

Preventing Poor Oral Health in Older Patients with Multiple Chronic Conditions: The Experience of the Gleam Smile Centre, Hamilton, ON

By Julie Di Nardo¹ with contributions by Dr. Howard Tenenbaum² & Ross Perry³

It has been more than 10 years since hygienists in Ontario began to practice independently and more than 5 years since these professionals were permitted to administer in-office prescription drugs. This new era in Ontario hygiene was designed primarily to improve access to professional oral healthcare for a rapidly aging community with multiple risks for poor oral health, on fixed incomes, without dental insurance and, consequently, with irregular visits to the dentist.

Ontario has been a leader in independent hygiene. Other jurisdictions such as the United States and the United Kingdom, and indeed, some other Canadian provinces, are only just recognizing or considering this new provider of healthcare. So it is important to measure Ontario's experiment with independent hygiene against its original mandate and it is timely to assess whether this mandate needs modification more than a decade later. These questions now bear consideration: first, has independent hygiene delivered better and more affordable oral health to older Ontario communities and, second, what is our mission over the next decade?

The experience of Gleam Smile Centre (Gleam) in Hamilton, Ontario over the past 5 years, positively answers the first question, and offers some guidance in answering the second.

The original mandate for Ontario independent hygiene: Back in 2007 when the first independent hygiene practice was founded, about 20% of the community was age 60+, which is the group most under-served by dental care.¹ Today, this group has grown to 26% of the community and in 10 years, it will be over 30%.² Over this same period, moreover, the health status of aging Ontario has become more complex. The era known as multiple chronic conditions or MCC had begun. Our older patients not only had hypertension and heart disease, they also had diabetes, or arthritis or mood disorders; they began taking multiple medications on a daily basis. We began to see that MCC was associated with poor oral health, and, perhaps most strikingly, some of us observed better oral health led to more manageable MCC.

Since 2007, moreover, two other trends emerged to influence independent hygiene's contribution to the health in aging communities. First, the clinical and business models for mobile hygiene progressed such that previously inaccessible segments of the community could be served – the institutionalized geriatric and special needs populations. These groups account for about 1 in 5 Ontario adults.

¹ <http://www.statcan.gc.ca/pub/82-003-x/1999001/article/4646-eng.pdf>

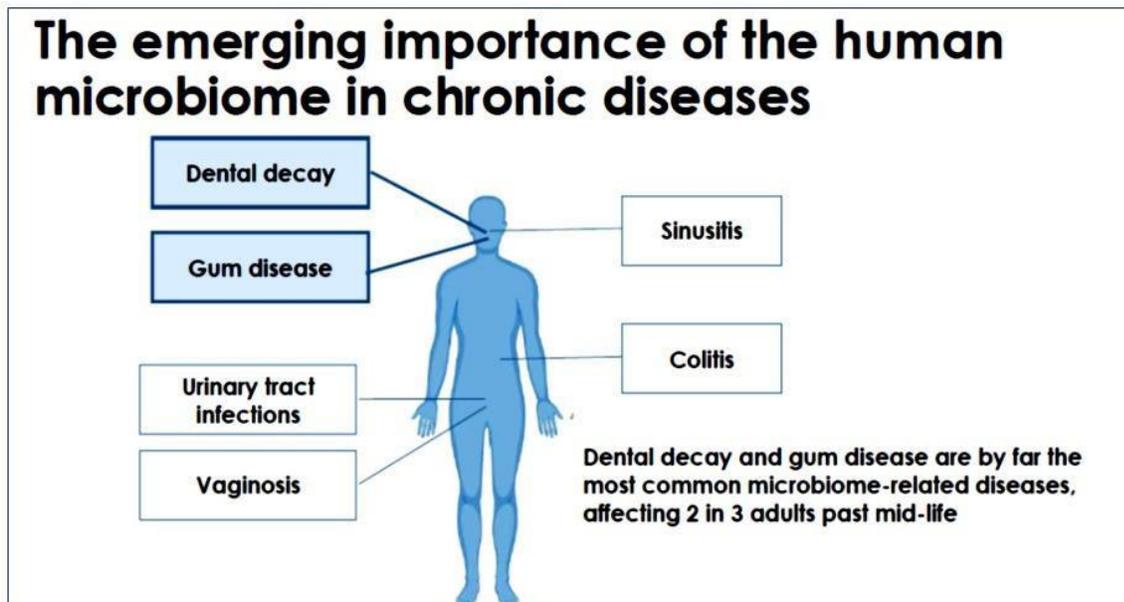
² <https://www.census.gov/data-tools/demo/idb/informationGateway.php>

Second, the science of the oral microbiome has quickly emerged to profoundly challenge the very basis for conventional dental services, including how independent hygienists work. It is now clear that surgical dentistry and many hygiene procedures are ineffective if not inappropriate in managing the oral biofilm from which stems poor oral health.

Independent hygiene, such as Gleam, has embraced this revolution in the microbiome for two reasons: first, we are less committed to the surgical model of oral healthcare and are thereby more flexible and less conflicted in introducing such services, and; second, we become more aligned with our mandate and with the interests of our aging community. Put another way, for independent hygiene it is just good business practice to address the microbial cause of poor oral health.

The emergence and early adoption of the microbiome model of oral care has strategically distinguished independent hygiene: we are no longer “tooth cleaners” offering cheaper services than the dental practice, and; we have a growing base of science and clinical evidence which is superior to the surgical model of care. Some say that the oral microbiome is the opportunity for hygiene to enter the mainstream of medicine where other biofilm-mediated diseases are managed without surgery or mechanical procedures (Figure 1).

Figure 1



The Gleam experience: Gleam became an independent hygiene practice in 2009, and in 2013, it began using an in-office, topical antiseptic prescription drug (Prevora) to prevent root caries in its older patients. Gleam now has more than 70 older patients at very high risk of poor oral health on the Prevora treatment plan, some for more than 5 years.

Prevora is a high-strength, sustained-release antiseptic which is topically applied by the hygienist to the teeth and gum line of the adult at high risk of root caries. Prevora works by re-adjusting the mix of bacteria in the dental plaque, shifting it from dysbiosis to symbiosis, so that dental diseases are minimized. The treatment plan involves 4 applications (Figure 2) in the first 8 weeks, followed by single applications every 6 months. Prevora has Class 1 evidence for caries, and is the only approved preventive treatment for root caries in Canada (DIN 02046245). It is administered under ODHA/CDHA procedure code 00606.



Figure 2 Topical application of Prevora

The characteristics of our Prevora patients are summarized in Figure 3. These patients are very representative of Canadian seniors, in terms of multiple chronic conditions, status of oral health, and insurance status.

Figure 3 Characteristics of Prevora Patients at Gleam Smile Centre, 2013-2018

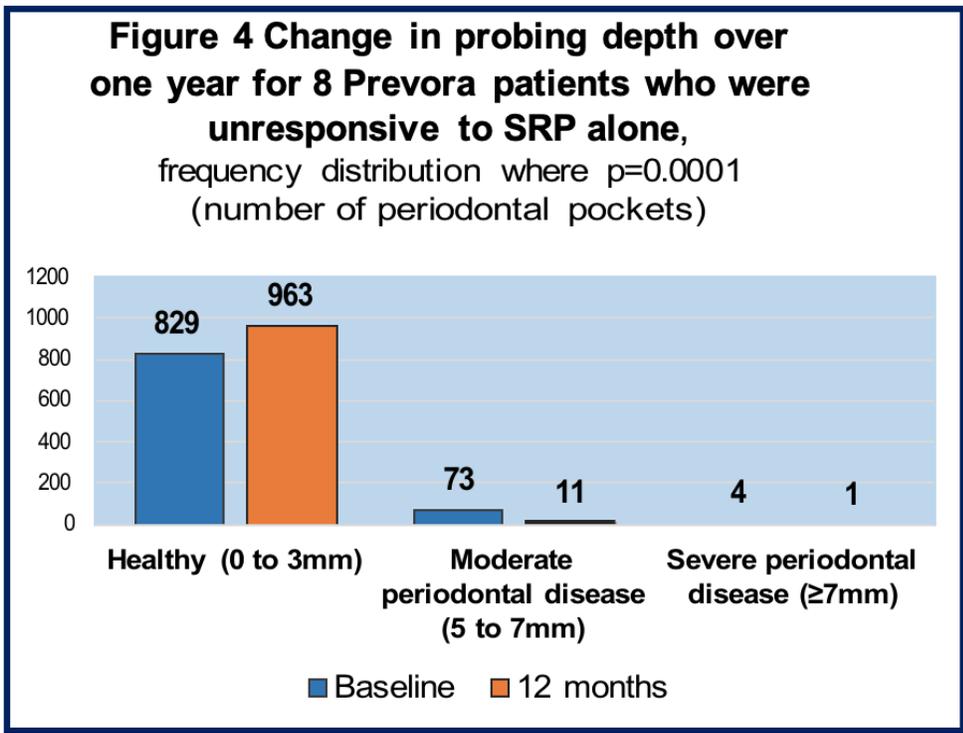
Feature	Prevora patients at Gleam	Comment
Average age	72 years	Less than 4 in 10 Canadian Seniors regularly visit the dentist.
Multiple chronic conditions	High blood pressure = 44% Cardiovascular disease = 41% Diabetes = 37% Arthritis = 33% Mood disorders = 19%	31.3% of Canadian seniors have 2 or more chronic diseases ¹
Average DMFT at baseline	17	DMFT for Canadian adults = 17.3 ²
Periodontal index at baseline	30	24% of Canadian seniors have moderate periodontal disease ²
Insured/uninsured	52%/48%	52% of Canadian seniors have no dental insurance ²
Payment for Prevora	All paid out –of-pocket	Most Canadians now pay for expensive dental services out-of-pocket

Sources: ¹ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4910465/table/t01/>;² http://publications.gc.ca/collections/collection_2010/sc-hc/H34-221-1-2010-eng.pdf

Importantly, all patients except one who moved out of the community, have remained loyal to the treatment plan. The patient who moved away, rejoined the Prevora plan upon returning to Hamilton. All of these patients have paid out-of-pocket for Prevora.

Prevora’s outcomes: All patients tolerate the treatment well; there have been no adverse safety events or cosmetic effects. All but one patient has been caries free during treatment. One patient who experienced root caries while on Prevora after 4 years, had neglectful oral hygiene, would likely have benefited from more frequent Prevora applications, and would likely have had more root caries without this treatment in any case.

Most notably, the periodontal health of these patients treated with Prevora patients has improved universally. This effect is particularly important for those patients whose periodontal condition was shown to be unresponsive to ongoing scaling and root planing. In these patients, the numbers of diseased periodontal pockets has declined markedly while the number of healthy periodontal sites has increased as shown in the frequency distribution shown in Figure 4. Prevora’s treatment and prevention effect on the periodontal health of these patients is both statistically and clinically significant. In fact as seen clearly in Figure 4, there were improvements in all ranges of probing depths. But most impressive was a **greater than 7-fold reduction** in the prevalence of 5-7 mm probing depths following treatment with Prevora (scaling alone did not provide for any additional reductions.)



Source: Gleam Smile Centre

The additional periodontal benefits of Prevora are profound for the practice of independent hygiene. For the first time, our profession has one simple procedure to manage simultaneously both of the most important chronic oral diseases. This quality improves the affordability of prevention, and enhances its convenience as well as patient adherence. It also simplifies the value proposition of independent dental hygiene services. The overarching concept here is that rather than focus on either caries or gum disease, the focus can now be on improvements in oral health; improvements that might also extend beyond the mouth!

Implications of Gleam's long-term experience with Prevora: Gleam's history with Prevora meets the original mandate of Ontario's independent hygiene movement. Our older patients with multiple risks for poor oral health and who do not visit the dentist have avoided caries and periodontal disease for years. This has been achieved at an affordable cost, no discomfort and with a simple and quick procedure – the topical application of a time-released antiseptic to the teeth and the gum line.

But Gleam and other independent hygiene practices serve but a handful of aging Hamilton's citizens. For example, there are now an estimated 100,000 Hamiltonians over age 65 who have irregular (if absent) dental attendance, with MCC, and thereby at high risk of poor oral health. So the mandate ahead can be daunting: how does hygiene ever meet this growing need?

It seems that hygiene's role in healthcare will need to evolve even more. We need to embrace the concept of integrated care whereby the MCC patient regularly visiting the family doctor is served at the same time in the same clinic by the independent hygienist. With the results from Prevora, we need to rebrand hygiene from a dental service to an essential medical service; this not only speaks to the consequences of better oral health on overall health, it is supported by the frequent statements of Gleam's Prevora patients who say they feel better. Lastly, we need to tell the community we are here to protect their health and overall health within their means and without pain. Fortunately, Gleam has found its Prevora patients are willing to help in communicating this message. Just read the following testimonial.



“I want to tell everyone about this new tooth coating!”

In the last 3-4 years prior to Prevora, I was getting cavities quite often and since I started Prevora I haven't got any new cavities. I have been on it for one year.”

Nora P., Hamilton

Call Gleam at (905) 387-6453 to follow Nora's path to better oral health.

¹ Registered independent hygienist and owner of the Gleam Smile Centre, Hamilton,

² Dentist in Chief, Mount Sinai Hospital, Toronto

³ President of CHX Technologies Inc., Toronto