Kama’aina Dental Office

Grant Proposal

<table>
<thead>
<tr>
<th>Steve Goffar</th>
<th>Kari Nakasone</th>
<th>Kristine Osada</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="mailto:goffars001@hawaii.rr.com">goffars001@hawaii.rr.com</a></td>
<td><a href="mailto:ksnakaso@hawaii.edu">ksnakaso@hawaii.edu</a></td>
<td><a href="mailto:kmsato@hawaii.edu">kmsato@hawaii.edu</a></td>
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</tbody>
</table>

Submitted to Catherine P. Fulford, Ph.D.

in partial fulfillment of course requirements for

ETEC 600, Fall Semester 2003

University of Hawai’i at Manoa
December 9, 2003

We, the undersigned, hereby certify our equal contribution in effort to the conceptualization, information collection and analysis, and writing of this paper. We understand that we are responsible for all the contents, and we will be evaluated as a group for the total project.

_________________  __________________  ________ _________
Steve Goffar    Kari Nakasone    Kristine Osada
Abstract

The oral health of the less affluent communities on the island of Oahu continues to decline. The number of families living below the poverty line and the number of students receiving free or reduced cost lunch have steadily increased on this island over the last 25 years. A survey of these communities demonstrates that minimal dental self-care is performed in the home and the complete absence of professional dental care in the absence of an emergency.

Interviews of members of this population from the age of 6 to 60 revealed a general lack of understanding of the impact of appropriate home care on oral health, a view of professional preventive dental care as an extravagance, and limited value of oral health. These findings are in direct opposition to surveys of more affluent communities. As a result, the expense absorbed by these families with limited financial assets and in many cases by the State Health Service has risen exponentially in the last decade and the overall health of the community has declined at a similar rate.

It is the intent of this project to develop instructional materials in the languages and comprehension levels representative of the community and deliver them through mass media and, with the support of volunteer dental professionals, deliver these materials at schools, community centers, and gathering places in the hopes of improving the oral health of several generations. By providing the information and motivation to change the oral health behaviors of this traditionally underserved population, this project will result in a significant decrease in costs to participants and the already strained State Health Service and in turn improve the oral and general health of the community.
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Introduction

Preventable oral disease and dental emergencies are responsible for 75% of the annual costs associated with dental care and result in a decreased quality of life and general health in millions of Americans per year. Oral disease has an even more devastating effect on the health and welfare of Hawai’i’s poor. The population of West Oahu has a household income typically one-third of the state’s mean income and 85% of the schools in this area are eligible for Title 1 benefits. This area of Oahu’s economic health is similar to its oral health. This community has an 80% higher rate of oral disease than the rest of the population of the island and their oral disease results in extraction rather than more expensive restorative treatment in 70% of cases. It is suggested in the professional literature that 90% of these preventable dental problems could be eliminated simply by adhering to the guidelines for self care delineated by the American Dental Association (ADA).

Data from the ADA indicates that the average American performs dental hygiene practices one time daily and less than half of these times include the use of dental floss. This frequency is one third of that recommended by the ADA and it is suggested that these poor oral hygiene practices are the direct cause of the numerous dental emergency visits that flood the dental clinics on Oahu. These preventable dental emergencies are responsible for up to 75% of the $8,000 spent by Americans in lifetime dental care. A second, and more difficult to quantify, result of substandard oral self-care and preventive dental care is the decline in general health associated with stress, pain, and difficulty maintaining a healthy diet in the presence of oral disease.
While these statistics are abysmal in themselves, the rates of self care and costs are dramatically worse when the population examined is restricted to the less affluent areas of the island of Oahu. A survey of three West Oahu communities demonstrates that minimal dental self-care is performed in the home and the complete lack of professional dental care in the absence of an emergency. Interviews of this population’s members, from the age of 6 to 60, revealed a general lack of understanding of the impact of appropriate home care on oral health, a view of professional preventive dental care as an extravagance, and limited value of oral health. Changing these perceptions, to an extent that will significantly improve clinical outcomes, requires an intervention that will effectively influence the values, beliefs, and understanding of the patient as well as the importance placed in oral health by the community as a whole. Creating this sweeping behavior change will require an intervention that is wide reaching and includes mass media, intervention in schools, and places that the community gathers.

The objectives of this project are to reduce the dental emergency rate in the West Oahu community by 75%, reduce the lifetime expenditure of dental care by 75%, and increase the understanding and value of oral health as indicated by a three fold increase in reported brushing and flossing of teeth. The Hawaii chapters of the American Dental Hygiene Association (HDHA) and the ADA are in a unique position to pursue efforts to improve the oral health of the West Oahu community. Their membership is as diverse as the community and the prevalence of volunteerism in the organization provides a significant resource to capitalize on. The HDHA and ADA have a long history of efforts to improve the oral health of Hawaii’s disadvantaged and has garnered significant
charitable contributions for this effort as well as support from local businesses and government.
Project Plan

The mission of this project is to have a positive impact on the oral and general health of the West Oahu community by way of high quality motivating instruction presented at schools and community gathering places. Achievement of the mission will be determined by the successful attainment of each of the project goals: 1) improve patient knowledge of how poor oral hygiene contributes to tooth loss as well as decreased overall health; 2) increase motivation of patients to apply sufficient resources toward attainment of their oral health goals; 3) reduce dental emergencies due to poor oral health by 75%; 4) achieve patient optimal oral health; and 5) decrease the lifetime expenditure of the patient to less than $2,000.

To achieve its goals, the project team has secured a cooperative relationship with the local dental health organizations (HDA and HDHA), partnered with the local schools and community boards, and has garnered the support of the State Department of Health. The strength of these relationships and the volunteerism present in the professional organizations and the community as a whole will contribute greatly to the success of the project. Only through these relationships can an instructional effort succeed in addressing the multitude of factors that affect the decisions made by patients regarding their oral health. Figure A1 in Appendix A delineates these factors thoroughly.

This project hopes to have a significant effect on the community oral health within a two year grant funded period, and with measurable achievement of its goals with indicators of success initially apparent in the 3rd year of the project. In order to achieve these goals in the prescribed time it will be implemented in a phased manner with
establishment of milestones along the way to monitor progress. The project timeline indicates three phases; Planning and Preparation, Implementation, and Evaluation.

Phase 1: Planning and Preparation

Phase I is projected to last for four months and will consist primarily of development of materials and training. Successful completion of phase I will require the production of a trained and ready volunteer force, development of patient instructional materials in each of the 3 languages selected to be most representative of the community, development and production of a series of 3 television and radio public service announcements, and the procurement of all necessary training aides for educating community members and sample products for distribution during training events. Achievement of these milestones will require the establishment of a committee with responsibility for a single milestone each.

The Training committee will develop a training plan that incorporates the standards defined by the ADA and the community expectations. Their initial product will be a set of materials for use in volunteer training. They are secondarily responsible for the training of all volunteers during this phase. The Instructional development committee has responsibility of the development of all print materials for distribution to the community. They will have 3 subordinate development teams each responsible for ensuring the common message of the instruction is appropriately translated into each of the 3 chosen languages. The media development committee has two subordinate units, the radio team and the television team. Each is responsible for development of three thirty second public service announcements in their particular media that follow the
instructional guidelines established set forth by the project leadership. The final committee is the supply/Support committee which has the responsibility of acquiring all needed training materials and samples with the least outlay of funds. They will begin this phase of the operation by establishing relationships with product suppliers and local businesses to facilitate procurement at minimal or no cost.

This phase of the project supports the achievement of project goals one and two by way of facilitating development of materials that will increase the knowledge and motivation of community members to increase efforts that support good oral health. The establishment of these positive health behaviors will in turn result in the achievement of goals three through five over the following three years.

**Phase 2: Implementation**

At the beginning of this phase of the operation the project will have met all milestones from phase I and be in position to execute training of community members in person and through mass media. The assets available will include 80-100 trained/qualified volunteers, five thousand copies of each language specific pamphlet, four sets of three-dimensional training aids and graphic training aides, and ten thousand sets of samples for free distribution to the community. At the outset of this phase the development committees will be disbanded and reorganized into committees responsible for scheduling and marketing, with the remainder of the volunteers divided into six to eight teams of trainers. Four of the training teams will have been specially trained to conduct intervention in elementary and middle schools while the remainder will focus their efforts on adult training.
The scheduling committee will prepare a plan which ensures each West Oahu Title 1 school child in grades four through eight, with parental consent, receives a dental screening and oral health education twice per year. They will prepare this schedule in coordination with the supply committee to ensure adequate training aids and equipment are available for each scheduled event. With eight schools planned for intervention, each with two classes of each grade level it will take two days at each school per semester to complete the screening and education process. The appropriate schedule will ensure no single team or volunteer is overburdened.

In the elementary schools, the 4th grade students were targeted for the program because of the eruption of the 6 year molar. The 6 year molar indicates the first sign of the permanent teeth to erupt into the oral cavity. Once the permanent teeth are erupted, the patient will need to take good care of it because there are no replacements of the tooth once it is missing.

In the 4th grade level, there are 2 classes of 30 students. The volunteers will conduct the dental health education portion to all 60 students in a 2 hour lecture. Once the lecture is completed, 5 of the volunteers will conduct the dental screening while the other 5 volunteers will help to record the findings onto a dental screening form. Each dental screener will take 10 minutes to conduct their findings. In a 2 hour period, 12 students will be completed per screener. Therefore, in the 2 hour period, all 60 students will have been through the dental screening process.

Once the screening has been completed, the screeners will assess the findings and recommend possible solutions to the findings. For example, if a child presents with
generalized gross decay, the screeners will inform the teacher and write a letter to the parents recommending immediate treatment of the problem. This process will ensure follow-up treatment and ultimately help to reduce the incidence of dental emergencies within the dental offices.

The scheduling committee will plan for the execution of dental health education and screening to the people in the community at the community health fairs by the remaining training teams ensuring the presence of a team at each major event and a presence in the community monthly at another location. According to the local community advisory board, two health fairs are scheduled annually in each major subdivision of the community. The community health organizers estimate about 800 of the community members will be attending each event. Due to the size of these events two teams will support each health fair.

At the health fairs, four volunteers will pass out the dental survey form that was created in the planning phase to address the current knowledge and practice of the patient, five volunteers will conduct the dental screening and another five volunteers will help with recording the findings, another four volunteers will provide the appropriate dental health education as deemed necessary by the dental screeners and the last two volunteers will pass out free toothbrushes, toothpastes and dental health brochures at the end of the dental screening and education process.

While all of these activities are going on, there will be a selection of poster boards showing decayed teeth, plaque and other oral health conditions relating to poor oral health. This section ensures that if someone cannot read or does not feel comfortable
discussing their oral health with a team member, they can still understand how important it is to practice good oral health care and what the consequences are for not doing so.

Throughout the implementation phase, the medial development committee’s efforts will be realized by the regular appearance of their public service announcements (PSA) on local television and radio stations. The support garnered through the establishment of partnerships with each station has resulted in the availability of three thirty second advertising spots per day. The media committee has arranged with each station to ensure the PSAs are run during programming that draws the intended audience of each. The advertising of dental health education on television and radio will expand the impact of the project to reach those individuals that have not attended other community events as well as those that avoided the project information booths for other reasons.

Phase 3: Evaluation

Measuring successful attainment of each of the goals established for this project will require two major evaluation efforts. Goals one and two pertain to subject perception and values. The effects of our intervention on these can be measured immediately following training and screening of persons and again later to ensure long term retention of the change. The remaining goals measure changes in outcome and expense whose alteration will not be evident until the fifth anniversary of the project’s implementation. For these reasons we will be conducting a brief survey of participants following intervention during the implementation phase, and conducting a large scale
phone survey in the manner used by the ADA to conduct their national survey to collect long term data in the three months following the fifth anniversary of the project.

The survey and the dental screening forms will be sorted into categories and evaluated on the current dental health knowledge and practices of the patients surveyed. The results from the survey forms will be discussed and assessed for recommended revisions to the project.
RESOURCES

Many resources are available to implement this multi-modal oral health education project in the State of Hawaii. They include the dedication of the American Dental Hygiene Association, American Dental Association, Hawaii Dental Association, KITV, KUMU, West Oahu teachers, community members, and school facilities. Additionally, product manufacturers of dental hygiene equipment are supporters of this effort.

Each of these resource agencies are available and have signed memorandums of agreement dedicating their agencies to the development and execution of this project. Professional organizations such as the ADHA, ADA, and HDA consist of dentists and dental hygienists and each of them have affirmed their commitment to this project. These professionals will assist in screening and educating the patients on dental caries and periodontal disease. All of them are licensed and well trained to perform their duties efficiently and effectively. The Hawaiian Dental Association has a membership of three thousand and a record of active volunteerism. Thirty percent of the active membership dedicated greater than forty hours of personal time last year to Association efforts. The local television station KITV and radio station KUMU have committed to this project and agreed to provide matching resources to those of the grant for production and display of PSAs.

West Oahu community boards and each of the eight principals have agreed to assist and are committed to the project indefinitely. Classrooms will be available for screening of dental plaque and caries indices of students. Community events such as community and school fairs will be held to educate the general West Oahu population
and the State of Hawaii. Screenings will also be done by dentists and dental hygienists
during these events and each individual will be directed to appropriate stations to educate
them accordingly. All other staff members will assist in preparing, organizing and
gathering patient records and data.

The final resource that will facilitate the success of this project is the staff of the
Education Technology Department of the University of Hawaii. Their dedication to the
production of health education materials that are tailored to the needs of the underserved
populations of West Oahu has been unwavering. They have committed media
development resources and expertise as well as provided guidance in the development of
print materials that will ensure successful attainment of the instructional goals.

The ultimate success of this project is hindered by the lack of funds needed to
prepare the high quality, population specific instructional materials deemed necessary by
a needs analysis undertaken this past year and expressed in the project problem statement
(Appendix B). This analysis included a thorough analysis of the intended audience and
their requirements to facilitate learning. It was decided that effective materials would
require three distinct qualities. First, the materials must be written in a language, tone,
and educational level appropriate to the learner. Second, the materials must be
motivational and visually intensive to gain the interest of the learner. Third, they must be
written in a manner than facilitates behavior change rather than simply information
transferal. These same design implications (Appendix C) are important to consider in the
development of the mass media materials as well. Materials that meet these criteria
cannot simply be purchased off-the-shelf. They must be designed specifically for the
intended audience, tested and revised. This process is incredibly expensive even with the donation of time from content experts.

Further funding is required to purchase graphic and three-dimensional training aids to facilitate the learning of community members that do not learn effectively through print media. The use of these models has been shown to dramatically enhance the learning of school age children as well as those community members with less formal education.

Without the acquisition of funds this project will be unsuccessful in its efforts to improve the oral health of the traditionally underserved population of West Oahu. These individuals will continue to suffer from oral disease at a rate far exceeding that of the remainder of the island’s populous and they will continue to burden their families and the state with the expense associated with preventable dental emergencies.
Dissemination Plan

The program will utilize the television, radio, health fairs, schools, community centers and newsletters to communicate and share information on proper oral health care and the consequences of poor oral health care. It is expected that each member of the West Oahu community will see or hear a message regarding oral health from this project at least two times per week. In turn this will raise awareness and alter the perceptions regarding oral health and disease. A consistency of patient education throughout the community will emphasize the importance of proper oral health care and will create an internal drive for patients to practice preventive measures at a higher level. Furthermore, the program will encourage more patients to visit the dentist regularly in an effort to reduce the ultimate costs associated with dental care through prevention. The value of having optimal oral and physical health will increase tremendously.

The progress of this project will be disseminated to the rest of the community of dental professionals in three ways. First, we will be preparing a poster presentation for the ADA and ADHA annual conferences during each year of the grant period indicating the process and progress of the project. This will encourage others to undertake such efforts and establish a network of professionals working toward a common goal. Second, we expect at least two publications in the ADA/ADHA magazine advertising the project and at least two outcome study publications in the association journal following completion of the project. Lastly, we have begun a website that will provide dental patients as well as professionals both educational and procedural information pertaining to the project. Ultimately, we envision this web site as a clearing house for free
...downloadable oral health promotion materials in many languages and planning
documents to facilitate replication of this project at minimal cost nationally and
internationally. This will result in long-term reduction of suffering from oral disease and
a reduction of the costs applied to restorative care and treatment of dental emergencies.

Following the grant funded period of two years the minimal costs associated with
the maintenance of the project are expected to be funded through donations from product
manufacturers and from state funding. It is expected that the state will recognize an
actual decrease in the outlay of funds for dental treatment of the West Oahu community
as a result of this project and the funds requested to support the ongoing project will
constitute only a small percentage of that savings. Ultimately, we envision the State
Dental Health Department becoming the proponent of this project and expanding its
footprint to include the outer islands and the remainder of Oahu’s Title 1 schools.
Evaluation Plan

Effective evaluation of the impact of this project on the oral health of the community will require the establishment of several measures that range from early changes in perception to long term changes in oral disease rates. Most importantly it is important to recognize that since oral disease is the product of years of faulty care even minor changes in the dental emergency rate and costs associated with this type of care will not occur in the first three years of this project. During this timeframe the rates of problems reported will have been a result of the poor care in the past. For this reason evaluation of the long term objectives of reducing dental emergencies and lifetime expenses for dental care will be conducted on the fifth anniversary of the program’s initiation and again on the tenth anniversary. This evaluation will include a review of preventable dental emergency cases treated in dental clinics in a random sampling of West Oahu dental clinics. The estimate of lifetime expenditures of the West Oahu community will be determined using the phone survey technique employed by the ADA to collect the national data. Areas of the community that lack home phones will be surveyed in the home by a local survey agency to ensure an accurate representation of data from the very poor.

In order to monitor early success of the program we will conduct a similar annual survey of households in the West Oahu community. This survey will be reflective of the national ADA survey that monitors community perceptions regarding oral health, rates of brushing and flossing, and rates of attending semi-annual preventive care dental visits.
We will further attempt to monitor more immediate changes in understanding and values regarding oral health following interventions in schools and in the community. These will come in the form of short surveys that follow group and individual instructional sessions.
Project Personnel

The West Oahu Community Dental Outreach program proposed under this grant request will be executed with a combination of partially funded positions and through the efforts of a large dedicated volunteer force. The Principle investigator and the Co-investigator will each be compensated for 0.25 FTE under an agreement with their full time employer. The compensation for the Instructional designer will be on a contract basis with a set fee for service.

The Principle Investigator is Kari Nakasone and she is responsible for grant preparation and submission, communication with the granting agency, compliance with grant guidelines as well as those guidelines governing use of funds within the project, she is also responsible for monitoring the project as a whole. Her secondary but more important duty for the success of the project is to establish network ties between the dental health organizations, meet with community board advisors and the principals of the elementary schools, and to collaborate with workplaces in the community. This is a position Ms. Nakasone is fully qualified for. She is the President of the Hawaiian Chapter of the American Dental Hygiene Association, a guest lecturer in the Dental Hygiene Department at the University of Hawaii and a dental hygienist in private practice. She holds a Master’s degree in Education Technology and is regarded as a voice of vision in oral health education in multicultural settings.

The co-principal investigator for this project is Kristine Osada DDS. She is a Cum Laude graduate of the Harvard Dental School and pursued her post doctoral education at Johns Hopkins with emphasis in community health promotion and disease prevention.
She is currently in private practice in Honolulu and is the Chairperson for the Hawaii Dental Association’s Fiscal Committee. Her responsibilities within the context of this grant fall under the title of Project Coordinator. Her duties include coordination with subordinate committee heads as well as assist the PI in coordination with community and state agencies. Her expertise in project management for the World Health Organization in Kurdistan makes her the first choice as the Project Coordinator. She will ensure the project is meeting the established milestones and remains on focus.

The final key staff position is that of Instructional Designer. The designer for this project is Steve Goffar. He holds a Ph.D. in Curriculum Studies with emphasis in Education Technology from the University of Hawaii. He has been developing instruction for multicultural communities in the Pacific Rim since his retirement from the military in 2003. His numerous successes in health promotion through technology are well known and his publication list is extensive. His expertise will be tapped in the production of both the print based and the media based patient instructional materials. His familiarity with the cultures of the pacific as well as their languages coupled with his experience as a medical professional make him a solid choice for this position.

The remainder of the project staff will consist of volunteers with various expertises as instructors and dental professionals. They will participate in the preparation phase of the operation on committees of their interest and during the implementation phase they will be utilized to provide dental health education and screening to the people in the community. The volunteers will be given continuing education credits for their time and efforts in supporting this project through the two year period. The continuing
education credits will meet their requirements of 20 credits per year if they decide to participate for the two years.
Budget

Staff

The only staff costs associated with this project are the 0.25 FTE for the PI and the Co-Investigator, the contract fee for the instructional designer, and the fringe costs for volunteer personnel. Over the two year period of the grant funded project this totals $116,000. This sum is balanced by the In-kind equivalent of 14,400 volunteer hours donated at a value of $144,000. The salaries for the PI and Co-Investigator are intended to offset the loss of income associated with the one full day per week they are kept away from their private practices due to the multitude of hours dedicated to the success of this project. The instructional design requirements of this project are expected to cost $12,000 with the grant funding two thirds of the cost and the designer donating $4,000 of time In-kind. A fringe cost of ten dollars per month for each volunteer is included to encourage further commitment to the project by providing professional meals, transportation and uniforms to volunteers. This cost will help defer the costs associated with recruiting and training new volunteers if original numbers attrit.

Supplies

The major supply items that are needed to facilitate the delivery of the oral disease prevention and health promotion message to the large groups of students in the West Oahu schools are the four sets of laptop computers and projectors. These will facilitate the professional delivery of quality instruction to a group of this size and facilitate the use of animation, video, and vivid imagery. It has been demonstrated that students in this generation learn best with this type of media. The smaller group and one
on one instructional sessions will use the three dimensional model sets to facilitate a similar result. These models are well constructed and enable the learner to touch, explore and further understand the information delivered. These models will be augmented by a series of professionally designed poster displays in a variety of languages. The costs associated with their production are incorporated in the media production category.

Grant funded supply costs are offset by In-kind donation of ten thousand sets of personal oral hygiene samples donated by their manufacturers worth $20,000. These sets include a tooth brush, fluoride tooth paste, floss, and fluoride rinse. The manufacturers have committed to supplying this project with all needed samples for distribution to students and community members for a period of 5 years. Similarly, the manufacturers of disposable oral probes, mirrors, and examination gloves have agreed to supply these items at fifty percent of their wholesale costs. Three hundred penlight flashlights have been donated by a local pharmaceutical company to complete the list of items needed to conduct screenings outside of a traditional setting.

A small amount of money is budgeted to pay for office supplies. Most of these funds will be utilized in the first four months of the project (planning phase) and the remainder of the grant period will have minimal office supply expense.

**Printing**

Printing costs account for a substantial part of the non personnel costs associated with this project. The printing of 60,000 full color tri-fold pamphlets at a cost of $1.00 each is reduced by one third by the In-kind donation of printing costs by the local printing
company. While this cost is high, the per person impact is substantial when the message is delivered in vivid colors and dramatically less so when delivered in monochrome.

Media Production

The potential exorbitant costs associated with media production are well controlled in this project. The scripting and design costs are eliminated by the use of talents internal the project staff. The oddly high percentage of staff pursuing graduate education in education technology and specifically media development is a windfall for the project as a whole. As a result the full cost of graphic design and production of the poster displays is provided In-kind. Similarly, the local radio and television stations have agreed to donate fifty percent of the costs associated with recording and editing of all three PSAs planned for each medium.

Media Broadcast

The philanthropy of all four local television companies and six radio stations is most evident in their donation of seventy-five percent of the costs associated with the airing of the public service announcements produced to support the goals of this project. For the grant funded sum of $25,000 the televised messages will be aired eight times per day (twice per each station) and the radio based messages will be broadcast twelve times per day (twice per each station). Most significantly, the project staff has collaborated with the market research director for a local media consulting company and determined the most appropriate times to broadcast the PSAs to reach the intended audience.

Utilities
The sum of $12,000 dollars is allocated at just over $500 per month during the grant funded period to facilitate the payment for utilities in the office space donated by the PI’s practice. Three hundred dollars per month is budgeted to pay for phone company charges associated with four separate office lines and a high speed digital subscriber line (DSL) connection with a backup. The remaining $200 will be used to pay the costs of electricity, maintenance and water that is a common expense in the office complex.
Table. Oahu Community Dental Outreach Project Budget

<table>
<thead>
<tr>
<th>Category</th>
<th>Personnel</th>
<th>Supplies</th>
<th>Printing Costs</th>
<th>Media Production</th>
<th>Utilities</th>
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<td>Principal Investigator</td>
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<td>Volunteer fringe 100x $10.00 x24 mos</td>
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<td>Computer projection systems 4 each at $2,000</td>
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<td>Laptop Computers 4 each at $2,000</td>
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<td>3-Dimensional Dental Models 10 sets of 8 pieces X $30/pc</td>
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<td>Sample oral health care products (tooth paste, brushes, floss) 10000 sets</td>
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<td>Pamphlet printing 3 different language pamphlets x 20,000 pcs x $1</td>
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<td>Television Public Service Announcements (PSA) 3 each at 30 seconds x $10000 each</td>
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<td>$15000</td>
<td>$15000</td>
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<tr>
<td></td>
<td>Radio PSAs 3 each at 30 seconds x $500</td>
<td></td>
<td>$750</td>
<td>$750</td>
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<tr>
<td></td>
<td>Graphic Design of Poster displays (10 each x $500)</td>
<td></td>
<td>$5000</td>
<td>$0</td>
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<tr>
<td></td>
<td>PSA Broadcast time</td>
<td></td>
<td>$75000</td>
<td>$25000</td>
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<tr>
<td></td>
<td>Phone ($300) and Electricity ($200) per month</td>
<td></td>
<td>$0</td>
<td>$12000</td>
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</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>$287,250.00</strong></td>
<td></td>
<td><strong>$230,000.00</strong></td>
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</table>
Cost Effectiveness

The funds requested in this grant proposal will have an impact on the oral health and general health of tens of thousands of people during the funded period alone and a positive impact on generations beyond. During the interventions at the eight West Oahu schools planned for intervention, 2880 students will have been educated and screened. Similarly, during the 20 community event booths and 8 health fairs in the first two years of the grant it is projected that another 6800 individuals will be screened and educated. The influence of these individual encounters will result in a logarithmic impact on the community as a whole as they disseminate the information to their friends and families. This permeation of oral health information into the community by word of mouth will be supported and expanded upon by the mass media broadcasts planned regularly throughout the funded period. Conservatively it is estimated that 300,000 persons over the age of six will encounter one of these mass media messages nearly 200 times during the two year period. If even twenty percent of this audience improves their oral health the cost per person for the project as a whole is less than two dollars per person. This cost is a minute fraction of the savings associated with the improvement of the oral health of the school children alone. The granting of the requested funds for this project will have a dramatic effect on the health and well being of the traditionally underserved and neglected population of the West Oahu communities and make a huge leap toward the development of health education materials appropriate for their particular needs.
Appendix A: System Analysis

[Diagram of Dental Care System with labels and connections, including offices, hygienists, dentists, assistants, receptionists, and patient/learner.]

Figure 1. Dental Care System Chart

Legend:
- Undirectional Communication
- Bidirectional Communication
- Amount of Information Transfer indicated by frequency of least to most.
Appendix B: Problem Statement

What is

Data indicates that patients perform dental hygiene practices one time daily and less than half of these times include the use of dental floss. This correlates with the reported belief that this is adequate frequency to prevent oral disease and the belief that flossing is necessary only when food debris is detected. Data also indicate that the typical insured patient receives preventive maintenance and cleaning services less than annually and that patients without insurance report preventive services only when a problem is detected. Execution of oral health needs at this substandard level result in numerous preventable dental emergencies such as toothaches, root canals, periodontal abscess, and tooth extraction. According to the American Dental Association (ADA) this failure to execute appropriate oral health care procedures result in a lifetime expenditure of $8,000 in preventable restorative dental care per American that could be avoided with regular maintenance at a cost of less than $2,000 in one’s lifetime.

What should be

The dental patient should conduct personal dental hygiene practices in accordance with the ADA guidelines and engage in semi-annual visits to a dental professional for evaluation and preventive maintenance regardless of the presence or absence of insurance. Patients should understand the short and long term value of flossing, brushing and visiting their dentist regularly. Routine personal dental hygiene practices should result in a decrease in the number of dental emergencies such as toothaches, root canals,
periodontal abscess, and tooth extraction. Subsequently, the average American should spend less than $2,000 in lifetime dental care.

The Gap

Data collected demonstrates the need for an increase in routine oral health care at home and in the dental office to prevent oral disease. The gap exists where patients fail to value their oral health enough to practice appropriate home care and visit their dentist regularly. Further, dental patients lack an understanding of the consequences associated with substandard oral health practices and as a result do not dedicate adequate resources, such as, time, money, and effort to prevent long term negative outcomes. Patients need to brush two to three times as much as they currently are and need to increase the incidence of flossing to at least daily. Emergency visits due to poor oral health should be eliminated. Optimal oral health and a decrease in the lifetime expenditure of a dental patient should be achieved.
Appendix C: Design Implications

Design Implications

Information derived from the systems analysis, the dissemination and diffusion plan, the needs assessment results and problem statement indicate several design implications. As a result, any possible instructional solutions within this system must be capable of altering patient beliefs regarding their oral health. They must be able to provide sufficient motivation to effect change in behavior. They must be supported by the clinical research in order to gain the support of our senior dentist and be reimbursed by third party payers. They should be cost neutral and not result in an increase in patient, state or project expense. Finally, any instructional solution must be flexible enough to accommodate the variety of cultures, languages, and education levels of our patients.