available at their current level of training, and for providing feedback. A frequent comment heard upon leaving is "When will we be coming back again?" and "We should do this more often." When surveyed student responses included, "Excellent teaching tool," "Great! Great! Great! It brings learning to life," and "I strongly believe this is the best way to understand what we've been learning."

Simulation offers a virtually unlimited opportunity for training in medical education, be it mastering individual skill, training and assessing diagnostic and management capabilities, practicing team performance, implementing interdisciplinary teamwork, or polishing interpersonal communication skills. The field of simulation in healthcare is growing by leaps and bounds, with the formation of fellowship training programs, the Society of Simulation in Healthcare, and "Simulation in Healthcare," a peer-reviewed, refereed multidisciplinary journal solely dedicated to healthcare simulation technology, education and research. All who teach and practice complex and advance medical skills and management are encouraged to explore the multitude of opportunities simulation offers.

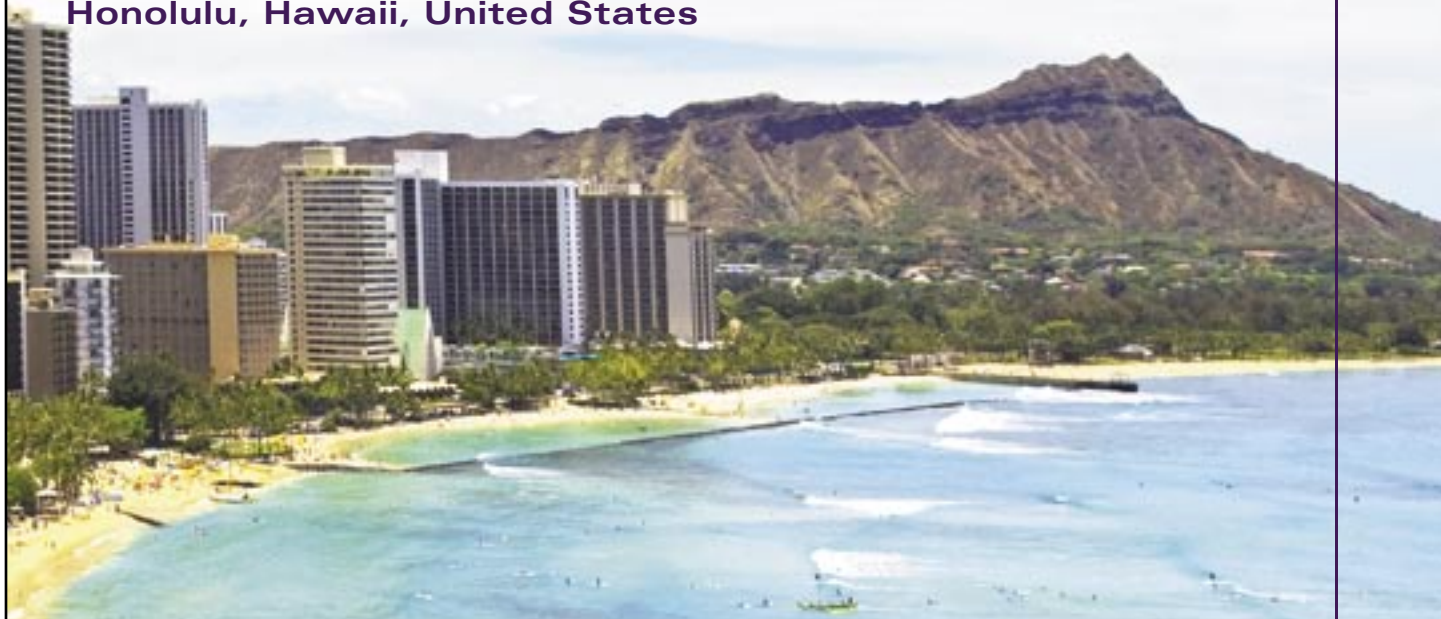
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Date	Specialty	Sponsor	Location	Meeting Topic	Contact
January 2010					
1/9-1/14	Multi	Pan-Pacific Surgical Association	Sheraton Waikiki	29th Biennial Congress of the Pan-Pacific Surgical Association	Tel: (808) 941-1010 Email: www.panpacificsurgical.org
1/10-1/15	DR	University of California San Francisco School of Medicine	The Fairmont Orchid, Kohala Coast, Hawai'i	A Practical Approach to Breast Imaging	Tel: (415) 476-4251 Web: www.cme.ucsf.edu/cme
1/17-1/22	DR	University of California San Francisco School of Medicine	The Fairmont Orchid, Kohala Coast, Hawai'i	Imaging Update in Kona: Top Teachers in Radiology	Tel: (415) 476-4251 Web: www.cme.ucsf.edu/cme
1/18-1/22	AN	California Society of Anesthesiologists	Hyatt Regency Maui, Ka'anapali Beach, Maui	2010 CSA Winter Hawaiian Seminar	Web: www.csaahq.org
February 2010					
2/7-2/12	Multi	Mayo Clinic	Wailea Beach Marriott, Maui	Mayo Clinic Interactive Surgery Symposium	Tel: (480) 301-4580
2/10-2/13	Multi	The Society of Laparoendoscopic Surgeons	Hilton Hawaiian Village, Honolulu	Asian American MultiSpecialty Summit IV: Laparoscopy & Minimally Invasive Surgery	Tel: (305) 665-9959 Email: Conferences@SLS.org
2/11-2/12	Multi	Department of Surgery, John A. Burns School of Medicine, American College of Surgeons - Hawai'i Chapter	Hyatt Regency Waikiki, Honolulu	Cross-Cultural Health Care Conference: Collaborative and Multidisciplinary Interventions	Tel: (808) 586-2925 Web: www.cchc-conference.com
2/13-2/16	OTO	University of California San Francisco School of Medicine	Hilton Hawaiian Village, Honolulu	Pacific Rim Otolaryngology Head and Neck Surgery Update Conference	Tel: (415) 476-4251 Web: www.cme.ucsf.edu/cme
2/13-2/19	PD	American Academy of Pediatrics & the AAP California Chapter	Hyatt Regency Maui, Ka'anapali Beach, Maui	Pediatric Potpourri: State of the Art	Tel: (323) 361-2752 Web: www.childrenshospital.lamedicalgroup.org
2/14-2/17	PUD, CCM	Hawai'i Thoracic Society and American Lung Association in Hawai'i	Maui Westin Resort and Spa, Ka'anapali, Maui	10th Annual Symposium: Current Concepts in Pulmonary and Critical Care	Web: www.ala-hawaii.org
2/14-2/19	DR	University of California San Francisco School of Medicine	The Fairmont Orchid, Kohala Coast, Hawai'i	Body & Musculoskeletal Imaging in Paradise	Tel: (415) 476-4251 Web: www.cme.ucsf.edu/cme
2/14-2/19	IM, ID	University of California San Francisco School of Medicine	The Fairmont Orchid, Kohala Coast, Hawai'i	Infectious Diseases in Clinical Practice: Update on Inpatient and Outpatient Infectious Diseases	Tel: (415) 476-4251 Web: www.cme.ucsf.edu/cme
March 2010					
3/26-3/30	AN	International Anesthesia Research Society	Hawai'i Convention Center, Honolulu	84th Congress	Tel: (216) 642-1124 Web: www.iars.org
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❖ LIFE DOESN'T BEGIN AT FORTY, BUT NIGHT LIFE OFTEN DOES.

Like U-V rays and diesel fumes, working the night shift will soon be listed as a probable cause of cancer. As far back as 1987, Dr. Richard Stevens, epidemiologist at the University of Connecticut Health Center, published a paper suggesting that the onset of nighttime shift work in the 1930s was related to the increased incidence of breast cancer in females. The idea seemed a bit wacky and was given little attention, but in recent years several studies of breast cancer incidence have found a link with prolonged night time employment. Moreover, animals who have had light-dark schedules inverted developed more cancerous tumors and died earlier than control groups. Many doubters remain, but the international Agency for Research on Cancer (cancer arm of World Health Organization) will list overnight shift work as a probable carcinogen and the American Cancer Society is expected to soon follow suit. Man evolved as a diurnal creature, remember?

❖ THERE ARE LIES, DAMNED LIES AND STATISTICS.

Amid all the foofaraw in Congress over national health care especially for the uninsured, a Washington, D.C. think tank, Employment Policies Institute, contends that sixteen million Americans between the ages of 18 to 64 earn 2.5 times the federal poverty level and could afford health coverage. This group represents about 43% of the uninsured in the above age group, and voluntarily elect not to purchase insurance. The authors of the study say that the US Census Bureau statement that 47 million Americans lack health insurance which leads to the erroneous assumption that they cannot afford it and do not obtain health care. It appears equally likely that many who can afford it simply choose to go bare, especially if they enjoy good health.

❖ FOR YOUR SURGERY TODAY LET ME INTRODUCE MY ASSISTANT, LEONARDO.

Reporting in the Journal of the American Medical Association, Dr. Jim Hu at Brigham and Women's Hospital in Boston has found that minimally invasive prostate cancer surgery for older men is more likely to result in incontinence and impotence. The surgery is done through small cuts and doctors are now using a robot called the Da Vinci to make the incisions. Medicare data for almost 9,000 men who had prostate surgery between 2003 and 2007 were evaluated with 6,900 patients having open surgery and the balance the minimally invasive procedure. Although the open surgery caused more blood loss and a day or two longer hospitalization, they were less likely to have incontinence and impotence at 18 months post surgery.

❖ AT EASE DISEASE! THERE'S FUNGUS AMONG US.

Trichophyton tonsurans is a fungus that is similar to athlete's foot, and produces itchy swollen redness of the face, neck and upper body. It is a native of Latin America and was spread to the United States in the 1960s. Infected US wrestlers later spread the fungus to Europe. From Europe the crud spread throughout the wrestling and martial arts community around the world. Because it can infest the scalp, the fungus can cause loss of hair follicles with patches of baldness. The significance of this for sumo can be devastating because wrestlers are expected to wear a traditional top knot. The infection spreads easily because competitors in judo or sumo must grapple with each other. A survey commissioned by the judo federation found that one-third of judo clubs and half of high school martial teams in Japan have encountered T. tonsurans. Although the disease can be treated with a three month course of medication, the disease is considered to be a major threat to martial competition.

❖ IF ONE-ARMED BIG DAN SAYS "NO" THE ANSWER IS NO!

Our heavy-duty senators, Inouye and Akaka, have requested that an exemption for Hawaii be included in the final draft for any health reform bill, Hawaii's medical care law is so comprehensive in nature and has been in place for so long that legislators and health care advocates do not want to see it disturbed by any plan coming out of Washington, D.C. The pending proposals do not have any mandates for employer coverage, but make individuals responsible for buying their own insurance. In June of 1995 when "Stormy" Johnson, M.D. was speaker of the AMA House of Delegates, I was afforded the chair of committee A. With the help of fellow delegates Calvin Kam, M.D. and Cal Sia, M.D. and HMA President Fred Holschuh, M.D. our Hawaii delegation pushed through a House of Delegates policy statement mandating employer provided insurance. Two years later that

policy was rescinded due to whining and pressure largely from southern delegates. We were ahead of our time.

❖ THE TROUBLE WITH JOGGING IS THAT THE ICE FALLS OUT OF YOUR GLASS.

The benefits of exercise with heart and respiratory conditioning, weight control, reduction in elevated blood pressure, as well as improved self-esteem, have been well described by many physicians and physiologists. Dr. David Nieman at Appalachian State University has found that moderate exercise for forty minutes per day causes a positive response in the immune system with increased macrophage production for anti-bacterial action. There are limits, however. Too much intense exercise can reduce immunity through the action of stress hormones, cortisol and epinephrine. Taxing the system with marathon running, triathlon competition, or 90 minutes of high intensity endurance exercises produces a negative immune response. According to Dr. Nieman this window of immune system dysfunction can last from three hours to three days making the individual more vulnerable to viruses and bacteria. Additional detrimental factors are fatigue, marital discord, financial anxiety, workplace stress, and if combined with over-exertion, act as a one-two punch on immunity. As Aristotle reminded us a few millennia back, moderation in all things.

❖ IT LOOKS GOOD! IT SOUNDS GOOD! IT EVEN SMELLS GOOD!

The injection of cement into the spinal fractures of aging bones resulting from osteoporosis has become a popular orthopedic procedure to relieve pain. Now two studies have been published stating that cement vertebroplasty is no more effective than placebo. With randomized patient selection and double blind analysis, investigators found similar and immediate improvement in disability in both groups. Patients who received anesthetic and could smell the cement which was not injected experienced similar results one month post op. Moreover, there is some concern for patients who did receive the permanent cement implant which could cause fractures at a later date. Lead investigator Rachelle Buchbinder, PhD, MBBS stated, "Our findings demonstrate once again the importance of establishing the efficacy of new procedures in well-conducted and appropriately designed clinical trials before widespread promotion and adoption into clinical practice."

❖ MONEY ISN'T EVERYTHING; USUALLY IT ISN'T EVEN ENOUGH.

Money Magazine and Payscale.com published a list of top paying jobs and found that anesthesiologists headed the list with a median income of \$292,000. Obstetrician/gynecologists are listed at a median of \$222,000, psychiatrists \$177,000 and nurse anesthetists have a median of \$157,000. Lawyers were well down the list with a median income of \$115,000. Presumably these numbers represent only employed professionals, and are only peripherally related to independent practitioners.

❖ AT LEAST SHE WASN'T TEXTING.

California has a state law providing penalties for people who hold a phone while driving. Oops! The woman who was photographed conversing with phone in hand while tooling down the highway was none other than the Governor's spouse, Maria Shriver. He promised to take "swift action" and thanked the web site TMZ.com for posting the picture. What could that swift action be: a spanking? withholding car keys?

ADDENDA

❖ One third of doctors' offices refuse to accept credit cards. Of the remaining 2/3rds who do like plastic, ophthalmologists at 84% top the roster.

❖ In Lucille Ball's first movie in 1933 (Roman Scandals) she had to shave her eyebrows. They did not grow back properly and she used eyebrow pencil the rest of her life.

❖ Marijuana growers in Mendocino County, California, take in about \$1 billion in revenue each year. Cannabis accounts for approximately 2/3 of the local smokin' economy.

❖ 42,500 is the number of military troops, national guard and police officers used to form security at President Obama's inauguration. 31,000 is the number of U.S. troops serving in Afghanistan.

❖ If you shoot a mime should you use a silencer?

ALOHA AND KEEP THE FAITH — rts■

(Editorial comment is strictly that of the writer.)

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