

HAPPY SMILES REPORT

Study of School-Based Dental Prevention Efforts for 2004-2011

Executive Summary

The need for dental health prevention services in Oregon is unquestionable. Our state has the third lowest rate of community water fluoridation in our nation and one of the worst rates of cavities, including rampant decay, among children.

With your support, we created a dental health prevention program that is making a difference in our community. Our achievements stand as a testament to the passion and professionalism of our Happy Smiles team; the support of our school and community partners; and the trust that you, the Walker Fund, have placed in La Clinica.

In the last seven years we have provided the following services:

1. Dental Education: 34,198 children at 20 schools¹;
2. Dental Health Screenings: 11,628 screenings performed at 18 schools;
3. Fluoride Varnish Application: 16,402 fluoride varnish applications at 17 schools;
4. Sealant Application: 4,379 students received 13,858 sealants at 16 schools;
5. Case Management: 2,906 students received case management services at 16 schools.

In this time frame, we have seen improvements in our health outcome measures:

1. Untreated cavities for students in 1st through 3rd grade decreased by 28 percent and the incidence of treated cavities decreased by 7 percent.²
2. Untreated cavities for students in 4th through 6th grade decreased by 19 percent, and treated cavities increased by 2 percent.

The return on investment for this project is tremendous. In analyzing just our sealant component—where we have successfully protected 13,858 teeth—we have averted \$16,491,400 in restorative dental costs over a 20-year period for a ROI of 1,313%.

$$\text{ROI} = \frac{(\text{Gain from Investment} - \text{Cost of Investment})}{\text{Cost of Investment}} = \frac{16,491,400 - 1,166,800}{1,166,800} = 13.13$$

This return on investment does not include the financial benefits of our dental education; screening, referral, and case management services; fluoride treatment program; or the benefit of keeping children in schools (a value of \$37 per day, per child).

The future of Happy Smiles truly depends on the Walker Fund—you currently support 68 percent of this program. We hope to continue this program, with Walker Fund support, into the foreseeable future. In this time we want to accomplish the following:

1. Continue existing program, at current service levels;
2. Incorporate federal funding to cover 15 percent of program costs;
3. Audit billing records to maximize billing revenue;
4. Conduct a longitudinal study of health outcomes attributable to the program;
5. Re-evaluate the need for support for our mental health program.

¹ Student number does not represent unduplicated users.

² Untreated decay reflects visible cavities that have not been treated; treated decay reflects cavities that have been removed and filled; and rampant decay reflects decay in seven or more teeth.

Program History:

A 2000 U.S. General Accounting Office report documented the extent of the dental health crisis in our nation by acknowledging that dental disease is now the most common of childhood diseases: “five times more common than asthma and seven times more common than hay fever.” This report also described how pain and suffering associated with dental disease impacts children by contributing to difficulties in eating, speaking, and learning, and the direct loss of more than 51 million school hours each year (see attachment, titled *Oral Health and Learning*, for more information on how poor dental health impacts learning).

Although La Clinica runs the only full-time, comprehensive community dental program in our county, we are powerless to effectively address the dental health needs of vulnerable children without additional community support because demand for our restorative and rehabilitative dental services is so great. In Jackson County, roughly 85,000 residents have no dental insurance and do not earn enough to afford dental care. In 2010, our dental clinics served 5,300 dental patients—about 6 percent of the need in our community.

Given our limited dental service capacity, it is safe to assume that the majority of uninsured and underinsured residents of Jackson County are going without dental care—this includes a high number of children, working poor, the homeless, and the elderly.

In 2004, La Clinica del Valle called on the Reed and Carolee Walker Fund to help launch a radical enterprise to address the dental health crisis in our community. Through your support, we created the Happy Smiles program to improve the health and wellbeing of the most vulnerable children in our community.

Our Happy Smiles program was designed under the guiding principle that cavities are highly preventable, and that by following best practices of providing school-based comprehensive dental education, as well as fluoride and sealant treatments, we could indeed improve the dental health of our community. We are thrilled to report that our Happy Smiles program continues to be extremely successful. The following analysis demonstrates that Happy Smiles works and that our services are a great investment in the health and wellbeing of our community.

Dental Health Education Program:

Education is the cornerstone of our Happy Smiles program. Our program provides dental health education to every child enrolled at a participating school—this education is delivered through a 45-minute, in-class presentation that teaches students the causes of cavities, how to properly take care of their teeth, proper nutrition, the importance of professional dental care, the cost of not taking care of their teeth, and the role of fluoride in dental health.

This curriculum has been approved by La Clinica’s dental director and is designed to be dynamic and developmentally appropriate for children in primary school (the tooth fairy visits kindergarteners and 1st graders). During this phase of our program, all children receive a dental health kit that includes a toothbrush, toothpaste, 2-minute timer, and floss. Included in this kit is additional dental health education to reinforce what the student learned in the classroom and to educate parents (see attachment).

We are very grateful for the level of support we have received from the schools: it is quite a commitment for them to give us 45 minutes of education time—per class—to provide this service. Our education service numbers reflect this amazing partnership.

Figure 1: Service Detail for Education Program

Service Year	Students Served	Number of Schools Served	Title I Schools Served
2004-2005	2,417	12	Evans Valley, Howard, Jackson, Jewett, Lincoln, Mountain View, Oak Grove, Phoenix, Talent, Walker, Washington, & White City.
2005-2006	4,238	11	Evans Valley, Howard, Jackson, Jewett, Oak Grove, Patrick , Phoenix, Rogue River , Sams Valley , Talent, & Washington.
2006-2007	4,584	12	Central Point , Evans Valley, Howard, Jackson, Mae Richardson , Oak Grove, Patrick, Phoenix, Rogue River, Sams Valley, Talent , & Washington.
2007-2008	4,880	13	Central Point, Evans Valley, Howard, Jackson, Jefferson , Oak Grove, Orchard Hill , Patrick, Phoenix, Rogue River, Sams Valley, Washington, & Wilson .
2008-2009	5,751	14	Central Point, Evans Valley, Howard, Jackson, Jefferson, Jewett , Oak Grove, Orchard Hill , Patrick , Phoenix, Rogue River, Sams Valley, Washington, & Wilson .
2009-2010	5,934	15	Central Point, Evans Valley , Howard, Jackson, Jefferson, Jewett, Oak Grove, Orchard Hill , Patrick , Phoenix, Sams Valley, Rogue River, Roosevelt , Washington, & Wilson .
2010-2011	6,394	16	Central Point, Evans Valley , Howard, Jackson, Jefferson, Jewett, Kennedy , Oak Grove, Orchard Hill , Patrick , Phoenix, Sams Valley, Rogue River, Roosevelt, Washington, & Wilson .

*Schools in blue receive education, fluoride application (2x a year), limited screening, and supplies, but not sealant services. Schools in bold font were NEW schools added that academic year.

Dental Health Screening Services:

Our in-depth dental health screening is a critical component of our program; we provide this service to every child with parental consent for treatment. Licensed and highly trained dental assistants conduct a visual screening—they look for cavities, determine plaque levels, and test for gingivitis. This work takes about 15 minutes per child.

During this phase, students are given first hand training on how to properly brush their teeth—reinforcing what they learned in class—and are given their first fluoride varnish application. Students with eligible healthy teeth are referred for sealant applications, and those with low risk caries are referred to a dentist for care. Students with severe caries are case managed by our staff (more on this case management later).

Again, the success of this program is directly attributable to our partnership with the schools and parents. On average, 40 percent of parents give us written consent to provide additional prevention services.

Figure 2: Service Detail for Dental Health Screening

Service Year	Students Served	Number of Schools Served	Title I Schools Served
2004-2005	825	11	Jackson, Jewett, Howard, Lincoln, Mountain View, Oak Grove, Phoenix, Talent, Walker, Washington, & White City.
2005-2006	1,587	10	Evans Valley, Howard, Jackson, Jewett, Oak Grove, Patrick, Phoenix, Sams Valley, Talent, & Washington.
2006-2007	1,528	10	Central Point, Evans Valley, Howard, Jackson, Oak Grove, Patrick, Phoenix, Rogue River, Sam's Valley, & Washington.
2007-2008	1,573	10	Central Point, Evans Valley, Jackson, Howard, Oak Grove, Patrick, Phoenix, Sam's Valley, Rogue River, & Washington.
2008-2009	2,050	12	Central Point, Evans Valley, Howard, Jackson, Jefferson, Jewett, Oak Grove, Phoenix, Sam's Valley, Rogue River, Washington, & Wilson.
2009-2010	1,923*	12	Central Point, Evans Valley, Howard, Jackson, Jefferson, Jewett, Oak Grove, Phoenix, Sam's Valley, Rogue River, Roosevelt, Washington, & Wilson.
2010-2011	2,450	13	Central Point, Evans Valley, Howard, Jackson, Jefferson, Jewett, Oak Grove, Phoenix, Sam's Valley, Rogue River, Roosevelt, Washington, Wilson, & Kennedy.

*This reduction was caused by confusion over a reference to billing for services on the Consent Form. Our intention was to advise parents that we would bill for eligible services if possible; parents misinterpreted this section and thought we would be charging them for services. We have since clarified the language related to insurance billing.

Fluoride Treatment:

In the 2004-2005 academic year, we administered prescription-strength fluoride rinse to all students with parental consent. The following year we switched to fluoride varnish after the American Dental Association and the American Academy of Pediatric Dentistry identified fluoride varnish as the best treatment for primary school-aged children.

Fluoride varnish is a topical solution that can be easily applied by a trained health care professional. This intervention has been proven to re-mineralize tooth enamel and delay the advance of dental caries in children. To comply with best practices, we now provide two applications of fluoride per year.

Figure 3: Service Detail for Fluoride Treatment

Service Year	Number of Applications	Number of Schools Served	Title I Schools Served
2004-2005	623	10	Evans Valley, Howard, Jackson, Jewett, Lincoln, Oak Grove, Phoenix, Talent, Walker, & Washington.
2005-2006	1,508	10	Evans Valley, Howard, Jackson, Jewett, Oak Grove, Patrick, Phoenix, Sams Valley, Talent, & Washington.
2006-2007	1,930	11	Central Point, Evans Valley, Howard, Jackson, Oak Grove, Patrick, Phoenix, Rogue River, Sam's Valley, & Washington.
2007-2008	2,273	13	Central Point, Evans Valley, Howard, Jackson,

			Jefferson, Oak Grove, Orchard Hill, Patrick, Phoenix, Sam's Valley, Rogue River, Washington, & Wilson.
2008-2009	3,795	14	Central Point, Evans Valley, Howard, Jackson, Jefferson, Jewett, Oak Grove, Orchard Hill, Patrick, Phoenix, Sam's Valley, Rogue River, Washington, & Wilson.
2009-2010	2,645	15	Central Point, Evans Valley, Howard, Jackson, Jefferson, Jewett, Oak Grove, Orchard Hill, Patrick, Phoenix, Sam's Valley, Rogue River, Washington, & Wilson, & Roosevelt.
2010-2011	3,628	16	Central Point, Evans Valley, Howard, Jackson, Jefferson, Jewett, Oak Grove, Orchard Hill, Patrick, Phoenix, Sam's Valley, Rogue River, Washington, & Wilson, Roosevelt, & Kennedy.

Sealant Services:

Dental sealants are a thin plastic coating applied to the chewing surfaces of adult molars. The coating fills pits and grooves to “seal” teeth from decay-causing bacteria—eighty-five percent of tooth decay occurs in these areas. Sealants are a critical tool in combating rampant decay, particularly in high-risk populations (uninsured and low-income children). Applying sealant applications in the school settings is recommended by the ADA Council on Scientific Affairs and the CDC (see attachment, titled *School-Based Dental Sealant Program*, for more information on sealants).

All children who have at least one eligible healthy tooth are referred to the sealant clinic. Our staff members spend several days at each school applying sealants—most children require at least three sealants and spend about 20 minutes with staff.

Figure 4: Service Detail for Sealant Services

Service Year	Students Served	Number of Teeth Sealed	Number of Schools Served	Title I Schools Served
2004-2005	78	257	7	Jackson, Mountain View, Oak Grove, Phoenix, Talent, Washington, & White City.
2005-2006	616	1,830	10	Evans Valley, Howard, Jackson, Jewett, Oak Grove, Patrick, Phoenix, Sams Valley, Talent, & Washington.
2006-2007	625	2,404	10	Central Point, Evans Valley, Howard, Jackson, Oak Grove, Patrick, Phoenix, Rogue River, Sam's Valley, & Washington.
2007-2008	742	1,893	10	Central Point, Evans Valley, Jackson, Howard, Oak Grove, Patrick, Phoenix, Sam's Valley, Rogue River, & Washington.
2008-2009	721	2,261	12	Central Point, Evans Valley, Howard, Jackson, Jefferson, Jewett, Oak Grove, Phoenix, Sam's Valley, Rogue River, Washington, & Wilson.
2009-2010	843	3,015	12	Central Point, Evans Valley, Howard, Jackson, Jefferson, Jewett, Oak Grove, Phoenix, Sam's Valley, Rogue River, Washington, & Wilson.
2010-2011	754*	2,198	13	Central Point, Evans Valley, Howard, Jackson,

				Jefferson, Jewett, Oak Grove, Phoenix, Sam's Valley, Rogue River, Washington, Wilson, & Kennedy.
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* This reduction is attributable to a new dentist who is very cautious about placing sealants.

Case Management:

Our Happy Smiles program has offered general case management services since its inception. In the service years of 2004 through 2007, this consisted of a letter to parents informing them that their child needed additional care—including a full description of the need and referral information. We followed up on referrals by contacting doctors' offices to confirm that the child received care.

We have now expanded our case management services to focus on children with urgent needs and/or rampant decay. In addition to the information sent home to parents, high-risk children also receive the following services:

1. Additional education to improve brushing and flossing;
2. Additional applications of fluoride varnish;
3. Personal contact to explain the need for restorative care and to help coordinate care;
4. Oregon Health Plan application assistance; support to maneuver complicated managed care plan rules; or referral assistance to access free or low-cost dental care;
5. Coordination with school officials and other social service agencies to make sure children receive the professional care they need.

We continue to help these children until they receive the restorative care they need and improve their dental home care.

Figure 5: Service Detail for Case Management Services

Service Year	Students Served	Number of Schools Served	Title I Schools Served
2004-2005	88	7	Jackson, Mountain View, Oak Grove, Phoenix, Talent, Washington, & White City.
2005-2006	628	10	Evans Valley, Howard, Jackson, Jewett, Oak Grove, Patrick, Phoenix, Sams Valley, Talent, & Washington.
2006-2007	675	10	Central Point, Evans Valley, Jackson, Howard, Oak Grove, Patrick, Phoenix, Rogue River, Sam's Valley, & Washington.
2007-2008	711	10	Central Point, Evans Valley, Jackson, Howard, Oak Grove, Patrick, Phoenix, Rogue River, Sam's Valley, & Washington.
2008-2009	475	12	Central Point, Evans Valley, Jackson, Jefferson, Jewett, Howard, Oak Grove, Phoenix, Rogue River, Sam's Valley, Washington, & Wilson.
2009-2010	152*	12	Central Point, Evans Valley, Jackson, Jefferson, Jewett, Howard, Oak Grove, Phoenix, Rogue River, Sam's Valley, Washington, & Wilson.
2010-2011	177	13	Central Point, Evans Valley, Jackson, Jefferson, Jewett, Howard, Oak Grove, Phoenix, Rogue River, Sam's Valley, Washington, Wilson, & Kennedy.

*This is the first year that we expanded our case management services and began tracking only the extensive case management services provided.

Service Evaluation:

To evaluate our services, we track three data sets to determine whether our services are improving the dental health of our patients and to measure changes in the dental health of our target population. These data sets are treated cavities, untreated cavities, and rampant decay. To test the effectiveness of our services, we compared our outcomes to the results of the 2007 Oregon Smile Survey, which is the most recent study of children’s dental health in our state.

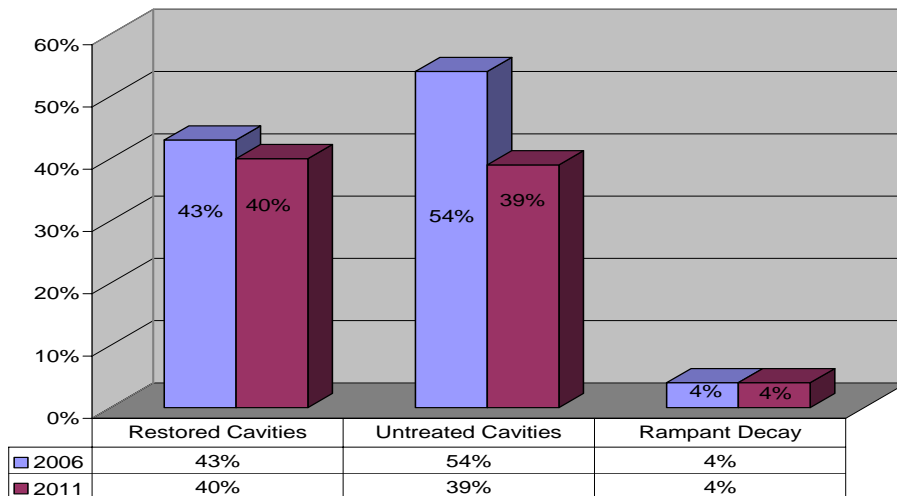
The Oregon Smile Survey is commissioned by the Oregon Department of Human Services and conducted every five years. In the study, researchers used the *Basic Screening Survey*—recommended by the CDC—to determine the dental health of 3,865 first, second, and third graders in Oregon. They found that between 2002 and 2007, the dental health of children in our state deteriorated significantly.

Oregon Smile Survey dental health finding for children in 1st, 2nd, and 3rd grades:

1. The rate of untreated cavities increased by 49 percent;
2. Two out of three Oregon children already have cavities;
3. More than half of children in Oregon have untreated cavities;
4. An estimated 27 percent of children in Oregon had not seen a dentist in the previous year.

To compare our data sets to these findings, we organized our data into 1st through 3rd grade and 4th through 6th grade sub-sets from schools that have participated in our program for at least five years.³ The following table describes the rate of treated cavities, untreated cavities, and rampant decay for students in grades 1st through 3rd.

Figure 6: Comparison of Student Dental Health (1st through 3rd grade)

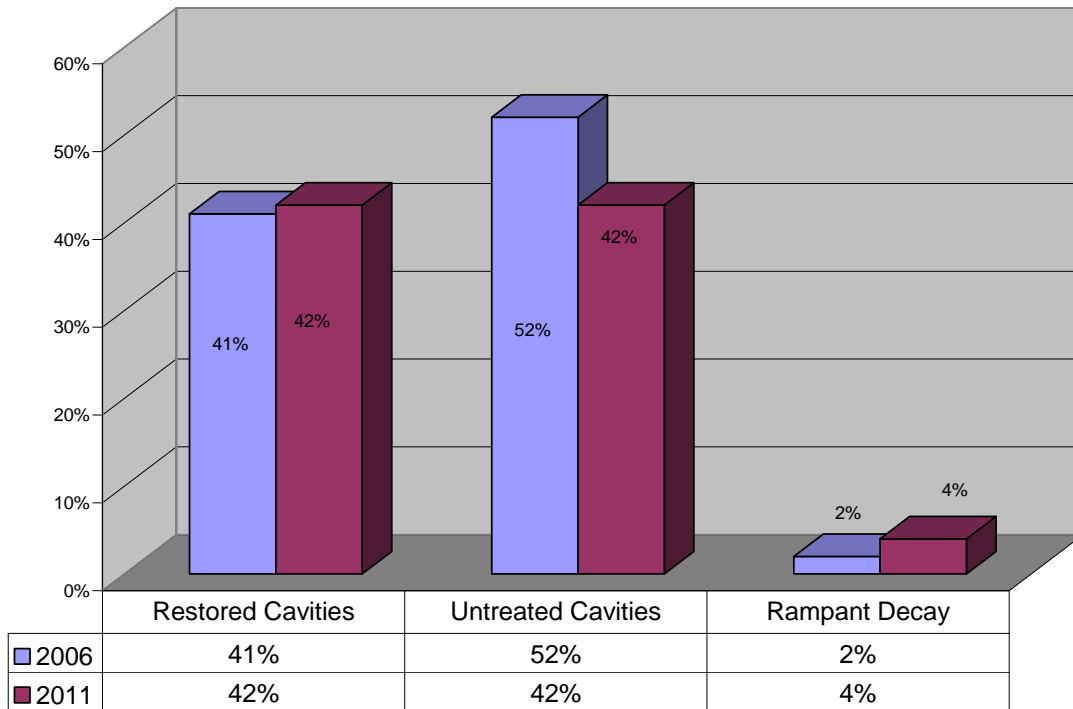


Between 2006 and 2011 the incidence of restored cavities in 1st through 3rd grade decreased by 7 percent and untreated cavities decreased by 28 percent. Quite the opposite happened in Oregon between 2002 and 2007. During that time frame, the rate of untreated cavities increased by 49 percent.

³ Evans, Howard, Jackson, Oak Grove, Phoenix, Rogue River, Sams Valley, and Washington, ,

For upper grade students, the improvements were significant—particularly in untreated cavities. Keep in mind that these students have been in our program the longest. Between 2006 and 2011, untreated cavities for these students *decreased* by 19 percent. Because this data set for this age group reflects the real impact of work, we are thrilled with this outcome.

Figure 7: Comparison of Student Dental Health (4th - 6th grades)



These improvements are remarkable, particularly when you consider the number of uninsured and low-income students we serve. In 2011, 37 percent of our students were uninsured and 41 percent had OHP coverage.

Because our comparison data is four years old, we have no real data on how the current recession has impacted the dental health of our target population or if the increase in OHP coverage among our target population has improved access to dental care (our program’s uninsured rate decreased by 11 percent between 2006 and 2011). The Oregon Smile Survey will be conducted again in 2012, and we look forward to comparing our data sets with their findings.

Return on Investment:

From 2004 to 2011, the Happy Smiles program has received \$1,166,800 in support from the Walker Fund. One way to measure our return on investment is to calculate the real cost of the services offered. The following table compares the amount of Walker support to the cost of fluoride and sealant applications in private practice.

Figure 8: Comparison of Grant Support to Services Received

Service Year	Grant Amount	Value of Sealants and Fluoride Varnishes ⁴
2004 - 2005	\$ 100,000	\$ 48,369
2005 - 2006	\$ 180,000	\$ 198,010
2006 - 2007	\$ 175,000	\$ 257,568
2007 - 2008	\$ 175,000	\$ 240,481
2008 - 2009	\$ 175,000	\$ 341,239
2009 - 2010	\$ 201,000	\$ 334,255
2010 - 2011	\$ 160,800	\$ 328,666
Total	\$ 1,166,800	\$ 1,748,588

Another way to measure ROI is to look at the cost averted through our prevention work. For example, our Happy Smiles program sealed 13,858 teeth in the last seven years. Over a twenty year period, these sealants will avert **\$16,491,020** in restorative dental care costs based on the following calculations:

Figure 9: Cost Calculation of Averted Restorative Dental Care

Activity	Cost Per Treatment	Total Cost
Amalgam fillings (on two tooth surfaces)	\$150 per tooth surface	\$4,157,400⁵
Crown to strengthen/stabilize filled tooth	\$1,000 per tooth	\$6,929,000⁶
Crown replacement	\$1,000 per tooth	\$5,405,000⁷
Total Cost Over a 20-Year Period		\$16,491,400

Using these cost figures and the following ROI formula we have calculated that our ROI for this project is 1,313%:

$$\text{ROI} = \frac{(\text{Gain from Investment} - \text{Cost of Investment})}{\text{Cost of Investment}} = \frac{16,491,400 - 1,166,800}{1,166,800} = 13.13$$

This return on investment calculation does not include the financial benefits of our dental education; screening, referral, and case management services; or fluoride treatments. These calculations also do not include the benefits of increased school attendance and enhanced health and wellness.

The Future of Happy Smiles:

The future of Happy Smiles depends on the Walker Fund. After all the good news we have given you about what we have accomplished together, the sobering truth is that without Walker support this program would cease to exist.

⁴ The average cost of each fluoride varnish application is \$50, and \$67 per sealant application.

⁵ Each tooth has five surfaces and in the populations we serve it is not uncommon to find cavities on at least two surfaces. Calculation: \$150 x 2 tooth surfaces x 13,858 teeth = \$4,157,400

⁶ At least half of amalgam fillings will require a crown within ten years to stabilize/strengthen the tooth. Calculation: \$1,000 x 6,929 teeth = \$6,929,000.

⁷ About 78 percent of crowns need to be replaced within fifteen years. Calculation: \$1,000 x 5,405 teeth = \$5,405,000.

We don't see any funding opportunity on the horizon, and we continue to receive requests from other schools wanting our services. With your support, we hope to continue this program into the foreseeable future. In this time we want to accomplish the following:

1. Continue existing program, at current service levels;
2. Incorporate federal funding to cover 15 percent of program costs;
3. Audit billing records to maximize billable revenue;
4. Conduct a longitudinal study of health outcomes attributable to the program;
5. Re-evaluate the need for support for our mental health program (decreasing the total amount of support to La Clinica).

With your help we can continue to support the most vulnerable children in our community.
Thank you!