Title
Does Text Messaging Improve Follow-Up Attendance After Completing Pediatric Dental Treatment Under General Anesthesia?

Permalink
https://escholarship.org/uc/item/7800v0fz

Author
Baker, Stacy

Publication Date
2012

Peer reviewed|Thesis/dissertation
Does Text Messaging Improve Follow-Up Attendance After Completing Pediatric Dental Treatment Under General Anesthesia?

by

Stacy Baker, DDS

THESIS

Submitted in partial satisfaction of the requirements for the degree of

MASTER OF SCIENCE

in

Oral and Craniofacial Sciences

in the

GRADUATE DIVISION

of the

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO
ACKNOWLEDGEMENTS

I would like to thank my mentors Dr. Jane Weintraub and Dr. Susan Hyde for the continued support and guidance they have given me throughout the research process. Special thanks also to my committee members Dr. Pamela DenBesten, Dr. Ling Zhan and Dr. Ann Lazar for your help and advice.
Does Text Messaging Improve Follow-Up Attendance After Completing Pediatric Dental Treatment Under General Anesthesia?

Stacy Baker

**Purpose:** The purpose of this study is to evaluate attendance at a 3-month follow-up appointment when text messaging is used to communicate appointment reminders and oral health information to parents of children who received dental treatment under general anesthesia (GA).

**Methods:** A sample of 21 parent/child pairs were recruited for an unblinded, pilot RCT from the University of California, San Francisco, Pediatric Dentistry clinic. Children were aged 1-6 years, ASA (American Society of Anesthesiologists) classification 1 or 2, and were scheduled to have dental treatment completed under GA. The pairs were randomized into 2 groups. Parents in the experimental group received appointment reminders and oral health information by text messages bi-weekly. The control group received appointment reminders by the conventional system using personal phone messages and postcards with no supplemental educational information. Data was collected regarding demographics, oral hygiene and dietary practices, and preferences for mode of appointment reminders.

**Results:** Most of the families were low income (90% Medicaid dental insurance). An average estimated distance of 28 miles was traveled to reach the clinic, and text messaging was the preferred method for appointment reminders (67%). Attendance at post-op exam appointments was 60% for parents who received text messages (n=11) and 80% for those who received a personal phone call (n=10), both higher than historical attendance rates in this clinic (43%). There were 7 participants (32%) who returned for
the 3-month follow-up, 2 (18%) from the experimental group and 5 (45%) from the control group. There were no statistically significant differences in follow-up attendance rates between participants receiving text messages as compared to phone calls, possible due to the small sample size (p=0.17). Although not statistically significant, participants reported a trend of reduced sugar consumption and increased water intake for their children.

**Conclusions:** There was better attendance at the post-op visit than 3-month appointment. However, both groups exhibited elevated attendance rates when compared to historical rates for this clinic.
# TABLE OF CONTENTS:

<table>
<thead>
<tr>
<th>Section</th>
<th>Page #</th>
</tr>
</thead>
<tbody>
<tr>
<td>TITLE PAGE</td>
<td>i</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>iii</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>iv</td>
</tr>
<tr>
<td>TABLE OF CONTENTS</td>
<td>vi</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>viii</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>ix</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>PURPOSE AND AIMS</td>
<td>5</td>
</tr>
<tr>
<td>HYPOTHESES</td>
<td>6</td>
</tr>
<tr>
<td>AIM 1: FEASIBILITY QUESTIONNAIRE</td>
<td>7</td>
</tr>
<tr>
<td>MATERIALS AND METHODS</td>
<td>7</td>
</tr>
<tr>
<td>RESULTS</td>
<td>8</td>
</tr>
<tr>
<td>DISCUSSION</td>
<td>13</td>
</tr>
<tr>
<td>AIM 2: HISTORICAL FOLLOW-UP RATES</td>
<td>15</td>
</tr>
<tr>
<td>MATERIALS AND METHODS</td>
<td>15</td>
</tr>
<tr>
<td>RESULTS</td>
<td>16</td>
</tr>
<tr>
<td>DISCUSSION</td>
<td>19</td>
</tr>
<tr>
<td>AIM 3: TEXT MESSAGE STUDY</td>
<td>22</td>
</tr>
<tr>
<td>MATERIALS AND METHODS</td>
<td>22</td>
</tr>
<tr>
<td>RESULTS</td>
<td>29</td>
</tr>
<tr>
<td>DISCUSSION</td>
<td>40</td>
</tr>
<tr>
<td>TABLE</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>-------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>1</td>
<td>AIM 1 PARTICIPANT &amp; CHILD DEMOGRAPHICS</td>
</tr>
<tr>
<td>2</td>
<td>AIM 1 SURVEY RESPONSES</td>
</tr>
<tr>
<td>3</td>
<td>AIM 2 DEMOGRAPHICS</td>
</tr>
<tr>
<td>4</td>
<td>AIM 2 FOLLOW-UP ATTENDANCE RATES</td>
</tr>
<tr>
<td>5</td>
<td>EXCLUSION FROM AIM 3 BASED ON CRITERIA</td>
</tr>
<tr>
<td>6</td>
<td>AIM 3 DEMOGRAPHICS</td>
</tr>
<tr>
<td>7</td>
<td>AIM 3 SURVEY RESPONSES</td>
</tr>
<tr>
<td>8</td>
<td>PARENTS MOST PREFERRED REMINDER</td>
</tr>
<tr>
<td>9</td>
<td>AIM 3 DENTAL KNOWLEDGE, BASELINE &amp; 3-MONTH</td>
</tr>
<tr>
<td>10</td>
<td>POST-OP AND 3-MONTH APPOINTMENT ATTENDANCE RATES</td>
</tr>
</tbody>
</table>
LIST OF FIGURES 

FIGURE 1: PARENTS’ TEXT MESSAGE PREFERENCES 11
FIGURE 2: PARENTS’ APPOINTMENT REMINDER PREFERENCES 12
FIGURE 3: APPOINTMENT ATTENDANCE RATES 18
FIGURE 4: ATTENDANCE RATES FOR MOFFITT AND ASC 19
FIGURE 5: STUDY FLOW DIAGRAM 27
FIGURE 6: SCREENING AND ENROLLMENT OF AIM 3 29
FIGURE 7: AIM 3 ENROLLMENT DIAGRAM 31
FIGURE 8: POST-OP ATTENDACE RATES FOR CONTROL AND EXPERIENTIAL GROUPS 39
INTRODUCTION

Dental caries is a common and chronic disease in pediatric patients, and has been identified nationally as the greatest unmet health care need among children [1]. Caries develops over time as a result of an imbalance between risk factors and preventive factors [2]. Risk factors for caries initiation include: high levels of mutans streptococci and/or untreated caries in the caregiver, frequent nighttime bottle feeding containing a sweet liquid, breast feeding at will, frequent snacking between meals, and frequent sugary drink consumption. Early Childhood Caries (ECC) has been defined as “1 or more decayed (non-cavitated or cavitated lesions), missing due to caries, or filled tooth surfaces occurring in a child 71 months of age or younger” [2]. In national studies conducted between 1988-1994 and 1999-2004, there was a significant increase in the prevalence of ECC in the primary dentition among 2-5 year olds from approximately 24% to 28% [3]. Children with ECC are at a higher risk for developing new caries, have more hospitalizations and emergency room visits, incur increased treatment costs, miss more school days, have a diminished ability to learn, and experience a decreased oral health related quality of life [2].

There are many treatment options available to treat the child with ECC including the conventional office setting, protective stabilization, nitrous oxide sedation, oral conscious sedation and general anesthesia (GA). The treatment is often determined by factors such as age of the child, amount of treatment needed and patient behavior during the appointment [4]. Treatment for ECC is often completed under general anesthesia.
because GA may give the best conditions to complete quality restorations[2]. However, research has shown that parents often neglect to bring their children for routine follow-up exams following treatment under GA [5]. Parents often overlook the importance of preventive oral hygiene home care, and fail to return for routine follow-up appointments, which may contribute to relapse and more caries [5]. Thus, these children are at higher risk for developing additional caries due to risk factors that were present prior to dental treatment, such as diet high in sugar and poor oral hygiene.

A study by Almeida et al., showed that after two years, 79% of children diagnosed with ECC had new caries detected at a follow-up exam, compared with 29% of those who were caries free at the initial exam [4]. These investigators also found that in children with ECC who were treated under GA for dental treatment, the average time between treatment and detection of new caries was 17.7 months, with 17% of those children needing a second treatment under GA within two years.

Children undergoing dental procedures in the operating room under GA have been identified as a high risk population due to the extent and severity of caries, amount of treatment needing to be completed and the young age at which this occurs. Many studies have shown that these groups of children and their parents often have very low compliance to follow-up treatment after dental procedures. Foster et al. showed that only 39% of patients returned for follow-up after the GA procedure and that those patients who failed the follow-up appointments were more likely to have new caries in two years [6]. Jamieson et al. found that 54% of patients returned for the 2-week follow-up after
dental treatment under GA, but only 13% returned for the 6-month follow-up exam [5]. These follow-up rates reported in hospital and university settings are very low, and with poor follow-up compliance the patients are returning with many new carious lesions, possibly even needing re-treatment under general anesthesia.

To reduce the caries relapse in this high-risk population of children, it is critical to improve preventive measures at home and encourage families to return to the dentist for preventive care such as nutritional counseling and fluoride applications [4]. Studies have shown that the key element to improving preventive home practices for children is encouraging parental involvement [7]. Parents become involved and knowledgeable through demonstration, education and reinforcement. Currently, new technologies are being used in health care to encourage patient compliance and to transmit educational information to patients and their families. Short message services, or text messages, are one such example of new technology being widely used in everyday life that also has uses in health care.

Text messaging is the exchange of brief written messages from phone to phone over a network. It has become the number one way of communicating in the United States with over 173 billion text messages sent per month in the US alone in 2010 [8]. The messages can contain up to 160 characters of information and they have been used for many purposes including personal, business or marketing applications.
Medical institutions and outpatient clinics have tested and implemented text messages as a reminder system for patient appointments with positive results [9]. These messages have been used in many ways including improving medication adherence, managing chronic medical conditions and making health-related behavior modifications [10]. Text messages have also been tested for use as reminders for immunization appointments, to track and manage asthma symptoms and to improve diabetes testing compliance. In these studies, using this new technology has been well-received by patients and families and was shown to improve appointment attendance and patient compliance to follow-up visits [9, 11, 12]. Downer et al. found significantly fewer missed appointments in the trial group who were sent a text message three days prior to their scheduled visit [13]. An additional advantage shown by the research was that text messages were cost effective, using less staff resources to administer. The study found labor costs to be one cent per text message sent, compared to US $0.20 - $ 0.90 to have staff make a telephone reminder or send a postcard [13]. Text messages were shown to be an inexpensive way to increase appointment attendance and therefore revenue, based on less missed appointments for the clinic.

As the popularity of text messages increases, they become a useful tool for the communication of preventive behavior modification messages for chronic conditions and situations. Interventions delivering education and information with text messages have shown success resulting in increased smoking cessation attempts, high adherence to diet control in overweight children and increased daily adherence rate to using sunscreen [10]. In dentistry, there are various potential uses for text messaging. Text messages have been
tested in dentistry as a reminder service in Scotland, the United States and Australia to improve patient attendance [13-15]. A study published by Nelson et al. in 2011, examined using a text message reminder sent to parents about their child’s upcoming scheduled appointment. There have been mixed results among the various studies. Some studies showed a large interest in text messages among dental patients, where others such as Nelson’s showed that only half of parents were interested in text message reminders. However, poor oral hygiene and dental disease are chronic conditions in which those affected may benefit from additional educational information, reminders and reinforcement of desired behaviors to improve knowledge and result in positive oral health routines.

PURPOSE AND AIMS

The purpose of this study is to evaluate using text messaging to communicate appointment reminders and oral health information to parents on follow-up care and oral health knowledge by conducting a randomized clinical trial in a pediatric dental population following treatment under GA.

AIMS

Aim 1: Conducted a survey from a consecutive sample of parents from the high-risk population whose children will have dental treatment under GA at UCSF, to collect information about their personal cell phone use including text messaging, parent and child demographics and their opinions about dental appointment reminder services.
Aim 2: Determined historical follow-up rates after dental treatment is completed under GA at the University of California, San Francisco (UCSF) Pediatric Dental Clinic using the currently administered appointment reminder approach which included automated reminder phone calls and postcards sent prior to follow-up due dates.

Aim 3: In a pilot randomized study, compared a text messaging reminder system with the conventional reminder system used at UCSF Pediatric Dental Clinic for improvements in follow-up attendance rates. The primary aim was to evaluate attendance at a 3-month follow-up appointment after treatment is completed under GA. The secondary aim was to evaluate attendance at a 2-week post-operative appointment and changes in parental knowledge.

HYPOTHESES

H1: Text messaging for appointment reminders and educational information would be well accepted by parents.

H2: Sending parents reminders and educational information through text messages will improve follow-up appointment attendance rates at 2-week post-operative appointment and 3-month follow-up appointment, and increase dental knowledge.
AIM 1: FEASIBILITY QUESTIONNAIRE

MATERIALS AND METHODS

The questionnaire and study designs were approved by the UCSF Committee for Human Research (IRB # 10-00837, 11-05869).

To assess the feasibility of using text messaging with the population at the USCF Pediatric Dental Clinic, a questionnaire was administered to a consecutive sample of 47 parents from August 2010 to November 2010 whose children were seen in the clinic for a comprehensive new patient exam. A cover letter explaining the purpose of our study (Appendix A- English, Appendix C - Spanish) accompanied the questionnaire. Parents were asked to complete the self-administered questionnaire (Appendix B- English, Appendix D - Spanish) if they had children aged 1-6 years old who were treatment planned to have comprehensive dental treatment completed under GA. The survey was three pages long and available in English and Spanish. Parents were given unlimited time to complete the questionnaire, however most completed it within five to ten minutes. Information was collected about parent and child demographics, cell phone availability and text-messaging usage, and preferences for mode of appointment reminders. Study participation was voluntary and non-participation did not impact eligibility or availability for care.

STATISTICAL ANALYSIS

Descriptive statistics were used to summarize the demographic data of the
participants, including frequencies and proportions. For continuous outcomes, t-tests were used and for categorical outcomes, chi-square tests or Fishers exact tests were used. Two-sided p-values were reported for all statistical tests using SPSS 17.0 and Excel for Mac, and p-values less than or equal to 0.05 were considered statistically significant.

AIM 1 RESULTS

A total of 50 parents completed the self-administered questionnaire. The response rate was 50/51 (98%) with one parent declining due to time constraints at the visit.

DEMOGRAPHICS

The majority of study participants, 23 (46%), were aged 20-29 years (Table 1). The study participants were mostly mothers, 42 (84%), with 7 (14%) fathers and one (2%) grandparent. The primary language spoken by 34 (68%) participants was English followed by 14 (28%) Spanish. However, only 8 (16%) participants preferred to complete the Spanish version of the survey. The home zip code of each participant was collected to estimate distance traveled from home to UCSF clinic. The mean distance traveled to the clinic was 31.4 miles (standard deviation - 29.3, range 1.1-118 miles).

The mean age of the child going to general anesthesia was 3.6 years (standard deviation - 1.02, range 1-6 years) with a similar number of male (48%) and female (52%) children. Government dental insurances (Denti-Cal, California Children’s Services, Healthy Kids/Healthy Families) were the predominant dental insurance for the children of 46 (92%) participants completing this survey.
Table 1: AIM 1 Participant and Child Demographics N=50

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Participant Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 20 years</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td>20-29 years</td>
<td>23</td>
<td>46%</td>
</tr>
<tr>
<td>30-39 years</td>
<td>20</td>
<td>40%</td>
</tr>
<tr>
<td>40-49 years</td>
<td>3</td>
<td>6%</td>
</tr>
<tr>
<td>&gt;50 years</td>
<td>3</td>
<td>6%</td>
</tr>
<tr>
<td><strong>Relationship to Child</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother</td>
<td>42</td>
<td>84%</td>
</tr>
<tr>
<td>Father</td>
<td>7</td>
<td>14%</td>
</tr>
<tr>
<td>Grandparent</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td><strong>Age of Child</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 year old</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td>2 years old</td>
<td>14</td>
<td>28%</td>
</tr>
<tr>
<td>3 years old</td>
<td>12</td>
<td>24%</td>
</tr>
<tr>
<td>4 years old</td>
<td>11</td>
<td>22%</td>
</tr>
<tr>
<td>5 years old</td>
<td>3</td>
<td>6%</td>
</tr>
<tr>
<td>6 years old</td>
<td>9</td>
<td>18%</td>
</tr>
<tr>
<td><strong>Child Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>24</td>
<td>48%</td>
</tr>
<tr>
<td>Female</td>
<td>26</td>
<td>52%</td>
</tr>
<tr>
<td><strong>Child’s Dental Insurance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Denti-Cal</td>
<td>42</td>
<td>84%</td>
</tr>
<tr>
<td>Healthy Families</td>
<td>2</td>
<td>4%</td>
</tr>
<tr>
<td>California</td>
<td>2</td>
<td>4%</td>
</tr>
<tr>
<td>Private Insurance</td>
<td>3</td>
<td>6%</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td><strong>Language of Family</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>34</td>
<td>68%</td>
</tr>
<tr>
<td>Spanish</td>
<td>14</td>
<td>28%</td>
</tr>
<tr>
<td>Mongolian</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td>Korean</td>
<td>1</td>
<td>2%</td>
</tr>
</tbody>
</table>
TEXT MESSAGE USAGE & APPOINTMENT REMINDER PREFERENCES

The results of the survey showed that 90% of participants have a cell phone and only 10% have only a home phone line. Of those participants with a cell phone, 42 (93%) were able to send a text message and 43 (96%) could receive a text message. The majority of participants (93%) have unlimited text messaging as part of their cell phone plan.

Table 2: AIM 1 Survey Responses

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you have a cell phone?</td>
<td>45 (90%)</td>
<td>5 (10%)</td>
</tr>
<tr>
<td>N=50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Able to send a text message?</td>
<td>42 (93%)</td>
<td>3 (7%)</td>
</tr>
<tr>
<td>N=45 participants with cell phone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Able to receive a text message?</td>
<td>43 (96%)</td>
<td>2 (4%)</td>
</tr>
<tr>
<td>N=45 participants with cell phone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Able to receive a voice mail message?</td>
<td>44 (98%)</td>
<td>1 (2%)</td>
</tr>
<tr>
<td>N=45 participants with cell phone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have unlimited text messaging?</td>
<td>42 (93%)</td>
<td>3 (7%)</td>
</tr>
<tr>
<td>N=45 participants with cell phone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interested in text message reminders from UCSF?</td>
<td>44 (98%)</td>
<td>1 (2%)</td>
</tr>
<tr>
<td>N=45 participants with cell phone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interested in text message educational information from UCSF?</td>
<td>38 (84%)</td>
<td>7 (16%)</td>
</tr>
<tr>
<td>N=45 participants with cell phone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Return to UCSF after GA appointment?</td>
<td>42 (91%)</td>
<td>4 (9%)</td>
</tr>
<tr>
<td>N=46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have another dental clinic for child?</td>
<td>26 (54%)</td>
<td>22 (46%)</td>
</tr>
<tr>
<td>N=48</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

When the participants with cell phones were asked if they were interested in receiving text appointment reminder messages from UCSF Pediatric Dental clinic 98% (44/45) reported “yes” (Table 2). The one respondent who answered “no” did not have unlimited
text messaging and could not send text messages or receive voice mail messages. Respondents were also asked if they were interested in receiving text messages with information about taking care of their child’s teeth and 84% responded “yes”. Figure 1 shows the number of text messages parents are interested in receiving in one month from UCSF Pediatric Dental Clinic. The majority of parents (57%) would be willing to receive 5 or more messages per month sent from the clinic.

Figure 1: Parents’ Text Message Preferences, N= 46

There were no statistically significant differences between the age groups 20-29 (N=24) and participants 30 or older (N=26) with regards to having a cell phone (p=0.71), using test messaging (p=0.28), or willingness to receive appointment reminders and educational information from UCSF by text message (p=0.55). Similarly, there were no significant differences between primary language spoken at home (English or Spanish/Other) and cell phone availability (p=0.15), usage of text messaging (p=0.14), and willingness to receive appointment reminders and educational information from UCSF (p=0.83).
Figure 2 shows participants’ first choice for appointment reminder method. Text messaging was the most frequently selected method (30%) followed by a phone call to the participant’s cell phone.

Participants were asked if they plan to return to UCSF after treatment for their child is completed under general anesthesia and 42/46 (91%) responded “yes” (Table 2). The average distance traveled for the four who reported “no”, as calculated by reported zip codes, was 58 miles. There was a significant difference in participants reporting “yes” to returning to UCSF after their child’s dental treatment under GA between those who traveled more then 40 miles to UCSF, and those that traveled less then 40 miles (p<0.05) using the chi-square test. When asked if the participant had another dental clinic for their child other than UCSF, 54% said “yes”. There were no significant differences between
age groups, relationship to the child or primary language spoken for those who reported they would return to UCSF and those who would not.

AIM 1 DISCUSSION

The main purpose of the AIM 1 survey was to assess parents whose children would receive dental treatment under GA regarding their cell phone use and opinions about appointment reminders. The questionnaire results showed that almost all parents (90%) surveyed had a cell phone and a very high percentage (98%) were interested in receiving appointment reminders by text message from UCSF. This is substantially higher than another recent study by Nelson et al. in 2011, which examined text messaging in a similar university pediatric dental clinic, and found that only 58% of respondents would be open to receiving a text message reminder [15].

Text messaging was selected most frequently as the participants’ first choice for receiving an appointment reminder, followed by a phone call to the cell phone. Similar to this study, in 2009 a US study examining text messages for immunization reminders in a medical setting found that many parents preferred text messages for appointment reminders over phone or mail reminders [9]. As text messaging continues to grow in use and popularity, it should be considered a useful and sometimes preferred method of communication between clinics and patients.

There was only one participant out of fifty who reported she was not interested in text message appointment reminders. Interestingly, this person was between the ages of 20-
29, was part of the 7% of participants who did not have unlimited text messaging and responded that she could not send text messages or receive voice mails. Thus, because this person was unfamiliar with cell phone and text messaging technology, this may have been the reason for not wanting text message reminders or educational information from UCSF. Additionally, the participant indicated she would not return to UCSF, and did not have another dentist or clinic for her child. The zip code was left blank so we are unable to determine the distance this family traveled to reach their appointment.

There were no statistically significant differences in participants between the ages of 20-29 and participants 30 or older in whether they had a cell phone, used text messaging or were willing to receive text messages from UCSF. This was an important finding because it has been found that younger populations are using text messaging more frequently than older age groups[8, 15]. However, based on the questionnaire results, older age groups are able and willing to communicate through text messaging with the UCSF clinic.

Geography may play a role in patient follow up as those patients who have to travel long distances to reach a health care clinic may have less frequent visits. The average distance participants traveled to their appointment at UCSF was 31 miles. Results show a significant difference in parents reporting “yes” they would return to UCSF after their child’s dental treatment if they had to travel 40 or more miles, when compared to those who would travel less than 40 miles. Thus, those traveling farther for appointments may return to UCSF clinic less frequently based solely on geography.
The primary limitation to these results was the questionnaire relied on self-reporting, and therefore may have introduced reporting bias into the results. Also, many participants skipped questions or did not answer questions appropriately as directed by the instructions of the survey and their answers had to be excluded.

**AIM 2: HISTORICAL FOLLOW-UP RATES**

**MATERIALS AND METHODS**

To determine the historical follow-up rates after dental treatment is completed under GA for the UCSF Pediatric Clinic, the clinic records were examined from July 2009-December 2010. This clinic had approximately 25 different providers over this time period consisting of pediatric dental residents and attendings. Data were collected from a sample of 150 patients treated under GA, out of a total of 300 patients treated in the clinic during that time period, and follow-up rates were determined. These follow-up rates are reflective of the appointment reminder systems currently used. For the two-week post-op GA visits, the parent was given the choice of scheduling that appointment the day of treatment under GA or calling into the clinic to schedule a visit. For the 3 month follow-up appointments, a postcard was sent approximately 3-4 weeks prior to when the follow-up was due. The postcard has the clinic phone number and reminds parents to call to schedule their child’s next visit. An automated telephone reminder message was given one or two days prior to scheduled appointments.
STATISTICAL ANALYSIS

Descriptive statistics were used to summarize the demographic data of the participants, including frequencies and proportions. For continuous outcomes, t-tests were used and for categorical outcomes, chi-square tests or Fishers exact tests were used. Two-sided p-values were reported for all statistical tests using SPSS 17.0 and Excel for Mac, and p-values less than or equal to 0.05 were considered statistically significant.

AIM 2 RESULTS

Data was collected from a simple random sample of 150 patients treated under GA, out of a total of 300 patients treated at UCSF during the time period from July 2009-December 2010, and follow-up rates were determined from a chart review.

DEMOGRAPHICS

The average age of the child for the sample of patients examined was 4.3 years (standard deviation - 1.12, range 1-6 years) (Table 3). Of the sample, there were 109 (73%) patients who were seen at the UCSF Ambulatory Surgery Center (ASC) and 41 (27%) who were seen at Moffitt Children’s Hospital, where the medically compromised children are treated.

If the patient was referred to UCSF by an outside clinic, the UCSF provider may have recorded it in the treatment note. Based on this information, there were 42 (28%) patients
who had referrals from another dental clinic and 6 (4%) patients who were referred from a non-dental provider including the Emergency Room or a Pediatrician, as documented in their treatment note. A total of 48 patients had documented referrals in their charts.

Table 3: AIM 2 Demographics N=150

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age of Child</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 years old</td>
<td>4</td>
<td>2%</td>
</tr>
<tr>
<td>3 years old</td>
<td>36</td>
<td>24%</td>
</tr>
<tr>
<td>4 years old</td>
<td>46</td>
<td>31%</td>
</tr>
<tr>
<td>5 years old</td>
<td>39</td>
<td>26%</td>
</tr>
<tr>
<td>6 years old</td>
<td>25</td>
<td>17%</td>
</tr>
<tr>
<td><strong>Hospital for GA Treatment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASC</td>
<td>109</td>
<td>73%</td>
</tr>
<tr>
<td>Moffitt Hospital</td>
<td>41</td>
<td>27%</td>
</tr>
<tr>
<td><strong>Referred From Outside Clinic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>48</td>
<td>32%</td>
</tr>
<tr>
<td>No</td>
<td>102</td>
<td>68%</td>
</tr>
</tbody>
</table>

FOLLOW-UP ATTENDANCE AFTER GENERAL ANESTHESIA

Table 4: AIM 2 Follow-up Attendance Rates, N=150

<table>
<thead>
<tr>
<th>Completed Appointment</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2-Week Post-Op (PO)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>65</td>
<td>43%</td>
</tr>
<tr>
<td>No</td>
<td>85</td>
<td>57%</td>
</tr>
<tr>
<td><strong>3 month follow-up</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>13</td>
<td>9%</td>
</tr>
<tr>
<td>No</td>
<td>137</td>
<td>91%</td>
</tr>
<tr>
<td><strong>6 month follow-up</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>29</td>
<td>19%</td>
</tr>
<tr>
<td>No</td>
<td>121</td>
<td>81%</td>
</tr>
<tr>
<td><strong>PO + 3 Month</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>4</td>
<td>3%</td>
</tr>
<tr>
<td>PO + 6 Month</td>
<td>Yes</td>
<td>10</td>
</tr>
<tr>
<td>-------------</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>140</td>
</tr>
<tr>
<td>PO + 3 Month + 6 Month</td>
<td>Yes</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>142</td>
</tr>
</tbody>
</table>

Figure 3 shows the attendance rates for the 150 children in the sample from the chart review were much lower for 3 and 6-month follow-up appointments then for the 2-week post-op appointment.

Figure 3: Appointment Attendance Rates, N= 150

![UCSF Overall Attendance Rates at Follow-Up Visits](image)

Figure 4 shows that there is a statistically significant difference in the post-op follow-up attendance rates between patients seen at the ASC and those treated at the Moffitt Hospital (p< 0.001). There were no statistically significant differences between follow-
up attendance rates of patients from the different GA facilities for the 3 or 6-month follow-up appointments.

Figure 4: Attendance Rates for Moffitt and ASC, N=150  
* Statistically Significant, p < 0.001

AIM 2 DISCUSSION

The purpose of AIM 2 was to determine historical follow-up rates for the UCSF clinic for those children who had dental treatment completed under GA. The follow-up rates determined in the UCSF Pediatric Clinic were low, but comparable to those at other University-based clinics. Jamieson et al. found 2-week post-op attendance rates to be 54% and 6-month follow up to be 13% at the University of Iowa, which is similar to 45% post-op and 19% 6-month attendance rates in the UCSF clinic [5]. However, the UCSF 6-month follow-up rates were very low compared to and Sheehy et al. and Primosch et al. who found 6-month follow-up rates of 31% and 77% respectively, for patients treated
under GA [16, 17]. These differences in follow-up rates may be attributed to differences in patient insurance as it was demonstrated that patients paying cash or having private insurance have higher follow-up rates than those on Medicaid. On average, the UCSF patient population is 90% Medi-Cal insured, which is higher than that of the studies mentioned above, and perhaps may be the reason for the lower follow-up rates.

Based on the chart review, there were 13 patients who returned for the 3-month follow-up out of the 150 total. Of those 13 patients, 8 also returned for the 2-week and 6-month follow-up and 4 returned for 2-week in addition to the 3-month. These data show that those attending the 3-month follow-up are likely to have attended other follow-up exams and are overall more consistent with bringing the child to the clinic regularly.

Over the 6-month period after completing GA, only 84 (56%) of patients returned to the clinic for at least one follow-up. This leads to a limitation with these data as many patients who are treated under GA at UCSF are also referred here for follow-up treatment, and instead may return to their original dental home for follow-up without ever reporting this information back to UCSF. A referral to UCSF was noted in the chart for one-third of patients in this sample. Unfortunately, there is no way to track if these patients are remaining at UCSF for their regular care, going back to their dental home or have not attended follow-up care at any clinic.

Another limitation with these data is that UCSF is a multiple provider clinic with some variations for standard follow-up procedures amongst providers. During the beginning of the time period examined, the 3-month follow-up visit was just beginning to be
implemented in the clinic for high-risk patients who were treated under GA. Thus, not all patients may have been told by their provider to return to the clinic for a 3-month follow-up, which may contribute to the low attendance rates for that appointment. Additionally, not all providers in the clinic reinforce the 2-week follow-up visit in the same way for patients. Some providers may personally schedule the patient’s appointment for the parent, while others may ask the parent to call and make the appointment over the phone. This may have influenced how many patients returned for the 2-week post-op.

There was a statistically significant difference in attendance at the 2-week post-op between patients seen in the ASC and the Moffitt hospital, with 52% of ASC-treated patients returning and only 20% of Moffitt patients returning. This may be due to dental care and follow-up appointments being of lower importance to parents of children who are medically compromised, or with possible developmental or mental delay. These parents may have many other medical appointments or commitments that seem more urgent than dental care and they may have less time or more difficulty with attending the follow-up appointments. A second explanation is the limitation of standardization between multiple providers in a large clinic such as UCSF. Possibly patients treated at Moffitt may not have the same encouragement by providers to attend a 2-week post-op visit as those treated in the ASC. The patients treated in Moffitt hospital have a slightly higher 6-month follow-up rate than those from the ASC. Possibly, UCSF is the primary dental home for these patients who may be too medically complex to be treated in an outside clinic. Therefore, they have a slightly higher follow-up at the traditional 6-month visit when compared to the group from the ASC, because some of the ASC patients are
returning to the original outside clinic from which they were referred for their follow-up exams.

The significance for determining these follow-up rates for the UCSF clinics is that these rates may now be used for comparison after an intervention is completed in AIM 3 of this study, where reminders and educational information are sent by text messages to parents. The historical rates for the UCSF clinics can also be compared to other similar clinics with patients completing dental treatment under GA.

**AIM 3: TEXT MESSAGE STUDY**

**MATERIALS AND METHODS**

**Screening and Enrollment**

All participants were recruited from the population of patients seen at the UCSF Pediatric Dental Clinic at 707 Parnassus Ave., San Francisco, California. Parents of children presenting for dental care were screened for entry into the study based on the inclusion and exclusion criteria. The inclusion criteria were as follows:

- Child age 1-6 years
- Child is treatment planned for dental treatment under GA at the Ambulatory Surgery Center at UCSF
- Parent is willing to participate and receive text messages from UCSF Pediatric Dental Clinic
• Parent is able to give written informed consent and complete questionnaire in English
• Parent has a personal cell phone

The exclusion criteria were as follows:

• Child has another primary dental home and does not plan to return to UCSF for care after GA dental treatment is completed
• Parent/guardian will be leaving the area and not available for recall exams
• Parent does not speak and read English
• Child is medically compromised and requires treatment to be completed at UCSF Moffitt Hospital
• Child has had previous GA for dental treatment

If the child and parent/guardian met these criteria and it was determined that the patient would be having dental treatment completed under general anesthesia, the parent met with study personnel to have the study explained to them and were asked to complete a written informed consent for enrollment into the study (Appendix F). Following enrollment, parents then completed a baseline dental knowledge questionnaire (Appendix H), which obtained demographic information, oral hygiene and diet inquires, as well as text message preferences and usage.

The questionnaire and study designs were approved by the UCSF Committee for Human Research (IRB # 10-00837, 11-05869). Study participation was completely voluntary.
General Anesthesia (GA) Visit (Time 0)

Following the baseline exam, the children were scheduled for dental treatment under GA. The child then had the dental treatment completed under GA at a subsequent visit (usually 6-8 weeks after their baseline visit).

The GA appointment represents Time 0. Following the completion of dental treatment under GA, parent/child pairs were randomized to either control or experimental groups based on computer generated random numbers. Those in the experimental group received appointment reminders and oral health information by text messages bi-weekly at variable times. The control group received appointment reminder by the conventional system with a personal phone call 1-2 days prior to the appointment and a voice mail message was left if possible. No supplemental educational information was given to the control group outside of the clinic setting.

Two Week Post-Operative Follow-Up (Time 2 weeks)

After dental treatment under GA was completed, children were scheduled for a post-up visit 2 weeks after the surgery. At this visit, the oral hygiene of the child was assessed and diet and hygiene information was given to the parent and child. Due to scheduling, this visit may have occurred 1-3 weeks after the GA visit.

Three Month Follow-Up (Time 12 weeks)

The child was put on a 3-month follow-up schedule due to high caries risk and informed to come back 3 months after GA was completed. For the control group, a postcard was
sent approximately 3 weeks prior to the due date for the 3-month follow-up with the clinic phone number to contact for scheduling the appointment. For the experimental group, a text message reminder was sent approximately three weeks prior to the due date for the 3-month follow-up with the clinic phone number to contact to schedule the appointment.

At this visit, the patient had a toothbrush prophy, caries risk assessment, oral hygiene information and fluoride application. A post-questionnaire (Appendix I) was given to the parent to determine dental knowledge.

Due to scheduling constraints and parent preference, this visit may have occurred between 2.5-3.5 months after the GA visit and still qualified as the 3-month visit. If the parent failed the 3-month follow-up appointment, an attempt was made to reschedule this visit. The parent was contacted by text message or phone call depending on group assignment to reschedule the failed appointment. A reminder prior to the rescheduled appointment was given either as a text message or phone call depending on group assignment. If parents failed the rescheduled appointment, no additional scheduling attempts were made.

The primary outcome measured for this study was attendance at 3-month follow-up visit. The secondary outcomes measured were attendance at 2-week post-operative appointment and change in parent dental knowledge from baseline to the 3-month follow-up visit.
Text Messages

The experimental group received text messages following the date at which dental treatment was completed under GA. The messages sent were age appropriate educational information directed at the parents (Appendix G).

A total of eight messages were sent to the experimental group on the following schedule:

• 1-2 days post GA procedure
• Reminder at 1-2 days prior to 2 week post-op visit
• Educational text at weeks 2,4,6,8,10
• Reminder text at week 12 (1-2 days prior to 3 month follow-up)

The content of the educational text messages addressed topics such as oral hygiene, non-cariogenic diet, caries prevention and fluoride. All messages were limited to 160 characters, in order to be sent as one standard size text message (Appendix G)
FIGURE 5: Study Flow Diagram, N=22

Baseline Appt. (NPE)
Consent, randomize, parent questionnaire

Control

Experimental

General Anesthesia Appt.
(Week 0)

General Anesthesia Appt.
(Week 0)

Text Education
(Week 0)

Text Education
(Week 2)

Post-op Appt.
(Week 2)

Text Education
(Week 2)

Text Education
(Week 4)

Text Education
(Week 6)

Text Education
(Week 8)

Text Education
(Week 10)

Phone Reminder
(Week 2)

Text Reminder
(Week 2)

Text Reminder
(Week 2)

3 Month Appt.
(Week 12)
OHI, prophy, fluoride,
pARENT questionnaire

3 Month Appt.
(Week 12)
OHI, prophy, fluoride,
pARENT questionnaire
STATISTICAL ANALYSIS

Descriptive statistics were used to summarize the demographic data of the participants, including frequencies and proportions. For continuous outcomes, t-tests were used and for categorical outcomes, chi-square tests or Fishers exact tests were used. Two-sided p-values were reported for all statistical tests using SPSS 17.0 and Excel for Mac, and p-values less than or equal to 0.05 were considered statistically significant.

Original Sample Size - A sample size of 59 participants randomized to each group (118 participants total) will allow us to have 80% power to detect a 20% response rate (or improvement probability from 0.1 to 0.3). The sample size calculation is based on a chi-square test.

Revised Sample Size – The sample size was revised to 26 participants total due to difficulty with recruitment.

In AIM 3, results for dental knowledge, oral hygiene and diet practices and oral hygiene and diet inquires, as well as text message preferences and usage both before and after education, were analyzed with descriptive statistics.
AIM 3 RESULTS

A total of 91 parent-child pairs were screened for enrollment into Aim 3. Of those, 26 were enrolled in the study and 22 completed the study (Figure 6). The two main exclusion criteria for parents-child pairs were if the child was medically compromised and would be treated at Moffitt Hospital or the parent did not speak English (Table 5).

Table 5: Exclusion from AIM 3 Based on Criteria, N=65

<table>
<thead>
<tr>
<th>Exclusion Reason</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent was Spanish speaking only</td>
<td>20</td>
</tr>
<tr>
<td>Parent was Cantonese speaking only</td>
<td>2</td>
</tr>
<tr>
<td>Child would be treated at Moffitt Hospital</td>
<td>24</td>
</tr>
<tr>
<td>Parent not planning to return to UCSF</td>
<td>13</td>
</tr>
<tr>
<td>Parent did not want to participate</td>
<td>2</td>
</tr>
<tr>
<td>Parent did not have a cell phone</td>
<td>3</td>
</tr>
<tr>
<td>Child had previous GA</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total Number</strong></td>
<td><strong>65</strong></td>
</tr>
</tbody>
</table>

There were two parents screened who did not want to participate. One parent reported having a negative experience participating in another research study at UCSF and the other did not want to be contacted by study personnel over the phone.
Of the 26 parent-child pairs enrolled into the study, only 22 completed the general anesthesia appointment and could therefore complete the study. Two of the pairs were not able to complete treatment at UCSF due to insurance complications. One child became sick and had to be rescheduled for a later date which was outside of the enrollment period and one child had to be seen in Moffitt hospital due to health complications and was excluded based on the criteria mentioned.
Figure 7: AIM 3 Enrollment Diagram, N=22

Enrollment

Assessed for eligibility (n= 91)

Excluded (n= 65)
- Not meeting inclusion criteria (n= 63)
- Declined to participate (n= 2)

Randomized (n= 26)

Allocation

Allocated to control (phone call) (n= 13)
- Received allocated control (n= 11)
- Did not receive allocated control b/c child not seen under GA (n= 2)

Allocated to intervention (text message) (n= 13)
- Received allocated intervention (n= 11)
- Did not receive allocated intervention b/c child not seen under GA (n= 2)

Follow-Up

- Returned for Post-Op Appointment (n= 6)
- Returned for 3-month Appointment (n= 5)
- Did not return to clinic for either visit (n= 5)

- Returned for Post-Op Appointment (n= 7)
- Returned for 3-month Appointment (n= 2)
- Did not return to clinic for either visit (n= 4)
DEMOGRAPHICS

All 22 parent participants were mothers, the majority (50%) age 20-29 (Table 6). Most families spoke English at home (64%). The average distance that the parent-child traveled to get to UCSF from home was 31 miles, as calculated by home zip code (standard deviation- 27.9, range 3.5 – 103 miles). 68% of parents reported they traveled less then 1 hour to get to UCSF.

The mean age of the child going to general anesthesia was 3.0 years (standard deviation – 1.5, range 1-5 years) with an equal number of male (50%) and female (50%) children (Table 6). The predominant race for the children in this group was Hispanic (32%) and African American (27%). All 22 children had government dental insurance, either Denti-Cal or Healthy Kids/Healthy Families.

Table 6: AIM 3 Demographics, N=22

<table>
<thead>
<tr>
<th></th>
<th>Total N=22</th>
<th>Control N=11</th>
<th>Experimental N=11</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Participant Age</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-29 years</td>
<td>11 (50%)</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>30-39 years</td>
<td>8 (36%)</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>40-49 years</td>
<td>3 (14%)</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td><strong>Relationship to Child</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother</td>
<td>22 (100%)</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Age of Child</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 year old</td>
<td>1 (5%)</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Age</td>
<td>Count</td>
<td>Count</td>
<td>Count</td>
</tr>
<tr>
<td>--------------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>2 years old</td>
<td>6 (27%)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>3 years old</td>
<td>8 (36%)</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>4 years old</td>
<td>5 (23%)</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5 years old</td>
<td>2 (9%)</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Child Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>11 (50%)</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Female</td>
<td>11 (50%)</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Child Race</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>7 (32%)</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>African American</td>
<td>6 (27%)</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Caucasian</td>
<td>4 (18%)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Asian</td>
<td>3 (14%)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Samoan</td>
<td>2 (9%)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Child’s Dental Insurance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Denti-Cal</td>
<td>20 (91%)</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Healthy Families</td>
<td>2 (9%)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Language of Family</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>14 (64%)</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Spanish</td>
<td>5 (24%)</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Mongolian</td>
<td>1 (4%)</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Tagalog</td>
<td>1 (4%)</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>French</td>
<td>1 (4%)</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Travel Time to UCSF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-15 min</td>
<td>1 (5%)</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>16-30 min</td>
<td>8 (36%)</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>31-60 min</td>
<td>6 (27%)</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>61-90 min</td>
<td>4 (18%)</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>91-120 min</td>
<td>1 (5%)</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>&gt;120 min</td>
<td>2 (9%)</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
TEXT MESSAGE USAGE AND REMINDER PREFERENCES

Based on the date, 95% of parents reported they were able to send text messages and most (77%) were receiving more than 5 messages per day to their cell phone (Table 7). All 22 parents were interested in appointment reminders by text message and 82% were interested in educational information from UCSF sent by text message. Reinforcing the inclusion criteria, all 22 participants reported they were planning to return to UCSF after their child had GA for their dental treatment. In this group, 3 participants were receiving other appointment reminders by text message and 4 of them were getting other health information by text message.

Table 7: AIM 3 Survey Responses, N=22

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you have a cell phone?</td>
<td>22 (100%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Able to send a text message?</td>
<td>21 (95%)</td>
<td>1 (5%)</td>
</tr>
<tr>
<td>Interested in text message reminders from UCSF?</td>
<td>22 (100%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Interested in text message educational information from UCSF?</td>
<td>18 (82%)</td>
<td>4 (18%)</td>
</tr>
<tr>
<td>Return to UCSF after GA appointment?</td>
<td>22 (100%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Have another dental clinic for child?</td>
<td>16 (73%)</td>
<td>6 (27%)</td>
</tr>
<tr>
<td>Receive other appointment reminders by text?</td>
<td>3 (14%)</td>
<td>19 (86%)</td>
</tr>
<tr>
<td>Receive other health information by text?</td>
<td>4 (18%)</td>
<td>18 (82%)</td>
</tr>
</tbody>
</table>

When participants were asked their one most preferred method of reminder at baseline, reminder by text message was chosen by over half of the participants (59%) (Table 8).
Of those returning at the 3-month visit, an equal number of parents preferred text message and phone call reminders.

Table 8: Parents Most Preferred Reminder, N=22

<table>
<thead>
<tr>
<th></th>
<th>Baseline N= 22</th>
<th>3-Month Control N= 5</th>
<th>3-Month Experimental N= 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>#1 Preference for Reminder</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Text Message</td>
<td>13 (59%)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Phone Call</td>
<td>8 (36%)</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Email</td>
<td>1 (5%)</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Postcard</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

At the 3-month follow-up, participants in the experimental group answered questions regarding the text messages sent. There were two subjects in this group, both answered that they received the text message reminders and educational information and they “always” read the information from the message. One participant reports “always” using the information from the messages sent while the other reported “sometimes” using the information. Both of these participants indicated text messaging was their most preferred reminder method.

DENTAL KNOWLEDGE

A questionnaire to assess baseline dental knowledge of parents in the study was given. The same questionnaire was repeated at the 3-month appointment and answers for both the experimental and control groups are presented in Table 9.
Table 9: AIM 3 Dental Knowledge, Baseline (N= 22) & 3-Month (N= 7)

<table>
<thead>
<tr>
<th>Dental Knowledge</th>
<th>Baseline N= 22</th>
<th>3 Month Control N=5</th>
<th>3 Month Exp N=2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child’s teeth brushed?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Some, not daily</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1x/day</td>
<td>7</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2x/day</td>
<td>11</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>&gt; 2x/day</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Fluoride toothpaste used?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>18</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>No</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Don’t know</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Adult helps child brush?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Yes, some</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Yes, mostly</td>
<td>8</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Yes, always</td>
<td>8</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>How often child eating sweet foods?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1x/week-not daily</td>
<td>4</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1x/day</td>
<td>4</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>2x/day</td>
<td>5</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3x/day</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4x/day</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5+ x/day</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>How often child drinking sweet liquids?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1x/week-not daily</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>1x/day</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>2x/day</td>
<td>6</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3x/day</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4x/day</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5+ x/day</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
What age can child brush alone?

<table>
<thead>
<tr>
<th>Age</th>
<th>1 yr</th>
<th>2 yr</th>
<th>3 yr</th>
<th>4 yr</th>
<th>5 yr</th>
<th>6 yr</th>
<th>7 yrs or older</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 yr</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 yr</td>
<td></td>
<td>2</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 yr</td>
<td>4</td>
<td></td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 yr</td>
<td></td>
<td>3</td>
<td>2</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 yr</td>
<td>4</td>
<td></td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 yr</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 yrs or older</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don’t know</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

What child drinks when thirsty?

<table>
<thead>
<tr>
<th>Drink</th>
<th>Milk</th>
<th>Juice</th>
<th>Water</th>
<th>Soda</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Juice</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Water</td>
<td>13</td>
<td>5</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Soda</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

With regards to the questions in the questionnaire relating to eating and drinking a high cariogenic diet, there was a trend of parents indicating less consumption of sugar at the 3-month appointment. Also, when asked what the child drinks when thirsty, more parents answered “water” at the 3-month appointment than at baseline. However, for questions related to frequency of brushing, fluoride toothpaste use, and what age the child can brush alone, there were no noteworthy changes between the answers given at the baseline and 3-month appointment.

**APPOINTMENT ATTENDANCE**

The purpose of AIM 3 was to assess participants attendance rates at the post-op and 3-month follow-up appointments after the child was treated under GA (Table 10). The post-op appointment attendance rates were very similar between the control and
experimental group, with the experimental group attendance rates slightly higher at 64%. Both of these attendance rates were higher than the historical post-op attendance rate of 43% described in AIM 2 (Table 4 & Figure 8). However, 3-month follow-up rates were lower for the text message group with only 2 patient-parent pairs returning for their appointment, compared with the phone reminder group who have 5 participants returning. Overall, 3-month attendance rates were low with 7/22 (32%) of participants attending the appointment, but higher than historical attendance rates of 9% for the clinic (Table 4). There were no statistically significant differences in follow-up attendance rates between participants receiving text messages as compared to phone calls, possible due to the small sample size (p=0.17).

Table 10: Post-Op and 3-Month Appointment Attendance Rates, N=22

<table>
<thead>
<tr>
<th>Attendance Type</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N=11</td>
<td>N=11</td>
</tr>
<tr>
<td>Post-op Attendance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>YES</td>
<td>6 (55%)</td>
<td>7 (64%)</td>
</tr>
<tr>
<td>NO</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>3-Month Attendance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>YES</td>
<td>5 (45%)</td>
<td>2 (18%)</td>
</tr>
<tr>
<td>NO</td>
<td>6</td>
<td>9</td>
</tr>
</tbody>
</table>

Figure 8 shows the post-op attendance rates for the two groups in comparison to the historical average for the clinic. There were four participants, 2 from control group and 2 from experimental group, who were not given a post-op appointment by their dentist after completion of GA and were asked to call and make an appointment. None of these four
participants called UCSF to make an appointment and did not return to the clinic, therefore lowering the attendance rates. Additionally, four other participants failed their scheduled appointment and one canceled their appointment and did not reschedule.

Figure 8: Post-op Attendance Rates for Control and Experimental Groups, N=22

As part of the study design, participants had to call UCSF to schedule their 3-month appointment. There were 12 participants who did not return for a 3-month follow-up exam who had not called UCSF to make an appointment. Additionally, one participant called to make an appointment and then failed that appointment. Two participants returned to the clinic for a follow-up appointment, but the date of the visit fell outside of the set “window” of 2.5 - 3.5 months and thus these visits were not considered a 3-month follow-up visit. Both were over four months since their GA visit.
AIM 3 DISCUSSION

The purpose of AIM 3 was to determine if using a text message reminder system for parents whose children have had dental work completed under GA, increased follow-up attendance at post-op and 3-month follow-up appointments more than the phone call reminder system in a pilot randomized clinical trial. Overall, the attendance rate at the post-op visit was slightly higher for the text message group. However, for the 3-month follow-up appointment the phone call group had increased attendance over the text message group. Neither result showed a statistically significant difference due to the small sample size. These results were similar to the study by Nelson et al, which showed that there was a lower no-show rate in the phone call group in a study completed in a university pediatric population [15]. However, there were differences between the Nelson study and this study because in Nelson’s research, the only intervention was a reminder message for an already scheduled upcoming appointment in the clinic. However, in this current study reminder messages were sent for the post-op visit, but then messages with educational information and prompts were sent to participants in the experimental group to help the participants remember to schedule the upcoming 3-month appointment.

The most significant issue with the study design for AIM 3 is that participants had to call in to the UCSF clinic three months later to schedule the 3-month follow-up, because the appointment was not assigned to them. Unfortunately, over half of the participants did not call UCSF to schedule this appointment and a few waited too long to schedule so
their appointments fell outside the window and their visits were not counted for research purposes. This was a significant limitation to the study design and future research should examine the effect of having an appointment already scheduled for the 3-month follow-up with reminders in place for the participant.

Participants may have been discouraged from calling UCSF to schedule the 3-month follow-up because of difficulty when contacting the reception office for the clinic, either being placed on hold or the participants finding it hard to reach a staff member to make an appointment. Also, if they did not call when they received the prompt to schedule the 3-month visit and waited a few weeks, due to wait time in the clinic schedule, they might have been scheduled outside the study “window” to be considered a 3-month follow-up.

When participants returned for the 3-month follow-up visit, they were asked to complete a questionnaire identical to the baseline questionnaire regarding dental knowledge and home habits. There was a trend of participants indicating less consumption of sugar at the 3-month appointment and giving their children more water. However, other variables were relatively unchanged among the groups and due to the small sample size no conclusions can be made about the effect of the educational messages sent by text message to the participants. When looking at individual results for the questionnaire, no participants seemed to be able to correctly answer all questions. For example, one parent in the control group correctly answered that the child should be seen every 3-months due to their high risk for getting cavities, but then answered the next question that the child should be able to brush their own teeth at age 1, which is incorrect. Overall, the question
that showed the least improvement in dental knowledge asked, at what age the children
could brush their own teeth. Only one participant out of the seven answered correctly.

Participants acceptance of text messaging as a reminder method was an important finding
in this study. At baseline, 59% of this group indicated their preferred reminder method
was text message. At the 3-month follow-up, both of the two participants from the
experimental group indicated text messaging is their preferred method. The control
group had 3/5 prefer phone call, one prefer text message and one prefer email reminders.
Overall, there was positive feedback from the experimental group who expressed that
they received the text messages, always read them and most of the time used the
information received. In addition, three different participants sent back text messages to
the clinic phone number replying “Thank you Doctor”, “We will be there” and “I would
like to schedule the next appointment for X, please call me XXX-XXXX” in response to
reminder and education messages sent during the study. Another research study using
text messaging in the health field addressed whether text messages sent to the patient are
impersonal [15]. However, our study found that more parents preferred the text messages
than phone calls, and the text messages also included the patient’s name when possible to
make them more personal for participants. Another consideration is whether the
participants thought of the text messages as “spam”. There were only two returning
members of the experimental group who both expressed positive feelings toward the
educational text messages, but we are unable to determine if those who did not follow-up
felt the same way.
The are limitations to the results of AIM 3 due to the small sample size of this pilot study, particularly with regards to the small number of parents returning for 3-month follow-up. In examining the results of the questionnaire from those participants who returned for the 3-month follow-up, the results could be influenced by only being able to account for the answers of those participants who returned for the visit and not all participants. These participants who returned for their follow-up were perhaps the most responsible and knowledgeable about their children’s oral health, which may have influenced the results obtained from the questionnaires.

Another limitation to this study was the unexpected difficulty with recruitment for participants in AIM 3, which led to the small sample size. Many patients screened did not meet the inclusion criteria and one of the main exclusions was for parents who did not speak or understand English. As a result of the difficulty with recruitment, the original sample size was reduced to a revised sample size of 26 participants. However, with this small sample, the results did not show any statistically significant differences between the two groups. Future studies should include a larger sample size and address the population of Spanish speaking only parents by including text messages and consent forms translated into Spanish.

CONCLUSION

Text message technology is fast becoming an important method of communication with patients and their families. The results of this study show that both phone and text
messages reminders can be used in a university pediatric dental population to increase attendance at future follow-up visits after children have been treated in the operating room under general anesthesia. The attendance rates for the post-op appointments were slightly higher for the text message group and the attendance rates at 3-month follow-up appointments were higher for the phone call group. Overall, both attendance rates were higher than the historical attendance rates at this clinic. However, due to the small sample size of this pilot study, no statistically significant differences were found between the control and experimental group.

Parents participating in this study were receptive to receiving text message reminders and it was the most preferred reminder method over phone calls, postcard or email. Positive feedback was received from participants in the experimental group showing the participants who returned were receiving, reading and using the information provided through text messages.

Future research should be directed towards enrolling a larger sample of participants, including Spanish speaking participants, and following those parents who did not return for follow-up and determining the reasons behind why they did not return to the clinic.
REFERENCES

17. Primosch, R.E., C.M. Balsewich, and C.W. Thomas, *Outcomes assessment an intervention strategy to improve parental compliance to follow-up evaluations*.
APPENDIX A: AIM 1 ENGLISH COVER LETTER

Dear Parent:

We are conducting a study to see if parents whose children are seen in the UCSF Pediatric Dentistry Clinic have access to a personal cell phone and are willing to receive visit reminder messages and other health information on their cell phone. You are being asked to be in this study because you are a parent of a child in the UCSF Pediatric Dentistry Clinic whose child will be undergoing general anesthesia for their dental treatment. Along with this letter is a short survey that asks questions about cell phone use and how you get to your visits.

If you agree to be in this study, please complete the survey now and return it to your dentist. It should take 5-10 minutes to complete. This study is completely voluntary. If there is any question that you do not want to answer, just leave it blank and continue. There may be no direct benefit to you from completing the survey. However, your responses will contribute to a better understanding of how we are able to communicate with our patients. There will be no cost to you for participating.

Participation in research may involve a loss of privacy, but information about you will be handled as confidentially as possible. You should not put your name on the survey and we guarantee that your responses will not be identified with you personally. Your name or your child’s name will not be used in any published reports about this study. No protected health identifiers will be collected or used regarding you or your child. Declining to participate in this survey will have no influence on your child’s present or future status as a patient in this clinic. Your child will receive the same care.

If you have any questions about this study, you may contact Dr. Jane A. Weintraub or Dr. Stacy Baker by e-mail (jane.weintraub@ucsf.edu or stacy.baker@ucsf.edu), by phone at (415) 476-3033, or in writing to the University of California, San Francisco, School of Dentistry, Department of Preventive and Restorative Dental Sciences, 3333 California Street, Suite 495, San Francisco, CA 94143.

If you have any comments or concerns about participation in this study and you do not wish to contact Dr. Weintraub or Dr. Baker, you may contact the Committee on Human Research, which is concerned with the protection of volunteers in research projects. You may reach the committee office between 8:00 and 5:00, Monday through Friday, by calling (415) 476-1814, or by writing: Committee on Human Research, Box 0962, University of California, San Francisco San Francisco, CA 94143.

Thank you very much for your assistance.

Sincerely,

Jane A. Weintraub, DDS, MPH
Lee Hysan Professor and Division Chair
University of California, San Francisco

Stacy Baker, DDS
Pediatric Dentistry Resident
APPENDIX B: AIM 1 ENGLISH QUESTIONNAIRE

University of California San Francisco, School of Dentistry
Division of Pediatric Dentistry

Study Title: Appointment Reminder Preferences
You are being asked to participate in this study because you are a parent of a child in the UCSF Pediatric Dentistry Clinic whose child will be undergoing general anesthesia for their dental treatment. This survey should take about 5-10 minutes to complete.

UNLESS OTHERWISE SPECIFIED, PLEASE CHECK THE SINGLE BEST ANSWER FOR EACH QUESTION

SECTION 1

1. What type of phone do you have?
   a) ___ cell phone
   b) ___ home phone (land line)
   c) ___ both
   d) ___ neither

If you have a cell phone ➔ please continue with the next questions about cell phone use
If you do NOT have a cell phone ➔ please skip to SECTION 2 on the next page

2. Are you able to send a text message on your cell phone?
   a) ___ Yes
   b) ___ No

3. Are you able to receive a text message on your cell phone?
   a) ___ Yes
   b) ___ No

4. Are you able to receive a voice mail message on your cell phone?
   a) ___ Yes
   b) ___ No

5. Do you have to pay an extra fee for each text message sent or received?
   a) ___ Yes
   b) ___ No, unlimited text messages are included as part of my cell phone plan
   c) ___ Don’t know

6. Would you be interested in receiving text messages from UCSF Pediatric Dentistry Clinic with reminders for dental appointments?
   a) ___ Yes
   b) ___ No
7. Are you interested in receiving text messages from UCSF Pediatric Dentistry Clinic with information and reminders about taking care of your child’s teeth and gums?
   a) ___ Yes
   b) ___ No

8. How many text messages would you be willing to receive from UCSF Pediatric Dentistry Clinic a month?
   a) ___ 0   b) ___ 1   c) ___ 2   d) ___ 3   e) ___ 4   f) ___ 5 or more

SECTION 2

1. Choose ALL the ways you are willing to be reminded about your child’s upcoming dental appointments (visits).
   a) ___ text message to your cell phone
   b) ___ personal phone call to your cell phone
   c) ___ personal phone call to your home phone (land line)
   d) ___ personal message on your home answering machine
   e) ___ automated phone call to your cell phone
   f) ___ automated phone call to your home phone
   g) ___ postcard to your home
   h) ___ e-mail message
   i) ___ other please list: ___________________

2. What is the ONE WAY you would MOST like to be reminded about your child’s upcoming dental appointments (visits)?
   a) ___ text message to your cell phone
   b) ___ personal phone call to your cell phone
   c) ___ personal phone call to your home phone (land line)
   d) ___ personal message on your home answering machine
   e) ___ automated phone call to your cell phone
   f) ___ automated phone call to your home phone
   g) ___ postcard to your home
   h) ___ e-mail message
   i) ___ other please list: ___________________

3. How do you usually travel to your child’s dental appointment here at UCSF?
   a) ___ personal car
   b) ___ public bus (ie Muni)
   c) ___ walk
   d) ___ train (ie BART, Cal Train)
   e) ___ ride from friend or family
   f) ___ taxi
   g) ___ other please list: ___________________
4. How easy/difficult is it for you to bring your child to the UCSF Pediatric Dental Clinic for dental care?
   a) ___ very easy
   b) ___ easy
   c) ___ difficult
   d) ___ very difficult

5. Do you plan to return to UCSF Pediatric Dental Clinic after your child has dental surgery?
   a) ___ yes
   b) ___ no

6. Do you have another dentist or dental clinic for your child’s dental care, other than UCSF?
   a) ___ yes
   b) ___ no

SECTION 3

1. What is your relationship to the child who is being seen here at UCSF for dental care?
   a) ___ mother
   b) ___ father
   c) ___ grandparent
   d) ___ relative (aunt/uncle/sibling)
   e) ___ friend
   f) ___ foster parent
   g) ___ caregiver
   h) ___ other  please list: ____________________

2. How old is this child?
   a) ___ 1 year old
   b) ___ 2 years old
   c) ___ 3 years old
   d) ___ 4 years old
   e) ___ 5 years old
   f) ___ 6 years old or older

3. What is the child’s gender?
   a) ___ male
   b) ___ female

4. How old are you?
   a) ___ under 20 years old
   b) ___ 20 – 29
   c) ___ 30 – 39
   d) ___ 40 – 49
5. What type of dental insurance does this child have?
   a) ___ Medicaid (Denti-Cal)
   b) ___ Healthy Kids / Healthy Families
   c) ___ CCS
   d) ___ Private insurance (Delta Dental, Blue Cross, etc)
   e) ___ No insurance, I pay cash for my child’s visits
   f) ___ other please list: ____________________

6. What is the primary language spoken at the child’s home?
   a) ___ English
   b) ___ Spanish
   c) ___ Chinese
   d) ___ other please list: ____________________

7. What is the child’s home zip code?

__________________

Please add any other comments you have regarding visit reminders. Thank you for your help.
APPENDIX C: AIM 1 SPANISH COVER LETTER

Estimados padres:

Estamos llevando a cabo un estudio para ver si los padres cuyos hijos son pacientes en la Clínica de Odontología Pediátrica en UCSF y tienen acceso a un teléfono celular personal están dispuestos a recibir mensajes recordatorios de la visita y otra información de la salud. Le estamos pidiendo su participación en este estudio porque su hijo además de ser paciente en la Clínica de Odontología Pediátrica de UCSF será sometido a anestesia general durante su tratamiento dental. Con esta carta también le mandamos un breve estudio que pregunta el uso de su celular y cómo ver sus visitas.

Si usted desea participar en este estudio, por favor complete la encuesta y entregársela a su dentista. La encuesta toma 5-10 minutos para completar. Este estudio es completamente voluntario. Si hay alguna pregunta que usted no desee contestar, deje la respuesta en blanco y continúe con la siguiente pregunta. La encuesta no lo beneficiará directamente, sin embargo, sus respuestas contribuirán a tener una mejor idea de cómo podemos comunicarnos con nuestros pacientes. No habrá ningún costo para usted por su participación.

Su participación en esta investigación puede implicar una pérdida de su privacidad, pero su información personal será tratada con la mayor confidencialidad posible. Usted no debe poner su nombre en la encuesta y le garantizamos que sus respuestas no serán identificados con sus datos personales. Su nombre y el nombre de su hijo no serán publicado en el reporte final de este estudio. Ningún identificador de salud de usted o su hijo serán utilizados en este estudio. Negarse a participar en esta encuesta no tendrá ninguna influencia sobre su hijo, ni afectará la condición de su hijo como paciente en esta clínica. Su hijo recibirá el mismo cuidado que ha recibido en esta clínica.

Si usted tiene alguna pregunta acerca de este estudio, puede comunicarse con la Dra. Jane A. Weintraub o la Dra. Stacy Baker por un e-mail (jane.weintraub@ucsf.edu o stacy.baker@ucsf.edu), por teléfono al (415) 476-3033, o por correo a la University of California, San Francisco, School of Dentistry, Department of Preventive and Restorative Dental Sciences, 3333 California Street, Suite 495, San Francisco, CA 94143.

Si tiene algún comentario o inquietud acerca de la participación en este estudio y no desea ponerse en contacto con la Dra. Weintraub o la Dra. Baker, usted puede comunicarse con el Comité de Derechos Humanos de Investigación, que se ocupa de la protección de los voluntarios en proyectos de investigación. Usted puede comunicarse con la oficina del comité 08:00-05:00, de lunes a viernes, llamando al (415) 476-1814, o escriba a: Committee on Human Research, Box 0962, University of California - San Francisco, San Francisco, CA 94143.

Muchas gracias por su ayuda.
Sinceramente,

Jane A. Weintraub, DDS, MPH  Stacy Baker, DDS
Lee Hysan Profesor y Presidente División  Odontología Pediátrica Residente
University of California, San Francisco
APPENDIX D: AIM 1 SPANISH QUESTIONNAIRE

University of California San Francisco, School of Dentistry
Division of Pediatric Dentistry

Título del estudio: Recordatorio de la cita

Preferencias

Se le pide a participar en este estudio porque usted es un padre de un niño que es pasiente en la Clínica de Odontología Pediátrica en UCSF y será sometido a anestesia general para su tratamiento dental. Esta encuesta tomará aproximadamente 5-10 minutos para completar.

Por favor chequea la mejor respuesta para cada pregunta.

SECCIÓN 1

9. ¿Qué tipo de teléfono tiene?
   a) __ teléfono celular
   b) __ teléfono casero (línea de la tierra)
   c) __ ambos
   d) __ Ninguno

Si usted tiene un teléfono celular → por favor continúe con las siguientes preguntas sobre el uso del teléfono celular

Si usted NO tiene un teléfono celular → por favor vaya a la Sección 2 en la página siguiente

10. ¿Puede usted enviar un mensaje de texto en su teléfono celular?
    a) __ Sí
    b) __ No

11. ¿Es capaz de recibir mensajes de texto en su teléfono celular?
    a) __ Sí
    b) __ No

12. ¿Es usted capaz de recibir un mensaje de voz en su teléfono celular?
    a) __ Sí
    b) __ No

13. ¿Tiene que pagar una cuota adicional por cada mensaje de texto enviado o recibido?
    a) __ Sí
    b) __ No, son mensajes ilimitados de texto como parte de mi plan de telefonía celular
    c) __ No sabe
14. ¿Estaría usted interesado en recibir mensajes de texto de la Clínica de Odontología Pediátrica de UCSF con recordatorios para citas con el dentista?
   a) ___ Sí
   b) ___ No

15. ¿Está usted interesado en recibir mensajes de texto de la Clínica de Odontología Pediátrica de UCSF hacía de información y recordatorios sobre el cuidado de los dientes del niño y las encías?
   a) ___ Sí
   b) ___ No

16. ¿Cuántos mensajes de texto estaría usted dispuesto a recibir de la Clínica de Pediátrica Odontología de UCSF de un mes?
   a) ___ 0          b) ___ 1          c) ___ 2          d) ___ 3          e) ___ 4          f) ___ 5 o más

SECCIÓN 2
7. Elija TODAS las formas que están dispuestos a recibir recordatorios acerca de sus próximas citas con el dentista de su hijo.

a) ___ mensaje de texto
b) ___ llamada telefónica personal a su teléfono celular
c) ___ llamada telefónica personal a su teléfono de casa (línea de la tierra)
d) ___ mensaje personal en su contestador automático en casa
e) ___ llamada automática a su teléfono celular
f) ___ llamada automática a su teléfono de casa
g) ___ tarjeta a su casa
h) ___ un e-mail mensaje
i) ___ otro _________________

8. ¿Cuál es la una manera que más te gustaría que se le recuerde acerca de las próximas citas con el dentista de su hijo?
   a) ___ mensaje de texto a su teléfono celular
   b) ___ llamada telefónica personal a su teléfono celular
c) ___ llamada telefónica personal a su teléfono de casa (línea de la tierra)
d) ___ mensaje personal en su contestador automático en casa
e) ___ llamada automática a su teléfono celular
f) ___ llamada automática a su teléfono de casa
g) ___ tarjeta a su casa
h) ___ un e-mail mensaje
i) ___ otro _________________

9. ¿Cómo suele viajar a cita con el dentista de su hijo aquí en la UCSF?
   a) ___ su coche
   b) ___ autobús público (ie Muni)
   c) ___ caminar
d) ___ tren (ie BART, Cal Tren)
e) ___ paseo de la familia o un amigo
f) ___ taxi
g) ___ otro ____________

10. ¿Qué tan fácil / difícil que es para que usted pueda llevar a su hijo a la Clínica de Pediátrica Dental de UCSF para el cuidado dental?
   a) ___ muy fácil
   b) ___ fácil
   c) ___ difícil
   d) ___ muy difícil

11. ¿Tiene planes de volver a la Clínica de Pediátrica Dental de UCSF después de que su niño tiene una cirugía dental?
   a) ___ Sí
   b) ___ No

12. ¿Tiene otro dentista o clínica dental para el cuidado dental de su hijo, que no sean de UCSF?
   a) ___ Sí
   b) ___ No

SECCIÓN 3

8. ¿Cuál es su relación con el niño que está siendo visto aquí en la UCSF para el cuidado dental?
   a) ___ madre
   b) ___ padre
   c) ___ abuelo
   d) ___ relativo (tía/ tío/hermano)
   e) ___ amigo
   f) ___ padre de adoptivo
   g) ___ cuidador
   h) ___ otro ____________

9. ¿Qué edad tiene este niño?
   a) ___ 1 año
   b) ___ 2 años
   c) ___ 3 años
   d) ___ 4 años
   e) ___ 5 años
   f) ___ 6 años o más

10. ¿Qué es el sexo del niño?
    a) ___ masculino
    b) ___ femenino

11. ¿Cuántos años tiene usted?
12. ¿Qué tipo de seguro dental tiene su niño?
   a) ___ Medicaid (Denti-Cal)
   b) ___ Healthy Kids / Healthy Families
   c) ___ CCS
   d) ___ privado seguro (Delta Dental, Blue Cross, etc)
   e) ___ No seguro, puedo pagar en efectivo para las visitas de mi hijo
   f) ___ otro ___________________

13. ¿Cuál es el idioma principal hablado en el hogar del niño?
   a) ___ English
   b) ___ Español
   c) ___ Chinese
   d) ___ otro ___________________

14. ¿Qué es el código de origen del menor postal?

____________________

Por favor, añada cualquier otro comentario que tenga con respecto recordatorios visita. Gracias por su ayuda.
Human Research Protection Program
Committee on Human Research

Notification of Expedited Review Approval

Principal Investigator: Jane A Weintraub
Co-Principal Investigator: Stacy L Baker

Type of Submission: Submission Correction for Initial Review Submission Packet
Study Title: Assessment of Compliance to Follow-up Care After Completing Dental Treatment Under General Anesthesia

IRB #: 10-00837
Reference #: 002112
Committee of Record: Laurel Heights Panel
Study Risk Assignment: Minimal
Approval Date: 06/25/2010
Expiration Date: 06/24/2011

Regulatory Determinations Pertaining to this Approval (if applicable):

This research satisfies the following condition(s) for the involvement of children:

45 CFR 46.404, 21 CFR 50.51: Research not involving greater than minimal risk.

The requirement for individual HIPAA authorization is waived for some subjects, as detailed in the application. This research is not subject to HIPAA for some subjects, as detailed in the application.

A waiver of informed consent and HIPAA Authorization is acceptable for the recruitment procedures to identify potential subjects. The recruitment procedures involve routine review of medical or other records and pose minimal risk to the subjects, do not adversely affect the rights and welfare of the subjects, and study recruitment could not practicably be carried out without the waiver. Subjects will provide informed consent before they are allowed to enroll in the study.

A waiver or alteration of informed consent is acceptable because, as detailed in the application, (1) the research involves no more than minimal risk to the subjects; (2) the waiver or alteration will not adversely affect the rights and welfare of the subjects; (3) the research could not practicably be carried out without the waiver or alteration; and (4) whenever appropriate, the subjects will be provided with additional pertinent information after participation. The waiver or alteration of informed consent applies to subjects, as detailed in the application.

IRB Comments (if applicable):

The iMedRIS system will generate an email notification eight weeks prior to the expiration of this project’s approval. However, it is your responsibility to ensure that an application for continuing review approval has been submitted by the required time. In addition, you are required to submit a study closeout report at the
UNIVERSITY OF CALIFORNIA, SAN FRANCISCO
CONSENT TO PARTICIPATE IN A RESEARCH STUDY

Study Title: Does Using Text Messaging Improve Follow-Up Attendance After Completing Pediatric Dental Treatment Under General Anesthesia (GA)?

This is a research study about sending appointment reminder messages and other dental health information by text message. The study researchers, Stacy Baker DDS., and Susan Hyde DDS. MPH. PhD, from the UCSF Dental Clinic, will explain this study to you.

Research studies include only people who choose to take part. Please take your time to make your decision about participating, and discuss your decision with your family or friends if you wish. If you have any questions, you may ask the researchers.

You are being asked to take part in this study because you are a parent of a child in the UCSF Pediatric Dentistry Clinic whose child will be undergoing general anesthesia (GA) for their dental treatment.

Why is this study being done?

The purpose of this study is to evaluate whether sending text messages with appointment reminders and dental information to parents of children who have had dental treatment under general anesthesia, helps to improve future dental outcomes.

How many people will take part in this study?

About 120 parents will take part in this study.

What will happen if I take part in this research study?

First, you will be asked some questions today to find out if you can participate in the main part of the study.

To be in this study:
- Your child must be age 1-6 yrs
- Your child must be treatment planned for dental treatment under general anesthesia at the Ambulatory Surgery Center (ASC) at UCSF
- You must have a personal cell phone
- You are willing to participate and receive text messages from UCSF Pediatric Dental Clinic
- You will plan to return to UCSF Pediatric Dental Clinic for regular dental visits after your child has had surgery (dental treatment under general anesthesia).
If you are eligible for the main part of the study and you choose to continue, this is what will happen next:

- Study members will explain this study to you and you will be able to ask questions about this study.
- You will be asked to complete a questionnaire about your dental knowledge, beliefs and habits. This will take approximately 15 minutes.
- You will be randomized into one of two study groups described below. Randomization means that you are put into a group by chance. A computer program will place you in one of the two groups. Neither you nor your doctor can choose the group you will be in. You will have an equal chance of being placed in either group.
  - If you are in group 1, you will receive phone reminders for upcoming dental appointments.
  - If you are in group 2, you will receive text message reminders for upcoming dental appointments with text message educational information.

FUTURE VISITS

- After the first study visit, your child will be scheduled for surgery to have their dental treatment completed under general anesthesia (GA). The treatment done under general anesthesia will be completed by the UCSF Pediatric Dental Clinic and is not arranged or conducted by this study.

After your child has had dental treatment completed under general anesthesia, you will begin to receive either a phone call or text message reminder for future appointments and you may receive educational text messages.

These phone calls or text messages will happen on the following schedule:
  - Reminder (phone or text) 1-2 days before post-operative follow-up appointment
  - Educational text messages at weeks 2, 4, 6, 8, 10 of the study
  - Reminder (phone or text) 1-2 days before 3-month exam appointment

The following appointments are the standard of care for your child and not part of study procedures, however this information about appointments is included for parents so you can be aware of upcoming appointments that your child will need.

Post-Operative Appointment
- Following dental treatment under general anesthesia, your child will be scheduled in 2-3 weeks to return for a post-operative appointment. This is a standard follow-up exam and is not specific to the study being conducted. At this appointment, the dentist will examine your child and assure that the fillings are in good condition and areas are healing well, answer any questions you may have and discuss diet and oral hygiene with you and your child to prevent future cavities.
- This appointment is the standard of care for treatment following dental treatment under general anesthesia.

3-Month Exam and Fluoride Treatment Appointment
- You and your child will be asked to return 3 months after the dental treatment is completed under general anesthesia for an exam and fluoride varnish treatment.
This is a standard follow-up exam and is not specific to the study being conducted. You will be sent reminders to schedule this 3-month visit, and you are responsible for calling the clinic to make the appointment for your child’s 3 month visit.

- At this time we will discuss oral hygiene (brushing and flossing) and diet with you and your child. Your child will receive a fluoride treatment to protect their teeth.
- At this visit you will be asked to complete an additional questionnaire.
- This appointment is the standard of care for treatment following dental treatment under general anesthesia.

This study ends following the 3-month visit.

- Study location: All these procedures will be done at the UCSF Pediatric Dental Clinic at 707 Parnassus Ave. and the Ambulatory Surgery Center at 400 Parnassus Ave., San Francisco CA.

How long will I be in the study?

You will be asked to participate for 3 months after your child has had dental treatment under general anesthesia. You will return for a post-operative appointment at 2-3 weeks. You will also return for a 3-month exam and fluoride treatment. After the 3-month visit, you will have completed your participation in this study.

Can I stop being in the study?

Yes. You can decide to stop at any time. Just tell the study researcher or staff person right away if you wish to stop being in the study. Also, the study researcher may stop you from taking part in this study at any time if he or she believes it is in your best interest, if you do not follow the study rules, or if the study is stopped.

What side effects or risks can I expect from being in the study?

- A computer will assign your child to a treatment group (either phone calls or text messages) by chance. The treatment your group receives may be less effective than the other group.
- By agreeing to receive 8-10 text messages in this study, you may have an additional charge to your cell phone plan if you do not have unlimited text messages as part of your plan.
- Your child’s dental treatment will not be affected by your participation in this study.
- For more information about risks and side effects, ask one of the researchers.

Are there benefits to taking part in the study?

There may or may not be a direct benefit from participating. One group will receive additional dental educational information by text messages that may help your child have better dental health and fewer cavities. We also hope that the information learned may allow health professionals to help other parents and their children prevent tooth decay.
What other choices do I have if I do not take part in this study?

You are free to choose not to participate in the study. If you decide not to take part in this study, there will be no penalty to you and you will receive the same care with only reminder phone calls and not receive text messages. You will not lose any of your regular benefits, and you can still get your care from our institution the way you usually do.

Will information about me be kept private?

We will do our best to make sure that the personal information gathered for this study is kept private. However, we cannot guarantee total privacy. Your personal information may be given out if required by law. If information from this study is published or presented at scientific meetings, your name and other personal information will not be used.

What are the costs of taking part in this study?

You will not be charged to participate in this study. The study will not cover your child’s dental treatment costs. You will be responsible for dental treatment costs (if they are not covered by insurance). By agreeing to receive text messages in this study, you may have an additional charge to your cell phone plan for each text message received if you do not have unlimited text messages as part of your plan.

Will I be paid for taking part in this study?

You will not be paid for taking part in this study.

What are my rights if I take part in this study?

Taking part in this study is your choice. You may choose either to take part or not to take part in the study. If you decide to take part in this study, you may leave the study at any time. No matter what decision you make, there will be no penalty to you in any way. You will not lose any of your regular benefits, and you can still get your care from our institution the way you usually do.

Who can answer my questions about the study?

You can talk to the researcher(s) about any questions, concerns, or complaints you have about this study. Contact the researcher(s) Dr. Susan Hyde or Dr. Stacy Baker at (415) 476-3276 or (415) 476-6011.

If you wish to ask questions about the study or your rights as a research participant to someone other than the researchers or if you wish to voice any problems or concerns you may have about the study, please call the Office of the Committee on Human Research at 415-476-1814.
CONSENT
You have been given a copy of this consent form to keep. You will be asked to sign a separate form authorizing access, use, creation, or disclosure of health information about you.
PARTICIPATION IN RESEARCH IS VOLUNTARY. You have the right to decline to be in this study, or to withdraw from it at any point without penalty or loss of benefits to which you are otherwise entitled.
If you wish to participate in this study, you should sign below.

Date ________________ Participant’s Signature for Consent ________________

Date ________________ Person Obtaining Consent ________________
APPENDIX G: AIM 3 TEXT MESSAGES

Text Messages (<160 Characters Each)

Enrollment
Please call UCSF Pediatric Dental Clinic @ 415-476-3276 if your child has a dental emergency or needs to reschedule an appointment.

Week 0
Children need help brushing their teeth until age 6 to 7 – an adult should always help the child brush in the morning & at night before going to bed.

Week 4
Give your child tap water when they are thirsty. Sweet drinks like juice, chocolate milk, and soda contain sugar and cause cavities.

Week 6
Please use a smear of fluoride toothpaste when brushing your child’s teeth - fluoride makes their teeth strong and helps prevent cavities.

Week 8
Your child is at high risk for getting new cavities – please bring your child to UCSF every 3 months for fluoride treatment to prevent new cavities.

Week 10
Tooth healthy snacks are cheese, veggies, fruit & yogurt. Avoid starchy/sticky snacks like chips, cookies, candy & crackers that cause cavities.

Reminder Messages

Week 2 and Week 13 (day before)
XXX has a follow-up appointment on XX-XX-XX at XX:XX at UCSF Dental Clinic. Questions call 415-476-3276

Week 12
XXX will soon be due for a 3-month check-up. Please call 415-476-3276 to schedule the appointment.

Missed Appointment

XXX as missed their appointment for a 3-month check-up. Please call 415-476-3276 to reschedule this appointment.
Text Message Study: Baseline Questionnaire

UNLESS OTHERWISE SPECIFIED, PLEASE CHECK THE SINGLE BEST ANSWER FOR EACH QUESTION

Demographics

1. What is your child’s age?
   a) ____ 1 year old
   b) ____ 2 years old
   c) ____ 3 years old
   d) ____ 4 years old
   e) ____ 5 years old
   f) ____ 6 years old
   g) ____ Other please list: ______

2. What is your child’s gender?
   a) ___ Male
   b) ___ Female

3. What is your child’s race? (select all that apply)
   a) ___ White
   b) ___ African American
   c) ___ Hispanic
   d) ___ Asian
   e) ___ Other please list: __________________
   f) ___ Don’t know
   g) ___ Prefer not to answer

4. What is your relationship to the child in this study?
   a) ___ Mother
   b) ___ Father
   c) ___ Grandparent
   d) ___ Relative (aunt/uncle/sibling)
   e) ___ Guardian
   h) ___ Other please list: __________________

5. How old are you?
   a) ___ Under 20 years old
6. What type of dental insurance does this child have?
   a) ___ Medicaid (Denti-Cal)
   b) ___ Healthy Kids / Healthy Families
   c) ___ CCS
   d) ___ Private insurance (Delta Dental, Blue Cross, etc)
   e) ___ No insurance, I pay cash for my child’s visits
   f) ___ Other please list: ____________________

7. What is the primary language spoken at the child’s home?
   a) ___ English
   b) ___ Spanish
   c) ___ Chinese
   d) ___ Other please list: ____________________

8. How much time would it take you and your child to travel to UCSF Dental clinic?
   a) ___ 0-15 min
   b) ___ 16-30 min
   c) ___ 31-60 min
   d) ___ 61-90 min
   e) ___ 91-120 min
   f) ___ More than 120 min
   g) ___ Don’t know

9. What is the child’s home zip code?

__________________

10. Do you plan to return to UCSF Pediatric Dental Clinic for follow-up care after your child has dental surgery or will you go to another dental clinic?
    a) ___ UCSF Pediatric Dental Clinic
    b) ___ Another dental clinic

11. Do you have another dentist or dental clinic for your child’s dental care, other than UCSF?
    a) ___ Yes
    b) ___ No
Dental

1. How often are your child’s teeth brushed?
   a) ___ Never
   b) ___ Sometimes but not every day
   c) ___ Once a day
   d) ___ Twice a day
   e) ___ More than twice a day
   f) ___ Don’t know

2. When your child’s teeth are brushed, is fluoride toothpaste used?
   a) ___ Yes
   b) ___ No
   c) ___ Don’t know

3. Do you or another adult help your child brush his or her teeth?
   a) ___ No my child brushes alone
   b) ___ Yes, sometimes
   c) ___ Yes, most of the time
   d) ___ Yes, always
   e) ___ Don’t know

4. How often does your child eat sweet or sugary foods (for example candy, cookies, donuts, ice cream)?
   a) ___ Never
   b) ___ At least once per week, but not every day
   c) ___ Once a day
   d) ___ Twice a day
   e) ___ Three times a day
   f) ___ Four times a day
   g) ___ Five or more times a day
   h) ___ Don’t know

5. How often does your child eat sweet or sugary drinks (for example juice, soda, pop, Kool-Aid, Gatorade, Coke, Lemonade, Chocolate Milk)?
   a) ___ Never
   b) ___ At least once per week, but not every day
   c) ___ Once a day
   d) ___ Twice a day
   e) ___ Three times a day
   f) ___ Four times a day
   g) ___ Five or more times a day
6. If your child is at high risk for getting cavities, how often should they come to UCSF for a check up and fluoride treatment?

   a) ___ Never
   b) ___ Only when they have pain
   c) ___ Every 12 months
   d) ___ Every 6 months
   e) ___ Every 3 months
   f) ___ Every month
   g) ___ Don’t know

7. At what age can a child brush his/her teeth by himself/herself?

   a) ___ 1 year old
   b) ___ 2 years old
   c) ___ 3 years old
   d) ___ 4 years old
   e) ___ 5 years old
   f) ___ 6 years old
   g) ___ 7 years old or older
   h) ___ Don’t know

8. What should you give your child to drink when they are thirsty? Choose the best answer.

   a) ___ Milk
   b) ___ Juice
   c) ___ Water
   d) ___ Soda
   e) ___ Nothing
   f) ___ Don’t know

**Text Message Usage**

1. Do you have a personal cell phone?

   a) ___ Yes
   b) ___ No

2. What cell phone company do you use?
3. Are you able to send and receive a text message on your cell phone?
   a) ___ Yes
   b) ___ No

4. How many text messages do you receive on your phone each day?
   a) ___ 0
   b) ___ 1-4
   c) ___ 5-8
   d) ___ 8-12
   e) ___ more than 12

5. Would you be interested in receiving text messages from UCSF Pediatric Dentistry Clinic with reminders for dental appointments?
   a) ___ Yes
   b) ___ No

6. Are you interested in receiving text messages from UCSF Pediatric Dentistry Clinic with information and reminders about taking care of your child’s teeth and gums?
   a) ___ Yes
   b) ___ No

7. How many text messages would you be willing to receive from UCSF Pediatric Dentistry Clinic a month?
   a) ___ 0   b) ___ 1   c) ___ 2   d) ___ 3   e) ___ 4   f) ___ 5 or more

8. Do you currently receive any forms of health information by text message?
   a) ___ Yes
   b) ___ No

9. Do you currently receive any appointment reminders by text message?
   a) ___ Yes
   b) ___ No

10. Which way do you prefer most to be reminded for your child’s dental appointments?
    a) ___ Text message
    b) ___ Phone call
    c) ___ Email
    d) ___ Postcard
    e) ___ Other Please list: _______________
    f) ___ I do not want a reminder
APPENDIX I: AIM 3 THREE MONTH QUESTIONNAIRES

University of California San Francisco, School of Dentistry
Division of Pediatric Dentistry

Text Message Study: 3-Month Recall Questionnaire - Experimental

UNLESS OTHERWISE SPECIFIED, PLEASE CHECK THE SINGLE BEST ANSWER FOR EACH QUESTION

Text Messages

1. Did you receive text messages from the UCSF Pediatric Dental Clinic about caring for your child’s teeth?
   a) ___ Yes
   b) ___ No
   c) ___ Not sure

2. Did you read the text messages that were sent to you from UCSF Pediatric Dental Clinic regarding your child’s teeth?
   a) ___ Always
   b) ___ Sometimes
   c) ___ Rarely
   d) ___ Never

3. Did you use the information that was sent to you in text messages to help you care for your child’s teeth?
   a) ___ Always
   b) ___ Sometimes
   c) ___ Rarely
   d) ___ Never

4. Which way do you prefer most to be reminded for your child’s dental appointments?
   a) ___ Text message
   b) ___ Phone call
Dental

1. How often are your child’s teeth brushed?
   a) ___ Never
   b) ___ Sometimes but not every day
   c) ___ Once a day
   d) ___ Twice a day
   e) ___ More than twice a day
   f) ___ Don’t know

2. When your child’s teeth are brushed, is fluoride toothpaste used?
   a) ___ Yes
   b) ___ No
   c) ___ Don’t know

3. Do you or another adult help your child brush his or her teeth?
   a) ___ No my child brushes alone
   b) ___ Yes, sometimes
   c) ___ Yes, most of the time
   d) ___ Yes, always
   e) ___ Don’t know

4. How often does your child eat sweet or sugary foods (for example candy, cookies, donuts, ice cream)?
   a) ___ Never
   b) ___ At least once per week, but not every day
   c) ___ Once a day
   d) ___ Twice a day
   e) ___ Three times a day
   f) ___ Four times a day
   g) ___ Five or more times a day
   h) ___ Don’t know

5. How often does your child eat sweet or sugary drinks (for example juice, soda, pop. Kool-Aid, Gatorade, Coke, Lemonade, Chocolate Milk)?
   a) ___ Never
   b) ___ At least once per week, but not every day
c) ___ Once a day  
d) ___ Twice a day  
e) ___ Three times a day  
f) ___ Four times a day  
g) ___ Five or more times a day  
h) ___ Don’t know

6. If your child is at high risk for getting cavities, how often should they come to UCSF for a check up and fluoride treatment?

a) ___ Never  
b) ___ Only when they have pain  
c) ___ Every 12 months  
d) ___ Every 6 months  
e) ___ Every 3 months  
f) ___ Every month  
g) ___ Don’t know

7. At what age can a child brush his/her teeth by himself/herself?

i) ___ 1 year old  
j) ___ 2 years old  
k) ___ 3 years old  
l) ___ 4 years old  
m) ___ 5 years old  
n) ___ 6 years old  
o) ___ 7 years old or older  
p) ___ Don’t know

8. What should you give your child to drink when they are thirsty? Choose the best answer.

g) ___ Milk  
h) ___ Juice  
i) ___ Water  
j) ___ Soda  
k) ___ Nothing  
l) ___ Don’t know

Please give any comments or suggestions you may have.

________________________________________________________________________

________________________________________________________________________

Thank you for your participation in this research study.
Text Message Study: 3-Month Recall Questionnaire - Control

UNLESS OTHERWISE SPECIFIED, PLEASE CHECK THE SINGLE BEST ANSWER FOR EACH QUESTION

Which way do you prefer most to be reminded for your child’s dental appointments?

a) ___ Text message  
b) ___ Phone call  
c) ___ Email  
d) ___ Postcard  
e) ___ Other Please list: __________  
f) ___ I do not want a reminder

Dental

1. How often are your child’s teeth brushed?

a) ___ Never  
b) ___ Sometimes but not every day  
c) ___ Once a day  
d) ___ Twice a day  
e) ___ More than twice a day  
f) ___ Don’t know

2. When your child’s teeth are brushed, is fluoride toothpaste used?

a) ___ Yes  
b) ___ No  
c) ___ Don’t know

3. Do you or another adult help your child brush his or her teeth?

a) ___ No my child brushes alone  
b) ___ Yes, sometimes  
c) ___ Yes, most of the time  
d) ___ Yes, always  
e) ___ Don’t know
4. How often does your child eat sweet or sugary foods (for example candy, cookies, donuts, ice cream)?

   a) ___ Never
   b) ___ At least once per week, but not every day
   c) ___ Once a day
   d) ___ Twice a day
   e) ___ Three times a day
   f) ___ Four times a day
   g) ___ Five or more times a day
   h) ___ Don’t know

5. How often does your child eat sweet or sugary drinks (for example juice, soda, pop. Kool-Aid, Gatorade, Coke, Lemonade, Chocolate Milk)?

   a) ___ Never
   b) ___ At least once per week, but not every day
   c) ___ Once a day
   d) ___ Twice a day
   e) ___ Three times a day
   f) ___ Four times a day
   g) ___ Five or more times a day
   h) ___ Don’t know

6. If your child is at high risk for getting cavities, how often should they come to UCSF for a check up and fluoride treatment?

   a) ___ Never
   b) ___ Only when they have pain
   c) ___ Every 12 months
   d) ___ Every 6 months
   e) ___ Every 3 months
   f) ___ Every month
   g) ___ Don’t know

7. At what age can a child brush his/her teeth by himself/herself?

   q) ___ 1 year old
   r) ___ 2 years old
   s) ___ 3 years old
   t) ___ 4 years old
   u) ___ 5 years old
   v) ___ 6 years old
   w) ___ 7 years old or older
   x) ___ Don’t know
8. What should you give your child to drink when they are thirsty? Choose the best answer.

   m) ____ Milk
   n) ____ Juice
   o) ____ Water
   p) ____ Soda
   q) ____ Nothing
   r) ____ Don’t know

Please give any comments or suggestions you may have.

__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________

Thank you for your participation in this research study.
University of California
Permission to Use Personal Health Information for Research

Study Title (or IRB Approval Number if study title may breach subject’s privacy):

Does Using Text Messaging Improve Follow-Up Attendance After Completing Pediatric Dental Treatment Under General Anesthesia?

Sponsor/Funding Agency (if funded):

none

A. What is the purpose of this form?
State and federal privacy laws protect the use and release of your health information. Under these laws, the University of California or your health care provider cannot release your health information to the research team unless you give your permission. The research team includes the researchers and people hired by the University or the sponsor to do the research. If you decide to give your permission and to participate in the study, you must sign this form as well as the Consent Form. This form describes the different ways that the researcher, research team and research sponsor may use your health information for the research study. The research team will use and protect your information as described in the attached Consent Form. However, once your health information is released it may not be protected by the privacy laws and might be shared with others. If you have questions, ask a member of the research team.

B. What Personal Health Information will be released?
If you give your permission and sign this form, you are allowing Dr. Baker [insert UC campus or name of health care provider(s) releasing medical records] to release the following medical records containing your Personal Health Information. Your Personal Health Information includes health information in your medical records and information that can identify you. For example, Personal Health Information may include your name, address, phone number or social security number.

☐ Entire Medical Record ☐ Laboratory Reports ☐ Emergency Medicine Center Reports
☐ Health Care Billing Statements ☐ Dental Records ☐ History & Physical Exams
☐ Pathology Reports ☐ Operative Reports ☐ Diagnostic Imaging Reports
☐ EKG ☐ Radiology Reports ☐ Consultations
☐ Progress Notes ☐ Radiologic & MR Scans ☐ Outpatient Clinic Records
☐ Other (describe) ☐ Discharge Summary ☐ Psychological Tests

Research Authorization
C. Do I have to give my permission for certain specific uses?
Yes. The following information will only be released if you give your specific permission by putting your initials on the line(s).

_____ I agree to the release of information pertaining to drug and alcohol abuse, diagnosis or treatment.
_____ I agree to the release of HIV/AIDS testing information.
_____ I agree to the release of genetic testing information.
_____ I agree to the release of information pertaining to mental health diagnosis or treatment as follows:

D. How will my Personal Health Information be used?
Your Personal Health Information may be released to these people for the following purposes:

1. To the research team for the research described in the attached Consent Form;
2. To others at UC who are required by law to review the research;
3. To others who are required by law to review the quality and safety of the research, including:
   U.S. government agencies, such as the Food and Drug Administration, the research sponsor or
   the sponsor’s representatives, or government agencies in other countries. These organizations
   and their representatives may see your Personal Health Information. They may not copy or take
   it from your medical records unless permitted or required by law.

E. How will my Personal Health Information be used in a research report?
If you agree to be in this study, the research team may fill out a research report. (This is sometimes
called “a case report.”) The research report will not include your name, address, or telephone or social
security number. The research report may include your date of birth, initials, dates you received medical
care, and a tracking code. The research report will also include information the research team collects
for the study. The research team and the research sponsor may use the research report and share it
with others in the following ways:

1. To perform more research;
2. Share it with researchers in the U.S. or other countries;
3. Place it into research databases;
4. Use it to improve the design of future studies;
5. Use it to publish articles or for presentations to other researchers;
6. Share it with business partners of the sponsor; or
7. File applications with U.S. or foreign government agencies to get approval for new drugs or health
care products.
F. Does my permission expire?
This permission to release your Personal Health Information expires when the research ends and all required study monitoring is over. Research reports can be used forever.

G. Can I cancel my permission?
You can cancel your permission at any time. You can do this in two ways. You can write to the researcher or you can ask someone on the research team to give you a form to fill out to cancel your permission. If you cancel your permission, you may no longer be in the research study. You may want to ask someone on the research team if canceling will affect your medical treatment. If you cancel, information that was already collected and disclosed about you may continue to be used. Also, if the law requires it, the sponsor and government agencies may continue to look at your medical records to review the quality or safety of the study.

H. Signature
If you agree to the use and release of your Personal Health Information, please sign below. You will be given a signed copy of this form.

______________________________
Subject’s Name (print)

______________________________   ______________
Subject’s Signature             Date
Human Research Protection Program
Committee on Human Research

Notification of Expedited Review Approval

Principal Investigator: Susan Hyde
Co-Principal Investigator: Jane A Weintraub, Stacy L Baker

Type of Submission: Initial Review Submission Packet

Study Title: Does using Text Messaging Improve Follow-Up Attendance After Completing Pediatric Dental Treatment Under General Anesthesia (GA)?

IRB #: 11-05869
Reference #: 027548

Committee of Record: Parnassus Panel

Study Risk Assignment: Minimal

Approval Date: 10/11/2011
Expiration Date: 10/10/2012

Regulatory Determinations Pertaining to this Approval:

Individual HIPAA authorization is required.

A waiver of HIPAA Authorization is acceptable for the recruitment procedures to identify potential subjects. The recruitment procedures involve routine review of medical or other records, do not adversely affect the rights and welfare of the individuals, and pose minimal risk to their privacy, based on, at least, the presence of the following elements: (1) an adequate plan to protect the identifiers from improper use and disclosure; (2) an adequate plan to destroy the identifiers at the earliest opportunity consistent with conduct of the research, or a health or research justification for retaining the identifiers was provided or such retention is otherwise required by law; (3) adequate written assurances that the requested information will not be reused or disclosed to any other person or entity, except as required by law, for authorized oversight of the research study, or for other research for which the use or disclosure of the requested information would be permitted by the Privacy Rule; (4) the research could not practically be conducted without the waiver; and (5) the research could not practically be conducted without access to and use of the requested information.

IRB Comments:

All changes to a study must receive CHR approval before they are implemented. Follow the modification request instructions. The only exception to the requirement for prior CHR review and approval is when the changes are necessary to eliminate apparent immediate hazards to the subject (45 CFR 46.103.b.4, 21 CFR 56.108.a). In such cases, report the actions taken by following these instructions.

Expiration Notice: The iMedRIS system will generate an email notification eight weeks prior to the expiration of this study’s approval. However, it is your responsibility to ensure that an application for continuing review approval has been submitted by the required time. In addition, you are required to submit a study closeout report at the completion of the project.
Publishing Agreement
It is the policy of the University to encourage the distribution of all theses, dissertations, and manuscripts. Copies of all UCSF theses, dissertations, and manuscripts will be routed to the library via the Graduate Division. The library will make all theses, dissertations, and manuscripts accessible to the public and will preserve these to the best of their abilities, in perpetuity.

Please sign the following statement:
I hereby grant permission to the Graduate Division of the University of California, San Francisco to release copies of my thesis, dissertation, or manuscript to the Campus Library to provide access and preservation, in whole or in part, in perpetuity.

[Signature]
Author Signature

[Date]
Date