

Midwest Dental: Dental Therapist Case Study

Introduction

In Minnesota, the dental therapist position was created through legislation in 2009 in an effort to increase access to oral health care. Dental therapists are primary oral health professionals who provide preventive, diagnostic, and restorative care for children and adults. Legislation limits dental therapists to practice primarily in settings that serve low-income, uninsured, and underserved patients, including dental Health Professional Shortage Areas (HPSAs).¹ However, as long as these requirements are met, dental therapists can work in any type of clinic, including private practices. They work under the supervision of a Minnesota-licensed dentist and under a collaborative management agreement that outlines the practice location and any limitations on services provided by the dental therapist, as well as quality and patient safety protocols.² Dental therapy is still an emerging profession and there are many unknowns about how to best incorporate dental therapists into dental teams. To gain a deeper understanding of this, Delta Dental of Minnesota supported two clinics to hire and employ a dental therapist professional for 12 months.

This case study explores the experience of one of the clinics: Midwest Dental in Renville, Minnesota. The study attempts to answer whether adding a dental therapist in a private, for-profit clinic setting contributes positively to health care's triple aim of increasing access to care, providing quality care, and increasing cost effectiveness.

To evaluate this question, multiple research methods were used, including patient satisfaction surveys (completed by 162 adult patients), observation data, clinic service and financial data, and four key informant interviews with both dental therapists, the dentist, and one administrative staff person.

ABOUT MIDWEST DENTAL

Midwest Dental is located in Renville, Minnesota, a town of nearly 1,200 residents in a rural area of central Minnesota.³ Renville is in Renville County, a designated Dental Health Professional Shortage Area.⁴ Midwest Dental staff said they learned about dental therapy in dental school and through hearing about the debate surrounding

Total visits completed
by dental therapist
(first 8 months)

459

Characteristics of patients
seen by dental therapist

Median age:

26

Type of procedure seen for:

RESTORATIVE
TREATMENT

83%

Type of insurance:

PUBLIC

71%

¹ Maps of HPSA in Minnesota and throughout the United States are available from <https://hpsafind.hrsa.gov>

² More information about dental therapists, including procedures within their scope of practice are available from <http://mchoralhealth.org/mn/dental-therapy/>

³ United States Census Bureau. (2010). *American FactFinder*. Retrieved from http://factfinder.census.gov/bkml/cf/1.0/en/place/Renville.city_Minnesota/POPULATION/DECENNIAL_CNT

⁴ United States Department of Health and Human Services. (2016). *Health Resources and Services Administration: Data Warehouse*. Retrieved from <http://datawarehouse.hrsa.gov/tools/analyzers/HpsaFind.aspx>

the field, which questions whether the new position increases access to care without increasing competition with licensed dentists. They decided to hire a dental therapist to see if productivity and efficiency would increase, particularly because recruiting dentists in a rural area is difficult. The first dental therapist, who also had a dual-licensure in dental hygiene, was hired in August 2014 and worked until November 2014. During that time, the dental therapist was practicing within the scope of that title and under indirect supervision of the dentist (meaning the dentist authorizes the procedure and is on-site when the procedure is performed).

After the first therapist's departure, the clinic reassessed their needs and chose to look for a dental therapist with more experience. A second dental therapist was hired at the end of March 2015. Before entering dental therapy, the second dental therapist had previous experience working in health care and decided to enter dental therapy to work directly with patients. When searching for dental therapy positions, he looked for an employer who offered health insurance and competitive wages, a mixed-age group of clients, and would allow his scope of practice to include a variety of procedures. This dental therapist also practiced within the scope of that title and under direct supervision, but was not dual licensed as a hygienist. The analysis in this brief focuses primarily on the tenure of the second dental therapist (April – November 2015).⁵

Access to care

Patient mix

One of the aims of dental therapy is to increase access to care for underserved populations, as lowered staff costs allow clinics to accept uninsured and underinsured patients at less of a loss. Upon hiring a dental therapist, the clinic advertised their acceptance of Medical Assistance (MA), Minnesota's Medicaid program, in the community. Additionally, the first dental therapist reported increasing access to care by initiating unpaid community outreach and inviting people to the clinic, which brought children to the clinic who had never been to the dentist. Through this effort, the number of patients who came to the clinic and used public insurance increased. Although the second dental therapist did not do any community outreach, a similar increase occurred.

The majority of the patients seen by the dental therapist were on public insurance⁶ (71%), which was much higher than the proportion of patients seen by the dentist (22%). The dentist, however, saw a higher proportion of uninsured patients (31%) compared to the dental therapist (9%). The majority of procedures performed by the dental therapist were paid for by public insurance (80%), followed by private insurance (13%), and out-of-pocket (7%). In patient surveys, the majority of patients reported they had not visited a dental professional for two or more years. The dental hygienist's patients were slightly more likely to report not having been to a clinic for more than one year (90%) than the second dental therapist's (84%) or dentist's patients (80%).

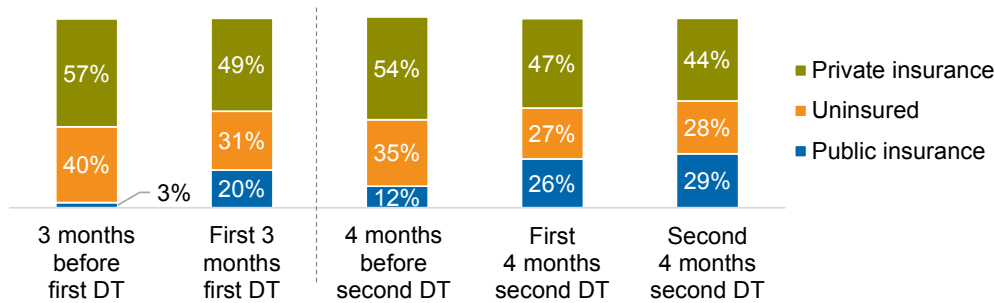
Results showed that the clinic served more patients on public insurance after hiring a dental therapist.⁷

The proportion of publicly insured patient visits increased from 3 percent three months before the hire of the first dental therapist to 20 percent during the three months after, an 824 percent increase in patient volume. The proportion of publicly insured patients decreased slightly to 12 percent during the four months where there was no dental

⁵ Unless otherwise noted, the data for the dental therapist in this brief are from April - November 2015 because the dental therapist only worked one week in March 2015.
^{6,7} These are patient visits and not unique patients.

therapist, yet increased to 29 percent during the first eight months after the arrival of the second dental therapist. The data suggest by hiring a dental therapist, the clinic is serving a patient population with similar socioeconomic characteristics to the population overall; 35 percent of Renville County residents are enrolled in public insurance programs. The highest increase in patient volume during the first period with the second dental therapist came from publicly insured patients (210% increase; Figure 1).

1. Comparison of patient insurance mix before and after hire of dental therapists (DTs)



As the percentage of patients enrolled in public insurance programs increased, procedures paid for by public programs increased proportionally. However, from the perspective of a staff person interviewed, the clinic found the additional paperwork and process for accepting MA to be cumbersome.⁸

Pre-visit experience

Another way to measure access to care is the quality of the patient’s experience before seeing the provider, including appointment wait times and satisfaction with their pre-visit experience. In patient surveys, patients who saw the second dental therapist reported roughly equal wait times for scheduling their visit as patients who saw the dentist, and shorter wait times than those who saw dental hygienists. **When asked about the timeliness of their scheduled appointment as well as if they were greeted promptly and courteously, the dental therapist’s patients, on average, “strongly agreed” their experience was favorable, similar to the results for patients of the dentist and dental hygienists.**

★ Quality of care

Service delivery

In the clinic, the dental therapist wore a badge with his title, but his role was not explained when patients were transferred to him from the dentist. The clinic also announced the dental therapist’s arrival in the community paper. Dental staff said that some patients did have questions about the role of the dental therapist or some hesitation about the level of care they would receive, but none declined being served once the dentist provided more information. To explore how the quality of the dental therapists’ work compared to the dentist, data were collected from staff interviews. After the hire of the second dental therapist, patient surveys were also collected and a clinic observation was completed.

⁸ Data were not gathered to measure how changes in the patient population impacted administrative staff time.

Overall, patients were very satisfied with the quality of care they received from the second dental therapist.⁹ Following their appointment, patients were asked to complete a survey on their satisfaction with the provider's chair-side manner and their overall satisfaction. On all measures, the dental therapist's patients, on average, "strongly agreed" that the dental therapist's chair-side manner and technical skill were favorable, similar to the results for patients of the dentist and dental hygienists.

In hiring the second dental therapist, staff said they looked for someone with more supervised hours indicating more experience, and the dentist was involved in the decision-making process. The dentist said that she was very satisfied with his work and felt it was high quality. After a few months, she no longer checked his work.

Staff relations

To prepare dental staff for the addition of a dental therapist to the clinic, the administration said they were open with staff and positive about the process. However, there were challenges with the integration of the first dental therapist to the team. From the perspective of the dental therapist, she did not feel as welcome as she would have liked.

From previous experience in health care, the second dental therapist said he was aware of the need to build trust with the other dental staff, especially because dental therapy is a new field. He seemed confident and aware of how to work collaboratively and he said he felt welcomed by the staff.

The researcher observed effective communication and interaction between the dentist and dental therapist, and positive relationships with the dental assistant and other dental staff. The second dental therapist felt he received sufficient guidance from the overseeing dentist.

Professional role

In total, the second dental therapist completed 835 procedures during the eight months studied. Staff reported that the dental therapist most often executed treatment plans and did not take any new patients. New patients were both seen by a hygienist and examined by a dentist. The dental therapist could see a patient if additional dental work was needed. The dental therapist and the dentist each had an assistant. The clinic would like to hire a third part-time assistant to add a second chair for the dentist.

Similar to findings from the 2014 Minnesota Legislative report on dental therapists,¹⁰ **clinic data showed the majority of the procedures completed by the second dental therapist between April – November 2015 were restorative (83%), followed by diagnostic (7%), adjunctive general services (4%), and oral surgery (3%).** One percent or fewer each were prosthodontic, preventive, orthodontic, or endodontic procedures. Clinic staff interviewed also noted that the dental therapist will at times see emergency patients where he gathers information and performs the initial screening, which is then checked by the dentist.

⁹ Patient satisfaction surveys were only completed for the second dental therapist.

¹⁰ Minnesota Department of Health. (2014). *Early impacts of dental therapists in Minnesota: Report to the Minnesota Legislature 2014*. Retrieved from <http://www.health.state.mn.us/divs/orhpc/workforce/dt/dtlegisrpt.pdf>

The clinic saw changes in the volume of various types of procedures in the first four months after hiring the second dental therapist in comparison to the previous year. There were overall increases in the proportion of oral surgeries (96%), emergencies (59%), restorative procedures (42%), and in diagnosis (22%). This may reflect the needs of patients enrolled in public insurance, who are at a higher risk for dental disease, potentially due to delays in receiving care, and may need more corrective procedures. **The type of work that the dentist performed shifted with the onboarding of the dental therapist as well.** Most notably, there were increases in the number of oral surgeries (75%), emergencies (58%), and diagnostic procedures (17%) performed by the dentist; the proportion of restorative treatments decreased by 33 percent.

Financial viability

Productivity

Generally, both dental therapists felt their schedules were full. The second dental therapist felt his time was being optimized, and the dentist shifted patients over when possible. In contrast, the first dental therapist felt she did more hygiene routines than she expected and wanted to do. The second dental therapist found that, at times, he did not have as much time to complete procedures as he would prefer.

The total number of visits completed by the second dental therapist (April – November 2015) was 459. The average hours worked was 126 per month (.8 FTE). On average, the dental therapist completed just under one visit every two hours while the dentist completed nearly five visits every two hours. The dental therapist completed fewer procedures per hour than the dentist did, but more procedures per visit. The rate depends on the complexity of the procedures routed to each role. The second dental therapist's productivity remained relatively stable during his first eight months. The dentist's productivity levels did not change substantially with the hire of the dental therapists.

At the clinic overall, there was an increase in the average number of visits after the second dental therapist's hire, to 408 visits per month between April – July 2015, from 328 visits per month during the same period one year earlier.

One challenge mentioned by the second dental therapist was the percentage of no-show appointments, which was higher for him compared to the dentist.

Changes in revenue

The addition of the dental therapist to Midwest Dental's staff generated positive financial returns. The average monthly revenue more than doubled after adding the dental therapist. There was an increase in average monthly expenses of around 16 percent for personnel costs. The net benefit associated with adding the dental therapist is 2.4 times the average monthly revenues prior to adding the therapist (based on January – July production data).

One important factor that led to greater income and profitability is the increased productivity and revenues of the office's dentist. The dentist in the office generated an estimated average of \$10,042 more in revenues per month after the dental therapist was added to the staff. Presumably, a fraction of the procedures taken over by the dental therapist freed some availability for the dentist to perform procedures that are more complex or of higher fees, increasing the productivity of dentists and potentially of other providers (e.g., hygienists and assistants).

Reimbursement rates and the clinic's payer mix (i.e., percentage of revenue from private sources, public programs, and self-pay), two factors largely beyond the control of the clinic, also play a significant role in financial stability. Dental therapists are required to work in areas where they will treat patients enrolled in public programs or with limited access to dental services. Because of this requirement, reimbursement revenue generated by dental therapists can be lower than a member of the dental team serving primarily private pay or commercially insured patients. Changes in either of these factors will have an impact on clinic revenue.

Conclusions

The hire of the dental therapist at Midwest Dental appears to have both benefited the clinic and presented some potential challenges.

Program successes

- There was some growth in the volume of patients using public insurance with the hire of the first and second dental therapists.
- The first dental therapist did free community outreach that reportedly brought children with limited access to dental care to the clinic.
- Patient surveys indicated equally high levels of patient satisfaction with the quality of care they received from the second dental therapist compared to the dentist or dental hygienist.
- Interviewed dental staff were satisfied with the quality of the second dental therapist's work.
- The dentist appears to have shifted focus to more higher-fee procedures, such as oral surgeries, with the hire of the second dental therapist. In addition, the dentist's productivity did not decline after the hire of the dental therapist.
- The average number of visits per month increased slightly after the hire of the dental therapist.
- The net benefit generated by hiring the dental therapist was 2.4 times the clinic's monthly average revenues without the therapist (based on January – July production data).

Program challenges

- In the case of the first dental therapist, but not the second, dental staff said they did not have the capacity to provide guidance without compromising their own productivity.
- The dental therapist saw fewer patients per hour and performed fewer procedures per hour than the dentist; however, this may be the result of the types of procedures performed by the dental therapist.

Issues to explore

Hiring the dental therapist has benefited the clinic and the community in certain respects, while also presenting some challenges. The dental therapist seems to have increased access to dental care for patients with public insurance while, in the case of the second dental therapist, maintaining patients' satisfaction with the quality of care they received. There was no substantial change in the dentist's levels of productivity, however, dental staff expressed concerns about the additional administrative time required by MA paperwork and the time the dentist spent providing guidance for the position. The dentist was able to focus on more higher-fee procedures. As clinic management considers whether to continue employing a dental therapist, they will want to assess if sufficient numbers of higher revenue

procedures, patient mix, and other aspects of clinic financial health are aligned if a dental therapist joins the practice. They will also want to weigh the cost of additional supervision time and the clinic's administrative capacity with the potential benefits of an additional practitioner. This process should also carefully delineate what skills candidates for this position need to most effectively serve the clinic and community.

Factors that may contribute to success

From this case study, several factors emerged that appear to have contributed to the successful components of incorporating a dental therapist at this clinic. Other clinics can consider these factors when deciding if they are a good candidate for adding a dental therapist to their team. Factors that support the success of the dental therapy model at a clinic include:

- Physical space available within the clinic
- A desire to increase access to dental care for low-income patients
- The ability to do outreach to potential patients enrolled in public insurance plans
- A supervising dentist who has the capacity and willingness to provide mentorship
- The ability to hire additional staff (dental assistants and/or dental hygienists) to increase capacity for patient treatments and to support the expanded schedule of the dental therapist and dentist

NOTES AND LIMITATIONS

The economic analysis conducted as part of this study used production and financial data from 2014 and 2015. The analysis accounts for seasonal fluctuation in production and procedures by type of provider during the study period. To achieve this goal, data from January – July 2015 (after the dental therapist was hired) was compared month to month with data from the previous year (January – July 2014). These seven months are the only ones for which revenue and cost information was available before and after the dental therapist was hired. Revenues come from fees and procedures performed by the dental therapist. Increased productivity of dentists also includes procedures only performed by doctors. Additional costs refer to personnel costs before and after the dental therapist was added; however, profitability remains even when total cost is used in the computations. It should be noted that any financial gain estimated in this report may differ from profits or losses reflected in financial statements since these documents are based on many accounts aggregated for a whole year. In addition, financial statements also include accounting calculations that are not actual disbursements such as depreciation and amortization.

This study of the dental therapy pilot project suggests positive results, but includes data from a relatively short period. A follow-up study, including data for a full year to capture any additional changes in productivity and revenue may provide a more comprehensive understanding of the long-term financial viability of the dental therapist role in rural clinic settings.

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Addendum: Dental Therapist Production and Revenues

Midwest Dental – Renville

Introduction

This addendum to the case study contains detailed information on the changes in productivity, gross revenues, and cost-effectiveness associated with adding a dental therapist in a private, for-profit clinic in Renville. It provides details on these outcomes by dentist and dental therapists, but does not include analysis of changes in production and gross revenues for dental hygienists and dental assistants. As a result, total office variance is calculated for the dental therapist position but not the whole office. Two dental therapists worked at the clinic during the pilot study period; outcomes for these two non-overlapping positions are reported separately. Results should be interpreted with caution due to the limited amount data of the providers' work time.

In general, results suggest that the dental therapists' contribution in productivity is about seven additional procedures per day. The direct gross revenues produced by the therapist are significantly larger than the personnel cost associated with the position (see the variance analysis section). We estimate that the therapist position generated \$97,283 in positive variance during the period studied (January 2014-November 2015).

Production

The average daily production refers to the total number of procedures performed by dentist and dental therapist) divided by the number of days worked during the period with and without a therapist working in the office. Within the period (January 2014-November 2015), there were 338 days when a therapist worked in the office.

- The dentist shows no significant change in their average daily productivity during the time a therapist worked in the office.
- The dental therapists show average increase in production of 6.1 and 8.1 procedures per day.

1. Procedures by provider, before and after therapist

	Dentist (1)	Dental Therapist (1)	Dental Therapist (2)	Dentist & Therapists
Average daily procedures - Before therapist period	22.1			22.1
Average daily procedures - After therapist	22.2	6.6	8.1	27.1
Difference	0.1	6.6	8.1	5.0

Note. Averages shown are based on the number of days worked by each provider. The total number of days worked by dentist and dental therapists is 258. The dentist worked 257 of those days, dental therapist 1 worked 130, and dental therapist 2 worked 54.

Gross revenues

Gross revenues are computed using office fees by type of procedure performed by dentists and therapists and number of procedures performed. Total gross revenues are the sum of the daily revenues for each provider during the days worked. Average daily revenues are computed by dividing the total gross revenues generated by each provider each day by the number of days worked. This analysis compares gross revenues for the periods with a therapist in the office and without a therapist in the office.

- The dentist's gross revenues decreased while a therapist was in the office. This is expected since the therapist was performing some procedures usually carried by the dentist.
- However, the average daily gross revenues of the dentist were higher when the therapist was present; with an increase of \$478 or about 17 percent. This increase may come from performing procedures with higher fees.
- The combined revenues of dentist and therapists increased by \$58,447 when the therapists were present in the office, an increase of 8 percent.

2. Total gross revenues

	Dentist	Dental Therapist (1)	Dental Therapist (2)	Dentist & Therapist
Gross revenues without dental therapist	\$714,710			\$714,710
Gross revenues with dental therapist	\$610,576	\$128,097	\$34,484	\$773,157
Difference	(\$104,134)	\$128,097	\$34,484	\$58,447

3. Average daily Gross revenues by provider, before and after therapist

	Dentist	Dental Therapist (1)	Dental Therapist (2)
Average daily fees <u>without</u> a dental therapist	\$2,859		
Average daily fees <u>with</u> a dental therapist	\$3,336	\$985	\$639
Difference	\$478	\$985	\$639

Note. Average refers only to days worked

Variance analysis

The variance analysis compares the cost of adding a dental therapist to the office, including wages and benefits, to the gross revenues generated by the dental therapist(s).

- The total cost of the dental therapist position is \$65,298 for the approximately 338 work days when a therapist provided services.
- The gross revenues produced directly by the therapists is \$162,581.
- The difference between direct gross revenues and costs is \$97,283.
- The substitution of dentist's work for the lower cost work of the therapist increases gross revenues for the office. The opposite case would occur if the therapist assumes procedures typically done by lower-paid staff and thus reduce financial efficiency.

4. Direct gross revenues and cost of dental therapist

	Dental Therapist (1)	Dental Therapist (2)	Total
Total revenue	\$128,097	\$34,484	\$162,581
Total direct cost of the dental therapist(s)	\$47,454	\$17,844	\$65,298
Variance	\$80,643	\$16,640	\$97,283
Work days	252	86	338

The direct positive variance in gross revenues and costs of the dental therapist does not include changes in productivity of other providers (e.g., dental assistant, dental hygienist) when the dental therapist is added.

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