FACEBOOK FOR HEALTH PROMOTION: FEMALE COLLEGE STUDENTS’ PERSPECTIVES ON SHARING HPV VACCINE INFORMATION THROUGH FACEBOOK
Ni Zhang PhD; JoAnn Tsark MPH; Shelly Campo PhD; and Michelle Teti DrPH

INVESTIGATION OF STROKE NEEDS (INVISION) STUDY: STROKE AWARENESS AND EDUCATION
Marissa M. Ing MSW; Kristen F. Linton PhD, MSW; Megan A. Vento BS; and Kazuma Nakagawa MD

WEIGHT REDUCTION AMONG PEOPLE WITH SEVERE AND PERSISTENT MENTAL ILLNESS AFTER HEALTH BEHAVIOR COUNSELING AND MONITORING
Matthew Katekaru MPH; Carol E. Minn MD, MSPH; and Ann M. Pobutsky PhD

MEDICAL SCHOOL HOTLINE
The Research Mission of the Cell and Molecular Biology Department and Program at the John A. Burns School of Medicine
Marla J. Berry PhD; Joshua Astern PhD; Frederick Bellinger PhD; Christopher Brampton PhD; Rebecca Cann PhD; Mariana Gerschenson PhD; David Haymer PhD; Nicholas G. James PhD; David M. Jameson PhD; Olivier LeSaux PhD; Peter R. Hoffmann PhD; Robert Nichols PhD; Matthew Pitts PhD; Lucia Seale PhD; Steven Seifried PhD; Alexander J. Stokes PhD; and Cedomir Todorovic PhD

INSIGHTS IN PUBLIC HEALTH
The Tobacco Settlement Special Fund: How Investments in Prevention Save Lives and Dollars
Bronwyn M. Sinclair-White MPH; Virginia Pressler MD, MBA, FACS; Tonya Lowery St. John MPH; Janice Okubo; Katie Richards MPH; and Lola H. Irvin MEd

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Facebook for Health Promotion: Female College Students’ Perspectives on Sharing HPV Vaccine Information Through Facebook

Ni Zhang PhD; JoAnn Tsark MPH; Shelly Campo PhD; and Michelle Teti DrPH

Abstract
Facebook, a social network site, has been widely used among young adults. However, its potential to be used as a health promotion medium has not been fully examined. This study explored Facebook’s potential for sharing human papillomavirus (HPV) vaccine information among female college students in Hawai‘i. Culturally tailored flyers and handouts were developed and distributed at one large university in Hawai‘i to recruit female college students between the age of 18 and 26 having an active Facebook account. Three focus group meetings were conducted to gather student perspectives about how information about HPV vaccine may be best shared via Facebook. We found that students believed Facebook is a good awareness tool but they needed more knowledge about the HPV vaccine to feel comfortable sharing the information. Participants preferred forwarding information to chatting about HPV. Some participants expressed concern that their Facebook friends would think the HPV vaccine information they forwarded on Facebook is spam. Participants suggested prefacing the posted HPV vaccine information with a personal note in their own words to make the message more interesting and relevant to their Facebook friends. Future interventions using Facebook to promote HPV vaccine could provide students with HPV vaccine information from credible sources and ask students to attach personal testimonials or endorsements while forwarding the information on Facebook.

Keywords
Health promotion, HPV vaccine, Facebook

Introduction
Human papillomavirus (HPV) is the most common sexually transmitted virus in the United States, affecting about 79 million Americans.1 HPV can cause cervical cancer in women, which is the second leading cause of cancer deaths among women around the world.2 Besides cervical cancer, certain HPV infections can also cause vaginal, vulvar, anal, and oropharyngeal cancers, and genital warts and warts in the throat. HPV vaccine can provide protection against specific strains of HPV most often associated with cervical cancer, vaginal and vulvar cancer, and genital warts.2 Routine vaccination is recommended for girls aged 11 to 12.2 However, the catch up vaccine is also recommended for females between the ages of 13 and 26 years.2 Evidence suggests that women between the ages of 18 and 26 are likely to be exposed to HPV and unlikely to be vaccinated. One cohort study in Hawai‘i found that about one in four (25.6%) women aged between 18 and 85 with normal cytology suffered from cervical HPV infection at study entry.3 However, lower uptake rates of HPV vaccine are reported among young women aged 18-26 years than among 13-17 year-old girls.4,5 In 2012, only about 34.5% of the US females ages 19-26 had initiated HPV vaccine.6

According to a systematic review of literature, knowledge is the main barrier for women’s acceptance of HPV vaccine.7 Knowledge of HPV was associated with more favorable attitudes toward HPV vaccine and higher intention to vaccinate among female college students.8,9 However, less than half of US adult women who reported hearing about HPV knew that HPV causes cervical cancer.10 One of the few existing studies targeting college students in Hawai‘i found that their knowledge about HPV was low.11 Out of 14 questions that addressed knowledge about HPV and abnormal Pap smears, about half (55.7%) of the sample correctly answered five or fewer questions.11

Social network sites (SNSs), particularly Facebook, have great potential to increase knowledge about HPV vaccine among female college students. About three in four (76%) female adults who used the Internet in the United States were using Facebook in 2013.12 A previous study at one university found that 77.7% of the students who had accounts on SNSs were using those sites several times a day; and 90.7% of these students who had accounts on SNSs were using Facebook more often than other SNSs.13 Furthermore, in a systematic examination of the use of SNSs for sexual health promotion, Facebook was found to be the most commonly used SNS (71%).14 However, the majority of sexual health promotion activities using SNSs have not been reported in scientific literature.14

Electronic word of mouth (eWOM) is a term used to describe online statements made by customers about a product received by multiple people.15 Use of eWOM about HPV vaccine may increase the reach of the information exponentially on Facebook if the messages are subsequently forwarded. Furthermore, eWOM on SNSs can be used for tailored health communication to provide informational support.16 Social support provided via eWOM on SNSs was found to impact college students’ intention to participate in leisure-time physical activity indirectly by influencing attitudes and subjective norms.17 One recent randomized trial found that eWOM from peer leaders on Facebook was effective in increasing home-based HIV testing among African American and Latino men who have sex with men.18 Thus, this study aimed to explore female college students’ perspectives on sharing HPV information via eWOM on Facebook in Hawai‘i.

The design of research questions for this study was based on two theories, the Theory of Planned Behavior (TPB) and the Path Model of Antecedents and Consequences of Online Word of Mouth (Path Model). TPB posits three predictors of intention: attitude (which is determined by the individual’s beliefs about outcomes or attributes of performing the behavior, weighted by
evaluations of those outcomes and attributes), subjective norm (which is the belief about whether important others in an individual’s life approve or disapprove of the behavior and the motivation to comply with those people), and perceived behavioral control (which is the individual’s perceived amount of control over behavioral performance, determined by one’s perception of the degree to which various environmental factors make it easier or more difficult to carry out the behavior). According to the Path Model, there are two behavioral consequences of online word of mouth: online forwarding and online chatting. Apart from chatting using users’ own words, Internet content can be forwarded directly using URLs, reaching an exponential number of users if subsequently forwarded by others. Thus, this study explored the female college students’ attitudes, subjective norms, and perceived behavioral control associated with forwarding information about HPV and chatting about HPV.

Methods

Procedures

Fliers and handouts were designed and distributed at one large university in Hawai‘i. The research team designed a localized flyer entitled, We need your kokua (help)! that included pictures of females from Hawai‘i. Focus groups were conducted with 14 college women aged 18-26 years who had an active Facebook account in three small groups of three to six participants. The first author facilitated two of the focus group meetings. One of the focus groups was facilitated by a trained community member. The facilitator and note-taker both took notes in each focus group meeting. The length of the focus group meetings ranged from 30 minutes to about an hour. Participants received $10 gift cards as incentives. This study was approved by the Native Hawaiian Health Care System Institutional Review Board on March 3, 2011 (FWA# 00000589).

Instrument

At the beginning of each focus group meeting, participants were asked questions about their age and marital status; if they had heard about HPV vaccine; how long they had used Facebook; if they had ever read HPV vaccine information on their Facebook wall; and if they had ever posted HPV vaccine information on their Facebook wall.

Focus group discussions were led by a semi-structured question guide based on all the concepts in the TPB and the Path Model. Chatting was defined as creating messages about HPV vaccine using one’s own words and posting it on one’s Facebook wall. Forwarding was conceptualized as sharing an existing HPV vaccine message, link, picture, video, etc, on one’s Facebook wall. Sample questions of attitude, subjective norm, perceived behavioral control, and intention about chatting and forwarding included: What do you think about chatting about HPV vaccine on your Facebook wall? What do you think your friends on Facebook would think about forwarding HPV vaccine information on your Facebook wall? How confident would you feel about chatting about HPV vaccine on your Facebook wall? How are you going to share HPV vaccine information on your Facebook wall?

Analysis

We used theme analysis methods to analyze the focus group transcripts. Notes recorded by the facilitator and the note-taker for each focus group meeting were compared immediately after each meeting. Disagreements were reconciled after each focus group meeting to ensure that the notes were consistent with each other. The notes were reviewed multiple times by two members of the research team and coded for key themes. Coding discrepancies were discussed and reconciled. Given several repetitive themes in the data, we believe we achieved saturation.

Results

Participant Characteristics

Participants’ ages ranged from 19 to 26, with a mean age of 22. Only one of the participants was married. The average length of usage for Facebook was 34.5 months. Thirteen of the 14 participants had heard of the HPV vaccine. None of the participants had shared HPV vaccine information on Facebook.

Although the majority of the participants reported hearing about the HPV vaccine, they demonstrated a lack of knowledge of the vaccine. Only one participant had been vaccinated. One participant had “heard of Gardasil® but [did not] know what it [was] for.” There were some misconceptions about the vaccine including the recommended age range for vaccination. For example, one participant stated that “it is a shot you get before you are 23.” Another participant reported that “I heard it was meant for people with HPV in their family, so I tuned out after I heard that.” Participants also expressed concern about the effectiveness of the vaccine. One participant told the group, “it does not work.” Another participant shared that “I remember I was thankful I didn’t get it because it increases cancer and they said that the adverse effects outweigh the benefits.” The main findings of four major TPB themes for chatting and forwarding respectively are outlined below.

Attitude

Chatting

The majority of participants (10 out of 14, 71%) showed a favorable attitude toward chatting about the HPV vaccine on Facebook. For example, one student mentioned “It’s an advocacy thing. I see people put up posts of what they stand up for.” Another noted it was “good information-wise.” Two students felt that they would be able to show positive attitudes only after they were provided more information about HPV vaccine. For example, one student said “I would not mind if you [the researchers] give the facts.” The other said “I would have to be more knowledgeable but don’t mind doing it [chatting about it].” Two participants opposed that idea saying “I would not do it,” and “I don’t think I would do it. [Because I am] not sure who I would post it to.”

Forwarding

The majority of participants (12 out of 14, 86%) demonstrated favorable attitudes towards forwarding. One participant pointed out “If I agree with it, if I support it, I will send it.” Furthermore,
among the 12 participants who showed favorable attitudes, five preferred forwarding over chatting. For example, one participant stated “I like this idea better [than chatting].” Another participant explained “links are easier because you aren’t taking the blame. It’s less troublesome.” Two participants showed hesitation about forwarding because of the concern that “it [might be perceived to be] like a spam link.”

**Subjective Norm**

**Chatting**
Participants revealed different subjective norms regarding chatting about the HPV vaccine. Five participants (36%) felt it would be “no problem”; one stated, “It [was] no big thing.” Apart from these five participants, one participant also mentioned that her friends would think “it is for a good cause. They would say it’s cool.” Another participant commented, “A lot of my friends would understand. They are at the age to get it. It’s pretty relevant, and good for your health.” Consistently, another participant suggested that “people will be interested in the information related to them.” One participant was not sure “how much they (her friends) would care. A lot of people read Facebook posts if they are funny or about people they know.”

However, two students (14%) were concerned about their friends’ approval. One of them mentioned that “If I did [post on Facebook], they would probably think “This girl’s weird.” The other participant agreed with that and stated “it depends on whether it is a fact or stating [a] (personal) opinion (about HPV vaccine).”

**Forwarding**
Three participants (21%) raised the concern that their friends would think the information forwarded was “spam.” Participants also compared their friends’ potential approval of them chatting versus forwarding information on HPV vaccination. One participant mentioned the advantage of forwarding over chatting: “If they don’t like it they don’t have to open it;” “If they don’t like it, they can always delete it. There is more of a choice.” One participant noted “It would have to be relevant to them to make it interesting. Friends probably are more interested in chatting than forwarding.” Another participant argued “people will also be interested in forwarding because information comes from organizations or institutions”. Two participants pointed out what contents their friends might like: “if it has cool music or has a video, they will like it;” “if it is associated with a place they live in (they will like it).”

Moreover, students recommended personalized messages (adding their own words before the existing message and link) to make the information more likely to attract their friends on Facebook. For example, one participant suggested “You have to include a personal message like, ‘Hey, you should check this out.’” Two participants also said that personalizing messages made them more relevant to their friends: “If you add a personal touch you will make it more relevant, since its health information they may want to read it more.” “It would have to be relevant to them and to make it interesting.”

**Perceived Behavioral Control**

**Chatting**
Three participants indicated that they felt confident and comfortable chatting about the HPV vaccine on Facebook. For example, one participant noted “I would be comfortable. It’s a positive message.” However, a lack of knowledge was listed as the main barrier to chatting about the HPV vaccine. Three students stated that if they knew more about the vaccine, they would feel more confident about chatting: “If I knew more about it, I would feel more confident”; “First I must know it well then I can tell others”. One participant mentioned commenting on HPV vaccine related information: “Depends on what it is saying. If it’s too pro for it, I’d rather not. If it’s neutral or factual, it is okay.” Another participant indicated that she would feel comfortable chatting about HPV “[o]nly if it’s useful information for my friends.”

**Forwarding**
Seven participants expressed confidence in forwarding HPV vaccine information. For example, one participant mentioned that “As an awareness tool, it [was] good.” In addition, one participant said she would be confident “but only if it’s facts” and three other participants agreed with her opinion. Another participant indicated that “I would read it first and send out only if I agree.” One specified that a credible source of information would enhance their enthusiasm and confidence in sharing information: “If it was from a good, reliable source, I would feel confident.”

**Intention to Share HPV Vaccine Information on Facebook**
Ten of the fourteen students (71%) indicated their willingness to share HPV vaccine information on Facebook. However, one participant did not want to share HPV vaccine information because “I did not get it so I’m not comfortable telling others” and two other participants agreed. In terms of the way they preferred to share the information, most of the students were more comfortable with forwarding. For example, a student mentioned that she did not want to create messages: “I am not keeping up with research so I feel bad creating my own message. I would do it if you (the researcher) share a link, as long as you give information. I don’t want to make up stuff.” Another participant agreed “yeah, you give people [the] link to access it themselves.”

Combinations of both chatting and forwarding were recommended by three participants. One participant suggested that “in the beginning it would be easier to forward information. After we look at the information and get a better idea, we can do more of the chatting.” One participant also preferred combinations “because I’m more likely to check it out if you address it to me.” Another participant thought “combination (of chatting and forwarding) would be good. I post everything and post health stuff too. Like, I would link my diabetes walk to Facebook. ‘Donate to me’ personalize a little bit. As long as (it is) a credible link.”
Discussion
The focus group meetings showed that although some female college students in Hawai‘i have heard of HPV, their knowledge level about the vaccine is low and there are some misconceptions about HPV and HPV vaccine. This is consistent with the findings of another study targeting college students in Hawai‘i.11 Thus, more education about the basic facts about HPV and HPV vaccine, such as the recommended age range for vaccination and effects, should be tailored to female college students aged between 18 and 26. Public health practitioners need to make sure that students being recruited to share HPV vaccine information on Facebook have accurate knowledge about HPV vaccine.

This study found that that increased knowledge of the HPV vaccine was associated with a more favorable attitude towards chatting and forwarding content about HPV vaccine on Facebook. Regarding subjective norms, this study found that usefulness and relevance of the information to one’s friends is an important consideration among female college students in deciding whether or not to share HPV vaccine information. Students felt that their friends would approve their chatting or forwarding as long as the messages were useful or relevant. Future interventions promoting HPV vaccine on Facebook could use sample messages such as “This message is important and useful for your friends. Please share it with them on your Facebook wall.” Additional formative research could be conducted to investigate how to make the messages appear more relevant, interesting and useful to college students.

Students demonstrated different perceived behavioral controls for, and intentions toward, chatting and forwarding. In general, students preferred forwarding existing information from a reliable source. They felt it was easier than chatting, and reported that not having to take personal responsibility for the content made forwarding a better option, especially when they were not well informed about HPV. Furthermore, personalizing the existing information from a reliable source was recommended by the participants. Students preferred receiving targeted messages tailored to them rather than being forwarded a link or an existing message. Future strategies to increase public health messaging on Facebook should provide students with existing messages, links, video, etc. and encourage them to append their own words to the message when they share it on Facebook.

This study shed light on different potential roles students could play in future health promotion campaigns on Facebook. Public health educators could recruit two groups of students to initiate eWOM about HPV vaccine on Facebook. The first group could be health sciences students who already have medically accurate information and have supportive attitudes toward vaccination. These students could then be peer opinion leaders to encourage others. The second group could be those students who have already been vaccinated. They could serve as role models and share their own experience and justification for getting the HPV vaccine.

This study was limited due to one small convenience sample from one university. The participants were relatively older (average age of 22) than the general college student population. Future research could benefit from randomized sampling and collecting more demographic information including ethnicity, year in college, major, etc. Although the purpose of the focus group meetings was to gain a depth of understanding of people’s perspectives rather than generalizing the findings to a large population,2 the findings of this study shed light on future applications for Facebook in sharing HPV vaccine information among college students.

Conclusions
This study found students have positive attitudes about chatting on Facebook about HPV vaccine if they have adequate knowledge about the topic. Participants felt that a personalized message together with a link from a credible source about HPV vaccine would have a greater likelihood of being noticed or read. Future health promotion campaigns should consider students with more knowledge about HPV vaccine as messengers likely to personalize and initiate HPV vaccine eWOM.

Conflict of Interest
None of the authors identify a conflict of interest.

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Reference
Investigation of Stroke Needs (INVISION) Study: Stroke Awareness and Education

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Abstract

The objective of this study was to assess the overall understanding and effectiveness of current inpatient stroke education practice by using the data from the Investigation of Stroke Needs (INVISION) Study, a qualitative study assessing various challenges and barriers of the hemorrhagic stroke survivors and their caregivers. Semi-structured interviews were conducted on patients who were recently hospitalized with intracerebral hemorrhage (ICH) and their caregivers during the follow-up visits. The electronic medical record for each patient was reviewed to assess whether they received standard stroke education material during their hospitalization. A phenomenological approach was utilized to identify gaps of education and knowledge in the targeted sample. A total of 21 participants were interviewed. Despite receiving formal stroke education material during their hospitalization, there were three major gaps in stroke knowledge that participants noted, including (1) lack of stroke knowledge/awareness, (2) need for stroke education, and (3) fear of recurrent stroke and comorbid diseases. The majority of ICH survivors had no memory of their hospitalization. This study suggests a need for increased continuity of care and communication with health-care providers to address the evolving educational and practical needs of stroke patients and their caregivers after hospital discharge.

Keywords

Intracerebral hemorrhage; Patient education; Patient discharge

Introduction

Stroke is the 4th leading cause of death in the United States and a leading cause of disability among adults. Although most healthcare providers acknowledge the importance of understanding the signs and risk factors of stroke, the general public continues to have a significant deficiency in stroke awareness and knowledge. Hawai’i-specific data from year 2009 indicates that only 41.9% of adults were aware of all 5 symptoms of stroke and the importance of calling 911 when a stroke is suspected. Studies focused on stroke patients and their caregivers indicate dissatisfaction with the stroke information they receive, especially during post-stroke care. Although stroke education is perceived as important by stroke patients and their caregivers, access to medical knowledge remains a consistent challenge.

Overall, deciphering medical terminology is problematic for many patients and caregivers. Difficulty in understanding educational materials creates a communication barrier between the patients, caregivers, and their healthcare providers. A qualitative study by Eams, et al, revealed that stroke patients and caregivers often felt uncomfortable or intimidated to ask their healthcare professionals questions during acute care, and right before discharge. As a result, many failed to obtain significant information regarding their disease and care plan. This is especially important among stroke patients since many of them recently acquired new physical and/or cognitive disabilities, resulting in more need for external assistance. Post-discharge barriers among stroke patients and caregivers include a lack of continuity of care and not knowing where to go to find answers to medical questions. To address these concerns, we assessed the stroke awareness and education component from an exploratory qualitative study entitled Investigation of Stroke Needs (INVISION) Study to: (1) identify gaps in knowledge among stroke patients and their caregivers, and (2) assess the adequacy of stroke education provided to patient and caregivers prior to hospital discharge.

Methods

Participants

INVISION participants were recruited from an ongoing cohort study of patients with intracerebral hemorrhage (ICH) at The Queen’s Medical Center (QMC). QMC is a 505-bed medical center located on O‘ahu, the largest hospital in Hawai‘i and the tertiary referral center for the Pacific Basin (Hawai‘i, American Samoa, the Commonwealth of the Northern Mariana Islands, Micronesia, and the US territories of Guam). QMC has the only Joint Commission-certified Primary Stroke Center and the only Neuroscience Intensive Care Unit for the state of Hawai‘i. All stroke patients hospitalized at QMC and their caregivers are highly recommended to receive the stroke education packet that includes information about the etiology of stroke, treatment and prevention strategy for stroke, and aftercare guidance. The stroke education material was created using the content provided by the National Stroke Association. These materials are organized into a folder and are handed to the patients and/or caregivers by the nurses prior to discharge. Although the nurses are encouraged to provide more in-depth verbal education to review the content of the material, this practice is often not being done.

This study was approved by the Queen’s Medical Center Institutional Review Board. Patients enrolled in an existing longitudinal cohort were eligible for participation in the current study. The inclusion criteria for the longitudinal ICH cohort study are age 18 years or older, a diagnosis of ICH by brain computed tomography (CT), and residence in the state of Hawai‘i for greater than 3 months in a household with a telephone. Exclusion criteria for the original cohort study included ICH related to trauma or subarachnoid hemorrhage from ruptured cerebral aneurysm. This exploratory qualitative study was conducted during outpatient follow-up period. Family caregivers of the ICH patient were recruited if they provided structured care,
free-of-cost, to the stroke patient. Hired-care was excluded from eligibility.

Thirty caregivers and stroke patients were screened and approached by telephone to participate in the study. A total of 21 participants including 11 caregivers and 10 patients were enrolled in the study. Nine interviews were conducted with the patient and his or her respective caregiver. One was conducted with two caregivers, and another with one patient. Each interview was conducted with both caregiver and patient in the same room, with the exception of one interview with two caregivers and another interview with one patient only. The interviews were reviewed after they were conducted. Saturation, or redundancy of information, was met after interviews with these participants, thus recruitment of new participants ended at that time. Table 1 includes information about participants’ age, education, and caregivers’ relationship to patient.

The institutional practice highly recommends that the patient or caregiver be given the stroke education packet prior to hospital discharge. The nurses are encouraged to provide oral education to review the packet, but this is not required and may not be practiced consistently. The nurse indicates that they have completed the stroke education by checking off a series of boxes in the education portion of the electronic medical record and then writes into their notes that the stroke packet has been given. An electronic medical record was conducted to check the documentation of stroke education for only those who participated in the interviews.

### Design and Procedure
Following verbal consent over the phone, caregivers and ICH patients were asked to return to QMC to sign the consent forms and participate in face-to-face, semi-structured interviews. Caregivers and ICH patients were given the option of being interviewed together or separately. Thereafter, two trained research staff members conducted face-to-face, semi-structured interviews with caregivers and/or patients utilizing a script developed by the research team. Research staff members opened each interview with an explanation of the study, and then asked participants to speak freely throughout the interview. The script included open-ended questions and focused on nine major topics, one of them being information about stroke. Participants were probed with non-leading questions and neutral statements to elicit further narrative. Some of the specific questions regarding stroke awareness and education used during the interviews were: “How did you feel about your receipt of information about stroke while you were here?” “Did you feel that the doctors told you everything you needed to know to take care of your health?” “Do you think they provided you with enough information for you to take care of yourself?” “Do you think you received enough information about the condition?” “As far as education goes about stroke, what kind of resources do you have?” “How do you feel about you and your family’s receipt of information about the situation when in the hospital—like the education you received? Now did you receive a stroke packet education book?” “Do you feel that you got enough information about the condition?” The audio portion of the interviews were digitally recorded for later transcription and analysis.

After completion of the interviews, the electronic medical records of the 10 participating stroke patients were reviewed for documentation of stroke education during hospitalization. After review of the electronic medical records, the stroke education packets currently utilized for patient education were examined for content. Lastly, any cognitive deficits that may have impaired the patients’ capacity to retain information were collected for rule-out purposes.

### Data Analysis
The audio-recorded data was transcribed and all identifying information mentioned during the interview, such as the patient or family caregiver’s name, was de-identified to protect patient confidentiality. Inductive content analysis was used whereby initial codes were grouped into recurrent and prominent themes across participants. The research team revised the codebook several times until agreement was reached and broad themes were apparent, based on the frequency, emotion, and extensive-ness of the narrative. Two authors then discussed and created the final codebook. A kappa coefficient of 0.72 was reached.

### Results
On average, interviews lasted 47.57 minutes, ranging from 36 to 86 minutes. Analysis of the interviews revealed three areas of concern: (1) lack of stroke knowledge/awareness, (2) need for stroke education, and (3) fear of stroke recurrence.

### Lack of Stroke Knowledge and Awareness
Interviews revealed that ICH patients and caregivers delayed calling 911 and did not identify their symptoms as stroke during acute onset. Patient 1 mistook her initial symptom of stroke,
which was a sudden onset of severe headache, as a symptom of influenza and decided to wait to seek medical attention. It was not until Patient 1 returned home when her symptoms significantly worsened that she decided to go to the Emergency Department.

Caregivers who responded immediately to stroke symptoms did so only when the patient exhibited clear signs of impairment or if he/she had experience with a previous health emergency. Caregiver 1 recalled the day she came home from work and found her daughter, Patient 2 in the bathtub minimally responsive. Caregiver 1 “…tried to wake her and call her,” and responded to the situation immediately by calling 911. Patient 3 compared her symptoms of stroke to the time she had a myocardial infarction. Although she did not realize at the time she was having a stroke, she sought urgent medical attention because of her inability to walk.

Need for Effective Stroke Education
Table 2 shows the different domain of difficulty that both the patients and their caregivers faced with obtaining stroke education. When participants were asked about receiving education prior to discharge from inpatient care, interviews revealed that it was generally the caregiver who took on the chief responsibility for receiving education, especially if the patient lacked decision-making capacity at the time. In fact, a majority of the ICH patients had no memory of the hospitalization all together. Caregivers who were not present and therefore unable to receive direct education from hospital staff were dissatisfied with the provided educational methods. Caregiver 2 said,

“I read the packet. I couldn’t make sense out of the packet…If I knew what kinds of questions to ask after I read it…that would be great. I could understand some of it. But even your packet tells you like the two or three different types of strokes you can have, but I didn’t even know what she had.”

As demonstrated in this narrative, people affected by stroke may not be utilizing the information that was given during the hospitalization due to difficulty comprehending the educational materials. For example, Caregiver 2 said, “I mean because, I tried to read about it, but I mean—it’s not in layman’s terms. When you read it, it looks like that’s the worst thing in the world.”

In some cases, caregivers did not recall receiving information during hospitalization, or misplaced their educational packet. When prompted about the packet, Caregiver 3 stated, “I don’t think they gave me any information, or they may have given me some written information, but I never read it.” Caregiver 4 said, “Yeah I think we did. We have it at home in a file some place,. I think.” further demonstrating that caregivers and patients may not be utilizing the provided packets. Participants valued face-to-face education during inpatient care and appreciated when information was provided in plainspoken language. Suitable language created a welcoming environment where patients felt comfortable to ask questions.

The majority of the interview participants reported relying mainly on their primary care physician and post-stroke services as a significant source of education after discharge from acute hospitalization. Caregiver 4, who was an active information seeker, stated, “Well, the first thing I would contact is [doctor] and you guys first.” Caregiver 4 further displayed his belief of going to the “doctor’s” office not only to receive direct health care, but also to acquire advice for managing the disease. In Caregiver 1, remembering what to ask was a challenge:

“That’s why I should write down on paper what kinds of questions I need to ask…But I never do…When I go there (the doctor’s office), I forget, and then when I go home I remember, “oh I forgot to say this, I forgot to ask this.”

When patients and caregivers forgot to ask their questions during outpatient visits and required additional inquiry, they resorted to searching for answers on the Internet. However, despite the presence of Internet resources in the education packet, many felt that the Internet was inadequate in providing trustworthy information.

Factors That Motivate Stroke Prevention Measures
Some patients who had previous substance-abuse challenges felt empowered after learning that cessation of drug abuse could lower their stroke risk. Caregiver 2 reflected, “When I talked to [doctor] the first time, he said, ‘got to stop the dope.’” Experiencing the stroke served as a turning point when the

<table>
<thead>
<tr>
<th>Table 2. Domains of Difficulty in Stroke Education</th>
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<tbody>
<tr>
<td><strong>Patient (n = 10)</strong></td>
</tr>
<tr>
<td>No memory of the hospitalization</td>
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<tr>
<td>Stroke education material was not helpful or did not read the material</td>
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<tr>
<td><strong>Caregiver (n = 11)</strong></td>
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<tr>
<td>Had inadequate knowledge of stroke prior to hospitalization</td>
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<tr>
<td>Felt inadequately educated about stroke prior to discharge</td>
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<tr>
<td>Felt that stroke education material was difficult to understand</td>
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<tr>
<td>Felt that stroke education material not helpful or did not read the education material even though it was provided during hospitalization</td>
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*Only the patients who remembered the hospitalization (n = 3) were used for the denominator. Denominator may not equal the total number since some respondents did not specifically address or describe each domain during the interview.

HAWAI'I JOURNAL OF MEDICINE & PUBLIC HEALTH, APRIL 2015, VOL 74, NO 4 143
individuals in our study who experienced a first-time stroke attained after having a stroke. Similar to prior studies, the results from this study reveal what 10 stroke patients and 10 caregivers determined to be the single venue for stroke education. This highlights the importance of not relying on the acute hospitalization period as the sole venue for stroke education.

Discussion

In Patient 2’s case:

“… I used to drink like crazy. Every day. I don’t drink anymore. I don’t know why—but after the stroke, nothing… Either the stroke was going to kill me, or the drinking…”

However, some patients demonstrated apathetic attitude towards managing their health even after their stroke-related hospitalization. One interview revealed that even after having a stroke, the patients’ perspective on secondary prevention remained unaltered for the reason that she did not believe that stroke was preventable. Patient 2 stated, “Well, if you’re going to get it, you’re going to get it. You can’t stop it.”

Another area of motivation that emerged from the narrative was fear of experiencing recurrent stroke, and knowing how to prevent stroke. Interviews revealed that both caregivers and patients acknowledged the occurrence of stroke and accepted that preventing the recurrence of stroke would require a lifestyle adjustment. Patient 6 said, “That’s what I kind of worry about. They say you can have another one and another one and… He (ref. to doctor) told me the next one will be my last one. I won’t survive it.” Experience with having a stroke became a chief cause of anxiety that at times prevented patients from returning to independence: “…I don’t know which doctor said, she’s high risk for another stroke. That’s been laying heavily on my mind so I try not to let her do too much—although maybe I should let her do stuff around the house,” admitted Caregiver 1.

Provision of Stroke Education

Results from review of the electronic medical records showed that 8 of 10 patients received a formal stroke education prior to discharge from the QMC. Stroke education includes a packet with information about: signs and symptoms of stroke and accepted that preventing the recurrence of stroke would require a lifestyle adjustment. Patient 6 said, “That’s what I kind of worry about. They say you can have another one and another one and… He (ref. to doctor) told me the next one will be my last one. I won’t survive it.” Experience with having a stroke became a chief cause of anxiety that at times prevented patients from returning to independence: “…I don’t know which doctor said, she’s high risk for another stroke. That’s been laying heavily on my mind so I try not to let her do too much—although maybe I should let her do stuff around the house,” admitted Caregiver 1.

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Discussion

The results from this study reveal what 10 stroke patients and their caregivers knew before having a stroke, and the knowledge attained after having a stroke. Similar to prior studies, many individuals in our study who experienced a first-time stroke did not believe that their symptoms were serious, and believed that their symptoms would resolve on their own. In addition, research demonstrates that people who are at high-risk for stroke or have experience with stroke are no more knowledgeable about stroke, than those without history or experience. When surveying a sample of individuals who had a stroke, less than 35% could describe signs and symptoms of a stroke and would take action to call 911. This lack of knowledge in stroke signs and symptoms is noteworthy, suggesting that future first-time stroke victims may delay seeking medical attention and that more public education is needed.

Our study suggests that despite providing the stroke education packet to the patients and caregivers, the stroke packets are not actually utilized by the patients. While presenting information just prior to discharge may be a practical time for stroke care providers to educate caregivers and patients, the results from this study demonstrate that patients need information pertaining to care after discharge. In past studies caregivers and patients were focused on information directly related to stroke disease during the acute phase, while, almost 6 months later, wanted information about how to manage their disease, and prevention of another stroke. This lack of information causes unnecessary anxiety about preventing another stroke from occurring. Similar to other areas of chronic illnesses, educational needs change over time during the illnesses, and the optimal timing and mechanism of effective delivery of stroke education needs to be further considered, especially since the majority of the stroke patients that were interviewed could not remember the hospitalization at all. Since stroke is potentially a life-changing event for many people, the post-stroke period may serve as the optimal “teachable moment” when stroke survivors’ and their caregivers’ behavior and lifestyle could potentially be significantly changed. Our findings indicate pre-discharge education may not be effective; instead, the first outpatient visit after stroke occurrence may be the ideal opportunity to positively influence a patient who is motivated to change by offering stroke awareness and prevention education in a comprehensible manner.

Limitations

First, the small number of caregiver and patient participants limits the generalization of these results; however, qualitative methods were used to capture the depth of stroke education and awareness experienced by patients, which often sacrifices breadth. Secondly, the unique archipelagic geography of Hawai‘i restricted our ability to conduct face-to-face interviews with prospective participants who resided on neighbor islands, therefore limiting our selection. Thirdly, caregivers and/or patients were required to speak English in order to participate in this study and it is possible that certain populations were overlooked due to language barriers, and therefore unintentionally excluded from this qualitative study. In the future, incorporation of a scale assessing functioning abilities of stroke patients may help us to understand how it affects the educational needs of both patient and caregiver. In addition, educational needs of outer-island stroke patients should also be explored.
Conclusion
Our findings demonstrate that most stroke survivors do not recall their hospitalization experience and the stroke education given during the hospitalization are not effective. This suggests the need for health professionals to promote stroke awareness and provide education to caregivers at discharge and to both survivors and their caregivers after discharge. While patients may not be utilizing the educational material provided at discharge, interviews revealed that having a stroke can serve as an influential experience to motivate patients to change their behaviors. Health care providers should improve education materials and delivery methods to utilize this powerful moment to deliver comprehensive education on stroke-related topics.

Conflict of Interest
None of the authors identify a conflict of interest.

Acknowledgments
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References
Weight Reduction Among People with Severe and Persistent Mental Illness After Health Behavior Counseling and Monitoring

Matthew Katekaru MPH; Carol E. Minn MD, MSPH; and Ann M. Pobutsky PhD

Abstract
The high prevalence of obesity and associated chronic conditions in persons with severe and persistent mental illness has contributed to a mortality rate that is nearly two times higher than the overall population. In 2008, the Central O'ahu Community Mental Health Center (COCMHC) began providing a health counseling intervention for her clients in 2008 to address weight management. The counseling involved motivational interviewing and health guidance for targeted behavioral change on risk factors for chronic disease (overweight/obesity, physical activity, and nutrition). Counseling became a part of regular check-up appointments with the medical director. Standard check-ups are scheduled every one to three months, depending on client mental health needs. Motivational interviewing, integrated into routine psychiatric practice, allowed the medical director to engage each person on the topics of weight, physical activity and diet in a conversational manner. Discussions were informal, and open dialogue was utilized to learn about each person’s lifestyle. Tips and recommendations on improving physical activity and diet were based on the medical director’s assessment of the individual. Clients were encouraged to increase physical activity and were consistently reminded of ways to improve nutrition. Suggestions included using the stairs instead of elevators, exercising with family, eating fresh fruits and vegetables, and drinking water instead of sugary beverages. Clients were also encouraged to attend weekly wellness classes at COCMHC that taught lessons on nutrition and exercise.

Introduction
Obesity is a major health concern in the United States with more than one-third of adults (35.7%) classified as obese. Concern is even greater for persons with severe and persistent mental illness (SPMI), such as schizophrenia, as the prevalence of obesity in those with SPMI is nearly two times higher than the overall population. The higher prevalence of obesity in this population is associated with an increase in weight related conditions including diabetes mellitus, hypertension, dyslipidemia, and cancer. The increased burden of chronic conditions in persons with severe mental illness contributes in part to a higher mortality rate than the overall population.

The prevalence of obesity in persons with SPMI is attributed to multiple factors. Previous studies have found that physical inactivity and unhealthy diets are common among the severely mentally ill; for example, the National Health and Nutrition Examination Survey (NHANES) 2005-2006 found that individuals with SPMI were less physically active than the general population (22% vs 49%). In addition to lifestyle factors, many atypical antipsychotic medications, often required for long-term symptom control, are associated with weight gain due to increased appetite. Examples of atypical antipsychotic medications include Olanzapine, Quetiapine and Risperidone. A potential mechanism for the association between antipsychotic medication and weight gain is believed to be the binding of serotonin and histamine receptors. Antagonistic action in serotonin and histamine neurotransmission is known to increase appetite and is also associated with sedation, which may further contribute to weight gain. Unhealthy lifestyles and the necessity of weight increasing medications make weight management very difficult. Learning and adopting new healthy behaviors is made more difficult due to impairments in memory and executive function associated with severe mental illness.

Due to concern with the health risks of obesity, the medical director of the Central O’ahu Community Mental Health Center (COCMHC) began providing a health counseling intervention for her clients in 2008 to address weight management. The counseling involved motivational interviewing and health guidance for targeted behavioral change on risk factors for chronic disease (overweight/obesity, physical activity, and nutrition). Counseling became a part of regular check-up appointments with the medical director. Standard check-ups are scheduled every one to three months, depending on client mental health needs. Motivational interviewing, integrated into routine psychiatric practice, allowed the medical director to engage each person on the topics of weight, physical activity and diet in a conversational manner. Discussions were informal, and open dialogue was utilized to learn about each person’s lifestyle. Tips and recommendations on improving physical activity and diet were based on the medical director’s assessment of the individual. Clients were encouraged to increase physical activity and were consistently reminded of ways to improve nutrition. Suggestions included using the stairs instead of elevators, exercising with family, eating fresh fruits and vegetables, and drinking water instead of sugary beverages. Clients were also encouraged to attend weekly wellness classes at COCMHC that taught lessons on nutrition and exercise.

Weight was monitored by a staff nurse at each appointment and Global Assessment of Functioning (GAF) was rated for each client by the medical director. The GAF is a 100 point numeric scale which rates psychological, social and occupational functioning in people over the age of 18. The goal of the intervention was to achieve weight loss or weight maintenance and improve GAF through the integration of health counseling with mental healthcare for persons with SPMI.

In 2013, the COCMHC medical director assigned a University of Hawai‘i, Master of Public Health student the task of assessing the trends in weight and GAF to determine the response of her clients to the health counseling intervention. The purpose of this article is to share the findings of the assessment and to provide support for the expansion of integrated primary care in community mental health centers in Hawai‘i.

Methods
The assessment of the client medical records was approved by the University of Hawai‘i and Hawai‘i State Department of Health IRB committees. Since this project involved secondary data analysis of de-identified data, consent forms were not needed. The intervention included 47 people with SPMI (all with schizophrenia or related disorders). The only inclusion...
criterion was that each person was diagnosed with SPMI, had been prescribed atypical antipsychotic medication and was a client of the COCMHC medical director. All received repetitive behavioral counseling from the COCMHC medical director.

Medical chart reviews were conducted for each person and data on height and weight (Body Mass Index [BMI] is a number calculated from a person’s weight and height, BMI provides a reliable indicator of body fatness for most people and is used to screen for weight categories that may lead to health problems. See: http://www.cdc.gov/healthyweight/assessing/bmi/index.html), GAF, medication and demographic information were collected for the years 2008 to 2013. The medication information was used to confirm that each person was prescribed an atypical antipsychotic medication for the five year duration. No weight loss medication was prescribed to any of the participants. Each person had five time points of data collected with 36 people having data for the years 2008-2012 and 11 people for 2009-2013. The data was organized in a Microsoft Excel spreadsheet. Weight and GAF were averaged and graphed to assess trend. Paired sample t-tests were performed to test for significant changes between years one and five in Microsoft Excel.

Results
In Table 1, patient demographics and BMI for years one and five are displayed. In the group, 32 of the 47 persons were male (68%) and 15 were female (32%). The group was organized into four age groups, though age was not used in the analysis. Three people were aged 31-40 (6%), ten people were aged 41-50 (21%), twenty-two people were aged 51-60 (47%) and twelve people were 61 or older (26%). Diagnosis is also displayed in table 1. Ten of the forty-seven were diagnosed with Paranoid Schizophrenia (21%), eleven were diagnosed with Undifferentiated Schizophrenia (23%), and twenty-six were diagnosed with Schizoaffective Disorder (55%). In year one, 22 of the 47 persons were obese (47%), 20 were overweight (43%) and 5 were in the normal BMI range (11%). The average weight of the study group at year one was 190 lbs. At year five, 21 people were obese (45%), 18 were overweight (38%) and 8 (17%) were in the normal BMI range with a group average weight of 184 lbs.

Figure 1 displays the five-year trend for average weight. The paired sample t-test on subject weight indicated a significant difference between year one (mean = 190 lbs., standard deviation = 43) and year five (mean = 184 lbs., standard deviation = 41) with a P-value of .04. Thirty-one people had lost weight with seventeen losing 10 or more pounds and three losing more than 40 pounds.

Figure 2 displays the five year trend for average GAF. The paired sample t-test indicated a significant difference between year one (mean = 57, standard deviation = 6) and year five (mean = 60, standard deviation = 3) with a P-value of <.001. Thirty-six people had improved GAF scores with five having lower scores and six remaining the same.

Discussion
The results of COCMHC’s counseling intervention shows potential for a practice which supports weight counseling and monitoring of persons with SPMI in a mental healthcare setting. Over five years, the majority of people included in the project experienced reductions in weight with an average loss of 6 lbs. The five year trend displays stable weight for the first four years and a 5 lb. decrease between years four and five. One possible explanation for the sudden change may be that applying changes to lifestyle takes more time in persons with SPMI. As cited in previous studies, persons with SPMI may take longer than those without SPMI to learn and adopt new behaviors due to impairments in memory and executive function.2 The first four years may have been the time needed for the COCMHC clients to slowly learn and apply the lessons taken from the counseling with the medical director. Nevertheless, the weight loss is a step in the right direction that encourages

| Table 1. Demographics and Key Variables (age, sex, diagnosis, BMI years one and five) of Participants, Central O'ahu Community Mental Health Center |
|---------------------------------|------|-----|
| Age                             | n    | %   |
| 31-40 years                     | 3     | 6   |
| 41-50 years                     | 10    | 21  |
| 51-60 years                     | 22    | 47  |
| 61+ years                       | 12    | 26  |
| Total                           | 47    | 100%|
| Sex                             |      |     |
| Male                            | 32    | 68  |
| Female                          | 15    | 32  |
| Total                           | 47    | 100%|
| Diagnosis                       |      |     |
| Paranoid Schizophrenia          | 10    | 21  |
| Undifferentiated Schizophrenia  | 11    | 23  |
| Schizoaffective Disorder        | 26    | 55  |
| Total                           | 47    | 100%|
| BMI Year One                    |      |     |
| Normal (18.5-24.9)              | 5     | 11  |
| Overweight (25.0-29.9)          | 20    | 43  |
| Obese (30.0 & above)            | 22    | 47  |
| Total                           | 47    | 100%|
| BMI Year Five                   |      |     |
| Normal (18.5-24.9)              | 8     | 17  |
| Overweight (25.0-29.9)          | 18    | 38  |
| Obese (30.0 & above)            | 21    | 45  |
| Total                           | 47    | 100%|

Note: Total percentages may not add up due to rounding.
further investigation and intervention development. A previous study found similar weight loss results in a randomized clinical trial of a weight management intervention for adults with severe mental illness. The intervention involved group weight management sessions and group exercise sessions, with a focus on calorie reduction, five daily servings of fruits and vegetables and moderate aerobic activity. The study results showed a between group weight change (change in weight in the intervention group minus the change in the control group) of -7 lbs. in 18 months. The results of this previous study indicate that weight loss is achievable for persons with severe mental illness with a structured intervention. Another interesting result of the COCMHC counseling intervention was the improvement in GAF. The average increase in GAF from year one to five was only 3 points, but can still be considered a positive outcome with the majority (36 of 47) of clients increasing GAF scores.
Many factors may be attributed to changes in GAF, so the cause of the trend increase cannot be accounted for from the data collected. We have considered the possible association between improved GAF and improved weight management behavior, but that is an investigation for future study.

The intervention has several strengths. First, the monitoring of weight and GAF took place over five years. Few studies have been conducted on behavioral weight loss interventions for persons with SPMI and most were short term, some only lasting 3 to 6 months. Second, the counseling was provided at the mental health clinic where there is ample opportunity to discuss weight and health on a regular basis. Clients are seen every one to three months and receive care from the same psychiatrist, which allows for consistent, ongoing discussions. Third, the counseling was provided at no cost to the clients and only required about 10 minutes per appointment. Resources and funding can be limited in community mental health centers, so low or no cost interventions that can address serious health issues are important for maximizing clinical impact.

For the limitations, it is important to note that this study was an assessment of an applied clinical practice, and not a clinical trial. Controls were not established and participants were not selected randomly, but were people who received counseling as clients of the medical director. Specific, measurable interventions were not applied. The amount of counseling and the topics covered varied with each person. Many factors may contribute to weight loss and since weight, GAF, and medication confirmation were the only variables accounted for, an association between weight loss and the counseling intervention cannot be made. GAF can be an inconsistent measure due to the subjective nature of the scale. The reliability of the GAF measures in this assessment may be improved because only the medical director rated the clients, but subjective variation or possible bias on the part of the rater are still unaccounted for.

Weight and health counseling could be beneficial in mental healthcare settings, but future studies and projects need more specific guidelines and curriculum. Along with more detailed counseling curriculum, tracking of physical activity and diet would allow for observations of behavior change over time. Other risk factors such as smoking, cholesterol, and blood pressure should be tracked to develop a more complete view of health for people with SPMI. Currently, there is no database on SPMI comorbidities in Hawai’i.

The Hawai’i State Department of Health (DOH) is now piloting the Living Well Hawai’i Project, an innovative collaborative effort with the Kalihi-Palama Health Center (KPHC) and COCMHC, which integrates primary care services into community mental health centers. The COCMHC and KPHC have enrolled more than 50 participants. The primary purpose of the Living Well Hawai’i Project is to improve the physical health status of people who have SPMI through the provision of primary and specialty care medical services, with a particular focus on chronic diseases and their risk factors (smoking, obesity, diabetes, high blood pressure, and high cholesterol). The Living Well Hawai’i Project monitors risk factors beyond weight such as hypertension and hyperlipidemia, which should help build a knowledge base on SPMI comorbidities in Hawai’i and provide insight into the effectiveness of primary and mental health care integration.

The counseling intervention at COCMHC displays potential for an effective, low cost method for improving weight management in persons with SPMI. Due to the high prevalence of obesity in the SPMI population more attention needs to be paid toward developing programs to address this issue. The results of COCMHC’s counseling intervention project should encourage further investigation and promote health counseling within community mental health centers in Hawai’i.

Conflict of Interest
None of the authors identify a conflict of interest.

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References
MEDICAL SCHOOL HOTLINE

The Research Mission of the Cell and Molecular Biology Department and Program at the John A. Burns School of Medicine

Marla J. Berry PhD; Joshua Astern PhD; Frederick Bellinger PhD; Christopher Brampton PhD; Rebecca Cann PhD; Mariana Gerschenson PhD; David Haymer PhD; Nicholas G. James PhD; David M. Jameson PhD; Olivier LeSaux PhD; Peter R. Hoffmann PhD; Robert Nichols PhD; Matthew Pitts PhD; Lucia Seale PhD; Steven Seifried PhD; Alexander J. Stokes PhD; and Cedomir Todorovic PhD

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

Mission
The mission of the Department of Cell and Molecular Biology (CMB) and the CMB Graduate Program at the John A. Burns School of Medical is to provide an outstanding environment for excellence in research and education in Cell and Molecular Biology and related biomedical disciplines.

Overview
The CMB Department (http://jabsom.hawaii.edu/departments/cmb/) and the CMB Graduate Program (http://www.hawaii.edu/cmb/CMB/Home.html) at the John A. Burns School of Medicine, University of Hawai'i (UH) at Manoa are comprised of a collection of multidisciplinary, outstanding faculty, graduate students, postdoctoral fellows, and technical and administrative support staff engaged in a highly diverse array of research. Areas of research focus include biochemistry, cell and molecular biology, ecological and evolutionary biology, endocrinology, genetics, immunology, neurobiology, reproductive biology, cancer biology, infectious diseases, and cardiovascular research. Funding supporting this research derives from the National Institutes of Health, the American Heart Association, the Alzheimer’s Foundation, the Michael J. Fox Foundation, pharmaceutical companies, the Hawai'i Community Foundation, and the State of Hawai'i. Undergraduates and high school students also participate in research projects under the guidance and training of department members. Faculty in the CMB Department include 7 Full Professors, 3 Associate Professors, 2 Associate Research Professors, 4 Assistant Research Professors and 2 Junior Researchers (postdoctoral fellows). The Department brought in over $8 million in extramural funding in fiscal year 2014 and in addition to their research endeavors, faculty participate extensively in medical, graduate, undergraduate, and high school education. Grants held by faculty in the Department support numerous research facilities in Kaka'ako, UH Manoa, and the Queen’s Medical Center. In addition, an $18.4 million NIH IDEa Network of Biomedical Research Excellence (INBRE) grant directed by Dr. Robert Nichols, is focused on building a research pipeline in the State of Hawai’i and supports junior faculty and undergraduate research training at the UH Hilo, Chaminade University of Hawai’i, Hawai’i Pacific University, and the UH Community Colleges. An $11 million NIH Research Centers in Minority Institutions (RCMI) grant entitled Bioscience Research Infrastructure Development for Grant Enhancement and Success (BRIDGES), directed by Dr. Marla Berry, is devoted to building the research infrastructure across the UH.

Alzheimer’s disease. Dr. Robert Nichols’ laboratory is investigating the earliest stage in the development of Alzheimer’s disease. The focus is on neurotoxicity induced by a spike in one pathological component, beta amyloid, early in the disease process. Recent work in the laboratory has demonstrated that specific target receptors sensitize neurons to the neurotoxicity induced by beta amyloid.1 To investigate the structural basis of this sensitization, a consortium was formed to study the synaptic actions of beta amyloid peptides using a multiplicity of approaches (imaging, electrophysiology, and behavioral testing) supported by core facilities. The consortium includes CMB faculty members: Drs. Todorovic, Bellinger, and Nichols (PI), and several trainees (PhD students and postdoctoral fellows). This work has led to the discovery of neuromodulatory peptide fragments from beta amyloid with potential neuroprotective activity.2 The beta amyloid peptide fragments are being developed as possible new therapeutics for Alzheimer’s disease.

Myopathies and Parkinson’s Disease. Research in Dr. David Jameson’s laboratory is focused in two major areas, the functions of dynamins in diseases including myopathies and mutations implicated in Parkinson’s disease. Studies on the role of the large GTPase, dynamin, in endocytosis and elucidation of the
defects in mutated dynamins have important implications in diseases such as Centronuclear Myopathy. A recent grant from the Michael J. Fox Foundation, awarded to Dr. Nicholas James and the first such award at the UH, supports investigation of how mutations in the protein LRRK2, implicated in Parkinson’s disease, influence the self-association and activity of this kinase. Dr. Jameson has also authored a textbook entitled “Introduction to Fluorescence” which is receiving outstanding reviews.

Modulation of traumatic memories by JNK signaling pathway – relevance for anxiety disorders. Human studies demonstrate that the c-Jun NH$_2$-terminal kinase (JNK) signaling pathway is associated with neuropsychiatric disorders. Recent studies in Dr. Cedmir Todorovic’s laboratory for the first time demonstrated that exposure to stress causes activation of JNKs in the hippocampus, and impair conditioned fear and long-term potentiation. They also demonstrated an enhancement of conditioned fear after pharmacological inhibition of JNKs under baseline conditions. Using transgenic approaches, they provided evidence that JNK2 and JNK3 isoforms are responsible for stress-induced deficit of acquired fear, while JNK1 isoform regulates baseline fear memory. In addition, they provided evidence that elimination of fear memories includes NMDA glutamate receptor-stimulated JNK3 activation, and removal of AMPA receptors from the synapses. These results provided mechanisms responsible for fear memory formation and its elimination that may provide effective prevention and treatment of anxiety disorders.

Cardiovascular calcification. Pathological mineralization of the vasculature occurs during aging and in several common acquired conditions, such as diabetes, hypercholesterolemia, chronic renal failure, and certain genetic disorders. The ABCC6 protein is primarily found in liver and kidneys and exports unknown substrates that mediate the cellular efflux of ATP, which is rapidly converted into inorganic pyrophosphate (PPi) and adenosine by ENPP1 and NT5E. Adenosine and PPi potently inhibit calcification. The physiological relevance is that ABCC6 generates the majority of the PPi released from liver, and 60% of the PPi in plasma. ABCC6 dysfunction is the primary cause of ectopic calcification in pseudoxanthoma elasticum, some cases of generalized arterial calcification of infancy, and β-thalassemia. These diseases serve as models to enhance our understanding of more common conditions. Drs. Olivier Le Saux and Christopher Brampton are currently developing a pilot clinical trial and studying other physiological roles for ABCC6 related to cardiac function and atherosclerosis.

Cardiovascular disease – On the way from the Bench, to the Bedside. Dr. Alexander Stokes’ laboratory has identified a new target and set of effective therapeutic compounds for the treatment and prevention of heart failure. Makai Biotechnology LLC is licensing this intellectual property, and partnering with UH, which holds an interest in Makai Biotechnology. The new treatment method focuses on the regulation of the ion channel TRPV1. This ion channel is best known for being activated by capsaicin, the hot component of chili peppers. The Stokes lab recently published pre-clinical data that show that inhibition of TRPV1 with a small molecule compound can protect the heart from the pathological and functional changes associated with cardiac hypertrophy, heart failure and associated pathologies. The Stokes Lab and Makai Biotechnology are optimistic that therapy can be developed to help treat the large number of people suffering from heart failure.

Mitochondrial Etiology of Metabolic Diseases. Dr. Mariana Gershenson’s laboratory studies the mitochondrial etiology of adult and pediatric diseases. Recent studies have been on HIV and non-HIV insulin resistance (IR), diabetes, lipodystrophy, and cardiovascular disease in Hawai’i and in multi-site cohorts across the United States. The research focuses on studying genetic and functional mechanisms. HIV lipodystrophy has been shown to be due to mitochondrial RNA transcription alterations and not mitochondrial DNA depletion. Furthermore, mitochondrial specific oxidative stress, in the form of 8-oxo-guanine, in peripheral blood mononuclear cells (PBMC) is associated with HDL function in adult HIV patients and is associated with the pathogenesis of cardiovascular disease. Pediatric HIV patients with IR have decreased PBMC mtDNA and decreased respiration and ATP synthesis compared to IR negative children. These mechanistic studies will assist in the diagnosis, prevention, and treatment of metabolic/cardiovascular diseases.

The University of Hawai’i Biorepository – A resource for translational studies. The UH Biorepository is operated by CMB faculty members Dr. Alexander Stokes (Director) and Dr. Joshua Astern (Manager), and facilitates an array of biomedical research projects in Hawai’i, nationally, and internationally. The Biorepository contains three major resources. The Human Reproductive Biospecimen Repository is supported by the RMATRIX grant from the NIH, awarded to Dean Jerris Hedges. This resource contains donated samples and de-identified clinical information from over 9,000 women and their newborns. The Comprehensive Human Organ and Tissue Bank is supported by the aforementioned RCMI-BRIDGES grant and contains primary human tissues from multiple organs. The INBRE III Biorepository and In Vivo Model Resource is funded by the aforementioned INBRE grant. This resource was designed to provide researchers at non-UH-Manoa institutions access to biomedical samples and services including training in biorepository techniques, and serves as a consultation resource to access and implement in vivo models. Projects utilizing the UH Biorepository have focused primarily on the effects of genetics, obesity, diabetes, infection, and immune function on birth outcomes, cardiovascular biology, and liver function. The UH Biorepository continues to procure valuable samples and data for use in research projects, publications, and grant applications. For more information please visit: http://uhsbio.jabsom.hawaii.edu.
Selenium: inflammation and immunity. Dr. Peter Hoffmann’s laboratory has long been interested in revealing mechanisms by which dietary selenium influences inflammation and immunity. Their studies have shown that levels of selenium intake change the redox status of immune cells and this dramatically affects their activation, proliferation, differentiation, and function. In addition to redox status, changes in selenium status can directly affect expression levels of individual selenoproteins in a wide variety of immune cells. The laboratory is currently dissecting the molecular interactions of selenoprotein K with other cellular proteins and the precise biochemical mechanisms by which this particular selenoprotein regulates immune cell function. Some of the diseases on which our work focuses include inflammatory bowel disease, different types of cancers, immunity to infectious diseases, and others.

Selenium and metabolic disorders. Drs. Lucia Seale, Marla Berry, and Matthew Pitts are investigating the role of dietary selenium in development of metabolic disorders. Several selenoproteins have been shown to act in maintenance of proper metabolic function and energy balance in laboratory and clinical studies. Disruption of selenium recycling results in development of obesity and symptoms of diabetes in animal models, and excess selenium results in a trend toward development of type 2 diabetes in humans. This effect was found to be gender specific in both clinical trials in humans and recent studies in mice, in both cases being observed only in males. Dr. Berry was recently awarded an NIH grant to investigate the reasons for this gender specificity.

Selenium and neurological function. Drs. Pitts and Berry are studying the roles of selenium in neurological function. Their studies reveal that disruption of both selenium transport to the brain and recycling of dietary selenium results in severe impairment of neurological motor function, seizures and death. These effects are also more pronounced in males than females, and the reasons for this difference are under investigation. Dr. Frederick Bellinger’s group is studying the role of selenoproteins in neurodegenerative disorders. They have found correlations of selenoprotein expression with neuropathology in Alzheimer’s disease and Parkinson’s disease, suggesting possible roles in mitigating these disorders. Current research is investigating the actions in Alzheimer’s disease of sodium selenate, an exciting potential therapy currently being investigated in a phase II clinical trial. Additional findings include discovering changes in antioxidant selenoprotein expression and function resulting from exposure to methamphetamine.

Ecological and Evolutionary Genetics. Dr. Rebecca Cann’s long-term project at Hakalau Forest National Wildlife Refuge, island of Hawai‘i, has generated concern over the future of native Hawaiian forest birds. Habitat management to restore the high elevation forest for endangered birds has also had negative consequences, with population sex ratio changes due to loss of breeding females, a year-long extension of molt, the explosive eruption of chewing lice, and invasive alien birds. Populations have crashed from intense competition with the invasive Japanese White Eye. Dr. Cann also explores the potential emergence of tolerance to avian malaria within a small population of amakihi on O‘ahu, and models climate change to show how high-elevation human populations may be at increased risk from enhanced mosquito movement. Her new Sri Lankan research examines an emergent hybrid swarm of exotic woodpeckers, where climate change is blurring boundaries between species.

Diversity and Threat of a Superbug in Hawai‘i. Dr. Steven Seifried’s laboratory studies *Staphylococcus aureus*. The resistant bacterial pathogen is sometimes called MRSA. Dr. Seifried and colleagues characterized the strain types of *S. aureus* found in Hawai‘i’s natural, clinical, and public environments. These strains represent much of the world’s phylogenetic diversity; brought to Hawai‘i by global travelers. The laboratory developed methods and found a low prevalence and fleeting persistence of *S. aureus* in Hawai‘i’s beach waters. Transient concentrations of the bacterium shed from beach users yield a low risk for seawater-associated exposure to *S. aureus*, although other human activities at the beach can heighten risk of exposure. Individual bacterial isolates are examined to better understand the transition from benign commensal carriage to potential lethal pathogen. Whole genome sequencing is also used to investigate why some strains are sensitive to most antibiotics, while very closely related strains demonstrate dangerous multiple antibiotic resistance.

Community Impact — The Innocence Project. Dr. David Haymer has served for a number of years as the DNA consultant for the Hawai‘i Chapter of the Innocence Project. The Innocence Project is a national organization that investigates cases where there is the possibility of a wrongful conviction of an innocent person. The Hawai‘i Chapter is headed by Professor Virginia Hench of the Richardson School of Law at UH, and Dr. Haymer is brought in when their investigations include the use of DNA evidence. In March of 2013, the local project had its first major breakthrough case when the conviction of a Maupan, who had been in jail for 20 years on a rape charge, was set aside primarily based on new DNA evidence.

The Future. The future efforts of the department will focus on continuing to build on our strengths and expertise through increasing interactions and collaborations with other units at JABSOM, UH and elsewhere, advancing our efforts in biotechnology, increasing the entrepreneurial atmosphere of the department, and recruitment of faculty with expertise in bioinformatics, genomics, proteomics, metabolomics, and other multidisciplinary areas that will increase our competitiveness in the global research and education community.
References


The Tobacco Settlement Special Fund: How Investments in Prevention Save Lives and Dollars

Bronwyn M. Sinclair-White MPH; Virginia Pressler MD, MBA, FACS; Tonya Lowery St. John MPH; Janice Okubo; Katie Richards MPH; and Lola H. Irvin MEd

It’s been fifteen years since our state began using Tobacco Settlement Special Funds (TSSF) for smoking and chronic disease prevention. While TSSF funding for prevention has been drastically reduced during this period, Hawai‘i’s achievements in both cost savings and health outcomes are proof of what we have always known: Prevention saves lives and is a smart investment.

Each year, 1,400 Hawai‘i residents die from smoking-related deaths, costing our state $526 million per year in smoking-related healthcare costs.¹ The state and federal tax burden from smoking in Hawai‘i caused government-related expenditures of $834 per household.² Every year, an additional 5,000 children in Hawai‘i try their first cigarette, and tragically one in three kids who get hooked on tobacco will die prematurely from it.³

The evidence is clear that tobacco prevention programs work to reduce smoking, save lives, and save money by reducing health care costs. Studies have shown that state spending on quality tobacco prevention programs lowers youth smoking rates and overall tobacco use. Hawai‘i conservatively saved a total of $586 million dollars between 2000 and 2013 as a result of adults, youth, and pregnant women who quit using tobacco. In other words, $4.73 was saved in direct health care costs for every $1.00 spent on tobacco prevention.⁴

Hawai‘i’s prevention efforts using TSSF funds have also resulted in better health outcomes for Hawai‘i residents. More adults are now tobacco-free, and youth are largely staying away from cigarettes. Adult smoking decreased 33% from 2000 to 2013, from 19.7% to 13.3%.⁵ Additionally, youth smoking decreased 63% from 27.9% in 1999 to 10.4% in 2013.⁶ Hawai‘i currently has the third-lowest adult smoking rate in the nation at 13.3%.⁷

Recent data also demonstrates significant decreases in chronic disease death rates. The World Health Organization identifies chronic disease as a silent and deadly epidemic that will take the lives of two in three people globally, and by 2030, 52 million people will die from it each year—five times more than from infectious diseases.⁸ Due in part to TSSF investments in chronic disease prevention, death rates in Hawai‘i from heart disease and stroke decreased 34% and 41% from 2001-2003 to 2011-2013 (3-year aggregates).⁹ Deaths due to lung cancer have also gone down by 21% during the same time period. Strides in policy, public education, cessation services, advocacy, and outreach have all contributed to these amazing wins, and were made possible by the use of TSSF funds for prevention.

TSSF dollars are the main source of funding for primary prevention and chronic disease management for the entire state. Using the money for prevention, especially for tobacco prevention and control, follows the spirit of why states sued and settled with the tobacco companies in 1998. The settlement between the 46 states and tobacco companies says that the funds would be used to provide “significant funding for the advancement of public health, the implementation of important tobacco-related public health measures . . .”¹⁰

From the onset, Hawai‘i legislators, former Governor Ben Cayetano, and public health partners, including the Department of Health, supported dedicating a significant portion of future payments towards prevention programs, particularly to invest in our youth, prevent a new generation of smokers, and help current smokers quit. However, over the years, partners in tobacco control and chronic disease prevention have seen the prevention dollars diverted. This is concerning, since the annual master settlement payments are projected to decrease from over $50 million to about $41 million beginning in 2018.¹¹

Originally, the state set aside 25% of the master settlement payments for the Tobacco Prevention and Control Trust Fund but through the years this portion was reduced—and even diverted—during tough economic times (Figure 1). Currently, the Hawai‘i Tobacco Prevention and Control Trust Fund receives 6.5%, or roughly $3 million, of the annual $50 million in payments to the state. These funds pay for (1) the Hawai‘i Tobacco Quitline, (2) state and community coalitions to continue public education and empower communities to mobilize and become smoke free, and (3) community and youth cessation grants to help people quit smoking and to prevent youth from starting.
The Department of Health originally received 25% and now receives 15%, or about $7.5 million, of these payments. The Department combines the prevention, management, and surveillance of chronic diseases in one place and effectively uses these dollars to pay for: (1) statewide Tobacco Prevention and Education and enforcement of smoke-free and retail policies to protect teens and families; (2) Obesity Prevention through policy, systems, and environmental changes designed to increase opportunities for physical activity and nutrition; and (3) statewide chronic disease management programs, including Asthma, Diabetes, Cancer and Heart Disease and Stroke. The TSSF is successfully leveraged as matching dollars for categorical chronic disease grant awards from the Centers for Disease Control and Prevention.

TSSF dollars are essential to protect the health and quality of life of the people of Hawai‘i. Now more than ever, it is imperative that the allocation of funds that support tobacco and chronic disease prevention programs be protected and preserved. The effective management of these funds is evidenced by the successful programs that have contributed to improved health outcomes over the last decade. TSSF programs focus on three critical health behaviors that exacerbate chronic disease: tobacco use, unhealthy eating, and physical inactivity. These three behaviors are identified by Centers for Disease Control and Prevention as “Winnable Battles” — public health priorities with a large-scale impact on health and with known, effective strategies to address them. Each TSSF-funded program was developed with long term objectives for population-based behavioral changes to sustain improved health outcomes. Here are some examples of what these programs fund in our communities:

School Health: TSSF funds have helped improve the environment for all Hawai‘i students attending public schools. Since 2007, Department of Health has supported the implementation of the Department of Education’s Wellness Guidelines by funding trainings, conducting data collection, and reporting on schools’ success towards implementing the Wellness Guidelines. Department of Health assesses and reports how well schools are following the guidelines for foods and beverages sold or provided on campus, the number of classroom hours for both health and physical education, and any teacher and staff development that is in place to support the guidelines. TSSF funds have also been used to help the Department of Education improve its school meals program with training for cafeteria managers and workers. Thanks in part to these efforts, public school cafeterias...
now serve milk with 1% or less fat, whole grain baked goods, no foods containing trans fats, and at least five different types of vegetables each week. Finally, TSSF funds support Health and Physical Education resource teacher positions in each district. The resource teachers are responsible for providing training and technical assistance to schools so that all students have access to quality health and physical education programs.

**Public Education:** There have been numerous award-winning public education campaigns funded by TSSF. Most recently in 2013-2014, TSSF-funded the “Rethink Your Drink” campaign which encouraged teenagers ages 12-18 to drink water and other healthy beverages like 1% or less milk and 100% juice instead of sugary drinks. Middle and high school students served as “youth advisors” during the campaign’s development, helping to develop the logos, taglines, and ad concepts. Fifty-four percent of teens recalled seeing at least one of the ads, and 60% of teens reported drinking fewer sugary drinks as a result of seeing the ads.13 The Rethink Your Drink campaign was recognized nationally, winning three awards in Public Health Communications from the National Public Health Information Coalition (Chicago, September 2013). To further engage youth on the issue, Department of Health held a “Rethink Your Drink” Teen Video Contest in 2014-2015, in which students were asked to create their own 30 second commercials. Winning and finalist videos aired on Fox and the CW (February through April, 2015).

**Active Living:** Since 2007, TSSF funds have helped make our communities, streets and neighborhoods more pedestrian- and bike-friendly, thereby increasing our opportunities for physical activity. Department of Health utilizes education, capacity building, and networking to meet its goal of implementing policy-level changes. In June 2009, Act 100 relating to Safe Routes to School (SRTS) and Act 54 relating to Complete Streets were signed into law. Since then, all four counties have passed Complete Streets policies through council resolutions in Kaua’i, Maui, and Hawai’i, as well as an ordinance in the City & County of Honolulu. In 2012, the State of Hawai’i passed Act 317, which added a SRTS surcharge on vehicular moving violations to be used to fund county level SRTS. These funds are meant to support county SRTS coordinators and provide funding for programmatic and infrastructure changes in the counties that will support SRTS.

**Smoking Cessation:** The Hawai’i Tobacco Quitline is entirely funded by TSSF dollars. Since 2005, the Quitline has provided telephone counseling and online services for smokers seeking to end their addiction. The service is staffed 24/7 by professional cessation coaches who provide assistance to all adult tobacco users, free of charge, regardless of insurance. The Quitline has exceeded the average of U.S. quitlines for both treatment and promotional reach rates. The Hawai’i Tobacco Quitline has helped more than 22,000 Hawai’i residents quit smoking, and continues to answer calls from an average of nearly 400 people per month. Over 90% of callers to the Quitline report making at least one quit attempt since they enrolled in Quitline services. Eighty percent of people who call the Quitline say they are very or mostly satisfied with services, and about 34% of people who call actually quit smoking. Quit rates are consistent over time. People who call the Quitline are 4 to 13 times more likely to successfully quit than if they tried to quit without assistance. Finally, 81% of people who call the Quitline say they are very or mostly satisfied with services.14 TSSF-Funded programs demonstrate the effective use of public health dollars and create the broadest return on investment. These programs are critical to maintaining the health of Hawai’i’s people. Without these funds, we can expect the following to happen:

- **Smoking rates will increase.** This has been the experience of other states that lost funding for tobacco prevention. One example of this is when Massachusetts cut funding for tobacco prevention and control. Cigarette consumption increased, reductions in youth smoking stalled and sales of tobacco to youth increased dramatically. Other states with similar stories include California, Florida, Indiana, Washington, Ohio, and Minnesota.15
- **Obesity rates will increase.** Adult obesity in our state has more than doubled between 1995 and 2010. Currently, about one in 2 adults and one in 3 children in Hawai’i is overweight or obese; without effective interventions, more than half of Hawai’i’s adults will be obese by the year 2030.16
- **Chronic disease rates will increase.** Currently 68% of Hawai’i adults are living with at least one chronic disease, nearly half (41%) have two or more, and 24.3% have three or more chronic diseases.17 If we do nothing, our population’s quality and length of life will continue to deteriorate, impacting our economy as a result of lower worker productivity and absenteeism, and threatening the strength of our military.

As evidenced, there is more work to be done in prevention. Tobacco is still the leading preventable cause of chronic disease and death. Despite low rates of smoking among high school and middle school students, each year roughly 1,000 Hawai’i youth under the age of 18 who transition from experimentation with cigarettes to smoking every day.18 One in three of our youth who get hooked on tobacco will die prematurely from it. Additionally, there is an alarming increase in experimentation with new tobacco products including electronic smoking devices (also known as e-cigarettes). In just two years (2011-2013), lifetime use of electronic smoking devices quadrupled in middle school students and tripled in high school students.19 These products are unregulated and advertised broadly. Unlike traditional tobacco products, there are no federal restrictions that would protect children from obtaining electronic smoking devices.

In addition, while Hawai’i’s overall cigarette smoking rates are low, disparities exist among some population subgroups. People with chronic and persistent mental health conditions and people who are substance abusers use tobacco at a higher rate, 30% to 40% more than a person without a mental health condition. As a result, these people also suffer disproportionately from...
People who are unemployed and who have lower incomes also smoke at a higher rate of close to 25%. Smoking is also higher among Native Hawaiians, at 22%. A comprehensive and sustained effort is therefore still needed to maintain and expand the social norms to discourage youth from initiating tobacco use. Continued efforts are needed to encourage cessation through the Hawai‘i Tobacco Quitline and continue to reduce exposure to secondhand smoke by enforcing the smoke free workplace law.

Prevention efforts need to continue in order to impact our rising obesity and chronic disease rates. Obesity, diabetes and chronic disease are already costly to our state. Hawai‘i currently spends an estimated $470 million annually on obesity-related medical costs, and $1.1 billion on diabetes-related medical costs (direct plus indirect costs). All Hawai‘i residents bear the burden of chronic disease in terms of their quality and length of life, as well as their pocketbooks. Business owners bear the brunt of the burden by paying for healthcare coverage for their employees. For these employers, rising obesity and chronic disease means higher medical claims expenses, increases in short- and long-term disability expenses, increased absenteeism, and lower productivity. For our military, the number of young men and women who are too heavy to join the military will continue to increase. In 2010, over 27 percent of 17 to 24 years of old Americans, or over nine million young men and women, were too heavy to join the military if they want to do so.

It is important that we sustain these programs that have proven success and results, are managed effectively, and have the greatest return on investment for our State and our people. As state funding continues to be scrutinized and priorities shifted, it is imperative that the TSSF allocation for tobacco and chronic disease prevention does not fall below current funding levels. The Department of Health asks the public health and health care community to support our efforts to keep TSSF focused on the intent of the Master Settlement Agreement with the tobacco companies, for the advancement of public health, so that Hawai‘i’s current and future generations can lead quality, productive, and long lives free from the burden of tobacco and chronic disease.

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References
LIFE CAN SOMETIMES BE A REAL PAIN IN THE A- - -
A man came to the emergency room at St. Paul’s Hospital in Vancouver complaining of pain in his rectum. A gastroenterologist found a vial of urine the patient had stashed in his rectum in preparation for a urine test for methadone. If the test were negative he would be given the privilege of “take home” methadone that he would either take or sell on the street. He feared the possible loss of privilege if the specimen did not test at body temperature. Tough luck, dude! You should have stored it in your armpit.

PREVIOUSLY THE GOVERNOR WAS INDECISIVE. NOW HE’S NOT SO SURE.
One might assume that an educated person would know, but apparently not always. The battle against vaccinations goes back to the first immunization for smallpox in 1796. Edward Jenner, a brilliant country doctor in England, observed that many milkmaids did not get small pox. He proved to the medical world that inoculation with cowpox would prevent the dreaded infection of smallpox, a deadly epidemic disease that ravaged civilization. He was both praised and vilified before his work was ultimately accepted. In the last 100 years more and more diseases have come under control, polio, diphtheria, pertussis, measles, rubella, tetanus, all through the process of vaccination. It is strange to see politicians who dream of the White House, namely Republican Governors Christie and Walker, dancing around the issue. Using phrases like “parental choice,” they failed to endorse vaccines. Meantime President Obama said of course he believes in vaccinations. “The science is irrefutable.” Apparently, the pussy-footing around vaccinations is related to the autism issue that was thoroughly debunked by multiple studies.

ONE SIZE DOES NOT FIT ALL.
Overlooked in all the media attention to Obamacare, is the introduction of EHRs, electronic health records. Inspired by the efficiencies of integrated health care systems such as Kaiser and Veteran’s Administration, designers of the ACAs inserted the mandate for EHRs beginning this year. Planners ignored the possibility that what works for Kaiser might not work for Dr. Jones, and that is exactly what is happening today. Medical Economics magazine found that 67% of physicians are dissatisfied with EHRs. Three of four doctors said they do not save time. They reported having to spend (waste) an average of 48 minutes a day dealing with a template of items to demonstrate “meaningful use.” This rigidity inhibits the doctor’s ability to tailor questions to the patient’s actual needs. Patients complain that the doctor no longer makes eye contact, but stares at a computer screen. EHRs do not increase efficiency, do not decrease record keeping errors, they do not increase efficiency, do not decrease record keeping errors, they do not increase efficiency, do not decrease record keeping errors, they do not increase efficiency, do not decrease record keeping errors, they do not increase efficiency, do not decrease record keeping errors, they do not increase efficiency, do not decrease record keeping errors.

ADDENDA
- The first tennis balls were stuffed with human hair.
- The official definition of a “jiffy” is 1/100th of a second.
- Chief, the United States Cavalry’s last horse died in 1968. He was 36 years old.
- Microsoft wants to create a driving computer. Now when some goofball cuts you off you go to the screen, bring up dashboard, then horn and press twice. So much simpler than going beep, beep.
- How come you never see a serial killer with a light up bow tie?
- Phyllis Diller said, “Women want men, careers, money, children, friends, luxury, comfort, independence, freedom, respect, love, and three dollar pantyhose that won’t run.”
- What this country needs is a lot less of all sorts of things.
- Do you know how Columbus discovered America? He was drawn by bright lights from the Indian casinos.

ALOHA AND KEEP THE FAITH rts
(Editorial comment is strictly that of the writer.)
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