



Expanding the Dental Team

Studies of two private practices

The Pew Charitable Trusts

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This report benefited from the insights and expertise of several external reviewers. We appreciate the thoughtful feedback that the following members of our case study advisory panel offered: Howard Bailit, D.M.D., Ph.D., professor emeritus, University of Connecticut School of Medicine; Caswell Evans Jr., D.D.S., M.P.H., associate dean for preventive and public health sciences, College of Dentistry, University of Illinois at Chicago; Todd Hartsfield, D.D.S., associate professor of clinical dentistry, Arizona School of Dentistry and Oral Health, A.T. Still University; Robert Isman, D.D.S., M.P.H., dental program consultant, California Department of Health Care Services; Jean Moore, B.S.N., M.S.N., director, Center for Health Workforce Studies, School of Public Health, Albany University; Alex Narvaez, D.D.S., dental director, Sea Mar Community Health Centers, Seattle; Matt Niewald, D.D.S., L.L.C., owner-dentist, Lakewood Dental, Lee's Summit, MO; Mark Schoenbaum, M.S.W., director, Office of Rural Health and Primary Care, Minnesota Department of Health; and Louis Sullivan, M.D., president emeritus, Morehouse School of Medicine.

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Pew's work on children's dental policy promotes cost-effective policies that will mean millions more children receive the routine care they need to grow, learn, and lead healthy lives.

Acknowledgments

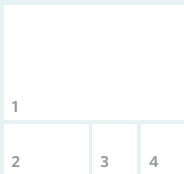
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Overview

For decades, millions of Americans—many of them low-income—have been receiving inadequate oral health care. Under a delivery system the Institute of Medicine describes as riddled with barriers, many dentists do not accept Medicaid, and millions of people live in areas with a shortage of dentists. Difficulties in accessing dental care, especially for low-income individuals, have been well-documented. For instance, in 2009, more than 830,000 dental-related visits to U.S. emergency rooms could have been avoided with earlier care. In 2011, more than half of all children on Medicaid did not see a dentist.

More than 50 countries have improved access to dental care by allowing providers other than dentists to offer routine preventive and restorative care, such as filling cavities. In comparison to dentists, such midlevel providers—dental therapists and hygienists with extra training in restorative care—require less education, perform fewer procedures, and command lower salaries. Research has confirmed that they provide high-quality, cost-effective routine care, and improve access to treatment in parts of the country where dentists are scarce. In the United States, these types of providers are already working in Alaska and Minnesota, and an additional 15 states are considering allowing them to do the same.

Policymakers and dental practitioners have asked important questions about how dental practices might be affected by these midlevel providers. To answer these questions, Pew conducted an extensive, in-depth examination of two private dental practices that employ dental therapists: a Minnesota practice where a dental therapist has been working since early 2012, and a practice in Saskatchewan, Canada, that has employed a dental therapist for more than 30 years. Because Canada's dental care delivery system is similar to that of the United States—residents obtain private dental insurance or pay out of pocket for care—a Canadian practice was chosen to illustrate a mature practice model.

The core questions explored with this research:

- How are dental therapists being integrated into practice settings?
- Can dental practices use dental therapists to expand their care to previously underserved populations without putting themselves at financial risk?

In this study, Pew researchers crafted a rigorous analytical approach with input from health economists and dentists in practice. This methodological framework allowed Pew to analyze practice records to empirically assess changes in productivity, patient access to care, revenue, and other variables in these practices. To supplement these data, researchers conducted site visits and interviewed dentists, dental therapists, hygienists, and other members of the dental team. The findings were vetted through a multistage process by a distinguished expert advisory panel and peer reviewers. (See the Acknowledgments and the Methodology, page 17.)

This is the first report to reveal early cost-impact findings of a dental therapist on a private practice in the United States and to describe how these providers are functioning on a daily basis—the patients they see, the procedures they conduct, the supervision they receive, and how they coordinate with the rest of the dental team.

Findings

Pew's analysis of the two practices found that:

- Significant numbers of underserved patients were able to get care, and the practices continued generating profits. Profit levels were influenced by such factors as the size of the patient population receiving government subsidies for care and the amount of the subsidies.

- The dentists were able to focus on more-complex procedures that generate higher revenue. By using dental therapists to perform routine restorative care, dentists concentrated more of their efforts on advanced procedures such as crowns and bridges.

This is the first of two reports issued by Pew examining how midlevel dental providers operate in practice settings. The reports should be useful to policymakers, community health centers, and dentists as they consider options for increasing access to dental care for underserved populations by employing these types of practitioners. While the findings illustrate how dentists and patients can benefit when practices employ dental therapists, more research is needed to fully understand how dental therapists and other midlevel dental providers with restorative training can be used to improve access to care and how they affect the economics of practices in the United States.

Main Street Dental Care, Montevideo, MN: A dental therapist helps expand a private practice

Table 1
 Rules Governing Dental Therapists in Minnesota

Education	Bachelor's degree (28-month degree; post-high-school program requiring 10 prerequisite courses).
Allowable procedures*	<ul style="list-style-type: none"> ▪ Take X-rays. ▪ Administer local anesthesia. ▪ Apply fluoride varnish and sealants. ▪ Prepare and restore decayed primary (baby) and permanent teeth (fillings). ▪ Place temporary and preformed crowns. ▪ Perform primary tooth pulpotomies (nerve removal). ▪ Extract primary teeth.
Supervision	Some procedures (preparing teeth for fillings, and restoring and extracting teeth) require a dentist's presence in the office, while others (taking X-rays, applying fluoride varnish and sealants) do not.
Other requirements	The underserved population must make up at least half of a dental therapist's patients.

*This is not a comprehensive list of authorized procedures.
 Source: State of Minnesota. Minnesota Administrative Rules. 3100.0100. <https://www.revisor.mn.gov/rules/?id=3100.0100>; State of Minnesota. Minnesota Session Laws, 2009, Regular Session. Chapter 95—S.F. No. 2083. <http://www.dentalboard.state.mn.us/Portals/3/Licensing/Dental%20Therapist/DTLEG.pdf>; Minnesota Board of Dentistry. Dental Therapist Scope of Practice. <http://www.dentalboard.state.mn.us/Portals/3/Licensing/Dental%20Therapist/DTSOPE.pdf>.
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Summary

Main Street Dental Care has been a solo practice operated since 2000 by John Powers, D.D.S. It is located in Montevideo, MN, a town of about 5,300 people that also serves as the county seat.

Minnesota began allowing dental therapists and advanced dental therapists* to practice in 2009. As of December 2013, there were 25 such providers practicing in the state.⁷ In February 2012, Dr. Powers hired a dental therapist to work in his practice three days per week.

An analysis of the records from the Main Street practice shows that revenue and the number of visits, new patients, and surgical procedures performed by Dr. Powers have increased since adding a dental therapist, while the number of nonsurgical services he performed has decreased.

* Advanced dental therapists complete more clinical hours and can perform more procedures under less-restrictive supervision requirements.

In the year following the dental therapist's arrival:

- Patient visits increased by 27 percent, and new patients increased by 38 percent.
- The portion of the practice's Medicaid patients being treated increased from 26 percent in 2011 to 39 percent in 2012.
- Patient billing amount, after accounting for an increase in fees for some procedures that year, increased by 33 percent.
- After accounting for the cost of employing the dental therapist, the practice's profits increased by \$23,831.

Background of the dental practice

Dr. Powers has an active patient base of about 2,750. Six other dentists are practicing within a 15-mile area. His office employs three dental assistants who provide chairside support during procedures (one of whom also serves as an office manager), two dental hygienists, and a dental therapist. The practice's five dental chairs are usually occupied all day. Since hiring a dental therapist, an overflow treatment space, or operatory, that had been closed is now in use.

Dr. Powers spends one day a week teaching at Rice Regional Dental Clinic, which serves as a training site for University of Minnesota dentistry, dental hygiene, and dental therapy students. It is also a source of dental care for many low-income and underserved residents in west-central Minnesota.

In February 2012, Dr. Powers hired dental therapist Brandi Tweeter who had worked as a dental assistant in his practice for more than a decade and with whom he has had a long-standing and trusted relationship. In 2009, when she expressed an interest in furthering her dental education, Dr. Powers said he would take her into his practice after she completed her studies. That year, Tweeter entered the 28-month dental therapy program at the University of Minnesota, graduating in 2011. Before entering the program, she held a bachelor's degree in biology.

Role of the dental therapist in the practice

When Tweeter started practicing as a dental therapist, Dr. Powers sent a mailing to his patients introducing her and describing her scope of work. He also booked Tweeter on a local radio talk show to discuss Minnesota's new dental therapist role and her work in his practice. According to Dr. Powers and Melissa Jerve, the office manager, some patients were skeptical of a dental therapist filling cavities, but their concerns soon faded.

In 2010—before Tweeter started as a dental therapist—15 percent of patient visits in Powers' practice were paid by Medicaid. Because Minnesota law requires that at least half of a dental therapist's patients be underserved, the practice started accepting more Medicaid patients in preparation for Tweeter's arrival. By the end of 2012, 62 percent of Tweeter's patients and 39 percent of overall practice patients were on Medicaid.

"I have people coming to me from as far as 2½ to three hours away," said Tweeter. These numbers are an improvement for many patients because, according to Jerve, before Main Street expanded its Medicaid practice, some had to travel four to five hours to reach another dentist who accepted new Medicaid patients.

The practice took three to six months to fully utilize Tweeter. She did not immediately receive her provider number for billing the state's Medicaid and other medical assistance programs for low-income patients, though once she did receive it, the state placed the Main Street practice on a list of providers that accept public insurance posted on a Department of Human Services website. The practice also had to become accustomed to scheduling Tweeter rather than Dr. Powers for the restorative care visits she was trained to provide. Given these factors, the

practice's figures relating to the dental therapist's productivity may be lower the first year than during a period in which the practitioner is fully integrated.

The protocol at the practice is for Dr. Powers to conduct the initial patient exams and to determine the treatment that is needed. Tweeter sees five to 10 patients daily, mostly for composite restorations (white fillings) and primary (baby) tooth extractions. All children's restorative care is scheduled with Tweeter, and she also provides fillings for adults. If patients need multiple fillings, she'll try to treat them in one sitting so they don't have to return. "Anything in her scope—that's her patient, that's in her column. Anything out of her scope is Dr. Powers'," Jerve said.

Tweeter also provides chairside oral health education that emphasizes avoiding sodas and sugary foods and includes brushing technique. Parents are involved in the instructions she gives to children.

Supervision

Dr. Powers worked with Tweeter when she was a dental assistant and observed her work when she trained as a therapist at the Rice clinic. He said that he no longer needs to supervise her directly while she sees patients, as state law permits. Every morning the team meets to review patient charts for the day and discuss any potential concerns. Because they work together in the office, Tweeter consults directly with Dr. Powers about patient care. He can also evaluate her work when patients return for follow-up care and regular hygiene visits, and he conducts annual performance reviews with members of his clinical team.

Impact

Pew conducted an analysis of the practice's records of procedures and amounts billed and collected for services between Jan. 1, 2008, and Dec. 31, 2012. This review included 11 months of data after Tweeter joined the practice as a dental therapist. Pew's analysis sought to examine whether or not the practice had changed after a dental therapist was added by answering the following questions:

- Has productivity increased?
- Has access to care for underserved populations increased?
- Is the dentist spending more time on complex, rather than routine, procedures?
- How have the practice's economics changed?

Practice productivity

In the year after Tweeter joined the practice as a dental therapist, total visits, total procedures, and the number of new patients grew, compared with the previous four years. The number of unique patients and visits grew from 2008 to 2011. Dramatic increases in service volume occurred from 2011 to 2012, with a 27 percent increase in visits and a 17 percent increase in total patients.

Between 2011 and 2012 the practice experienced a nearly 27 percent increase in procedure volume. (See Table 2.) This was the largest increase over the four years examined. (See Table 3.) Of the 2,062 increase in the practice's procedures between 2011 and 2012, Tweeter was responsible for nearly half, at 972.

Table 2
Main Street Dental Care Patient Volume
 2008-12

	2008	2009	2010	2011	2012
Visits	2,274	2,421	2,427	2,898	3,686
Percent increase	N/A	6.5%	0.2%	19.4%	27.2%

Source: Data from Main Street Dental Care, Dec. 2, 2013

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Table 3
Main Street Dental Care Overall Practice Procedure Volume
 2008-12

	2008	2009	2010	2011	2012
Procedures	6,547	6,923	6,443	7,687	9,749
Percent change	N/A	+5.7%	-6.9%	+19.3%	+26.8%

Source: Data from Main Street Dental Care, Dec. 2, 2013

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Increase in Medicaid patients

The Main Street practice staff reported that 15 percent of patient visits were covered by Medicaid in 2010. According to practice records, 26 percent of patients were on Medicaid in 2011 and 39 percent (507 patients) by the end of 2012, the year Tweeter joined the practice as a dental therapist. Part of this increase resulted from the deliberate efforts of the practice starting in 2011 to recruit Medicaid-enrolled patients in preparation for Tweeter’s new role.

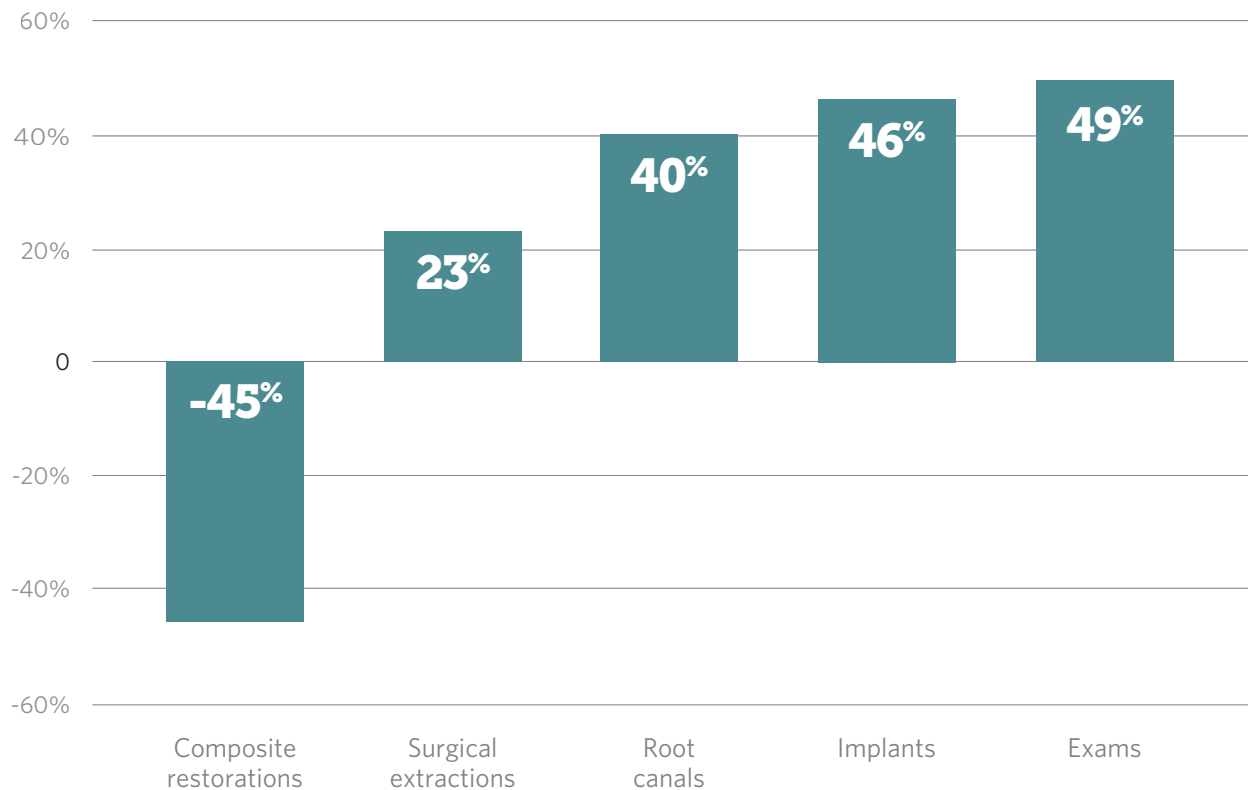
The practice reported that in 2012, the Minnesota Medicaid agency reimbursed for dental care at 41 percent of Dr. Powers’ usual and customary charges for dental services. In 2013 the state increased its Medicaid

reimbursement rate to Main Street Dental Care to about 55 percent of practice fees* because the practice qualified as a “critical access dental provider.” As defined by the state Department of Human Services, critical access dental providers work in dental shortage areas and serve substantial numbers of Medicaid patients. Revenue data from this report, however, reference the practice’s finances only through 2012.

Change in types of procedures performed by dentist

The data show that during the year that Tweeter worked as a dental therapist, Dr. Powers was able to better allocate his time, conducting significantly more new patient exams and more complex procedures that produce higher revenue, such as endodontics (root canals) and surgical extractions. At the same time, he performed fewer routine procedures such as restorations, otherwise known as fillings. (See Figure 1.)

Figure 1
Change in Common Procedures Performed by Dr. Powers
2011-12



Source: Data from Main Street Dental Care, Dec. 2, 2013

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* Percentage based on Main Street Dental Care’s 2012 fee schedule. Critical access payments provide an additional 35 percent above Medicaid maximum allowable payments.

Cost impact

Revenue generated by the dental therapist

In 2012, Tweeter worked 25 hours per week at the clinic and earned \$45 per hour, practicing when the dentist was on-site. Main Street's employment cost for Tweeter for her first 11 months—accounting for salary, fringe benefits, taxes, overhead, and the partial time of a dental assistant—totaled \$90,671. During that time she billed \$156,078 in patient care. (See Table 4.)

Table 4
Dental Therapist's Fiscal Impact*
2012

Experience	Hours worked	Procedure volume	Total revenue in billings	Cost of employment
11 months	25 hours/week	972**	\$156,078	\$90,671

* Data are for 11 months, from February through December 2012.

** Tweeter's procedure volume in her first few months of employment was significantly lower than in subsequent months.

Source: Data from Main Street Dental Care, Dec. 2, 2013

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Total practice revenue

In the year that Tweeter worked as a dental therapist, billings and collections—defined as the actual payment received for a billed procedure—increased significantly for the practice. In 2011, the practice billed a total of \$805,077 for patient care; in 2012 it billed \$1,099,345—an increase of \$294,268, or 37 percent. In terms of collections, the practice received \$528,264 in 2011 and \$642,766 in 2012—an increase of \$114,502, or 22 percent.† (See Figure 2.)

After controlling for an average price increase of 9 percent in 2012 for a number of complex procedures (e.g., root canals and bridges), billings increased by 33 percent. Collections during that period increased by 22 percent. After subtracting the cost of Tweeter's employment, including the staffing cost of a dental assistant, from the \$114,502 increase in collections, the practice generated an additional \$23,831.

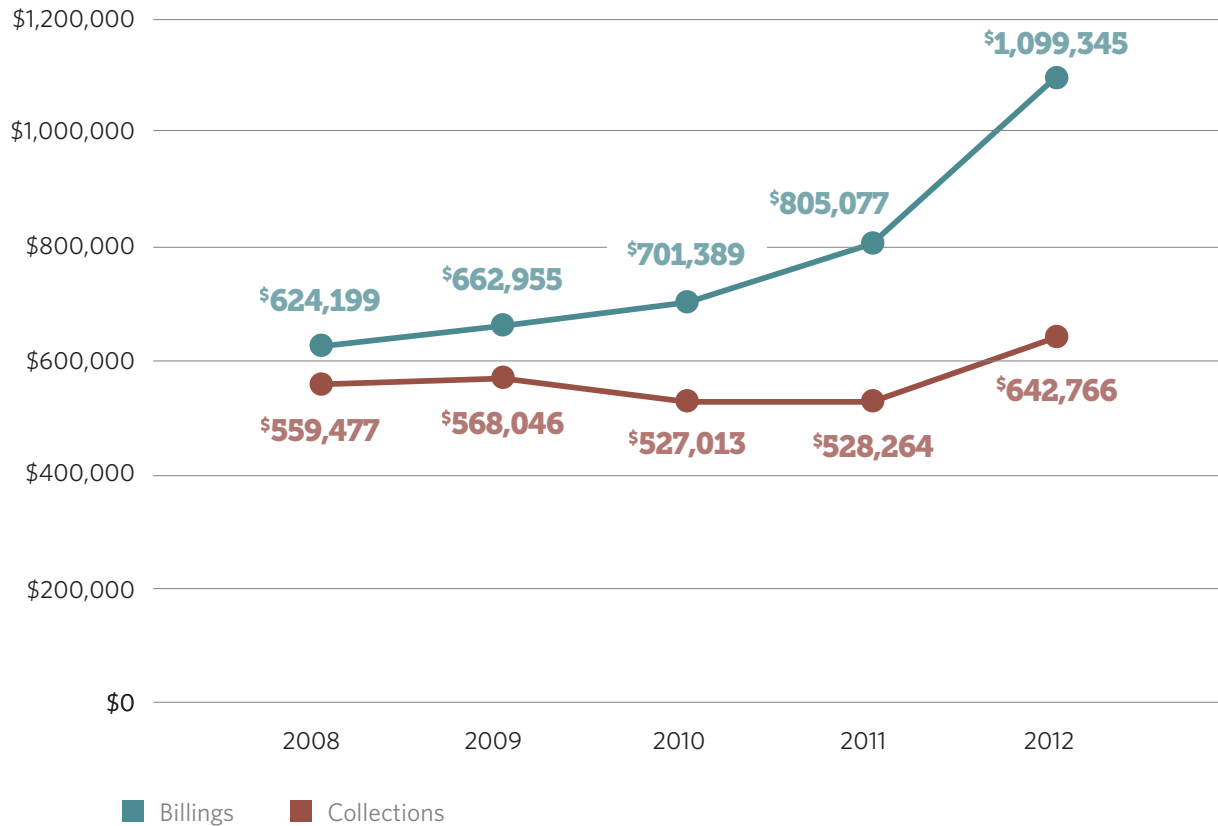
Cost impact summary

The year that Tweeter joined the practice as a dental therapist, patient visits, procedures, and revenue all increased significantly compared with the three previous years. In addition, Dr. Powers said he was able to focus on more complex care (e.g., fillings and root canals) that generated higher revenue and brought him more professional satisfaction. Overall, after accounting for the cost of employing Tweeter, practice profits increased by \$23,831.†

* Because Medicaid does not reimburse for the full amount billed, the collection amounts are significantly lower than the billed amounts.

† Profits are defined as practice collections minus the costs (salary and overhead) of employing a dental therapist.

Figure 2
 Comparison of Billings and Collections for Main Street Dental Care
 2011-12



Source: Data from Main Street Dental Care, Dec. 2, 2013

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Many factors were at play that resulted in this profit increase. Tweeter increased procedure volume and provided care at a lower cost than if Dr. Powers had performed the same procedures. He was able to bring in more revenue by performing more complicated procedures—many of which were not subject to Medicaid’s reimbursement rates that are 41 percent of his customary charges. Other factors also were involved. Main Street’s fee schedule included increases on some procedures, mostly complex ones such as root canals and bridges.

In short, between 2011 and 2012, with the addition of a dental therapist to the practice, Main Street Dental Care changed the way it did business: Its share of Medicaid patients increased by 50 percent—totaling 507 in 2012—and Dr. Powers performed more of the higher-level procedures that he found more rewarding, both professionally and financially. The practice accomplished these two changes while also generating a modest increase in profits. It should be noted that the first year of clinical practice is considered to be a “start-up” year for dentists, dental therapists, and dental hygienists; in successive years, their overall productivity typically increases. Revenue was expected to increase for 2013 because of two major factors: Tweeter’s productivity markedly increased during the first six months of the year, and the state Medicaid agency will be reimbursing Main Street Dental Care at the higher rate as a critical access dental provider.

Battlefords Dental Group, North Battleford, Saskatchewan: A dental therapist has strengthened a private practice for 33 years

Table 5
 Rules Governing Dental Therapists in Saskatchewan, Canada

<p>Education</p>	<p>Two-year diploma.</p>	<p>*This is not a comprehensive list of authorized procedures.</p> <p>Sources: The Dental Disciplines Act, Chapter D-4.1 of The Statutes of Saskatchewan, 1997, as amended by the Statutes of Saskatchewan, 2001, c.8; 2002, c.R-8.2; 2009, c.T-23.01; and 2010, c.19 and 20. http://www.sdta.ca/mrws/filedriver/DDA.pdf; Saskatchewan Dental Therapists Association. Saskatchewan Dental Therapists Association Bylaws. http://www.sdta.ca/mrws/filedriver/BYLAWS3.pdf; Saskatchewan Dental Therapists Association. The Dental Therapy Profession in Canada: Scope of Professional Practice/Competencies. http://www.sdta.ca/mrws/filedriver/Scope_of_Practice.pdf.</p> <p>© 2014 The Pew Charitable Trusts</p>
<p>Allowable procedures*</p>	<ul style="list-style-type: none"> ▪ Assess a patient's needs, diagnose cavities and abscesses, and create a treatment plan. ▪ Administer local anesthesia. ▪ Take X-rays. ▪ Prepare and restore primary (baby) and permanent teeth (fillings), including crowns in primary teeth. ▪ Manage pulp (nerve) exposures and perform pulp-therapy procedures. ▪ Extract primary teeth and uncomplicated permanent teeth. 	
<p>Supervision</p>	<p>Dental therapists must work within a general consultative/referral relationship with a dentist. The dentist does not need to be on-site when the dental therapists are carrying out procedures within their scope of practice.</p>	

Summary

Dental therapists have been practicing in the Canadian province of Saskatchewan since 1974. Originally, they worked in schools or served indigenous Inuit and First Nations' peoples in rural northern areas of the province. As of 2013, more than half (144), of the province's 235 dental therapists were working in private practice.⁸ The others were employed by Saskatchewan Health Districts, Health Canada (which hires them to serve indigenous populations), and First Nations organizations.

Two dental therapists work at the Battlefords Dental Group, a private practice founded by Lornce Harder, D.D.S., in 1965. One therapist joined the practice in 1980, and the other in 2009. The practice is located in North Battleford, a rural town of roughly 14,000 people in west-central Saskatchewan. About 20 percent of the area's population is from indigenous communities.

* The term "First Nations" refers to 630 groups of aboriginal populations across Canada. The Inuit people are not included under this term.

Dr. Harder reports that, by handling the practice's routine restorative care procedures, dental therapists have freed him to focus on crowns, bridges, surgeries, and other advanced procedures. A review of financial records shows that the dental therapists generated combined profits*—after accounting for commissions and other overhead expenses—of CA\$216,987.†

Background of the dental practice

Drawing from as many as 20 towns within a 100-mile radius, Dr. Harder's dental practice serves more than 5,000 patients, many of whom have private insurance.

According to information provided by the practice, about 85 percent of Dr. Harder's collections come from

Dental Care in Canada

Unlike Canada's health care system, the country's dental care delivery system is similar to that of the United States. It is not part of the national health care system, so Canadians must obtain private dental insurance or pay out-of-pocket for care. The government provides coverage for indigenous citizens and for some low-income individuals. Many employers and other organizations sponsor private health plans, which include dental, vision, and prescription drug coverage, among other services.

private insurance or self-pay, 10 percent from government payments for indigenous patients, and 5 percent from government payments for welfare recipients. The federal government's Indian Health reimbursement rate is 85 percent of the Saskatchewan Dental Association's fee schedule—approximately 12 percent of the practice's patient base is indigenous—and the provincial government reimburses for patients on welfare at 70 percent of provincial dental retail fees.

Dr. Harder hired Darcy Tkatchuk as a dental therapist in 1980. She is licensed as both a dental therapist and hygienist, having completed a two-year training program for dental therapy and a 10-month program for dental hygiene. Before moving to the Battlefords practice, she worked for five years in Saskatchewan's school-based dental program. In 2009, Dr. Harder hired Siri Bounlom as the practice's second dental therapist.

In addition to Dr. Harder, a second dentist hired recently, and the two dental therapists, there are six dental assistants who support the dentists and dental therapists chairside. Therapists in this practice split their time between providing dental therapy services and preventive services (i.e., cleanings and scalings) that a dental hygienist would typically provide in the United States.

Hiring dental therapists

Dr. Harder hired dental therapists because he wanted to change the balance of the procedures he performed—taking on fewer routine restorative procedures in favor of more advanced care. He had supervised a dental

* Profits are defined as dental therapists' collections minus their costs of employment (commissions and overhead).

† As of Jan. 15, 2014, one Canadian dollar equaled US\$0.91, according to Bloomberg. (Source: <http://www.bloomberg.com/quote/CADUSD:CUR>)

therapy training program and was impressed with the education the students received and their overall competence. According to Dr. Harder, one of the reasons he hired Tkatchuk was that he wanted to hand over care of many of the children in his practice and knew her experience working in a school-based program would be advantageous.

Role of dental therapists in the practice*

Dr. Harder sees every patient for the initial exam. Most of Tkatchuk's work involves filling cavities, but she also performs procedures such as sizing night guards, prepping for orthodontics, and pulling primary (baby) teeth. In the course of her work, Tkatchuk conducts oral health education, including the proper care for teeth, the causes of gum disease or cavities, and the health effects of habits such as smoking or grinding teeth.

Dr. Harder and Tkatchuk work four days a week. She works about 28 to 30 hours a week and sees eight to 14 patients a day, including children and adults. She is booked six weeks in advance with either cleanings or restorative work for patients whom Dr. Harder identifies through an exam or who have called complaining of tooth pain.

“ Sometimes when I am away and I want patients to be looked after, I will let [Tkatchuk] do the checkup. She can discern cavities just as well as I can.”

Dr. Lornce Harder

Supervision

After years of working together, Dr. Harder does not routinely check the work of his dental therapists at the time it is performed. He observes the results of their efforts when he conducts follow-up evaluations and sees how the dental work is faring.

“Darcy has become so specialized that I wouldn't want to pretend that I could touch the work that she does in fillings because I haven't done it for a long time,” Dr. Harder said.

Tkatchuk consults with Dr. Harder on whether a tooth should be extracted or when a complication involving wisdom teeth arises.

Impact

Data were not available from the early years of Tkatchuk's 33-year tenure to assess the impact she has had on the quantity of services performed or on practice profits over time. Instead, data were analyzed for 2011 and 2012 on the activities of Dr. Harder and both dental therapists. (A second dentist, who joined the practice later in the study, was not included in this analysis.)

* This case study focuses on the day-to-day activities of just one of the practice's dental therapists—Darcy Tkatchuk—but offers a financial analysis of how both dental therapists have contributed to the practice.

Tkatchuk and Bounlom have a different salary structure when they perform tasks as hygienists—primarily cleaning, scaling, polishing, and applying fluoride—than they do for procedures as therapists. They are paid exclusively on commission, receiving 40 percent on all billings for hygiene services and 35 percent (for Tkatchuk) or 30 percent (for Bounlom) for dental therapy services. Dr. Harder receives a 10 percent commission on all services provided by the therapists. Dental therapy services are billed at rates that are two to four times higher than hygiene services.

Productivity

In 2012, Tkatchuk completed 1,111 procedures as a dental therapist and Bounlom completed 1,006. (See Table 6.) This tally represents only a portion of their overall productivity because they also generated substantial collections for hygiene services that year.

Table 6
Productivity of Battlefords' Dental Therapists
 2012

Siri Bounlom

Years of experience at Dr. Harder's practice	Days worked	Procedure volume: therapy	Procedure volume: hygiene	Salary
3	176 (1,276 hours)	1,006	2,624	CA\$77,717

Darcy Tkatchuk

Years of experience at Dr. Harder's practice	Days worked	Procedure volume: therapy	Procedure volume: hygiene	Salary
33	167 (1,211 hours)	1,111	4,185	CA\$114,315

Source: Data from Battlefords Dental Group, Dec. 5, 2013

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I like doing crowns and bridges, and there's lots of that out there. And I do a lot of surgery, which I have enjoyed."

Dr. Lornce Harder

Cost impact

In 2012, combined collections from the two dental therapists totaled CA\$529,035. (See Table 7.) Just under half of this amount came from providing hygiene services. After subtracting their commissions (CA\$192,032), the dental therapists yielded the practice CA\$337,003. Battlefords Dental Group did not incur additional employment costs for the dental therapists.

In determining profits generated by both dental therapists, this analysis could not precisely adjust for supply and equipment costs associated with the dental therapists' employment. Practice staff noted that their equipment is fairly old and depreciated, and supply costs were not tracked to each dental provider. Cost estimates were derived assuming supply costs of CA\$400 per week for each dental therapist.* In addition, each dental therapist has a full-time dental assistant, which amounts to CA\$754 per dental assistant per week at the practice's hourly rate. Using these assumptions, combined profit would amount to an estimated CA\$216,987.

Table 7

Total Billings and Collections Generated by Dental Therapists at Battlefords Practice (in Canadian dollars)

	Thatchuk		Bounlom		Harder	Total practice
	Hygienist	Therapist	Hygienist	Therapist		
2011 billing	\$142,187	\$174,031	\$90,925	\$138,082	\$456,902	\$1,002,127
2011 collections	\$136,242	\$164,577	\$89,669	\$134,277	\$445,319	\$970,084
2012 billing	\$149,722	\$155,504	\$93,448	\$134,460	\$438,083	\$971,217
2012 collections	\$151,054	\$153,034	\$93,696	\$131,251	\$442,945	\$971,980

Note: Collections are higher than billings in 2012 because of instances in which payments from charges in 2011 were received in 2012.

Source: Data from Battlefords Dental Group, Dec. 5, 2013

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* Supply costs reported by Main Street Dental Care—\$100 per day per dental therapist—were used as a proxy to estimate supply costs for the dental therapists at Battlefords Dental Group.

The relative productivity of the two therapists was assessed by comparing their collections to that of Dr. Harder. Although he provided more-expensive services than those provided by the therapists, their share of collections was still a significant percentage of total practice income. The combined services provided by Tkatchuk and Bounlom equaled 54 percent of total practice collections in 2011 and 2012. (See Table 8.)

Table 8
Provider’s Collections as a Percentage of Overall Collections

	Thatchuk		Bounlom		Harder
	Hygienist	Therapist	Hygienist	Therapist	
2011	14.0%	17.0%	9.2%	13.8%	45.9%
2012	15.5%	15.7%	9.6%	13.5%	45.6%

Source: Data from Battlefords Dental Group, Dec. 5, 2013
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Cost impact summary

In 2012, Battlefords Dental Group was able to provide services to a significant number of historically underserved patients. About 12 percent of the practice’s patient base—an estimated 600 individuals—are from indigenous communities, while a smaller portion is on welfare.

Tkatchuk and Bounlom yielded the practice CA\$337,003 in 2012 after factoring in their commissions. After accounting for other overhead costs, they contributed an estimated CA\$216,987 profit to the practice. The practice was able to generate this profit even though a substantial portion of billings—amounting to about 15 percent of revenue—was paid at a discounted government rate.

The Dentist’s Experience

Dr. Lornce Harder cited a number of reasons that dental therapists are an essential part of the team. The most important of these is that, with dental therapists performing restorations and fillings, he is able to do other procedures that he would have otherwise had to turn down.

In addition, dental therapists provide a financial advantage to a dentist. “We pay them a good percentage, but at the same time [we] definitely see some profit,” said Dr. Harder. He also said the dental therapists attract patients. “Tkatchuk has a lot of people that come here because they are really happy with the work she did for them.”

Tkatchuk said that is the most rewarding part of her role in the clinic. “What I value the most is to see work that lasts sometimes for more than 10 years,” she said. “And the people that aren’t afraid to come anymore because they have learned that getting dental work doesn’t have to hurt. It doesn’t hurt if you do it right.”

Conclusion

More states are considering authorizing midlevel dental providers—such as dental therapists or dental hygienists with training in restorative care—to help address critical problems surrounding access to dental care. Pew undertook these case studies to provide documentation of how such providers perform in actual practice settings: what they do on a day-to-day basis and how they are affecting practice economics.

Main Street Dental Care—the first private practice in the United States to employ a dental therapist—increased its share of Medicaid patients by 50 percent and still achieved modest increases in overall profit. Data from the first six months of 2013 suggest that profits will continue to grow. Tweeter’s productivity has increased significantly and, with the new state designation as a critical access dental provider, Medicaid rates have increased by 35 percent. In addition, Dr. Powers was able to do more work at the top of his skill level by conducting more complex procedures.

In the case of the Battlefords Dental Group, which has employed a dental therapist for more than 30 years, the practice has cared for both privately insured and underserved patients. Dr. Harder was pleased with the amount of time he spent performing advanced procedures. Moreover, the dental therapists—working strictly on commission—generated significant profits (albeit with government reimbursement rates that are higher than most state Medicaid programs in the United States). Medicaid reimbursement rates will figure largely in the calculus that private dentists will use to decide how many Medicaid patients they would serve using dental therapists.

Findings from two practices cannot be conclusive about the potential financial benefit for dental practices of employing dental therapists or how they can employ midlevel providers to increase access to care in the communities in which they work. An examination of many more cases over longer periods of time is needed to better address these issues. These case studies demonstrate, however, that for private dental practices, using midlevel providers can be a good business decision that addresses the access gap for low-income individuals and can enable dentists to focus on the complex procedures that only they have the skills to perform.

Appendix: Methodology

Methodology for Main Street Dental Care

The case study addressed the following questions:

- Has productivity increased in the year that a dental therapist has been a part of the dental team?
- To what extent, if any, has access to care for underserved populations increased since a dental therapist has been part of the dental team?
- Is the dentist spending more time focusing on complex, rather than routine, procedures since a dental therapist has been part of the team?
- How have the practice's economics changed since a dental therapist has been part of the dental team?

The practice provided detailed electronic and paper records of services delivered by Dr. Powers and Brandi Tweeter, the dental therapist, through a series of tables that included the following data elements: provider ID, patient ID, date of service, transaction number, procedure description, and amounts billed and collected. Data were provided for the years 2008 to 2012. Productivity was measured in terms of numbers of patient visits, procedures, and new patients.

Profit was calculated by subtracting the costs to the practice attributed to Tweeter's employment from the increase in collections between 2011 and 2012. The costs to the practice include the therapist's direct salary and benefits, supply costs, overhead, and the partial time of a dental assistant.

Information obtained directly from the practice was used to estimate the costs associated with the staffing and management changes that occurred following Tweeter's employment as a dental therapist. She worked 25 hours per week and earned \$45 per hour in direct salary. A dental assistant, who earned \$15 per hour in direct salary, worked 25 hours per week with her time split evenly between assisting Tweeter and Dr. Powers. The practice provides a \$100 per month 401(k) benefit and a \$100 per month health care allowance for Tweeter. The practice pays FICA, Medicare tax, and state and federal unemployment taxes, which totaled \$3,254 for Tweeter and \$616.50 for Tweeter's share of the dental assistant. This results in a total cost to the practice for Tweeter of \$49.55 per hour and \$16.03 for the dental assistant. The practice incurred \$59,454 in salary cost to hire Tweeter and \$9,617 to hire a dental assistant. The practice estimated another \$150 per week in overhead costs (e.g., chair and utilities) and \$300 per week in supplies to support Tweeter. Total costs came to \$90,671.

Gross revenue was estimated from line item claims provided by the practice for the three years before and 11 months after Tweeter joined Main Street. The data were organized as one record per claim for specific services and products sold by the clinic.

Billing was estimated from line item claims provided by the practice for 2008 to 2012. Services were classified using current dental terminology codes to establish the set of unique services provided in the year before and following the staffing change. The change in payer mix between 2011 and 2012 was based on the practice's report of the payer of record for each patient encounter listed. This information was provided independently of the detailed line item claims, which did not include payer information. Data on the portion of total visits covered by Medicaid in 2010 were provided by Main Street office manager Melissa Jerve.

An exact count of collections for Tweeter could not be calculated because, for the first 10 to 12 weeks of her employment as a dental therapist, she lacked a provider ID number for Medicaid. As a result, her procedures were billed under Dr. Powers' ID number. The practice's records system provided an accurate count of Tweeter's

procedures, but because a separate system tracking the practice's collection data does not link payments to specific procedures, we were unable to ascertain Tweeter's exact collection amount for 2012.

The 2012 state Medicaid reimbursement rate for the practice's procedures (41 percent of Main Street's 2012 fee schedule) was provided by the practice and reported to be based on a combination of managed care and fee-for-service Medicaid collections. In 2013, critical access payments started providing an additional 35 percent above Medicaid maximum allowable payments to Main Street Dental Care, according to the state Department of Human Services. The 2013 estimated Medicaid reimbursement rate of 55 percent accounts for this critical access payment increase and is based on Main Street's 2012 fee schedule. Revenue data from this report, however, only reference the practice's finances through 2012.

Methodology for Battlefords Dental Group

This case study focused on the dental therapists' impact on the practice's profits, as well as their productivity in relation to the entire practice. Battlefords Dental Group pays dental therapists a percentage of the revenue they generate. The practice paid them a straight commission—40 percent on all billings for hygiene services and 35 percent (for Tkatchuk) and 30 percent (for Bounlom) for dental therapy services.

The practice provided aggregations of each therapist's revenue from both hygiene and therapy services for 2011 and 2012, their collection totals, and a breakdown of procedures performed. The same data were provided for the dentist. This information was used to calculate the therapists' commissions on all of the services they provided.

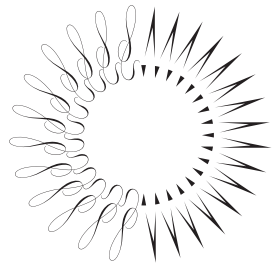
Estimates of profits from the dental therapists after accounting for other overhead charges were calculated as follows:

- Two dental assistants working 29 hours each week assisting each dental therapist at an hourly rate of CA\$26 yielded an annual cost of CA\$78,416.
- An additional CA\$400 per week per dental therapist was calculated for supply costs, which totaled CA\$41,600.
- These costs were subtracted from their postcommission combined collections in 2012 of CA\$337,003 to yield CA\$216,987.

The portion of total collections from indigenous and welfare patients was calculated from the practice's bank records. The portion of indigenous patients seen by the practice was based upon estimates provided by practice staff independent of patient records.

Endnotes

- 1 Institute of Medicine and National Research Council, *Improving Access to Oral Health Care for Vulnerable and Underserved Populations*, 1, (Washington: National Academies Press, 2011), http://www.nap.edu/openbook.php?record_id=13116.
- 2 U.S. Department of Health and Human Services, Health Resources and Services Administration, "Find Shortage Areas: HPSA by State & County," data as of April 8, 2013, <http://hpsafind.hrsa.gov/>; and U.S. Government Accountability Office, *Efforts Under Way to Improve Children's Access to Dental Services, but Sustained Attention Needed to Address Ongoing Concerns* (November 2010), accessed Dec. 10, 2012, <http://www.gao.gov/new.items/d1196.pdf>.
- 3 Pew children's dental campaign, *A Costly Dental Destination*, 1 (February 2012), http://www.pewtrusts.org/uploadedFiles/wwwpewtrustsorg/Reports/State_policy/Pew_Report_A_Costly_Dental_Destination.pdf.
- 4 This figure counts children 1 to 18 years old eligible for the Early and Periodic Screening, Diagnostic and Treatment Benefit. See U.S. Department of Health and Human Services, Centers for Medicare and Medicaid Services, Annual EPSDT Participation Report, Form CMS-416 (National) Fiscal Year: 2011, accessed April 1, 2013, <http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Benefits/Early-and-Periodic-Screening-Diagnostic-and-Treatment.html>. Analysis by The Pew Charitable Trusts.
- 5 David A. Nash et al., "Dental Therapists: A Global Perspective," *International Dental Journal* 58 (2008): 61-70.
- 6 This number is based upon personal communications from state legislators and their staffs.
- 7 Personal communication from Karl Self, director, Division of Dental Therapy, University of Minnesota School of Dentistry, to Jane Koppelman on Dec. 16, 2013.
- 8 Personal communication from Cindy Reed, executive director, Saskatchewan Dental Therapists Association, to Jane Koppelman on Sept. 4, 2013.



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