

# Development of a Sustainable Community-Based Dental Education Program

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*Abstract:* Increasing the use of community-based programs is an important trend in improving dental education to meet the needs of students and the public. To support this trend, understanding the history of programs that have established successful models for community-based education is valuable for the creation and development of new programs. The community-based education model of the University of Michigan School of Dentistry (UMSOD) offers a useful guide for understanding the essential steps and challenges involved in developing a successful program. Initial steps in program development were as follows: raising funds, selecting an outreach clinical model, and recruiting clinics to become partners. As the program developed, the challenges of creating a sustainable financial model with the highest educational value required the inclusion of new clinical settings and the creation of a unique revenue-sharing model. Since the beginning of the community-based program at UMSOD in 2000, the number of community partners has increased to twenty-seven clinics, and students have treated thousands of patients in need. Fourth-year students now spend a minimum of ten weeks in community-based clinical education. The community-based program at UMSOD demonstrates the value of service-based education and offers a sustainable model for the development of future programs.

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In the last ten years, the expansion of community-based programs has been an important trend in dental education. Extending clinical training beyond the walls of the dental school increases the number of patients treated in public clinics and exposes students to the oral health care needs of disadvantaged populations. However valuable these outcomes, schools interested in establishing community-based programs may nevertheless hesitate when confronted with the challenging task of building a program that must be long-term, educationally meaningful, and cost-neutral. Understanding the history of currently successful models for community-based education will be useful for those creating and building new programs. The community-based education program at the University of Michigan School of Dentistry (UMSOD) can serve as a model.

Major concerns about the success of dental education followed the release of the May 2000 report by the U.S. surgeon general on oral health in America<sup>1</sup> and the 2001 future of dentistry report by the American Dental Association.<sup>2</sup> Valuable initiatives to improve dental education such as the Macy Study and the Pipeline, Profession, and Practice:

Community-Based Dental Education program were implemented in response. The Macy Study report analyzed the financial challenges facing dental education and proposed community-based education as one of three models for improvement.<sup>3</sup> The pipeline program funded and assessed the development of community-based educational programs at dental schools across the nation. The results of this program demonstrated that community-based learning is valuable for improving clinical training, diversity, student orientation toward public service, and access to care.<sup>4-6</sup> The results of the Macy Study and the pipeline program have demonstrated the value of expanding community-based learning in dental education. However, more information about how to implement community-based programs is necessary for progress to occur. Such information can be derived from examining the long-term development of established programs.<sup>7</sup>

Since the expansion of community-based education at UMSOD to a year-round program in 2000, the school has formed partnerships with twenty-seven community clinics, and a minimum of ten weeks in the students' fourth year is spent in community

programs. Students live and work in the clinic community to gain a better understanding of the unmet need that exists in communities outside of the dental school. The program model is financially self-sustaining, and its success is seen in the large number of patients treated and data demonstrating varied and improved student performance. However, developing such an extensive outreach model took years of dedicated effort. The story behind the development of the UMSOD community-based program reflects the obstacles to implementing service-learning programs in dental education and innovative problem-solving techniques used to overcome these challenges.

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## Development of the Community-Based Program

As the first publicly funded dental school in the United States, the University of Michigan School of Dentistry set a precedent for dental education standards that still exist today. The initial funding for the dental school was appropriated by the Michigan legislature in 1875 for the purpose of improving the standard of dental education and meeting the oral health care needs of the public.<sup>8</sup> Therefore, UMSOD has an obligation to its founding mission to provide community support as part of its education. In response to a recognized need to care for underserved populations in the state of Michigan, community-based education at UMSOD became a year-round component of the fourth-year curriculum. The vision for this program began to emerge in 1997 and was realized in 2000.

The initial goals were to create a community-based program that offered a valuable educational experience, provided students with atypical clinical cases, and was cost-neutral. While these requirements presented several new challenges, the most critical aspects of initiating a successful program were raising the initial funding, selecting the right community clinic model for student service, and recruiting clinics to become partners.

Funding was managed through collaboration with several public and private sector organizations. One major source was a large public fund dedicated to improving whole body health. The intentions of the community-based program aligned with this funding initiative, and a large sum was given to the program for its development. The major contributors to the portion of this fund appropriated to the UMSOD

program were the Michigan Department of Community Health, Michigan Primary Care Association, Michigan Dental Association, and Delta Dental.

When selecting the right community clinic model for student service-learning, five criteria proved to be most important: 1) easy transition for students from school clinics to the community clinics; 2) the ability of the community clinics to accommodate students for one to two weeks; 3) the ability of the community clinics to offer students an immersion experience; 4) distance learning capabilities at the community site; and 5) educationally meaningful cases at the community clinic. Based on these criteria, federally qualified health center (FQHC) dental clinics were the best fit of available clinics in the area. The FQHC service model met all five criteria: 1) students could transition easily from the dental school clinic to an FQHC because patients were prequalified for treatment and the students could perform single procedures based on short-term treatment; 2) the clinics were in need of staff to meet the large number of patients; 3) the clinics were located in areas of greatest need; 4) the clinic locations offered Internet capabilities on site for students to access dental school lectures; and 5) the clinics had funding for a wide range of procedures, including urgent care. Developing relationships with FQHCs was thus key to implementing a meaningful community-based dental education program.

The FQHCs saw the value in collaborating with the dental school to improve their dental clinics. They were receptive to the idea of teaching a culture of ethical behavior to future practitioners, and student assistance provided the workforce for them to better meet the needs of their communities. Some initial hesitation from the clinics was due to their lack of prior experience concerning community-based education. However, the success of the model helped in recruiting additional partners as the program grew.

The first year-round outreach program began at UMSOD in 2000. During this inaugural year, dental students participated in three one-week community rotations at five sites. In 2002, rotations were increased to four weeks per year for fourth-year students; this number has since grown to the current model of ten weeks. During these years, major changes in state funding of adult dental programs required modifications to the program through diversification into new clinical settings and the creation of a new revenue-sharing model. These important changes were implemented to protect the program's longevity and improve its educational value.

## Creating a Sustainable and Unified Model

During a time of economic volatility, grants dried up, and the outreach program needed to find new funding sources. It became apparent that, for the program to become self-sustaining in the long term, it needed to generate enough funds to cover the cost of student travel and lodging, as well as partially recover the loss of student profits in the school clinics. The solution developed was a revenue-sharing model.

Under this new funding model, the UMSOD community-based program receives from each community site a reimbursement fee per day for student services. The amount chosen was less than what students produce in revenue for the clinic, but enough to cover overhead costs. This revenue-sharing model was essential to creating a sustainable outreach program because it guaranteed reliable funding for both

maintenance and expansion. A visual representation of the program model appears as Figure 1.

Once the revenue-sharing model was implemented, expansion to new forms of community-based education could be explored. The types of clinics added include Indian Health Service clinics, community clinics, correctional facilities, hospitals, veterans hospitals, private practice, a mobile clinic, and international programs in Ecuador and Jamaica. One obstacle in expanding the program was maintaining transparency and consistency among all sites. Therefore, a single outreach contract was needed to ensure that all agreements were equal and could be managed in the same way. After negotiations with outreach directors, a universal contract was written. This new contract created a clear and manageable model for current and prospective community partners. Looking back, we realized that developing a standard contract at the beginning of the program would have simplified site management and recruitment.

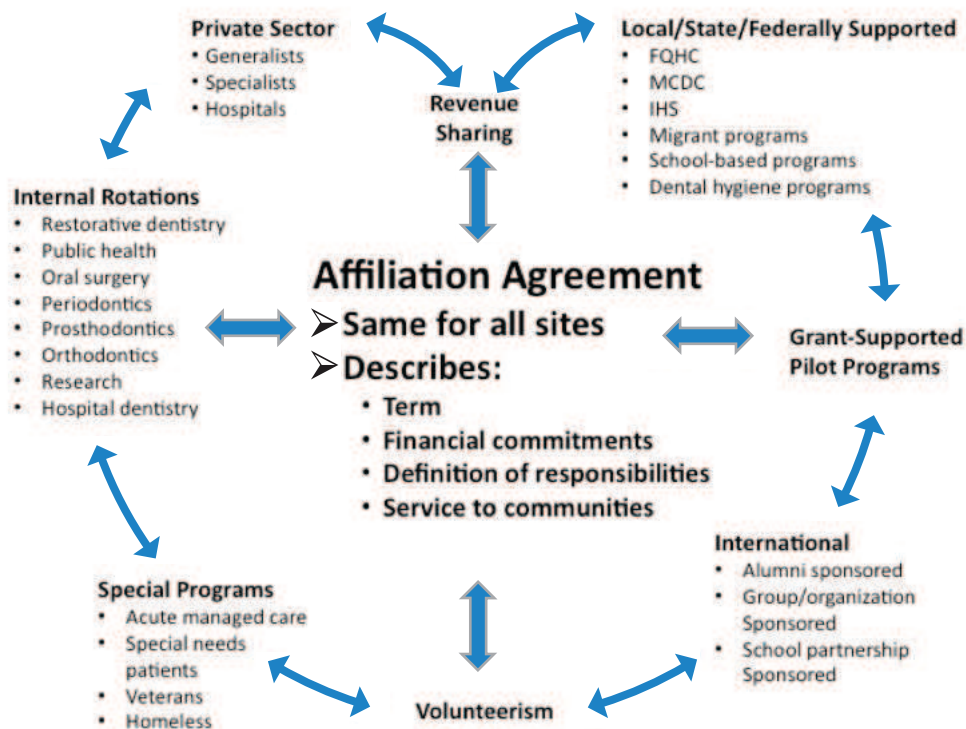


Figure 1. Flow chart illustrating the community-based dental education program at UMSOD

Another important addition to the program was the assessment of students' clinical skills through evaluations. Community-based education gives dental schools the opportunity to assess the effectiveness of their overall clinical instruction by comparing evaluations of student performance in the school clinic with that in the community clinics. The evaluation data collected on student performance at community sites have allowed UMSOD to strengthen its clinical curriculum in areas where students need improvement. The ability to assess the clinical training of students and make necessary adjustments prior to graduation ensures the effectiveness of clinical education and has proved to be a valuable tool during accreditation.

## Program Successes

The success of the UMSOD community-based model is evident in the increased access to care in communities with partnering dental clinics, the improvement in students' clinical skills, and the impact on student education through exposure to the needs of underserved communities. Since the beginning of the program's expansion in 2000, the school has developed partnerships with twenty-seven clinics in the state of Michigan (Figure 2). The amount of time students spend in community clinics has increased from three weeks in 2000 to ten weeks in 2010. Since 2004, students have treated 58,652 patients



Figure 2. Map of the state of Michigan, showing the diverse types and locations of clinic partners in the UMSOD community-based dental education program

and performed 121,769 procedures at community clinics (Table 1).

The growth in community-based dental education has greatly increased the number and variety of procedures students perform during their clinical

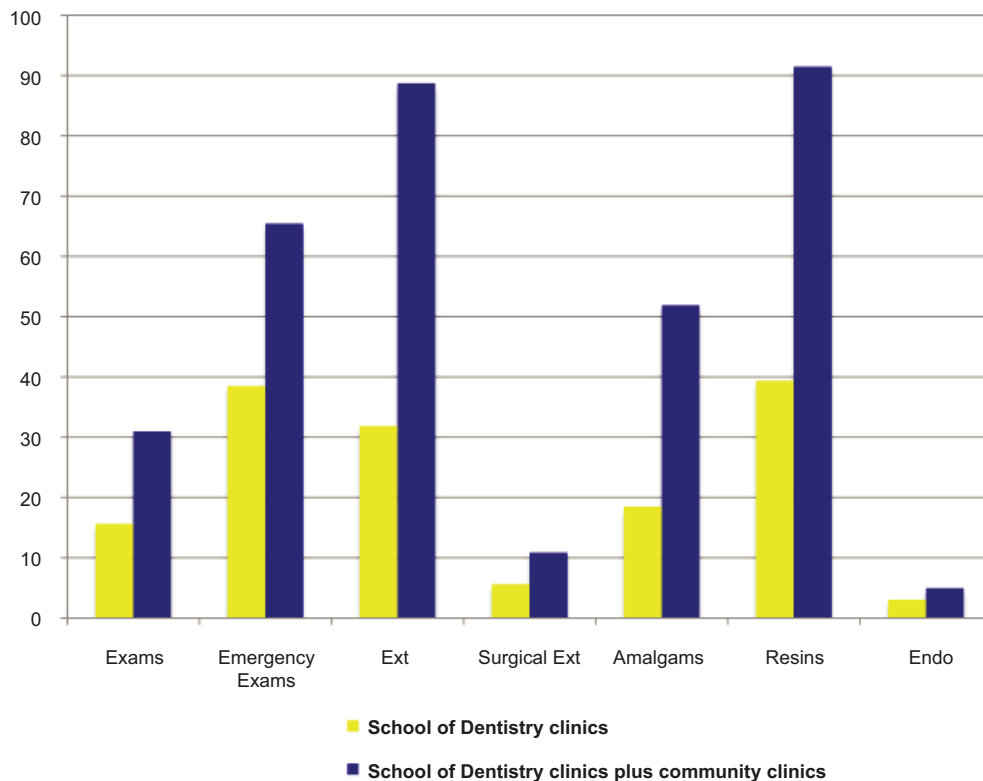
**Table 1. Number of patients seen and procedures performed in the UMSOD community-based dental education program from 2004 to 2010**

Year	Patients Seen	Procedures
5/2004 to 4/2005*	7,332	21,530
5/2005 to 2/2006*	7,890	16,488
5/2006 to 4/2007	5,790	12,002
5/2007 to 4/2008	8,765	18,247
5/2008 to 4/2009	13,806	25,493
5/2009 to 4/2010	15,069	28,009
Total	58,652	121,769

\*Combined efforts with AEGD and Grad-Op programs.

education. By adding eight weeks of community-based education to the curriculum, the number of procedures performed by fourth-year students doubled in almost all clinical aspects compared to those students performing procedures only in the dental school clinic (Figure 3). The data collected about the students' performance in community clinics revealed some weaknesses in the clinical program at UMSOD, but after curriculum changes, the most recent graduating class showed no weaknesses in any of the thirteen areas of clinical evaluation.

Another important success of the program lies within each student. During their outreach rotations, students live and work in underserved communities to gain a better understanding of the public's need for oral health care. This experience challenges students to address the need for improved access to dental care with resources available. The effect of this experience is seen in student evaluations of the program. Many students report that the community experience was the highlight of their four years of dental school.



**Figure 3. Procedures performed by fourth-year students at School of Dentistry clinics compared to procedures fourth-year students performed at School of Dentistry clinics plus community clinics, 2009–10**

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## Discussion

Obstacles faced in the development of the school's financially self-sustaining and successful community-based program required innovative solutions. Some may view the revenue-sharing model unfavorably or argue that it conflicts with the definition of *service-learning*. However, the greater good served by the program must be taken into account before this model can be discounted. The students provide a much-needed workforce and revenue that benefit the community clinics far beyond the fee incurred by the program. This financial model ensures the sustainability of the program and long-term support for its community partners. The revenue-sharing model also allows the program to pursue entirely altruistic endeavors like fully donated care centers. In the end, the benefits of the community-based program to the community clinics reach far beyond the expenses they incur in sharing revenue.

Staying flexible is vital to maintaining the success of the community program at UMSOD. The goals of the program are consistent with the school's mission and its founding obligations, but its aims are never static. It is important to always be actively pursuing the best model for community-based education. Oral health care is a dynamic profession, and maintaining flexibility in the face of change teaches students that they too will have to be adaptable as practitioners. One adaptive pursuit is expanding into free dental care. Currently, the outreach department is developing a new model for a fully donated service clinic to deliver pro bono dental care to the most disadvantaged communities in Michigan and internationally. This opportunity has been made possible through continued dedication to improving the educational experience through service-learning. Further information about the financial models pertaining to site selection will be the focus of future publications.

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## Conclusions

The impact of the UMSOD community-based program on its partnering community clinics and on the students who participate in them supports the idea that our program can serve as a model for improving dental education and access to care without increasing the cost of dental education. Having established models of community-based dental education available for those developing new programs will increase the efficiency and ease of expanding service-learning throughout dental education.

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