NEEDS AND ASSETS ASSESSMENT OF ORAL HEALTH SERVICES IN HAWAI‘I:
RESULTS AND RECOMMENDATIONS
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Executive Summary

The importance of oral health cannot be underestimated. Good oral health promotes not only our ability to speak and eat, but also impacts broader issues such as self-esteem, school/work performance, and chronic diseases such as diabetes and heart disease. Although research strongly supports these connections, overwhelming issues persist with tooth decay, gum disease, mouth pain, and other conditions associated with poor oral health. In particular, Hawai‘i’s oral health outcomes have consistently been worse than the rest of the nation.

Thus, Hawai‘i Dental Service (HDS) partnered with the Office of Public Health Studies (University of Hawai‘i at Mānoa) to conduct a needs and assets assessment of oral health services and priorities across the State. The study aimed to cull through existing oral health recommendations, assess the feasibility of new recommendations, and help to identify and prioritize action steps that have the potential to make the greatest impact on Hawai‘i’s oral health outcomes.

The assessment consisted of three major phases: qualitative interviews, a quantitative survey, and review of the proposed recommendations with select stakeholders. A total of 29 individuals participated in the qualitative portion, and 293 participated in the quantitative portion. Respondents represented a variety of disciplines relating to oral health (e.g., clinicians, instructors, administrators, and researchers), and were from all islands.

Findings reveal that stakeholders are most concerned about:

- Improving overall oral health awareness and messaging;
- Co-locating oral health programs and services (e.g., at schools, community health centers, etc.);
- Improving oral health among our lower income communities, including outreach, access to services, and appropriate reimbursement for providers that serve these families; and
- Creating more structure/opportunities for collaboration, both within the oral health community, as well as with allied professions.
Three over-arching recommendations are offered through this report:

1) Enhance community awareness, capacity, and prioritization of oral health promotion;

2) Enhance professional and organizational awareness, capacity, and prioritization of oral health promotion; and

3) Coordinate and integrate oral health promotion efforts, and lead statewide action that includes all pertinent stakeholders.

These recommendations and steps for action will provide a basis for HDS and other community stakeholders to further brainstorm and develop comprehensive plans to improve the State’s oral health.
The Public Health Issue

The promotion of oral health is an important public health issue nationally. About 25% of adults age 60 and older are missing all of their natural teeth, as are about 5% of adults age 40 and 59 years (Centers for Disease Control and Prevention [CDC], 2013). Having lost teeth is associated with poorer nutrition and quality of life for adults. Approximately 20% of children between 5 and 11 years of age have at least one untreated decayed tooth (Dye, Xianfen, & Beltran-Aguilar, 2012). Untreated tooth decay (i.e., cavities) may cause pain and infections, and these issues can lead to longer term challenges with eating, speaking, playing, and learning (CDC, 2015). Therefore, it is important that preventative activities be implemented to decrease the individual, community, and societal costs of tooth decay.

The most recently published oral health data for Hawai‘i comes from the Hawai‘i State Department of Health (HSDOH), through their 2015 report, “Hawai‘i Oral Health: Key Findings” (HSDOH, 2015). The data demonstrated that although 70% of adults (>18 years of age) reported seeing a dentist in the past year, more than 3,000 emergency room visits due to preventable dental problems occur annually. In addition, substantial dental health disparities persist:

- **Low-income residents** – overall, low-income residents are more likely to have dental problems and less likely to see a dentist each year.
  - In 2012, 51% of low-income adults lost teeth from dental disease, compared to 32% of higher income adults. 82% of high-income adults see a dentist each year, compared to 52% of those categorized as low-income.
  - Similar trends are seen in children. 29% of low-income children reported dental problems in the past six months, compared to 13% of high-income children. Among children enrolled in Hawai‘i’s Medicaid/QUEST program, 59% saw a dentist in 2013, which is higher compared to national Medicaid statistics (50%). However, it is important to note that children in Hawai‘i’s Medicaid program are receiving more treatment services, rather than preventive care, compared to national trends.

- **Geography** – as many have already acknowledged, Hawai‘i faces unique geographic challenges. Overall, the State’s estimated ratio of persons for every dentist is 1,283 to 1. Among neighbor island counties, the highest ratios are seen in Kaua‘i County (1,813:1), followed by Hawai‘i County (1,698:1), and Maui County (1,613:1). Between 2009-2013, the State saw a decline in clients transported from neighbor islands to Honolulu for dental services, from 3,633 to 2,266 clients.

- **Pregnant women** – between 2009-2011, only 41% of pregnant women in Hawai‘i reported seeing a dentist during their pregnancy. Pregnant women living in Hawai‘i County, those who have less than a high school education, younger mothers (20-29 years old), and women who are low-income and on Medicaid/QUEST had the lowest rates of not seeing a dentist during pregnancy.

Study Purpose and Rationale

The Pew Center on the States periodically reviews and assesses states’ performance in a variety of domains. The Center’s reports on oral health among youth, including the most recent comprehensive report (2011), have consistently rated Hawai‘i poorly. The 2011 report rated states against eight major benchmarks. These included:

1) Having sealant programs in at least 25% of high-risk schools;
2) Allowing hygienists to place sealants in school-based programs without requiring a dentist’s exam;
3) Providing fluoridated water to at least 75% of residents served by community water systems;
4) Meeting or exceeding 2007 national average of Medicaid-enrolled children ages 1-18 receiving dental services;
5) Paying dentists who serve Medicaid-enrolled children at least the 2008 national average of median retail fees;
6) Reimbursing medical care providers through the state Medicaid program for preventive dental services;
7) Authorizing a new type of primary-care dental provider; and
8) Submitting basic screening data to national databases that track oral health status.
Hawaiʻi was among five states receiving an “F” rating, meeting two or fewer benchmarks (The Pew Center on the States, 2011). In 2013, a follow-up report was issued to specifically examine states’ efforts to improve access to sealants for low-income children. Again, Hawaiʻi received an “F” rating on this evaluation (The Pew Center on the States, 2013; The Pew Center on the States, 2013b).

The Hawaiʻi State Department of Health’s (HSDOH) recent report has helped to serve as basis for discussion and action regarding oral health among Hawaiʻi residents. Eight potential strategies were put forth to support rebuilding of the State’s dental infrastructure:
1) Develop and implement an oral health surveillance plan to improve data collection, analysis and the use of data for program planning, evaluation and policies;
2) Develop effective, evidence-based community and school-based dental disease prevention programs for all age groups, particularly those who are experiencing oral health disparities;
3) Continue to support and expand affordable and accessible preventive dental care services to Hawaiʻi’s low-income population;
4) Expand Medicaid dental services for adults beyond the current coverage for “emergencies only” to include preventive and treatment services;
5) Consider increasing reimbursements to dental providers for key preventive or restorative procedures to increase participation in Medicaid;
6) Develop strategies to reduce barriers to finding and receiving preventive dental care services for children enrolled in the Medicaid program;
7) Use or adapt existing educational programs for pregnant women and for health and dental professionals regarding the safety and importance of dental care and preventive counseling during pregnancy and in the neonatal period; and
8) Explore innovative, evidenced-based strategies to expand access to underserved, high-risk populations, including tele-dentistry.

While there are already-existing collaborations on the promotion of oral health care in Hawaiʻi, there is no comprehensive picture of current services and priorities which can help direct a course of action. In particular, the Hawaiʻi Dental Service Foundation wished to better understand the statewide landscape and needs, as well as potential areas and activities that may require new or additional support. Therefore, the current study aimed to conduct a needs and assets assessment of oral health care services (both prevention and treatment) in Hawaiʻi, and translate resulting findings into prioritized and actionable recommendations. In addition, the specific strategies recommended by the Pew Foundation and HSDOH were evaluated and prioritized to inform resource allotment. Through the assets and gaps identified through this assessment, it will be possible for collaborators to propose a course of action that aligns with the current state of services.

**Study Design and Methods**

The overall research design for this study applied a mixed methods approach. Health research now acknowledges the importance of employing diverse research methods, including mixed methods and multi-level approaches. Mixed methods approaches are particularly necessary in order to understand complicated health issues and their accompanying social factors such as disparities among populations, behavioral factors contributing to health, and social determinants of health (Creswell, Klassen, Plano Clark, Clegg Smith, 2011). It has become more commonplace to see qualitative approaches (e.g., in-depth interviews, focus groups, field observations) combined with traditionally quantitative approaches (e.g., surveys, clinical trials, epidemiological measures) to better understand health issues (Plano Clark & Creswell, 2010).

This assessment consisted of three major phases: qualitative interviews, a quantitative survey, and review of the proposed recommendations with select stakeholders. Institutional Review Board (IRB) exempt approval was obtained from the University of Hawaiʻi (exempt status, CHS #23877). A portion of this assessment was conducted through a course project (PH 649 – needs assessment), in partnership with the University of Hawaiʻi at Mānoa’s Office of Public Health Studies (OPHS). Dr. Jeanelle Sugimoto-Matsuda
supervised ten OPHS students to engage in a portion of the study. Students assisted with identification of stakeholders, design of data collection tools (quantitative and qualitative), management/analysis of data received, and summarizing findings. All student researchers completed the appropriate ethics trainings (i.e., CITI training), and those completion reports were submitted to the UH IRB.

Data from both interviews and surveys were stored separately from the collected consent forms. Identifying information (e.g., names of individuals and organizations) was removed from qualitative transcripts/notes, and audio recordings were destroyed once all files were transcribed. Paper-based data were stored in a locked cabinet, behind a locked door. Electronic data were stored on secure computers, which were password-protected and encrypted. For public dissemination, data will always be reported in the aggregate, and thus will be de-identified.

Qualitative Interviews (see appendix for copy of recruitment script, semi-structured interview guide, and consent form)

Individual key informant interviews were conducted with representatives of organizations which had been identified as major stakeholders in the movement of the oral healthcare agenda on a statewide level.

- Recruitment
  - An initial list of potential participants was assembled, combining information from previous oral health reports/studies, feedback from major stakeholders including Hawai‘i Dental Service, and other pertinent documents/websites found by the students through their initial research. In addition, snowball sampling was employed as data collection began – i.e., participants were asked to recommend other providers who would be appropriate to participate in the study. Participants were selected for interviews in lieu of surveys since statewide/large-scale organizations typically organize and oversee multiple programs and initiatives, and/or the individuals themselves possessed in-depth knowledge of historical and current oral health services/issues.
  - An introductory script was delivered by email or over the phone (see appendix). The script explained the purpose of the study, and provided potential participants with contact information should they have questions/concerns regarding the study. Once an individual agreed to participate in an interview, a member of the research team contacted him/her and arranged to meet/speak at a date and location that were agreeable to the participant.

- Interview protocol
  - Interviewers presented and explained the study, risks/benefits, etc. to the interviewees, according to the informed consent form (see appendix). Only individuals who agreed to participate and sign the informed consent form were interviewed. Signed consent forms were stored in a locked cabinet, behind a locked door, at the Office of Public Health Studies.
  - Interview participants were asked to complete a brief set of demographic questions (see appendix), so that the research team could gather general information to summarize the participants’ backgrounds.
  - Interviews followed a semi-structured interview guide (see appendix), and were conducted in person when possible. If an in-person interview was not possible (e.g., scheduling conflicts, the participant resides on a neighbor island), interviews were conducted by other means (e.g., phone, Skype, video conferencing).
  - Interviews were audio-recorded, to assist the research team in transcribing the interviews and extracting themes during qualitative analysis. Participants indicated on the informed consent form if they agreed to be audio-recorded or not. Digital voice recorders were used to record interviews. Files were reviewed by the research team for the purposes of data management and analysis, and subsequently deleted.

Quantitative Surveys (see appendix for copy of survey)

A wide net of oral healthcare providers (e.g., dentists, dental hygienists, dental assistants, nurses, researchers, instructors/professors, insurance providers, etc.) were targeted for the quantitative survey. The survey asked providers to: 1) Describe how they/their organization are involved in oral healthcare in Hawai‘i;
and 2) Reflect on statewide gaps in oral healthcare activities and services, and potential solutions for addressing those gaps, including how to prioritize those solutions.

- **Recruitment**
  - An initial list of potential participants was assembled, combining information from previous oral health reports/studies, feedback from major stakeholders including Hawai‘i Dental Service, and other pertinent documents/websites found by the students through their initial research. In addition, snowball sampling was employed as data collection began – i.e., participants were asked to recommend other providers who would be appropriate to participate in the study. Any oral health organization/provider was deemed eligible for the survey, so that the research team could gain the broadest perspective to inform study recommendations.
  - Surveys were made available both electronically and in paper-pencil format. The survey’s web link was disseminated widely, via the Hawai‘i Dental Service network, interview participants, and a variety of health-related email listservs. Paper-pencil surveys were also mailed to all providers in the Hawai‘i Dental Service network.
  - The introductory script appeared at the beginning of the survey (see appendix). The script explained the purpose of the study, and provided potential participants with contact information should they have questions/concerns regarding the study.

- **Survey protocol**
  - The web-based survey was administered through Survey Monkey. As above, all providers in the Hawai‘i Dental Service network (approximately 1,100 providers) were mailed a paper-pencil survey. Other providers who expressed interest in participating, but did not have access to a computer and/or internet service, could request a physical paper copy of the survey.
  - Web data were collected via Survey Monkey. A research assistant hand-entered data from the paper-pencil surveys. Once data collection and entry were completed, the two databases were merged.
  - Data cleaning and analyses were conducted using a quantitative software package (SAS Version 9.4). Frequencies were calculated for each item. In addition, group differences were calculated for O‘ahu versus Neighbor Island respondents, as well as dentists versus other types of providers. All data were analyzed and stored on secure computers, which were password-protected and encrypted.
Summary of Study Results

All survey and interview participants were adults, and were of diverse backgrounds. They were all professionals who work in oral healthcare in Hawai‘i – e.g., dentists, dental hygienists, dental assistants, nurses, researchers, instructors/professors, insurance providers, etc.

Summary of Qualitative Data

23 interviews and two focus groups were conducted, for a total of 29 individual participants. 44 individuals were initially identified for interview; however, nine stakeholders did not respond to our inquiries. In addition, six individuals declined to be interviewed, though all six agreed to participate via the quantitative survey. The two focus groups were conducted with organizations that specifically requested the group format due to scheduling difficulties. The research team elected to accommodate these requests, in lieu of missing out on capturing their input. In general, the qualitative interviews were constructed to complement the quantitative survey. Qualitative analysis also provided depth to observed responses and trends in data, and helped to provide detail and context to the final recommendations.

Among the 29 participants:

- 14 are dentists, and 15 serve in another type of role in the oral health care system (e.g., hygienists, instructors, administrators, etc.).
- Only six individuals indicated that their work/practice served only O‘ahu. All others reported serving one or more neighbor islands, or serving the entire State.
- A variety of settings were represented, including health centers, hospitals, private practice, government, non-profits, community-based organizations, and insurance carriers. 11 (38%) of the interviewees self-identified with more than one organization.
- 22 out of the 29 individuals' organizations were classified as “large,” meaning that they serve more than 300 patients annually.
- The organizations represented provide an array of oral health services, including restorative, emergency, preventive, and cosmetic. In addition, the majority (21 of 29) of individuals stated their work/practice serves patients of all ages (from 0 to over 65).

--- Topic #1 ---

Hawai‘i has consistently received an “F” rating from the Pew Center, which does periodic assessments of oral health statuses and services by state (e.g., Pew Center on the States, 2011; Pew Center on the States, 2013).

- In your opinion, what is different about oral health/healthcare in Hawai‘i, compared to the rest of the US?
- Probes used if needed – What things are better/worse? Is the “F” justifiable?

Initial reference to and discussion of the Pew Center, which does periodic assessments of oral health statuses and services by state, revealed varying opinions regarding the “F” rating that Hawai‘i consistently receives.

- Is the “F” justifiable?
  - Eight respondents felt that yes, the “F” is justifiable.
  - The remaining 21 respondents either disagreed or did not offer a specific position regarding the “F” rating. It was argued that the “F” is relative and dependent on the standards being examined, and that Hawai‘i is generally moving in the right direction (“F means total failure. There is much that we need to improve, but we are not 100% failing.”)

- Summary of comments
  - Both groups agreed that public water fluoridation and the limited role/scope of dental hygienists contribute to Hawai‘i’s rating.
  - Some participants underscored the pockets of positive progress being made across the State. Examples included:
    - Surveillance programs.
    - Oral health coverage among low-income youth.
• More children with Medicaid coming for check-ups.
  ▪ High provider-to-population ratios, though providers are “just not in the right places.”
  ▪ Sealant programs have increased and expanded.
  ▪ Many outreach programs, though of course more would be helpful.
  
  o Challenges discussed:
    ▪ Individual factors
      • Families not bringing their children to the dentist early enough (e.g., not bringing their child until five years old).
      • Low “dental IQ.”
      • Issues with food/diet (e.g., sugary beverages).
      • Dentists giving out mixed information.
      • Dentists very protective over their roles and autonomy.
      • Cultural issues.
    ▪ Cost and access
      • Lack of oral health coverage for low-income adults.
      • High cost of living.
      • Lack of access to oral health services among rural, low-income, and neighbor island populations.
      • Higher immigrant population – not just risk factors, but also takes arrivals a while to get connected to a dentist.
    ▪ Infrastructure
      • Absence of a statewide oral health coalition, and lack of comprehensive/innovative plan (“Hawai‘i doesn’t have its act together”).
      • Lack of dental division.
      • Lack of dental school.
      • Hawai‘i always in “crisis mode,” as opposed to prevention.
      • Lack of media coverage/promotion.

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The Hawai‘i State Department of Health (HSDOH) responded to the Pew Center’s findings with their 2015 report, “Hawai‘i oral health: Key findings,” which included potential strategies on improving overall oral health in the State. Based on HSDOH’s response, as well as the Pew Center’s reports, 10 recommendations have been proposed for discussion [list provided to participants].

• Which recommendations are your organization ENGAGING IN NOW?

Examining the current landscape surrounding oral health, all but one organization indicated they are currently engaged in at least one recommendation. The most common activities discussed were outreach/awareness, provision of direct services (some with emphasis on low income communities), and collaboration.

• General oral health awareness
  o Educating students in local schools, especially starting at very young ages (e.g., basics like brushing, flossing, going to the dentist).
  o Providing translated materials for immigrant populations.
  o Promoting dental care among pregnant women through developed videos and educational material.
  o Outreach to senior/kupuna groups.

• Direct services and/or efforts to increase access:
  o Outreach programs such as mobile clinics.
  o Co-locating services, for example at community health centers or WIC offices.
  o Sealant programs (“sealants work!”).
  o Utilizing interpreters.
  o Use of tele-dentistry.
  o Fluoride varnish.
Specific to low income communities:
- Direct services in low income communities.
- Sliding scale for low income, homeless, etc.

Infrastructure and collaboration
- Importance of hygienists, assistants, etc., especially for outreach and community engagement.
- Participating in available surveillance activities.
- Partnerships with relevant professional organizations – e.g., pediatricians, nurse practitioners, midwives, etc.
- Maintaining connection to existing networks/taskforces, despite not being a “formal” state coalition.
- At the table for the State’s SIM Plan.

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### Topic #3

The Hawai‘i State Department of Health (HSDOH) responded to the Pew Center’s findings with their 2015 report, “Hawai‘i oral health: Key findings,” which included potential strategies on improving overall oral health in the State. Based on HSDOH’s response, as well as the Pew Center’s reports, 10 recommendations have been proposed for discussion [list provided to participants].

- **Where have you seen the MOST progress over the last five years in Hawai‘i?**
- **Where have you seen the LEAST progress over the last five years in Hawai‘i?**
- **Which would HELP make the GREATEST progress, if it were to be prioritized?**

When asked where respondents have seen the most progress in Hawai‘i over the last five years, 10 stated “none,” or “not aware” of any positive progress for the State. Of those who commented, promotion of oral-health among low-income populations, primarily around youth, was a recurrent response. Participants also discussed the increase of school-based oral health programs, such as school-based surveillance.

- **Education**
  - Organizations like HDS are raising awareness, but doesn’t apply to those with Medicaid or those without insurance.
  - Providing information during prenatal care.

- **Specific programs**
  - Surveillance programs/pockets, including this and DOH’s recent studies.
  - School-based programs, including sealants and co-location of dental clinics at schools.
  - Programs that are trying to address specific barriers to access, such as transportation.
  - Tele-dentistry.

- **Collaboration**
  - After state funding was cut, community-based clinics/partners have “stepped up and picked up the burden.”

Interviewees were also asked where they have seen the least progress in Hawai‘i over the last five years. Lack of Medicaid oral health coverage for adults and expansion of oral health provider reimbursements were the top responses. Lack of legislative support and funding were noted as contributing factors. Inadequate reimbursements for those serving low-income populations dissuade providers from taking in these patients. Tele-dentistry was also mentioned as making little progress. However, this could be due to a lack of general knowledge and awareness around tele-dentistry itself.

- **Awareness/education**
  - Need to increase awareness at younger age.
  - Need to outreach to parents, as they often refuse or put it off. For them, it’s not a priority.
  - Professional organizations need to help promote oral health (e.g., APA, ACOG).

- **Specific programs**
  - “State lacks surveillance and data to support any sort of programs.”
  - School programs, including sealant programs, disappeared once funding lost.
  - Tele-dentistry.

- **Cost/reimbursement issues**
  - Decimation of oral health funding.
o “Medicaid reimbursements are just too low.”
  o Lack of preventative oral health coverage for low-income adults obstruct progress from being made.
  o Lack of public health/prevention perspective – a lot of money is spent to take care of emergency and after-the-fact issues.

- Policies
  o Lack of any formal coordination and organization of oral health across the state is a hindrance to making progress. The former taskforce came up with priority areas, many of which went nowhere.
  o Lack of legislative support for oral health. Not a state priority.
  o Water fluoridation.
  o Need for expansion of hygienist’s roles.

Finally, respondents were asked which recommendation would help make the greatest progress, if it were to be prioritized. The majority agreed that expanding coverage for adult Medicaid patients, as well as increasing provider reimbursements would have the greatest impact. In general, it is believed that low-income populations suffer from most from oral health inadequacy and subsequent health sequelae, thus reducing the financial barrier would have a significant pay-off. However, many respondents felt that these recommendations are not very feasible due to the current political climate and low “oral health IQ.” Promotion of more oral health awareness campaigns was felt to be a feasible recommendation. This would be valuable among the general public, political figures, and various providers as well.

- Awareness and education
  o “We need to lead by example. Right now, the culture is telling people that oral health is not important, and seeing the dentist is optional (if you can afford it).”
  o Push for prevention – “We can fix the acute problem, but what is important is what you do every day, the prevention, the daily cleaning of the teeth.”
  o “Need a whole family approach.”

- Specific programs
  o Statewide oral health surveillance system – “We found out people were collecting their own data. We didn’t know if it was collected properly. It is really hard to get funding unless you have that kind of data.”
  o Sealants – “the programs worked well, when they were actually being used.”
  o Fluoride – supplements, varnish programs.
  o Tele-dentistry.

- Cost/reimbursement issues
  o Expanding coverage and increasing reimbursements – “Even though politics is a huge barrier, we’re the closest we’ve ever been.”
  o “Need help mobilizing funding for these recommendations.”

- Policies
  o Expand the DOH dental division, and have a dental director.
  o State commitment.
  o “Lack of leadership. There needs to be more than just awareness.”
  o Fluoride – “Biggest impact would be fluoride in the water. Next best is fluoride supplements, especially for the kids.”

- Collaboration
  o “Too much turf protection,”
  o Use of hygienists – e.g., already putting in extra work to go into the community, they’re the ones doing outreach to schools.
Do you have any NEW recommendations that are not included in the list?

In addition to identifying current progress of recommendations and their potential, respondents were asked for additional suggestions not listed. The most common recommendation was public water fluoridation and fluoride varnishing programs. Many reported substantial evidence and success of fluoride initiatives in other states. Others recommended starting interventions earlier with children and during prenatal care, which would require more collaboration with primary care providers, organizations such as the Department of Education, and public and private services. Furthermore, participants would like to see the re-establishment of an oral health coalition to help coordinate efforts to improve oral health across Hawai'i.

- **Awareness/education**
  - Promote oral health as priority, for both adults and children (“cultural change”).
  - Importance of nutrition, and addressing food deserts (i.e., communities with limited access to healthy foods).
  - Identifying and focusing on specific populations:
    - Advocacy for the most vulnerable adults – e.g., those with developmental and intellectual disabilities, severe disease or cancer.
    - Immigrant communities.
    - Homeless.

- **Specific programs**
  - Surveillance and data collection.
  - Other forms of fluoride – sealants, varnish, supplements.
  - Co-location and integration
    - Dental/mobile vans.
    - Integrating oral health within other programs, such as WIC.
    - Continue to work on integrating medical and dental care, and promote overall healthcare.
    - Arrange for “warm hand-off” from pediatrician/OB-GYN/home visits to dentist.
  - Assistance with transportation, to help reduce individual-level barriers.

- **Policy**
  - Compensate organizations that do provide services to low income/sliding scale patients.
  - Expansion of dental hygienists (e.g., varnish, sealants, education) – very cost-effective.
  - Make it a school requirement.
  - Re-establish dental division.
  - Fluoridation – “we’ve tried it so many times, but we can’t ignore it,” “it’s fundamental, and evidence shows it works.”
Lastly, interviewees were asked to identify their current collaborative networks, as well as partners they would like to connect with in the future. Responses (see table below) have been grouped into insurers (e.g., HDS), government agencies (e.g., Department of Health), healthcare providers, non-profit and community-based organizations, membership organizations (e.g., HDA), and training programs. Collaborative efforts are working to increase access to communities, education, and oral health services. School-based partnerships were often school specific, and not with the Department of Education as a whole. Many would like to see the Department of Health play a larger leadership role, and help to prioritize oral health in the State, increase financial support, and re-establish a formal coalition.

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>EXAMPLES OF CURRENT COLLABORATORS</th>
<th>EXAMPLES OF NEW/DESIRED COLLABORATIONS</th>
</tr>
</thead>
</table>
| Insurers                        | • Hawai‘i Dental Service  
• Medicaid/Quest                                                                                      | • Medicaid/Quest                                                                                     |
| Government Agencies             | • Department of Education  
• Department of Health (e.g., WIC, maternal child)  
• Department of Human Services (e.g., MedQuest, Hawai‘i Youth Correctional Facility)  
• University of Hawai‘i, including the John A. Burns School of Medicine  
• SIM Workgroup, Governor’s oral health working group  
• Health Resource Services Administration (HRSA – federal funder)        | • Department of Health, including Developmental Disabilities Division  
• Military  
• Department of Education – specific schools, including health academies |
| Healthcare Providers            | • Hawai‘i Primary Care Association (community health centers)  
• Kapi‘olani Medical Center for Women and Children  
• Specific/individual providers – dentists, hygienists, primary care providers | • Hawai‘i Primary Care Association (community health centers)  
• Treatment facilities – e.g., Salvation Army  
• Queen’s Medical Center  
• Shriner’s Hospital  
• Specific/individual providers – dentists, hygienists, primary care providers |
| Non-Profit/Community Organizations | • Queen Lili‘uokalani Children’s Center  
• Head Start  
• Homeless programs                                                                                           | • Domestic violence programs (e.g., Domestic Violence Action Center)  
• Goodwill  
• Special Olympics                                                                                               |
| Membership Organizations        | • Hawai‘i Dental Association  
• American Academy of Pediatrics, Hawai‘i Chapter  
• Hawai‘i Academy of Pediatric Dentistry  
• Board of Dental Examiners  
• American College of Nurse Midwives  
• National Organization of Nurse Practitioners  
• American Congress of Obstetricians and Gynecologists                                                               | • Hawai‘i Dental Association                                                                 |
| Training Programs               | • University of Hawai‘i Dental Hygiene School  
• Lutheran Residency Program                                                                                   | • Kapi‘olani Community College – dental assistant program  
• Other universities – to see their models of education and integration                                            |
To conclude, most of those interviewed were optimistic regarding the current direction of the State’s oral health landscape. They felt that oral health was heading in a positive direction and gradually improving, though more must definitely be done. Many were grateful for the opportunity to share their thoughts and are hopeful to see change in the coming future. All of the following are direct quotes from the interviews and focus groups.

- **Education**
  - "We believe that the gap area that most impacts oral health outcomes in Hawai‘i is, clearly, one of educating the public of the value of regular dental care. Ongoing public education promoting oral health as the best, most cost-effective way to maintain good overall health should be the top priority for future action."
  - "Incentivize the patient to promote good behavior."

- **Collaboration**
  - **Leadership**
    - “There needs to be leadership.”
    - “DOH is in the best position to lead oral health.”
  - **Prioritization**
    - “There’s a lot to do, but oral health isn’t prioritized in Hawai‘i.”
    - “Work on prevention early, priority above all else.”
  - **Up-and-coming leaders**
    - “Need younger leadership with more recent training and innovative ideas.”
    - “Older dentists are holding all the power and won’t let go.”
  - **Specific partnerships**
    - “Native Hawaiian Healthcare System.”
    - “Invite the Board of Water Supply, to revisit the water fluoridation issue.”
    - “Look into the past Oral Health Taskforce, from Hawai‘i Primary Care Association’s reports.”

- **Systems and policy issues**
  - **Systems issues**
    - “There needs to be a systems-level changes.”
    - “Communication between DOH and DHS and insurers like HDS.”
    - “The long standing oral health issues have been well-known for decades and have gone unaddressed in a substantive way.”
    - “Hawai‘i had an outstanding oral health surveillance program that was destroyed in 2009. Without an objective and skilled public health science infrastructure, State agencies will continue to flounder in this area.”
  - **Specific policies**
    - “No-show rates are a problem because the dentist may have to pay out of pocket. If you start a procedure with lab fees, but the patient doesn’t come back, the cost of the lab fee is to be paid by the dentists and can’t be reimbursed unless all visits completed. So it’s a disincentive to start work on a patient who will not follow through.”

- **Other comments**
  - “I feel bad about the ‘F’ grade because it doesn’t truly represent what was going on at the time, like government cuts and turnover of duties.”
  - “I’m very happy to hear more people are raising the issue of oral health in Hawai‘i.”
  - “Glad this is being done because it’s needed.”
  - “I was very excited to be part of this interview process because I think it is important to gather this information and really get a feel for what people’s views are. In order to move forward, you need to have that baseline assessment.”
Summary of Quantitative Data
A total of 293 surveys were completed. Of those, 229 (78%) were completed via paper-pencil surveys, and 64 (22%) were completed via the web-based version in Survey Monkey.

– Sample Description –

The following is a summary of the participants for Phase 2 (quantitative) of the assessment.

<table>
<thead>
<tr>
<th>How would you categorize your organization (select all that apply)? [Q1]</th>
<th>What is your official title/position (select all that apply)? [Q4]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Response</strong></td>
<td><strong>Frequency (n = 291)</strong></td>
</tr>
<tr>
<td>Health center</td>
<td>29</td>
</tr>
<tr>
<td>Hospital</td>
<td>5</td>
</tr>
<tr>
<td>Private practice</td>
<td>253</td>
</tr>
<tr>
<td>Government</td>
<td>1</td>
</tr>
<tr>
<td>Non-profit</td>
<td>11</td>
</tr>
<tr>
<td>CBO</td>
<td>12</td>
</tr>
<tr>
<td>Faith-based</td>
<td>0</td>
</tr>
<tr>
<td>Insurance</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
</tr>
</tbody>
</table>

What is the zip code of your primary location? [Q2]
(zip codes have been categorized by island/ geographic area)

<table>
<thead>
<tr>
<th><strong>Response</strong></th>
<th><strong>Frequency (%) (n = 286)</strong></th>
<th><strong>Response</strong></th>
<th><strong>Frequency (%) (n = 39)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hawai‘i Island</td>
<td>29 (10.1%)</td>
<td>Hawai‘i Island</td>
<td>8 (20.5%)</td>
</tr>
<tr>
<td>Kaua‘i</td>
<td>14 (4.9%)</td>
<td>Kaua‘i</td>
<td>1 (2.6%)</td>
</tr>
<tr>
<td>Maui County (including Maui, Lāna‘i, Moloka‘i)</td>
<td>38 (13.3%)</td>
<td>Maui County (including Maui, Lāna‘i, Moloka‘i)</td>
<td>8 (20.5%)</td>
</tr>
<tr>
<td>O‘ahu – Honolulu area</td>
<td>134 (46.9%)</td>
<td>O‘ahu – Honolulu area</td>
<td>12 (30.8%)</td>
</tr>
<tr>
<td>O‘ahu – outside of Honolulu</td>
<td>71 (24.8%)</td>
<td>O‘ahu – outside of Honolulu</td>
<td>25 (64.1%)</td>
</tr>
</tbody>
</table>
### How many years have you been working in oral healthcare? [Q11]

**AVERAGE = 24 years**

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency (%) (n = 288)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5 years</td>
<td>31 (10.8%)</td>
</tr>
<tr>
<td>6-10 years</td>
<td>30 (10.4%)</td>
</tr>
<tr>
<td>11-20 years</td>
<td>41 (14.2%)</td>
</tr>
<tr>
<td>21-30 years</td>
<td>101 (35.1%)</td>
</tr>
<tr>
<td>31-40 years</td>
<td>62 (21.5%)</td>
</tr>
<tr>
<td>&gt; 40 years</td>
<td>23 (8.0%)</td>
</tr>
</tbody>
</table>

### How many years have you been working in your current position? [Q12]

**AVERAGE = 21 years**

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency (%) (n = 289)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5 years</td>
<td>64 (22.1%)</td>
</tr>
<tr>
<td>6-10 years</td>
<td>30 (10.4%)</td>
</tr>
<tr>
<td>11-20 years</td>
<td>40 (13.8%)</td>
</tr>
<tr>
<td>21-30 years</td>
<td>82 (28.4%)</td>
</tr>
<tr>
<td>31-40 years</td>
<td>55 (19.0%)</td>
</tr>
<tr>
<td>&gt; 40 years</td>
<td>18 (6.2%)</td>
</tr>
</tbody>
</table>

### Have you practiced dentistry outside of Hawai’i? [Q13]

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency (%) (n = 287)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>108 (37.6%)</td>
</tr>
<tr>
<td>No</td>
<td>179 (62.4%)</td>
</tr>
</tbody>
</table>

- Elsewhere in the US = 84
- Through US Military = 11
- Outside of the US = 16

### ORGANIZATIONAL CHARACTERISTICS

Each year, approximately how many patients/clients does your organization serve? [Q5]

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency (%) (n = 289)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 25</td>
<td>1 (0.4%)</td>
</tr>
<tr>
<td>26 to 50</td>
<td>1 (0.4%)</td>
</tr>
<tr>
<td>51 to 100</td>
<td>6 (2.1%)</td>
</tr>
<tr>
<td>101 to 300</td>
<td>11 (3.8%)</td>
</tr>
<tr>
<td>More than 300</td>
<td>264 (91.4%)</td>
</tr>
<tr>
<td>Don’t know</td>
<td>5 (1.7%)</td>
</tr>
<tr>
<td>Not applicable</td>
<td>1 (0.4%)</td>
</tr>
</tbody>
</table>
### What dental service(s) do/does your organization provide (select all that apply)? [Q6]

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restorative</td>
<td>265 (90.4%)</td>
</tr>
<tr>
<td>Emergency</td>
<td>278 (94.9%)</td>
</tr>
<tr>
<td>Preventative</td>
<td>266 (90.8%)</td>
</tr>
<tr>
<td>Cosmetic</td>
<td>218 (74.4%)</td>
</tr>
<tr>
<td>Not applicable</td>
<td>4 (1.4%)</td>
</tr>
</tbody>
</table>

### Which island(s) do your patients/clients come from (select all that apply)? [Q7]

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>O‘ahu</td>
<td>213 (75.5%)</td>
</tr>
<tr>
<td>Hawai‘i Island</td>
<td>95 (33.7%)</td>
</tr>
<tr>
<td>Maui</td>
<td>72 (25.5%)</td>
</tr>
<tr>
<td>Lāna‘i</td>
<td>35 (12.4%)</td>
</tr>
<tr>
<td>Moloka‘i</td>
<td>31 (11.0%)</td>
</tr>
<tr>
<td>Kaua‘i</td>
<td>59 (20.9%)</td>
</tr>
</tbody>
</table>

### What age group(s) does your organization serve/outreach to (select all that apply)? [Q8]

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 18 years</td>
<td>274 (94.2%)</td>
</tr>
<tr>
<td>19 to 45 years</td>
<td>269 (92.4%)</td>
</tr>
<tr>
<td>46 to 64 years</td>
<td>267 (91.8%)</td>
</tr>
<tr>
<td>65 years and older</td>
<td>265 (91.1%)</td>
</tr>
</tbody>
</table>
Approximately what percentage of your patients/clients have the following types of insurance? [Q9]

<table>
<thead>
<tr>
<th>Response</th>
<th># seeing patients with this type of insurance (n = 262)</th>
<th>Average proportion of patients in organization with this type of insurance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private (e.g., HDS)</td>
<td>256</td>
<td>63.2%</td>
</tr>
<tr>
<td>Public – Medicaid/Quest</td>
<td>115</td>
<td>33.2%</td>
</tr>
<tr>
<td>Public – Tricare</td>
<td>145</td>
<td>11.3%</td>
</tr>
<tr>
<td>None (i.e., services provided free/“pro-bono”)</td>
<td>67</td>
<td>8.7%</td>
</tr>
<tr>
<td>Other (e.g., cash, out-of-pocket)</td>
<td>64</td>
<td>17.7%</td>
</tr>
</tbody>
</table>

Are any of your organization’s programs culturally-based or culturally-adapted? [Q10]

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency (%) (n = 283)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>30 (10.6%)</td>
</tr>
<tr>
<td>No</td>
<td>174 (61.5%)</td>
</tr>
<tr>
<td>Not Sure</td>
<td>62 (21.9%)</td>
</tr>
<tr>
<td>Not Applicable</td>
<td>17 (6.0)</td>
</tr>
</tbody>
</table>

Comments (summarized):
- Inclusion of language/translation services – 12 comments
  - We provide culturally appropriate services to accommodate needs such as language interpreters.
  - Multilingual translation on site.
  - Bilingual programs and information for the public and patients.
  - Community health workers able to translate languages and bridge cultures. We have community programs, informational items, and looping videos in various languages.
  - Specific languages mentioned:
    - Japanese (4), Cantonese, Filipino, French, Spanish
- Service/outreach to a specific group – 11 comments
  - Specific ethnic groups mentioned:
    - Native Hawaiians/Native Hawaiian programming (6)
    - Filipinos
    - Korean immigrants
    - Patients from the pacific basin
  - Other groups
    - Low or no income
    - Baby boomers
    - None are culturally-based per se, just “local Hawaii culture”
- General comments on inclusive/holistic services – 4 comments
  - We pride ourselves in preventative care for our patients, and also specialize in acute care for diabetes and other diseases. We have a medicinal garden with natural healing plants (Hawaiian, Filipino, Japanese). This gives our patients an idea and visual on how they can practice natural healing, as well as come to our facility for treatments.
  - We inspire and connect navigators and healers in every family for physical, mental, and spiritual health. Our vision is to re-establish the cultural norm where every ohana recognizes a special family member who possesses special knowledge of and interest in providing care to other members of the family. In keeping with this vision, we provide education, capacity-building, facilitation of lifestyle changes, and access to health care for all clients. We encourage families to participate, and thus build resources within each family.
  - We try to accommodate all cultures.
  - We offer holistic services where we treat the person, not just the mouth. People are more amenable to natural treatment, and we can provide most clients with what they need in a holistic way.
The Hawai‘i State Department of Health (HSDOH) responded to the Pew Center’s findings with their 2015 report, “Hawai‘i oral health: Key findings,” which included potential strategies on improving overall oral health in the State. Based on HSDOH’s response, as well as the Pew Center’s reports, the following 10 recommendations have been proposed for discussion.

Please refer to this list when answering the next set of questions.

1. Surveillance systems that include information on oral health
2. School and community-based sealant programs
3. School-based oral health programs ASIDE from sealant programs
4. Oral health awareness campaigns
5. Promotion of oral health among low-income populations
6. Expansion of Medicaid oral health coverage for adults
7. Expansion of oral health provider reimbursements (e.g., “incentives”)
8. Addressing individual-level barriers to obtaining dental care
9. Promotion of dental care among pregnant women
10. Use of tele-dentistry

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency (n = 124)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – surveillance</td>
<td>47</td>
</tr>
<tr>
<td>2 – sealant programs</td>
<td>68</td>
</tr>
<tr>
<td>3 – school-based programs (aside from sealants)</td>
<td>34</td>
</tr>
<tr>
<td>4 – awareness campaigns</td>
<td>78</td>
</tr>
<tr>
<td>5 – oral health among low-income populations</td>
<td>64</td>
</tr>
<tr>
<td>6 – Medicaid coverage</td>
<td>22</td>
</tr>
<tr>
<td>7 – provider reimbursements</td>
<td>41</td>
</tr>
<tr>
<td>8 – individual-level barriers</td>
<td>44</td>
</tr>
<tr>
<td>9 – oral health among pregnant women</td>
<td>78</td>
</tr>
<tr>
<td>10 – tele-dentistry</td>
<td>9</td>
</tr>
</tbody>
</table>

Of the participants, 124 indicated they engage in at least one of the ten areas, and 169 did not report engaging in any.
Comments (summarized):

- "None" or "not applicable" – 9 comments
- Individual activities – 3 comments
  - Private practice.
  - Local "health care for people with diabetes" lecture series. "Oral Health for People with Diabetes" is subset of presentation.
  - Volunteer in Kalihi.
- Specific programs – 5 comments
  - We have a Fluoride program, where children seeing their Pediatrician can receive Fluoride at the time of their visit.
  - Recommend sealants for adolescent patients.
  - We provide sealants and oral health education in our office.
  - Applying for a grant to establish a pilot school-based sealant program on the island of Maui.
  - Integration of oral health into WIC Program.
- Comment regarding fluoridation – 4 comments
  - Your list is incomplete without community fluoridation.
  - The best solution for Hawaii is one that avoids any effort on the patient's part – fluoridation. This has always been the easiest, most cost effective solution, but there is no political will to carry it out. Why does fluoride work everywhere except Hawaii?
  - We see many patients from the military, and the caries rate difference between kids who have fluoridated water and non is striking. Community based fluoridation programs are needed, especially in areas with high percentages of low-income individuals.
  - Year ago, as a young man I lived in another country that does not have fluoridation. Our OB/GYN physician recommended a fluoride tablet along with pre-natal vitamins during my wife's pregnancy. Our son never had a tooth cavity or a broken bone! Maybe offering fluoride to pregnant women should be discussed.
Of these recommendations, where have you seen the MOST progress over the last five years in Hawai‘i? [Q15]

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – surveillance</td>
<td>17 (11.9%)</td>
</tr>
<tr>
<td>2 – sealant programs</td>
<td>14 (9.8%)</td>
</tr>
<tr>
<td>3 – school-based programs (aside from sealants)</td>
<td>14 (9.8%)</td>
</tr>
<tr>
<td>4 – awareness campaigns</td>
<td>50 (35.0%)</td>
</tr>
<tr>
<td>5 – oral health among low-income populations</td>
<td>16 (11.2%)</td>
</tr>
<tr>
<td>6 – Medicaid coverage</td>
<td>8 (5.6%)</td>
</tr>
<tr>
<td>7 – provider reimbursements</td>
<td>10 (7.0%)</td>
</tr>
<tr>
<td>8 – individual-level barriers</td>
<td>6 (4.2%)</td>
</tr>
<tr>
<td>9 – oral health among pregnant women</td>
<td>5 (3.5%)</td>
</tr>
<tr>
<td>10 – tele-dentistry</td>
<td>3 (2.1%)</td>
</tr>
</tbody>
</table>

Comments (summarized):
- Felt that no progress seen – 14 comments
  - “None” (5)
  - Other comments
    - Don’t believe the State has done anything other than eliminate/destroy.
    - None really, and State just de-funded public clinics.
    - Haven’t noticed any.
    - Haven’t seen progress.
    - I have seen very little change.
    - None, other than self-generated.
    - I can’t say that I have seen much progress in any of these areas.
    - None, the State says it has no money to expand these projects.
    - I’m not sure if there has been progress in the past year. Given the Pew report, the dental health needs are still not being met. I believe this has to do with government funding and government support. Oral health is still secondary and not really viewed as a priority in health status of patients.
- Unsure – 10 comments
  - Don’t know/not sure (5)
  - Felt they could not comment
    - Difficult to comment as a specialty provider.
    - Only worked in Hawaii for 2 years.
    - Never knew of any of these programs.
    - Not qualified to answer.
    - Unable to know.
- Other needs – 4 comments
  - We need all these and more
  - You have increase the type of procedures but not increase fees.
  - Expansion into Chinese community and satellite locations.
  - I am a Medicaid provider, but am considering dropping out as my business cannot survive because of low-reimbursements.
Of these recommendations, where have you seen the LEAST progress over the last five years in Hawai‘i? [Q16]

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency (%) (n = 158)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – surveillance</td>
<td>13 (8.2%)</td>
</tr>
<tr>
<td>2 – sealant programs</td>
<td>11 (7.0%)</td>
</tr>
<tr>
<td>3 – school-based programs (aside from sealants)</td>
<td>12 (7.6%)</td>
</tr>
<tr>
<td>4 – awareness campaigns</td>
<td>12 (7.6%)</td>
</tr>
<tr>
<td>5 – oral health among low-income populations</td>
<td>22 (13.9%)</td>
</tr>
<tr>
<td>6 – Medicaid coverage</td>
<td>27 (17.1%)</td>
</tr>
<tr>
<td>7 – provider reimbursements</td>
<td>37 (23.4%)</td>
</tr>
<tr>
<td>8 – individual-level barriers</td>
<td>2 (1.3%)</td>
</tr>
<tr>
<td>9 – oral health among pregnant women</td>
<td>2 (1.3%)</td>
</tr>
<tr>
<td>10 – tele-dentistry</td>
<td>20 (12.7%)</td>
</tr>
</tbody>
</table>

Comments (summarized):
- Don’t know – 7 comments
  - “I have not put much focus on these areas lately.”
- All areas lacking – 5 comments
- Specific areas – 3 comments
  - Dental fees are extremely stagnant, not keeping up with inflation and wage increases.
  - We have only one hygienist here for the entire island.
  - We haven't decreased dental decay.
<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Not at all Important</th>
<th>Slightly Important</th>
<th>Fairly Important</th>
<th>Very Important</th>
<th>Not at all Feasible</th>
<th>Slightly Feasible</th>
<th>Fairly Feasible</th>
<th>Very Feasible</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – surveillance (n = 183/n = 178)</td>
<td>16 (8.7%)</td>
<td>44 (24.0%)</td>
<td>76 (41.5%)</td>
<td>45 (24.6%)</td>
<td>16 (9.0%)</td>
<td>49 (27.5%)</td>
<td>65 (36.5%)</td>
<td>44 (24.7%)</td>
</tr>
<tr>
<td>2 – sealant programs (n = 191/n = 185)</td>
<td>5 (2.6%)</td>
<td>38 (19.9%)</td>
<td>68 (35.6%)</td>
<td>78 (40.8%)</td>
<td>15 (8.1%)</td>
<td>50 (27.0%)</td>
<td>54 (29.2%)</td>
<td>63 (34.1%)</td>
</tr>
<tr>
<td>3 – school-based programs (aside from sealants) (n = 190/n = 184)</td>
<td>6 (3.2%)</td>
<td>27 (14.2%)</td>
<td>59 (31.1%)</td>
<td>97 (51.1%)</td>
<td>5 (2.7%)</td>
<td>45 (24.5%)</td>
<td>67 (36.4%)</td>
<td>64 (34.8%)</td>
</tr>
<tr>
<td>4 – awareness campaigns (n = 193/n = 188)</td>
<td>2 (1.0%)</td>
<td>13 (6.7%)</td>
<td>55 (28.5%)</td>
<td>122 (63.2%)</td>
<td>2 (1.1%)</td>
<td>2 (1.1%)</td>
<td>50 (26.6%)</td>
<td>111 (59.0%)</td>
</tr>
<tr>
<td>5 – oral health among low-income populations (n = 192/n = 188)</td>
<td>4 (2.1%)</td>
<td>13 (6.8%)</td>
<td>66 (34.4%)</td>
<td>108 (56.3%)</td>
<td>5 (2.7%)</td>
<td>55 (29.3%)</td>
<td>70 (37.2%)</td>
<td>56 (29.8%)</td>
</tr>
<tr>
<td>6 – Medicaid coverage (n = 191/n = 187)</td>
<td>8 (4.2%)</td>
<td>34 (17.8%)</td>
<td>48 (25.1%)</td>
<td>100 (52.4%)</td>
<td>14 (7.5%)</td>
<td>75 (40.1%)</td>
<td>58 (31.0%)</td>
<td>35 (18.7%)</td>
</tr>
<tr>
<td>7 – provider reimbursements (n = 194/n = 185)</td>
<td>6 (3.1%)</td>
<td>20 (10.3%)</td>
<td>32 (16.5%)</td>
<td>135 (69.6%)</td>
<td>10 (5.4%)</td>
<td>69 (37.3%)</td>
<td>45 (24.3%)</td>
<td>59 (31.2%)</td>
</tr>
<tr>
<td>8 – individual-level barriers (n = 187/n = 180)</td>
<td>5 (2.7%)</td>
<td>34 (18.2%)</td>
<td>77 (41.2%)</td>
<td>67 (35.8%)</td>
<td>6 (3.3%)</td>
<td>61 (33.9%)</td>
<td>74 (41.1%)</td>
<td>36 (20%)</td>
</tr>
<tr>
<td>9 – oral health among pregnant women (n = 190/n = 183)</td>
<td>1 (0.5%)</td>
<td>44 (23.2%)</td>
<td>74 (39.0%)</td>
<td>68 (35.8%)</td>
<td>4 (2.2%)</td>
<td>34 (18.6%)</td>
<td>73 (39.9%)</td>
<td>70 (38.3%)</td>
</tr>
<tr>
<td>10 – tele-dentistry (n = 115/n = 148)</td>
<td>50 (28.1%)</td>
<td>60 (33.7%)</td>
<td>48 (27.0%)</td>
<td>17 (9.6%)</td>
<td>33 (22.3%)</td>
<td>41 (27.7%)</td>
<td>42 (28.4%)</td>
<td>32 (21.6%)</td>
</tr>
</tbody>
</table>

Please rank EACH of the recommendations in their IMPORTANCE to the oral health of Hawai'i in the next five years. [Q17]

Please rank EACH of the recommendations in their FEASIBILITY to implement in Hawai'i in the next five years. [Q18]
Participants were then asked to provide feedback on the following additional/potential issues and recommendations.

In your opinion, what factors are contributing to poor oral health in Hawai‘i (select ALL that apply)? [Q19]

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poverty</td>
<td>182 (73.1%)</td>
</tr>
<tr>
<td>Tobacco use</td>
<td>101 (40.6%)</td>
</tr>
<tr>
<td>Inadequate insurance coverage</td>
<td>173 (69.5%)</td>
</tr>
<tr>
<td>Low provider-to-population ratios</td>
<td>33 (13.3%)</td>
</tr>
<tr>
<td>Fear or dislike of dental care</td>
<td>189 (75.9%)</td>
</tr>
<tr>
<td>Time away from work/school</td>
<td>83 (33.3%)</td>
</tr>
<tr>
<td>Geographic/transportation barriers</td>
<td>30 (12.0%)</td>
</tr>
<tr>
<td>Lack of oral health awareness</td>
<td>185 (74.3%)</td>
</tr>
<tr>
<td>Language barriers</td>
<td>52 (20.9%)</td>
</tr>
<tr>
<td>Cultural/social barriers</td>
<td>77 (30.9%)</td>
</tr>
</tbody>
</table>

Comments (summarized):
- Awareness/education – 24 comments
  - General comments = 4
    - Educating people about the importance of oral hygiene and its effects on overall wellbeing will help people take their oral health seriously.
    - Lack of education and prevention.
    - Lack of education greatly contributes to poor oral health in Hawaii.
    - Uneducated population.
  - Increasing sense of individual responsibility/priority = 11
    - Culture of low individual self-responsibility.
    - Don’t care about oral health.
    - Can’t put the effort to brush and floss.
    - People don’t value their teeth.
    - Poor oral hygiene due to laziness.
    - Patients don’t care.
    - Patients’ priorities.
    - Lack of motivation.
    - Importance not placed on oral health, at least in the patients I’ve seen.
    - Low appreciation.
    - Patients fail to see the value in preventative care or comprehensive care, rather than just dealing with emergencies when they occur.
  - Connection between oral health and diet = 4
    - Awareness among youth and younger populations of sugar and energy drinks with harmful effects.
    - Carbohydrates (rice, pasta, breads) that stick to the teeth and cause decay.
- Fruit punch.
- Poor eating habits due to lack of nutritional knowledge.
  o Other topics/populations = 5
    - Effects of drugs/substance use (2)
    - Parents (2)
    - Micronesian community
- Policy/systems issues – 22 comments
  o Fluoridation = 13
    - Fluoridated water (12)
    - Anti-fluoride groups.
  o Cost/reimbursements (i.e., Medicaid/Quest) = 5
    - Cost of care.
    - Money.
    - Inadequate Quest reimbursement, lack of participating dentists
    - Low Medicaid provider-to-population ratio due to the inadequate reimbursement rate that Medicaid offers.
  o Other comments = 4
    - Elected officials.
    - Failure of insurance companies and legislators to accept responsibility for the poor state of oral health in Hawaii…not individual dentists.
    - Lack of hygienists.
    - Lack of specialty providers.
In your opinion, what is the ONE BIGGEST barrier to obtaining dental care and/or having adequate dental health in Hawai’i (select only ONE)? [Q20]

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poverty</td>
<td>38 (15.9%)</td>
</tr>
<tr>
<td>Tobacco use</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Inadequate insurance coverage</td>
<td>84 (35.2%)</td>
</tr>
<tr>
<td>Low provider-to-population ratios</td>
<td>3 (1.3%)</td>
</tr>
<tr>
<td>Fear or dislike of dental care</td>
<td>38 (15.9%)</td>
</tr>
<tr>
<td>Time away from work/school</td>
<td>8 (3.4%)</td>
</tr>
<tr>
<td>Geographic/transportation barriers</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Lack of oral health awareness</td>
<td>46 (19.3%)</td>
</tr>
<tr>
<td>Language barriers</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Cultural/social barriers</td>
<td>3 (1.3%)</td>
</tr>
</tbody>
</table>

Comments (summarized):
- Awareness/education – 11 comments
  - Increasing sense of individual responsibility/priority (9)
    - Apathy.
    - No cultural value of dental health (people rather spend money on iphones).
    - Lazy parents.
    - Lack of personal responsibility in all states.
    - People don't value their teeth enough.
    - People make the choice not to, or don't make it a priority.
    - Patients don't care.
    - Patient’s priorities.
    - Lack of individual's value for dental health.
  - Diet (1)
    - Use of soda/acidic drinks.
  - Programs (1)
    - Lack of dental hygiene programs in elementary schools.
- Policy/systems issues – 8 comments
  - Cost issues (5)
    - Money (4)
    - Yes, you do have some great, low-priced insurance. But that $35 can buy a can of baby formula. State insurance doesn't even offer adults dental care. They are forced to research on their own, and pay extra for it. They can't research if they have a baby crying and all the money is going to the rent, gas, food, and diapers. Honestly, a lot of low income adults just let their teeth rot. I think this should be a concern.
  - Other comments (4)
    - Lack of community water fluoridation
    - Elected officials
    - Government
    - Lack of specialty par providers
Please review the following additional strategies, and rank the IMPORTANCE of each in improving oral health in Hawai‘i.

<table>
<thead>
<tr>
<th>Strategy Description</th>
<th>Not at all Important</th>
<th>Slightly Important</th>
<th>Fairly Important</th>
<th>Very Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Expanding roles of existing providers (e.g., greater dental hygienist autonomy)</td>
<td>95 (40.8%)</td>
<td>69 (29.6%)</td>
<td>40 (17.2%)</td>
<td>26 (11.2%)</td>
</tr>
<tr>
<td>b) Creation of new types of providers (e.g., dental therapists, dental health aids)</td>
<td>127 (54.7%)</td>
<td>64 (27.6%)</td>
<td>24 (10.3%)</td>
<td>14 (6.0%)</td>
</tr>
<tr>
<td>c) Expansion of insurance coverage</td>
<td>10 (4.3%)</td>
<td>23 (9.9%)</td>
<td>59 (25.4%)</td>
<td>137 (59.1%)</td>
</tr>
<tr>
<td>d) Educational loans/scholarships for providers who practice in rural/under-served areas</td>
<td>19 (8.3%)</td>
<td>62 (27.0%)</td>
<td>85 (37.0%)</td>
<td>60 (26.1%)</td>
</tr>
<tr>
<td>e) Recruitment of providers from rural/under-served areas</td>
<td>28 (12.1%)</td>
<td>64 (27.7%)</td>
<td>89 (38.5%)</td>
<td>47 (20.4%)</td>
</tr>
<tr>
<td>f) Increasing education/screening/prevention programs</td>
<td>7 (3.0%)</td>
<td>30 (12.7%)</td>
<td>70 (29.5%)</td>
<td>128 (54.0%)</td>
</tr>
<tr>
<td>g) Water fluoridation</td>
<td>12 (5.1%)</td>
<td>23 (9.7%)</td>
<td>44 (18.6%)</td>
<td>156 (65.8%)</td>
</tr>
</tbody>
</table>

Please rank the FEASIBILITY of implementing each of these additional strategies.

<table>
<thead>
<tr>
<th>Strategy Description</th>
<th>Not at all Feasible</th>
<th>Slightly Feasible</th>
<th>Fairly Feasible</th>
<th>Very Feasible</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Expanding roles of existing providers (e.g., greater dental hygienist autonomy)</td>
<td>77 (34.2%)</td>
<td>81 (36.0%)</td>
<td>40 (17.8%)</td>
<td>23 (10.2%)</td>
</tr>
<tr>
<td>b) Creation of new types of providers (e.g., dental therapists, dental health aids)</td>
<td>102 (45.3%)</td>
<td>71 (31.6%)</td>
<td>30 (13.3%)</td>
<td>17 (7.6%)</td>
</tr>
<tr>
<td>c) Expansion of insurance coverage</td>
<td>20 (8.9%)</td>
<td>70 (31.1%)</td>
<td>64 (28.4%)</td>
<td>66 (29.3%)</td>
</tr>
<tr>
<td>d) Educational loans/scholarships for providers who practice in rural/under-served areas</td>
<td>22 (9.8%)</td>
<td>80 (35.7%)</td>
<td>69 (30.8%)</td>
<td>47 (21.0%)</td>
</tr>
<tr>
<td>e) Recruitment of providers from rural/under-served areas</td>
<td>25 (11.1%)</td>
<td>85 (37.8%)</td>
<td>78 (34.7%)</td>
<td>33 (14.7%)</td>
</tr>
<tr>
<td>f) Increasing education/screening/prevention programs</td>
<td>8 (3.5%)</td>
<td>46 (20.2%)</td>
<td>80 (35.1%)</td>
<td>91 (39.9%)</td>
</tr>
<tr>
<td>g) Water fluoridation</td>
<td>35 (15.3%)</td>
<td>60 (26.2%)</td>
<td>43 (18.8%)</td>
<td>88 (38.4%)</td>
</tr>
</tbody>
</table>

29
Finally, participants were asked several miscellaneous questions regarding their perceptions of oral health and oral health services in Hawaii, as well as their relationship with other health providers/stakeholders.

### In your opinion, ORAL HEALTH in Hawai‘i is _______ than other US states. [Q23]

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency (%) (n = 251)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Much better</td>
<td>3 (1.2%)</td>
</tr>
<tr>
<td>Better</td>
<td>15 (6.0%)</td>
</tr>
<tr>
<td>Comparable</td>
<td>99 (39.4%)</td>
</tr>
<tr>
<td>Worse</td>
<td>93 (37.1%)</td>
</tr>
<tr>
<td>Much worse</td>
<td>41 (16.3%)</td>
</tr>
</tbody>
</table>

### In your opinion, oral health SERVICES in Hawai‘i are _______ than other US states. [Q24]

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency (%) (n = 241)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Much better</td>
<td>9 (3.7%)</td>
</tr>
<tr>
<td>Better</td>
<td>33 (13.7%)</td>
</tr>
<tr>
<td>Comparable</td>
<td>140 (58.1%)</td>
</tr>
<tr>
<td>Worse</td>
<td>50 (20.8%)</td>
</tr>
<tr>
<td>Much worse</td>
<td>9 (3.7%)</td>
</tr>
</tbody>
</table>
Please rate your relationship with the following types of providers/organizations: [Q25]

<table>
<thead>
<tr>
<th></th>
<th>Collaborative</th>
<th>Neutral</th>
<th>Negative</th>
<th>No Professional Relationship</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internists/Family Practitioners (n = 246)</td>
<td>135 (54.9%)</td>
<td>69 (28.1%)</td>
<td>2 (0.8%)</td>
<td>25 (10.2%)</td>
<td>9 (3.7%)</td>
</tr>
<tr>
<td>OB-GYNs (n = 245)</td>
<td>76 (31.0%)</td>
<td>77 (31.4%)</td>
<td>3 (1.2%)</td>
<td>57 (23.27%)</td>
<td>26 (10.6%)</td>
</tr>
<tr>
<td>Pediatricians (n = 241)</td>
<td>112 (46.5%)</td>
<td>76 (31.5%)</td>
<td>3 (1.2%)</td>
<td>33 (13.7%)</td>
<td>14 (5.8%)</td>
</tr>
<tr>
<td>Dentists (n = 247)</td>
<td>225 (91.1%)</td>
<td>18 (7.3%)</td>
<td>1 (0.4%)</td>
<td>0 (0%)</td>
<td>3 (1.2%)</td>
</tr>
<tr>
<td>Dental Hygienists (n = 248)</td>
<td>197 (79.4%)</td>
<td>34 (13.7%)</td>
<td>4 (1.6%)</td>
<td>3 (1.2%)</td>
<td>6 (2.4%)</td>
</tr>
<tr>
<td>Insurance Providers (n = 241)</td>
<td>108 (44.8%)</td>
<td>77 (32.0%)</td>
<td>40 (16.6%)</td>
<td>3 (1.2%)</td>
<td>2 (0.8%)</td>
</tr>
</tbody>
</table>

Please feel free to leave any additional comments. [Q28]

- **Awareness/education – 10 comments**
  - General comments = 3
    - Oral health awareness is key!
    - Raising public dental awareness is one of the quickest and effective ways to improve oral health among Hawaiian residents.
    - After practicing 20+ years in Hawaii, I have not seen an overall improvement to the caries rate in the children here. Although I feel fluoridation would be very beneficial, I feel education is the most important way to break the cycle of poor oral habits/hygiene that are passed from generation to generation.
  - Schools = 3
    - Educate, educate, educate parents and students at least once per year.
    - I feel working with our teachers to create dental education lessons that can be reinforced from grade to grade can pay long-term dividends.
    - Reinstate dental check-ups before entering kindergarten.
  - Specific topics = 4
    - Diet (2)
      - The public needs motivation to change their diet.
      - Address prevention/education through kids’ diet. Educate parents that sugary drinks (e.g., soda, juice, Gatorade) and candy (e.g. “all natural: fruit rolls) increase potential for decay.
    - Sense of priority (2)
      - Poor oral health in Hawaii is not due to lack of providers. We don’t need dental therapists, etc. Hawaii has the highest per capita number of dentists in the country. Individual value for dental care commitment is at the root. Even patients with good healthcare benefits do not use them.
      - People don’t respect their bodies. A cigarette or beer is more important than oral care!

- **Specific programs – 2 comments**
  - Prior to opening my new clinic, I did some work with a “tooth bus dental clinic.” This was a successful operation for several years. Unfortunately, this is now closed due to lack of funding and administrative direction.
  - I worked on a mobile van as a volunteer, and also started a WIC Program, and am well aware of access to care issues.

- **Policy/systems level – 25 comments**
  - Funding/costs/reimbursement = 11
    - Dental fees in Hawaii should be comparable to US mainland counterparts. Oral health in Hawaii is worse than any other state due to limited insurance coverage, and more dentists/providers are frustrated due to very low fees. Plus, insurance companies make it hard for dental offices to get reimbursed for services that have been done already. So many requirements for minimum fees...not worth it.
    - We have two dental service programs – clinic and dental under sedation. All services are
targeted to those pediatric patients without a dental resource, including insured patients 
without dental insurance.

- Private dentists will follow financial incentives. If you want more providers in an area, 
  incentivize it with money. Basic economics.
- Review the Medicaid system.
- I believe Oahu has one of highest provider-to-patient ratios. Medicaid/Medicare 
  reimbursement is so low that it does not make “business sense” to treat them. Many two-
  income multiple job families are trying making ends meet, so only Saturday appointments are 
  feasible. Nobody is going to work in underserved areas if they have >$400K in tuition to pay 
  off.
- How can medical providers survive with these unfair reimbursements?
- Raising dental fees (comparable to other states), given the high living expenses in Hawaii, 
  would result in positive net effects like reducing emergency dental visits and related costs to 
  the State.
- Increase reimbursement rates so that more providers will care for patients on Quest or 
  Medicaid.
- Neighbor island dentists taking Medicaid get a step-up fee but Oahu does not.
- The business world of traditional dentistry is under constant attack, and probably will be 
  irreversibly changed by economics + insurance pressures in 10 years. Helping the 
  underserved will be easier as there are less dentist practices to deal with. Dental corporations 
  will prevail.
- Insurance providers and their coverages strongly influence what kind of care patients receive. 
  So many times, “If it is not a covered benefit, don't need it.”

- Fluoridation = 9
  - Fluoridate the water. (2)
  - Fluoride is important, and children should have emphasis.
  - Hawaii legislature blocks water fluoridation for this State. It’s not worth the time to lobby for it, 
    but it would help those who do not help themselves have stronger teeth.
  - Water fluoridation would have a huge impact on oral health. It’s the biggest factor when 
    comparing us to the states with better oral health.
  - Working and treating patients in a state where the water is fluoridated, and in Honolulu, I have 
    seen a night and day difference between the caries rate in each city. Fluoridated water is a 
    “game changer.”
  - If you want to improve overall oral health in Hawaii, try putting fluoride in the water (although it 
    probably won't pass since we've been trying since I've been in practice for 30 years). The kids 
    I've seen in dental school never had as much "bombed out" teeth as the children in Hawaii, 
    even with the same diet.
  - The value of community water fluoridation is the least expensive and most cost-effective 
    method to dramatically improve oral health (reduce tooth decay) in Hawaii. The data are 
    overwhelming.
  - Non-fluoridated communities and highest cavity rates – these are related and no one seems to 
    care.

- Other policies = 5
  - Hygienists (role expansion, more of them) (2)
    - Expanded duties for assistants would be the most important way to have greater allies 
      for patients.
    - Hawaii has highest dentist-to-population ratio in the US, but we do not have enough 
      hygienists. I am a dentist 20 hours a week, and do hygiene the other 20 hours a week.
  - Others (3)
    - I personally believe you should start to cover more composites and get rid of 
      amalgams. I know you can't see it in the back, but it contains mercury. You let this go 
      in our children's mouth because it is more cosmetic, or saves someone money. It is a 
      health concern. Start to cover more of the composites, and I think your revenue would 
      increase.
    - I would like to see the results of these surveys. I think there are a lot of willing dentists, 
      hygienists, and other volunteers that would help in free dental care events with the 
      State's help and legal protection.
    - Consider restricting purchase of sugary foods with food stamps.
Discussion and Recommendations

A multi-level, public health approach is recommended to effectively address complex community-wide topics such as oral health. This type of approach takes into account the multiple levels of influence on a person’s behaviors and resulting health outcomes. In addition to individual-level attitudes and behaviors, there are many relational, structural, environmental, and policy-level factors which influence a person’s oral health outcomes, including social determinants of health (e.g., economics, social networks, housing, culture, etc.).

Framing of Recommendations

The social ecological model (SEM; see diagram) is a tool that helps to frame and understand the multitude of factors that influence a particular health topic/behavior, and organize subsequent multi-level interventions (Bronfenbrenner, 1979; WHO, 2002). While many health programs and interventions are implemented at the individual level (e.g., provider to patient, on a one-to-one basis), the SEM acknowledges that a person does not exist in isolation. People are influenced by their relationships, the organizations and communities they belong to, the places where they live/work/play, and the societal forces that surround all of us (e.g., policies, social norms, cultural values, media, etc.). All of the programs and approaches discussed in this study contribute to oral health for Hawai‘i’s communities; however, it is only with a strategically planned effort to better guide our collective movement that a coordinated, integrated, and comprehensive approach to oral health and wellness is possible.

A proposed logic model is also presented (see appendix) as one method of organizing and guiding the various activities (current and proposed) supported by the Hawai‘i Dental Service and Hawai‘i Dental Service Foundation. Logic models are both planning and evaluation tools, as they help to map existing (or needed) resources, activities, and short- and long-term outcomes, in addition to showing the complex and interactive relationships among these components. Resources are the assumptions underlying a program and the necessary infrastructure for implementation. Activities are the actual programs and interventions that are implemented and evaluated, and for this study, have been organized according to the levels of the SEM. Short-term outcomes are those immediate “outputs,” our immediate results, that are expected through implementation of the activities. Long-term outcomes refer to the eventual/intended effects of cumulative activities (mediated by the intermediary outcomes). Contextual conditions refer to concepts such as culture, rurality, and socioeconomic conditions. While these may not be controllable, they must still be considered as planning and implementation take place.

Key Concepts in Changing Behaviors and Patterns

A key tenet of public health is the development of strategies to change the patterns and behaviors of individuals and organizations. However, the development, implementation, and evaluation of such strategies are associated with a multitude of challenges. Considerations may include cultural/personal attitudes and beliefs, mixed and/or “competing” messages (e.g., sales pitches through the media for unhealthy foods), and social determinants of health (i.e., employment and work status, early life conditions/events, stress, social exclusion/support, addiction, food availability/choices, and transportation). In addition, health behavior change is different from traditional health promotion and education. Promotion and education can increase awareness and help enable people to adopt new behaviors. Health behavior change encompasses all of these tasks, but also incorporates: 1) one’s personal behaviors, expectations, motives, values, and perceptions; 2) maintenance of the behavior change over time; and 3) how the change helps to maintain, restore, and improve overall health (Glanz, Rimer, & Viswanath, 2015).
Public health interventions are varied. They may take place in a variety of settings, such as schools, clinics, workplaces, within homes/families, in communities, or even via media outlets (including social media). They may target one or a combination of the levels of the social ecological model (discussed above), including policy interventions. They may also address one or more of the three levels of prevention: 1) primary prevention aims to avert the occurrence/onset of a condition/event; 2) secondary prevention aims to identify and treat issues early (e.g., routine screening for conditions, early intervention); and 3) tertiary prevention aims to reduce the impact of a particular illness/condition. Finally, interventions may target large communities or even the general public (i.e., universal programming), or they may target specific audiences (e.g., grouped by race/ethnicity, age group, occupation, risk status, community, etc.).

Behavior change theories and models are useful when designing, implementing, and evaluating interventions. Not only can these tools provide guidance at all stages of the process, but they also bring research- and evidence-based concepts that have been shown to contribute to attitude, intention, and behavior changes. Of course, it is important to build in evaluation processes when incorporating any theory or model, to ensure adequacy of fit to the target community/population as well as intervention effectiveness. While there are a multitude of behavior change theories and models that have been proposed and tested through public health research, a few key concepts that may be most applicable for the recommendations in this report are described below.

Individual and Interpersonal Considerations:

- The earliest and most basic assumptions of individual health behavior change come from the Health Belief Model (HBM) (Hochbaum, 1958; Rosenstock, 1960; Sugg-Skinner, Tiro, & Champion, 2015). It posits that in individual must feel some type of “threat” to their health/safety, and this must be combined with:
  - Perceived benefits – one’s individual beliefs, both medical and social, regarding effectiveness of available treatments/interventions to address an illness/condition.
  - Perceived barriers – one’s individual beliefs regarding the potential negative aspects (“costs”) of a behavior change/action.
  - Self-efficacy – confidence in one’s ability to take action on an issue/threat, and overcome potential barriers to the proposed change.

- Readiness to change – even though an individual may understand that a proposed change could bring about positive outcomes, the person may not be ready to implement the change at that particular time. Therefore, it may be important to consider a person’s level of readiness, and tailor their intervention to where they are at. The transteoretical model (TTM) posits five stages of individual behavior change (Prochaska, Redding, & Evers, 2015):
  - Pre-contemplation – no intention to change – may not be aware of the issue, or may have tried to change in the past and had a negative experience.
  - Contemplation – has intention to change, but not immediately – has some awareness, but also hesitant due to possible drawbacks/challenges, therefore may have some ambivalence.
  - Preparation – ready to make the change soon – the person may have some plan of action and/or already taken some steps to change.
  - Action – in the process of making the change.
  - Maintenance – made the change (generally, more than six months ago) – success associated with increasing confidence in sustaining the changing, and/or working to prevent relapse to old behaviors.

- Social support – generally, social support encompasses the assistance a person receives from others. By definition, social support is intended to be helpful, consciously provided, and given in the context where the individual has the right to make his/her choice in the end (Holt-Lunstad & Uchino, 2015).
Social support may take different forms, including emotional (empathy, love, trust), instrumental (tangible aid/service), informational (advice/suggestions to address problems), or appraisal (constructive feedback, affirmation).

Some public health interventions target social networks, due to the major leverage points that are associated with such groups/communities. For example:

- Companionship – many benefits are gained simply by sharing leisure or other activities with one’s social network.
- Social influence – the idea that thoughts and actions may be changed by others within the social network. However, negative feedback/criticism may also be shared – this is sometimes known as “social undermining.” Therefore, it is important to understand a group’s dynamics and leverage points, in order to most effectively implement an intervention.
- Social capital – a group’s collective capacity, strengths, norms of reciprocity, and social trust.

Organizational and Community Considerations:

- Organizational/community readiness
  - Just as with individual readiness, an organization or community may be viewed as a larger system with varying degrees of readiness. At this level, readiness is generally defined as shared commitment/resolve for collective action.
  - Assessing and addressing organizational/community readiness is important for several reasons:
    - Appropriate readiness may impact the likelihood of successful program implementation and outcomes.
    - It helps to initiate a change process, and also differentiates what the group is ready for – action versus change.
    - There are times that organizational changes may be “forced” (e.g., shifts in environment, research, leadership, structure/systems, etc.). Readiness assessment can help to increase buy-in and decrease fear/resentment in these types of processes.

- Strategies for interventions at the organizational/community level:
  - Community building – stresses community assets and shared identity; not necessarily task-oriented.
  - Community organizing – process by which groups are helped to identify collective issues/goals, mobilize resources, and develop/implement strategies.
  - Empowerment – process of enabling, to take control over their lives and environments.

Final Recommendations

Based on this study’s findings, recommendations for action are proposed. It is important to note that the study participants, and therefore the resulting findings, reflect the overall statewide landscape and larger oral healthcare systems. However, the recommendations presented in this report specify actions that the Hawai‘i Dental Service may consider with respect to its role within the larger landscape. Recommendations have been categorized and presented under three major areas:

- Recommendation #1 – community awareness.
- Recommendation #2 – professional/organizational awareness.
- Recommendation #3 – coordination and integration.
RECOMMENDATION #1

Enhance community awareness, capacity, and prioritization of oral health promotion.

Aside from structural and policy issues, the most frequently-discussed strategy by study participants was the continued enhancement of awareness and capacity around oral health, as well encouraging the prioritization of oral health among both patients and professionals. Recommendation #1 addresses awareness among the general public, as well as the purposeful use of data to identify specific sub-groups that may warrant additional focus.

Objective 1a – pursue framing and branding of a universal oral health message that may be adopted by oral health providers/partners statewide.

- Rationale: As always, one of the most important stakeholder groups in any public health strategy are our consumers and communities. There are multiple oral health promotion messages that have emerged from a variety of Hawai’i-based agencies and projects, though the majority have been directed at specific populations. In addition, it is not uncommon for an individual consumer to receive varying messages from different sources (e.g., dentist, physician, insurance provider, family, media, etc.). Therefore, resources may be directed to the systematic development of a universal oral health promotion message (or set of messages), and also the framing and branding of those messages.
  - “Message framing” (see Centers for Disease Control and Prevention [CDC], 2010) can help connect people to a public health issue by establishing new associations with the topic area. Framing helps to address common communication challenges when disseminating a message to the public – e.g., lack of understanding the scope of the issue, low levels of perceived relevance or connection to the topic, enduring beliefs about the issue and/or treatment modalities, etc. This process makes the issue meaningful for the consumer by framing the topic in a way that allows for increase in perceived value and priority of the issue.
- Possible action items include:
  - Activity 1ai – Collaboration with an organization with expertise in public health message development, including the implementation of qualitative methods (e.g., focus groups with both consumers and providers to assess message meaning and relevance) for message development and testing.
  - Activity 1aii – Collaboration with an organization (may be the same group as above) with expertise in message framing and branding, including the development of graphics and dissemination items.

Objective 1b – pursue in-depth analysis of oral health surveillance data, including insurance data housed within HDS, to help identify specific consumer groups that may warrant targeted messages and outreach strategies.

- Rationale: Both national and local reports have emphasized the importance of bolstering oral health surveillance systems. Data and surveillance were also discussed at length by our study participants. While pockets of surveillance and data collection continue, there is a need for more a comprehensive data system that is population-based and follows standardized collection/management protocols. It has been widely recommended that public health evidence should always be incorporated in the selection and implementation of programs, policies, and evaluation plans (Brownson, Gurney & Land, 1999). For example, data and evidence permeate all four steps of CDC’s public health approach to prevention: 1) Describe the problem and perform surveillance; 2) Identify causes and risk/protective factors; 3) Develop, implement, and evaluate prevention strategies, and 4) Disseminate and ensure widespread adoption (Mercy, Rosenberg, Powell, Broome, & Roper, 1993). In addition, surveillance data should be analyzed and translated into recommendations that can inform decision-making. For example, new sub-populations of consumers may be identified that warrant greater attention and outreach. Therefore, action is recommended to increase the robustness of Hawai’i’s oral health surveillance systems, as well as rigorous collection and analysis of those data.
Possible action items include:

- Activity 1bi – Collaboration with an organization to conduct a detailed inventory of existing oral health databases in Hawai‘i (e.g., Hawai‘i Dental Service and other insurance carriers, Department of Health, Department of Human Services, Department of Education, community health centers, hospitals. This would include ascertaining where the data are housed, what variables/data points are collected, frequency of collection, quality of data, and required processes for data access.
- Activity 1bii – Collaboration with an organization (may be the same group as above) to prioritize surveillance databases, facilitate access to the prioritized sources, and conduct data cleaning/analysis to help identify new priority populations and strategies.
- Activity 1biii – Collaboration with appropriate partner/community organizations to develop and disseminate targeted messages to identified groups. While certain groups have already been identified through this assessment (e.g., Native Hawaiian communities, Micronesian communities, pregnant women, those with developmental and/or intellectual disabilities, those with chronic diseases and cancers), formal data analysis can serve to confirm these findings, as well as identify other sub-groups that may still be missing (e.g., by age group, community, etc.).

RECOMMENDATION #2

Enhance professional and organizational awareness, capacity, and prioritization of oral health promotion.

In addition to continuing to bolster community awareness, specific professional groups and organizations can be identified and prioritized as messengers and agents of change. Through this study, the following groups/organizations were emphasized for outreach: primary care practitioners (e.g., pediatrics, obstetrics/gynecology, etc.), dental hygienists and assistants, and K-12 educators.

Objective 2a – formalize collaborations with primary care colleagues, including pediatricians and obstetricians/gynecologists (OB/GYNs), to design and implement targeted communication tools and strategies for their respective professional groups specific to oral health.

- Rationale: Primary care providers are valuable gatekeepers for public health information. Thus, formal collaboration with local professional groups can facilitate the dissemination of oral health education to their respective patient populations. However, it is widely acknowledged that these providers are saddled with the responsibility of educating their patients on a wide variety of health issues, all within a very limited period of interaction. Giving the provider groups ownership of the development of communication products and strategies may help to increase adoption among their respective networks. Such collaboration can also foster a larger and more robust advocacy network for oral health systems and policy change.
- Possible action items include:
  - Activity 2ai – Collaboration with pediatric professional groups to develop an oral health communication plan – e.g., creation of educational materials, strategically disseminate that information, and work with providers on strategies to integrate oral health education/screening in their practices. Messages for parents may include education about the importance of a healthy diet, and its impact on oral health.
  - Activity 2aii – Collaboration with OB/GYNs’ professional group to develop an oral health communication plan – e.g., creation of educational materials, strategically disseminate that information, and work with providers on strategies to integrate oral health education/screening in their practices.

Objective 2b – formalize collaborations with dental hygienists and assistants, to increase visibility and capacity of these professional groups, and create a more defined and prominent role in the oral health system.

- Rationale: dental hygienists and assistants play a critical role in our oral healthcare system, but their role is not always acknowledged as frequently as dentists. It is quite common for hygienists and
assistants to be “on the front line” in the community, directly communicating with and educating individuals and families. As such, communities may be more likely to accept information and adhere to instructions if the messages are delivered by individuals in these roles. In addition, hygienists and assistants have less frequent opportunities for continuing education, capacity-building, program design/development, and advocacy. Therefore, support for these allied disciplines is important to strengthen their engagement in oral healthcare network, thus having positive effects on the larger oral health system.

- Possible action items include:
  - Activity 2bi – Collaboration with dental hygiene/assistant training programs to create a direct venue to support students and foster innovative ideas/strategies (e.g., student awareness/outreach projects, internship experiences, etc.).
  - Activity 2bii – Collaboration with local dental hygienist/assistant professional groups to strengthen their connection to and visibility within the oral health community, including as community/policy advocates.

Objective 2c – formalize collaborations with K-12 education institutions (e.g., Hawai‘i State Department of Education [DOE]), to increase awareness and capacity among those educators so they may more strategically and comprehensively promote oral health within school settings.

- Rationale: Schools in general are ideal locations for youth programs and interventions (Cortina et al., 2008). Housing an intervention within a school increases access for all students, thereby promoting equity for all. The school also possesses the already-existing infrastructure of the physical grounds and trained personnel. Specifically, schools continue to be important settings to convey oral health promotion information. While oral health education has been ongoing in select schools and complex areas, there is no standardized curriculum/material that has been developed and evaluated. Some study participants indicated that they were already engaging in school-based oral health education, or would be happy to do so, but would find great utility in a prepared and organized “toolkit.” Also, for large-scale dissemination and sustainability purposes, it would be important to ensure that school-based staff are trained to administer such a curriculum (i.e., a “train-the-trainer” model).

- Possible action items include:
  - Activity 2ci – Collaboration with an organization (and also the Hawai‘i State Department of Education) to develop or adapt an oral health curriculum targeted for school settings, that may be implemented by teachers, health aides, and other school-based staff. The curriculum should be age-appropriate, and may include a parent/community component that would serve to educate and engage families as well as children.
  - Activity 2cii – Collaboration with an organization (may be the same as above) to pilot test (with evaluation) and disseminate the developed curriculum, train teachers/staff to administer, provide technical assistance to those administering the curriculum, and conduct ongoing process and outcomes evaluation.

**RECOMMENDATION #3**

*Coordinate and integrate oral health promotion efforts, and lead statewide action that includes all pertinent stakeholders.*

Ultimately, the strongest overall sentiment from both qualitative and quantitative results expressed the desire for continued collaborations, including a coordinated statewide effort. Participants understood that larger issues, such as policy and systems changes, could not occur without the coalescing and unification of stakeholders.

**Objective 3a – continue to encourage co-location of oral health screening/prevention programs and services, and disseminate resulting evaluation data to promote translation of promising practices to a larger scale.**

- Rationale: Despite the various contributions and tireless effort of oral health providers around the State, many individual and family barriers remain that prevent people from seeing an oral health provider. Some of these barriers may include fear, competing priorities, inability to take time off of work/school,
and lack of transportation. Co-location and integration of services is becoming a popular remedy for some of these challenges, for oral health as well as other healthcare services, with the ultimate goal of increasing access for all members of the community.

- Possible action items include:
  - Activity 3ai – Formalize and enforce the need for process and outcomes evaluation of existing pilot programs that co-locate oral health services – e.g., at schools, community health centers, WIC programs, mobile clinics, tele-dentistry, etc. This should include some type of standardization of which data points should be collected, and at what frequency.
  - Activity 3aii – Collaborate with an organization to collect, organize, analyze, and translate the above evaluation data to glean specific promising practices – which then may be used to encourage expansion of co-location/integrated programs. Such “proof-of-concept” data may also be a valuable tool in advocacy for additional programs, funding, and policy/systems changes.

Objective 3b – facilitate the reconvening and formalization of a statewide oral health collaborative, to increase communication and collaboration across stakeholder groups.

- Rationale: coordination and collaboration are basic actions needed to move any public health agenda forward, beyond individual programs and initiatives. For example, the Prevent Suicide Hawai‘i Taskforce is one model of a local public-private collaborative that has both statewide and also island/community-specific presence. Having a formalized collaborative has facilitated regular communication, sharing of successes and lessons, and increased visibility of the issue. Increased social and political capital can also motivate larger policy and systems changes.

- Possible action items include:
  - Activity 3bi – Identify one or more organizations/agencies that would spearhead coordination of the collaborative, and provide resources for staffing/support to help maintain ongoing convening and momentum. While members of these types of groups are often volunteers, having a compensated individual to take care of routine/administrative functions is very helpful in ensuring meetings and activities continue.
  - Activity 3bii – Collaborate with the collaborative to develop a type of “clearinghouse” (e.g., website) that could house program information, resources, web links, training opportunities, etc.
  - Activity 3biii – Collaborate with the collaborative to identify oral health priorities/strategies, with the long-term goal of formalizing and implementing a statewide strategic plan for the promotion of oral health.
References


Hawai‘i State Department of Health [HSDOH] (2015, August). Hawai‘i oral health: Key findings. Honolulu, HI: Family Health Services Division, Hawai‘i State Department of Health, State of Hawai‘i.


Appendices

Appendix #1: participant recruitment script

Needs and Assets Assessment of Oral Health Services in Hawai‘i

Introductory Email
(for use with both quantitative survey and qualitative interviews)

Aloha ________,

The Office of Public Health Studies at the University of Hawai‘i at Mānoa is partnering with the Hawai‘i Dental Service (HDS) to conduct a statewide needs and assets assessment on oral health services in the State. We are seeking to collect input and feedback from oral health professionals, such as yourself.

This assessment was partially prompted by Hawai‘i’s consistently low marks on oral health. For example, Hawai‘i received an “F” rating in The Pew Center’s 2011 and 2013 state-by-state assessments, meaning we had met two or fewer major benchmarks (out of eight recommendations). In response, the Hawai‘i State Department of Health (HSDOH) published their 2015 report entitled, “Hawai‘i oral health: Key Findings,” detailing potential improvement strategies.

[FOR SURVEYS ONLY] – We are seeking your help in participating in this survey to examine what is currently being done around oral healthcare in Hawai‘i, and in what areas improvements can be made. The survey will take approximately 15-20 minutes to complete, and can be accessed at the following link [insert web link here]. The link will remain open until [date]. If you are unable to access the survey online, a paper copy can be made available to you.

[FOR INTERVIEWS ONLY] – We are seeking your help in participating in an interview to discuss what is currently being done around oral healthcare in Hawai‘i, and in what areas improvements can be made. If you agree to be interviewed, I would like to coordinate a time and location which is convenient for you. The interview will take approximately 30-45 minutes. Our goal is to conduct all of our interviews sometime in April 2016.

If you have any questions, please do not hesitate let me know. Additionally, Dr. Jeanelle Sugimoto-Matsuda (Assistant Professor at the Office of Public Health Studies) is serving as the Principal Investigator of this project, and she may be reached at sugimotoj@dop.hawaii.edu.

Respectfully,
Appendix #2: demographic questionnaire administered to all interview/focus group participants.

Needs and Assets Assessment of Oral Health Services in Hawai‘i

Qualitative Interviews – Demographic Questions for Participants

1) How would you categorize your organization (check ALL that apply)?
   - Health center
   - Hospital
   - Private practice
   - Governmental agency
   - Non-profit
   - Community-based organization
   - Faith-based organization
   - Insurance provider
   - Other (please specify): _____________________

2) What is the zip code of your primary location? ___________________

3) What is your official title/position? _________________________________________________________

4) Each year, approximately how many patients/clients does your organization serve?
   - Less than 25
   - 26 to 50
   - 51 to 100
   - 101 to 300
   - More than 300
   - Don’t know
   - Not applicable for my program/organization

5) What dental service(s) do/does your organization provide (check ALL that apply)?
   - Restorative
   - Emergency
   - Preventative
   - Cosmetic
   - Not applicable for my program/organization
6) Which island(s) do your patients/clients come from (check ALL that apply)?
   - O’ahu
   - Hawai‘i Island
   - Maui
   - Lana‘i
   - Moloka‘i
   - Kaua‘i
   - Not applicable for my program/organization

7) What age group(s) does your organization serve/outreach to (check ALL that apply)?
   - 0 - 18 years
   - 19 to 45 years
   - 46 to 64 years
   - 65 years and older

8) Approximately what percentage of your patients/clients have the following types of insurance?
   - Private (e.g., HDS) = __________%
   - Public – Medicaid/Quest = __________%
   - Public – Tricare = __________%
   - None (i.e., services provided free or “pro-bono”) = __________%
   - Other (please specify: ____________________) = __________%
Appendix #3 – semi-structured interview guide for qualitative interviews/focus groups

Needs and Assets Assessment of Oral Health Services in Hawai'i
Qualitative Interviews – Semi-Structured Interview Guide

1) Hawai'i has consistently received an “F” rating from the Pew Center, which does periodic assessments of oral health statuses and services by state (e.g., Pew Center on the States, 2011; Pew Center on the States, 2013).
   a. In your opinion, what is different about oral health/healthcare in Hawai'i, compared to the rest of the US?
   b. Probes:
      i. What things are better/worse?
      ii. Is the “F” justifiable?

Recommendations Review
2) The Hawai'i State Department of Health (HSDOH) responded to the Pew Center’s findings with their 2015 report, “Hawai'i oral health: Key findings,” which included potential strategies on improving overall oral health in the State. Based on HSDOH’s response, as well as the Pew Center’s reports, the following 10 recommendations have been proposed for discussion:
   • Recommendation #1 – surveillance systems that include information on oral health
   • Recommendation #2 – school and community-based sealant programs
   • Recommendation #3 – school-based oral health programs ASIDE from sealant programs
   • Recommendation #4 – oral health awareness campaigns
   • Recommendation #5 – promotion of oral health among low-income populations
   • Recommendation #6 – expansion of Medicaid oral health coverage for adults and youth
   • Recommendation #7 – expansion of oral health provider reimbursements (e.g., “incentives”)
   • Recommendation #8 – addressing individual-level barriers to obtaining dental care
   • Recommendation #9 – promotion of dental care among pregnant women
   • Recommendation #10 – use of tele-dentistry

   a. Which recommendations are your organization ENGAGING IN NOW?

   b. Of these recommendations:
      i. Where have you seen the MOST progress over the last five years in Hawai'i?
      ii. Where have you seen the LEAST progress over the last five years in Hawai'i?
      iii. Which would HELP make the GREATEST progress, if it were to be prioritized?
         1. Probes:
            a. How feasible would it be to implement the strategies you mentioned?
            b. What potential barriers do you see in implementing the strategies you mentioned?

   c. Do you have any NEW recommendations that are not included in the list?
Additional Information

3) What professionals/organizations do you collaborate/network with to support oral healthcare?
   a. Probes:
      i. For example – dentists, dental hygienists, physicians, private dental insurance carriers, Medicare/Medicaid, oral care societies, community health centers, schools, state departments, non-profits and etc…)
      ii. Who are your strongest/weakest collaborators?
      iii. Who would like to collaborate with but don’t already?

4) Is it okay if we contact you if additional information is needed?
   a. If yes, please confirm your contact information.

5) Are there any other organizations/individuals that you feel should be included in this project?
   a. If yes, please list them and a known point of contact.

6) Any last comments?

THANK YOU FOR YOUR TIME AND THOUGHTFUL PARTICIPATION!
University of Hawai'i at Mānoa  
Office of Public Health Studies  

Consent to Participate in Research Project  
Needs and Assets Assessment of Oral Health Services in Hawai'i  

The Office of Public Health Studies, at the University of Hawai'i at Mānoa, is conducting a statewide needs and assets assessment of oral healthcare in Hawai'i. The purpose of this project is to assess the statewide landscape of oral health services, as well as identify gap areas and prioritize them for future action. We are asking you to participate because you work in or are affiliated with the oral healthcare system in Hawai'i.

Activities and Time Commitment: If you participate in this project, a member of our research team will meet with you for an interview at a location and time convenient for you. The interview will consist of 5-10 demographic and 5-10 open-ended questions. The entire interview will take 30-45 minutes. Examples of the open-ended questions include: “What are your thoughts of the recommendations (from the Hawai'i State Department of Health’s report)?,” “What action would make the greatest progress?” and “What potential barriers to do you see in implementing any of these actions?” Only you and a member of the research team will be present during the interview. We will audio-record the interview so that we can later transcribe the interview and analyze the responses. You will be one of about 20 people whom will be interviewed for this study.

Benefits and Risks: There will be no direct benefit to you for participating in this interview. The results of this project may help improve oral healthcare services in Hawai'i. We believe there is little risk to you in participating in this research project. You may become stressed or uncomfortable answering any of the interview questions or discussing topics during the interview. If you do become stressed or uncomfortable, you can skip the question or take a break. You can also stop the interview or you can withdraw from the project altogether.

Privacy and Confidentiality: We will keep all information in a safe place. Only members of our research team will have access to the information. Other agencies that have legal permission have the right to review research records. The University of Hawai'i Human Studies Program has the right to review research records for this study. After we write a copy of the interviews, we will erase or destroy the audio-recordings. When we report the results of this research project, we will not use your name. We will not use any other personal identifying information that can identify you. We will use pseudonyms (fake names) and report findings in a way that protects your privacy and confidentiality to the extent allowed by law.

Voluntary Participation: Your participation in this project is completely voluntary. You may stop participating at any time. If you stop being in the study, there will be no penalty or loss to you.

Questions: If you have any questions about this study, please call or email our Principal Investigator, Dr. Jeanelle Sugimoto-Matsuda, at (808) 692-1910 or jsugimot@hawaii.edu. If you have questions about your rights as a research participant, you may contact the UH Human Studies Program at (808) 956-5007 or uhirb@hawaii.edu.

If you consent to be in this project, please sign the signature section below and return it to any member of the research team. A copy of this form will be given to you for your records.
Signature(s) for Consent

I give permission to join the research project entitled, “Needs and Assets Assessment of Oral Health Services in Hawai‘i.”

Please initial next to either “Yes” or “No” to the following:

_____ Yes  _____ No    I consent to be audio-recorded for the interview portion of this research study.

Name of Participant (Print): ___________________________________________________

Participant’s Signature: _______________________________________________________

Signature of the Person Obtaining Consent: _____________________________________

Date: ____________________________
Appendix #5: quantitative survey

Needs and Assets Assessment of Oral Health Services in Hawai‘i
(This survey can also be completed online via the following link -
https://www.surveymonkey.com/r/57WSFK6)

The Office of Public Health Studies, at the University of Hawai‘i at Mānoa, is conducting a statewide needs and assets assessment of oral healthcare in Hawai‘i. The purpose of this project is to assess the statewide landscape of oral health services, as well as identify gap areas and prioritize them for future action. We are asking you to participate because you work in or are affiliated with the oral healthcare system in Hawai‘i.

Activities and Time Commitment: We are seeking your help in participating in this survey to examine what is currently being done around oral healthcare in Hawai‘i, and in what areas improvements can be made. The survey consists of 28 close- and open-ended questions. The entire survey will take approximately 15-20 minutes. Only members of the research team will see your responses. You will be one of about 100 people whom will take the survey.

Benefits and Risks: There will be no direct benefit to you for participating in this survey. The results of this project may help improve oral healthcare services in Hawai‘i. We believe there is little risk to you in participating in this research project. You may become stressed or uncomfortable answering any of the questions while taking the survey. If you do become stressed or uncomfortable, you can skip the question. You can also withdraw from the project altogether.

Privacy and Confidentiality: We will keep all information in a safe place. Only members of our research team will have access to the information. Other agencies that have legal permission have the right to review research records. The University of Hawai‘i Human Studies Program has the right to review research records for this study. When we report the results of this research project, we will not use your name. We will not use any other personal identifying information that can identify you. We will report findings in a way that protects your privacy and confidentiality to the extent allowed by law.

Voluntary Participation: Your participation in this project is completely voluntary. You may stop participating at any time. If you stop being in the study, there will be no penalty or loss to you.

Questions: If you have any questions about this study, please call or email our Principal Investigator, Dr. Jeanelle Sugimoto-Matsuda, at (808) 692-1910 or jsugimot@hawaii.edu. If you have questions about your rights as a research participant, you may contact the UH Human Studies Program at (808) 956-5007 or uhirb@hawaii.edu.
Section 1: Background Information

1. How would you categorize your organization (select all that apply)?
   □ Health center
   □ Hospital
   □ Private practice
   □ Government agency
   □ Non-profit
   □ Community-based organization
   □ Faith-based organization
   □ Insurance provider
   □ Other (please specify): ____________________

2. What is the zip code of your primary location? _______________

3. If your organization has satellite locations, please provide their zip codes:
   ______________________

4. What is your official title/position (select all that apply)?
   □ Dentist
   □ Dental hygienist
   □ Dental assistant
   □ Administrator
   □ Health educator
   □ Nurse
   □ Researcher
   □ Student
   □ Other (please specify): ____________________
5. Each year, approximately how many patients/clients does your organization serve?
   □ Less than 25
   □ 26 to 50
   □ 51 to 100
   □ 101 to 300
   □ More than 300
   □ Don’t know
   □ Not applicable for my program/organization

6. What dental service(s) do/does your organization provide (select all that apply)?
   □ Restorative
   □ Emergency
   □ Preventative
   □ Cosmetic
   □ Not applicable for my program/organization

7. Which island(s) do your patients/clients come from (select all that apply)?
   □ O’ahu
   □ Hawai’i Island
   □ Maui
   □ Lana’i
   □ Moloka’i
   □ Kaua’i
   □ Not applicable for my program/organization

8. What age group(s) does your organization serve/outreach to (select all that apply)?
   □ 0 to 18 years
   □ 19 to 45 years
   □ 46 to 64 years
   □ 65 years and older

9. Approximately what percentage of your patients/clients have the following types of insurance?
   □ Private (e.g., HDS)
   □ Public - Medicaid/Quest
   □ Public - Tricare
   □ None (i.e., services provided free/"pro-bono")
   □ Other (please specify): ____________________

10. Are any of your organization's programs culturally-based or culturally-adapted?
    □ Yes – please describe briefly: ____________________
        __________________________________________
        __________________________________________
        __________________________________________
        __________________________________________

    □ No
    □ Not sure
    □ Not applicable for my program/organization

11. How many years have you been working in oral healthcare? _________

12. How many years have you been working in your current position? _________

13. Have you practiced dentistry outside of Hawai’i?
    □ Yes – please list location(s): ____________________
    □ No
Section 2: Recommendations Review

The Hawai‘i State Department of Health (HSDOH) responded to the Pew Center’s findings with their 2015 report, “Hawai‘i oral health: Key findings,” which included potential strategies on improving overall oral health in the State. Based on HSDOH’s response, as well as the Pew Center’s reports, the following 10 recommendations have been proposed for discussion.

Please refer to this list when answering the next set of questions.

11. Surveillance systems that include information on oral health
12. School and community-based sealant programs
13. School-based oral health programs ASIDE from sealant programs
14. Oral health awareness campaigns
15. Promotion of oral health among low-income populations
16. Expansion of Medicaid oral health coverage for adults
17. Expansion of oral health provider reimbursements (e.g., “incentives”)
18. Addressing individual-level barriers to obtaining dental care
19. Promotion of dental care among pregnant women
20. Use of tele-dentistry

14. Which recommendations are your organization engaging in now (select ALL that apply)?
   □ 1. Surveillance systems
   □ 2. Sealant programs
   □ 3. School-based programs (aside from sealants)
   □ 4. Awareness campaigns
   □ 5. Oral health among low-income populations
   □ 6. Expansion of Medicaid oral health coverage
   □ 7. Expansion of provider reimbursements
   □ 8. Addressing individual-level barriers
   □ 9. Oral health among pregnant women
   □ 10. Tele-dentistry

Please feel free to expand on the recommendations your organization is involved with, or describe other oral health services/activities not captured in the list above:
15. Of these recommendations, where have you seen the **MOST** progress over the last five years in Hawai‘i?
- 1. Surveillance systems
- 2. Sealant programs
- 3. School-based programs (aside from sealants)
- 4. Awareness campaigns
- 5. Oral health among low-income populations
- 6. Expansion of Medicaid oral health coverage
- 7. Expansion of provider reimbursements
- 8. Addressing individual-level barriers
- 9. Oral health among pregnant women
- 10. Tele-dentistry

Comments:

16. Of these recommendations, where have you seen the **LEAST** progress over the last five years in Hawai‘i?
- 1. Surveillance systems
- 2. Sealant programs
- 3. School-based programs (aside from sealants)
- 4. Awareness campaigns
- 5. Oral health among low-income populations
- 6. Expansion of Medicaid oral health coverage
- 7. Expansion of provider reimbursements
- 8. Addressing individual-level barriers
- 9. Oral health among pregnant women
- 10. Tele-dentistry

Comments:

17. Please rank EACH of the recommendations in their **IMPORTANCE** to the oral health of Hawai‘i in the next five years.

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Not at all Important</th>
<th>Slightly Important</th>
<th>Fairly Important</th>
<th>Very Important</th>
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<td>Surveillance systems</td>
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<td>Sealant programs</td>
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<td>School-based programs (aside from sealants)</td>
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<td>Awareness campaigns</td>
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<td>Oral health among low-income populations</td>
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<td>Expansion of Medicaid oral health coverage</td>
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<td>Expansion of provider reimbursements</td>
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<td>Addressing individual-level barriers</td>
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<td>Oral health among pregnant women</td>
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<td>Tele-dentistry</td>
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18. Please rank EACH of the recommendations in their **FEASIBILITY** to implement in Hawai‘i in the next five years:

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Not at all Feasible</th>
<th>Slightly Feasible</th>
<th>Fairly Feasible</th>
<th>Very Feasible</th>
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<tr>
<td>Surveillance systems</td>
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<td>Sealant programs</td>
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<tr>
<td>Oral health among pregnant women</td>
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</table>
Section 3: Additional Strategies

19. In your opinion, what factors are contributing to poor oral health in Hawai‘i (select ALL that apply)?
   □ Poverty
   □ Tobacco use
   □ Inadequate insurance coverage
   □ Low provider-to-population ratios
   □ Fear or dislike of dental care
   □ Time away from work/school
   □ Geographic/transportation barriers
   □ Lack of oral health awareness
   □ Language barriers
   □ Cultural/social barriers
   □ Other (please specify): ___________________

20. In your opinion, what is the ONE BIGGEST barrier to obtaining dental care and/or having adequate dental health in Hawai‘i (select only ONE)?
   □ Poverty
   □ Tobacco use
   □ Inadequate insurance coverage
   □ Low provider-to-population ratios
   □ Fear or dislike of dental care
   □ Time away from work/school
   □ Geographic/transportation barriers
   □ Lack of oral health awareness
   □ Language barriers
   □ Cultural/social barriers
   □ Other (please specify): ___________________

21. Please review the following additional strategies, and rank the IMPORTANCE of each in improving oral health in Hawai‘i.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Not at all Important</th>
<th>Slightly Important</th>
<th>Fairly Important</th>
<th>Very Important</th>
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<tbody>
<tr>
<td>h) Expanding roles of existing providers (e.g., greater dental hygienist autonomy)</td>
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<td>i) Creation of new types of providers (e.g., dental therapists, dental health aids)</td>
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<td>j) Expansion of insurance coverage</td>
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<tr>
<td>k) Educational loans/scholarships for providers who practice in rural/under-served areas</td>
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<td>l) Recruitment of providers from rural/under-served areas</td>
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<td>m) Increasing education/screening/prevention programs</td>
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<td>n) Water fluoridation</td>
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</table>

22. Please rank the FEASIBILITY of implementing each of these additional strategies.

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<tr>
<th>Strategy</th>
<th>Not at all Feasible</th>
<th>Slightly Feasible</th>
<th>Fairly Feasible</th>
<th>Very Feasible</th>
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<tbody>
<tr>
<td>a) Expanding roles of existing providers (e.g., greater dental hygienist autonomy)</td>
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<tr>
<td>b) Creation of new types of providers (e.g., dental therapists, dental health aids)</td>
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<td>c) Expansion of insurance coverage</td>
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<td>d) Educational loans/scholarships for providers who practice in rural/under-served areas</td>
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<td>e) Recruitment of providers from rural/under-served areas</td>
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<td>f) Increasing education/screening/prevention programs</td>
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<tr>
<td>g) Water fluoridation</td>
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</table>
23. In your opinion, ORAL HEALTH in Hawai‘i is _______ than other US states.

☐ Much better
☐ Better
☐ Comparable
☐ Worse
☐ Much worse

24. In your opinion, oral health SERVICES in Hawai‘i are _______ than other US states.

☐ Much better
☐ Better
☐ Comparable
☐ Worse
☐ Much worse

25. Please rate your relationship with the following types of providers/organizations:

<table>
<thead>
<tr>
<th>Provider/Type</th>
<th>Collaborative</th>
<th>Neutral</th>
<th>Negative</th>
<th>No Professional Relationship</th>
<th>Not Applicable</th>
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</thead>
<tbody>
<tr>
<td>Internists/Family Practitioners</td>
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<td>OB-GYNs</td>
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<td>Pediatricians</td>
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<td>Dentists</td>
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<tr>
<td>Dental Hygienists</td>
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<tr>
<td>Insurance Providers</td>
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26. May we contact you for further information/clarification?

☐ Yes – please provide your contact information:
☐ No

27. Please provide names and contact information of any other individuals/organizations you believe may offer valuable insight to this project.

28. Please feel free to leave any additional comments.

Please return your completed survey, using the enclosed self-addressed stamped envelope, to the UH Office of Public Health Studies (1960 East West Road, Biomed D-104AA, Honolulu, 96822).

Thank you for your time and thoughtful participation!
Appendix #6: working logic model for activity planning and evaluation
HAWAII DENTAL SERVICE FOUNDATION – WORKING LOGIC MODEL FOR PLANNING AND EVALUATION

CONTEXTUAL CONDITIONS
(e.g., social determinants of health, socio-economic status, cultural values/beliefs, geography/rurality, language, etc.)

RESOURCES
• Hawai‘i Dental Service and Hawai‘i Dental Service Foundation
• Leadership, Board Members, internal staff
• Consumers and the general public
• Providers (dentists, hygienists, assistants, etc.)
• Community provider organizations (e.g., Aloha Medical Mission, Life Foundation, community health centers, Ke Ola Mamo, etc.)
• Other partner agencies (e.g., Hawai‘i State Department of Health, Hawai‘i Primary Care Association, University of Hawai‘i, etc.)

ACTIVITIES
Individual and Interpersonal Levels
• Continue to support expansion of direct services.
• Messaging and communication strategies to promote public awareness around oral health.
• Support targeted information and services for high-need groups, as identified by surveillance data (e.g., low SES, hospitalized, disabled, those with health challenges, etc.).

Organizational and Community Levels
• Support development of messages, best practice guidelines, and communication strategies among related professional groups (e.g., primary care, hygienists/assistants, education, etc.).
• Continue to support co-location and evaluation of oral health programs and services at strategic locations, thereby increasing service access (e.g., schools, community health centers, WIC programs, mobile clinics, tele-dentistry, etc.).

Policy/Societal Level
• Support statewide communication and collaboration (e.g., support of formalized coalition).
• Support identification of policy priorities, and mobilization of partners around advocacy activities.

SHORT-TERM GOALS
Individual and Interpersonal Levels
• ↑ availability of oral health services.
• ↑ awareness among individuals and families in the community, regarding the importance of oral health and preventative strategies.

Organizational and Community Levels
• ↑ messages and communication strategies tailored for prioritized professional groups.
• ↑ co-located services (i.e., access) for oral health screening and care.

Policy/Societal Level
• Re-establishment of statewide oral health coalition.

LONG-TERM GOALS
Individual and Interpersonal Levels
• ↑ number of individuals and families accessing any dental care.
• ↑ number of individuals and families accessing preventative care.

Organizational and Community Levels
• ↑ professional groups integrating oral health promotion in their protocols.
• ↑ accessibility of existing oral health services.

Policy/Societal Level
• Sustainability of statewide oral health coalition, including regular staffing and resources.
• Engagement in advocacy efforts to address policy-level issues such as reimbursement levels, expansion of funding, etc.

Resources
• ↑ utilization of preventative oral health services.
• Sustained collaborations, resources, and funding.
• ↑ overall oral health of Hawai‘i’s communities.