THE INSIDE STORY®

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WHAT'S INSIDE

Dental public health care specialist, Dr. Carlos Quiñonez joins us for episode 24 of our podcast to talk about dentistry and innovation.

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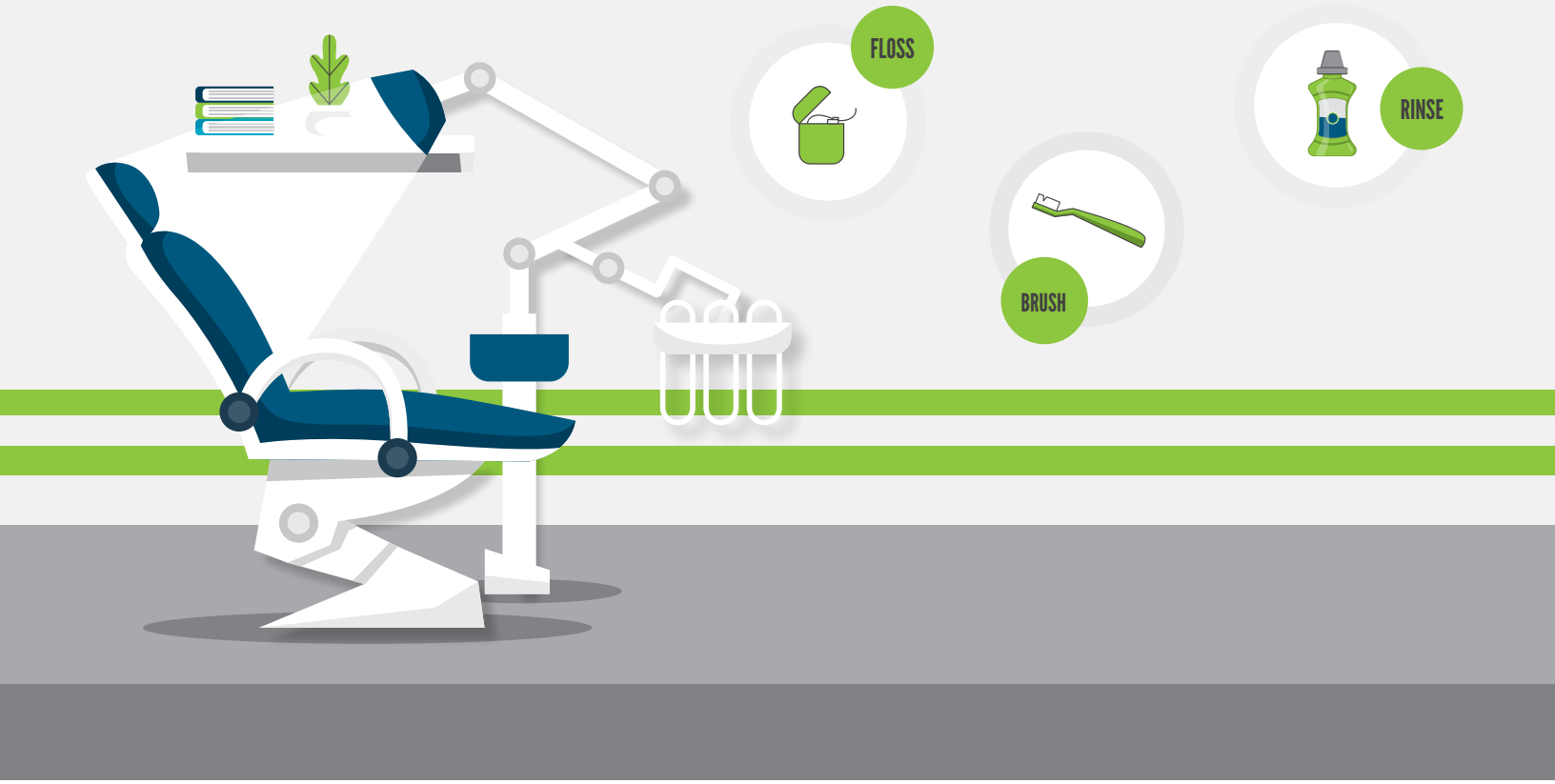

FROM DRILLING TO DIGITAL... REDEFINING THE DENTIST

From the first dental practitioner—believed to be an Egyptian scribe in around 2600 B.C.—to barber-surgeons in the middle ages who were avid tooth-pullers (without anaesthetics, of course), the practice of dentistry has certainly come a very long way.[1] And going forward, the role of the dentist will continue to look very different from the past.

All business and no health?

Attracting new patients, supervising staff, ordering supplies, managing finances… and oh yes, providing oral health care. Although dentists are regulated health care professionals, the reality of being a dentist is that they are also in the business of oral health care. Although some dentists work in public health or academia or go on to pursue a dental speciality, the Canadian Dental Association (CDA) reports that "most dental school graduates become general practitioners, providing comprehensive oral health care to a wide variety of patients."[2] The most common business model is the solo owner-operator via buying an established practice or starting one from scratch.[3]

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And today, we're seeing dentists go from small business people to big business people as solo practices are consolidated into large group practices. Although in Canada, so far corporations only own about 2% of all dental offices, the CDA reports that corporatization is steadily rising and predicts a decline in solo practices. Corporatization is at about 30-40% in the United States.[4]

Unaffordability of going solo is a major driver of the corporatization of dentistry—like graduating with major debt (major like $400,000), plus the high cost of setting up a practice (high like $600,000).[5] In addition, dreams of buying an established practice are often also crushed due to bidding wars (bidding like 25-50% over asking).[6] This points to the oversupply of dentists in urban areas as cited in a 2016 CDA report indicating that the density of dentists in Canada's big cities is about three times more than in rural areas.[7] And whether small business people or part of corporations, dentists are in the private sector and paid via a fee-for-service model.

So who's doing the paying? Statistics for 2015 indicate that 56.2% of dental service expenditures were financed through private insurance (employer and non-employment related coverage), 37.6% was directly out-of-pocket, and only 6.3% was funded by government-subsidized programs for those eligible.[8]

An enduring and common concern is that payment based on the number and type of treatments performed could create an incentive to intervene more rather than less with the goal of generating volume—and that volume doesn't necessarily mean value. So now with the corporatization trend, the fear is that treatment protocols may emphasize generating income rather than promoting health. Will the dentist put patient health first or will the patient be increasingly seen as just a profit centre?

For better health… don't trip up on the restorative staircase

Historically, dentists were trained as technicians (and arguably still are, for the most part—more on that to come). The first dentists used their technical skills to pull teeth. Then in the early 1700s, their role evolved to become more restorative and replacement-focused.[9] This approach continues today. Whether in a solo practice or part of a corporation, a main aspect of a dentist's job is drilling and filling to treat cavities, as well as scaling and polishing to treat periodontal disease.

But here's the thing, research shows that "oral diseases, such as dental caries (cavities) and periodontitis, are still prevalent worldwide despite advancements in dental treatments and oral hygiene products. Dental caries is one of the most common diseases worldwide."[10]

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The old saying is that they have to "drill to bill."

Furthermore, reparative procedures—like fillings, crowns, and implants—often become necessary to replace older dentistry. Known as the "restorative staircase," it's intervention after intervention; a filling is replaced by a larger filling, which ends up needing a root canal, then the weakened tooth eventually needs a crown, then pulling, then an implant… and on it goes.[11]

Ultimately, this "fix it" approach is just that, a short-term fix that does not prevent or stop disease progression or even improve health in some cases. In fact, research shows that it leads to "enormous financial costs to the individuals, their families, and community health systems. The burden of disease is enormous in terms of pain, infection, quality of life, and school and work absenteeism."[12] It can be debated whether there is long-term value for the patient or private payor or society.

But it does represent monetary value for the dentist. Remember, dentists' compensation is based on intervening; the old saying is that they have to "drill to bill." In addition, some dentists turn to things like cosmetic dentistry as a way to generate another income stream.

Say cheese!

Our look-at-me-society where everyone needs an Insta-worthy smile is opportunity knocking for dentists. Indeed, society's obsession with beauty and eternal youth has reached a new high (read: low) as today, there isn't a body part too big or too small to nip and tuck to a supposedly better you. And, of course, teeth are prime candidates for "improvement." What began with replacing silver fillings with white ones, has now blossomed into all manner of "enhancements." Teeth whitening, implants, orthodontics for adults—all are commonplace now. Plus, you wouldn't want to be seen with a "gummy smile" (the horror). Not to worry, gum-line altering is possible.

So with demand for cosmetic dentistry, why not give the people what they want? But does dentist as cosmetician combined with technician deliver value in terms of maintaining and improving health?

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Let's talk…

Fortunately, a new definition of oral health was approved in 2016 by the FDI World Dental Federation (which represents more than one million dentists worldwide). Highlights include that oral health "is a fundamental component of health and physical and mental well-being. It exists along a continuum influenced by the values and attitudes of people and communities" and "is influenced by the person's changing experiences, perceptions, expectations, and ability to adapt to circumstances."[13] Just like the definition, prevailing thought is that the role of the dentist follows suit by evolving away from a focus on restoring and repairing and toward prevention and personalization.

Technically, preventive dentistry has been around since the development of the early dental profession (and maybe even before), boosted by the introduction of fluoride in the 1940s.[14] And research continues to confirm that at-home preventive measures—like good old brushing—can help curb biological processes that lead to tooth decay and periodontal disease. To gain a more comprehensive understanding of the biology at play, we spoke with Dr. Carlos Quiñonez who is a dental public health specialist and an associate professor at the Faculty of Dentistry, University of Toronto:

"We need to put the spotlight on the oral microbiome and oral inflammation. The oral microbiome is the collection of microorganisms that live in our mouths. And oral inflammation can result when the oral microbiome becomes unbalanced, destroying tissues inside the mouth and potentially leading to inflammation and destruction on other parts of the body, too. Ultimately, a healthy microbiome can help prevent caries and periodontal disease, and can lessen the burden of oral inflammation on the body as a whole. So dentists can act as coaches, advising patients on good oral hygiene and other positive lifestyle changes like limiting sugar and stopping smoking to improve their oral health and potentially their systemic health. So the dentists' focus should be on preventing oral diseases, rather than just treating them once they are present. Then the dentist can also take an individualized approach to monitoring their patients with a view to early conservative intervention, as well as risk management interventions, as needed on an individual basis."

Like preventive dentistry, taking an individualized approach—personalized dentistry—has been brewing for some time. It began to take shape back in 1953 with the discovery that DNA structure affects dental development and oral diseases.[15] It may also sound familiar, as we covered personalized medicine in the July/August 2016 edition of *The Inside Story*. And of course, today we're seeing personalization everywhere—as in "I'll have a venti, half-sweet, non-fat, high-whip, soy caramel macchiato" and "thanks Netflix for teeing up my next binge-worthy watches."

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> **"Results revealed no difference in tooth loss among low-risk patients whether they went for a checkup once or twice a year."**

The value of personalized treatment really hit home in a study about dental checkups every six month—the norm for decades. Results revealed no difference in tooth loss among low-risk patients whether they went for a checkup once or twice a year. However, with the high-risk group, about 17% of those who had two checkups a year had a tooth pulled, compared with about 22% who had just one checkup a year.[16] The take-home: twice-yearly checkups are not necessary for everyone. The dentist should use individual risk profiles to treat each patient. So prevention and personalization rule, with the dentist just putting on the technician's hat as needed. And it's not just dentists that could play a role in spreading the prevention word.

Dental *and* medical teams on the same prevention page

There is talk that this educational role should be the focus of a range of health professionals. As the American Dental Association (ADA) puts it, "With physicians, nurses, physician assistants, and other members of the primary care team joining the fight for oral health, we have a real chance to eradicate the silent epidemic of dental disease."[17] Accordingly, in 2012, the ADA endorsed a national oral health curriculum for primary care providers stating that "the dental profession looks favourably on the engagement of primary care clinicians who have contact with patients of all ages since they can greatly impact dental disease firsthand."[18]

Not only does this expand the role of oral disease prevention and oral health promotion beyond dentists, it might lead to less separation between dentistry and medicine: the mouth back into the body, rather than considering the mouth as separate. For example, when you go for a regular dental checkup, you would be cared for by a team of dental *and* medical health professionals who "would take your blood pressure, check your weight, update your medications, see if you are due for any preventive screenings or treatments, and clean your teeth. If you have an artificial heart valve or have previously had a heart infection, or you are taking a blood thinner, your clinicians will manage these conditions without multiple calls to referring doctors."[19]

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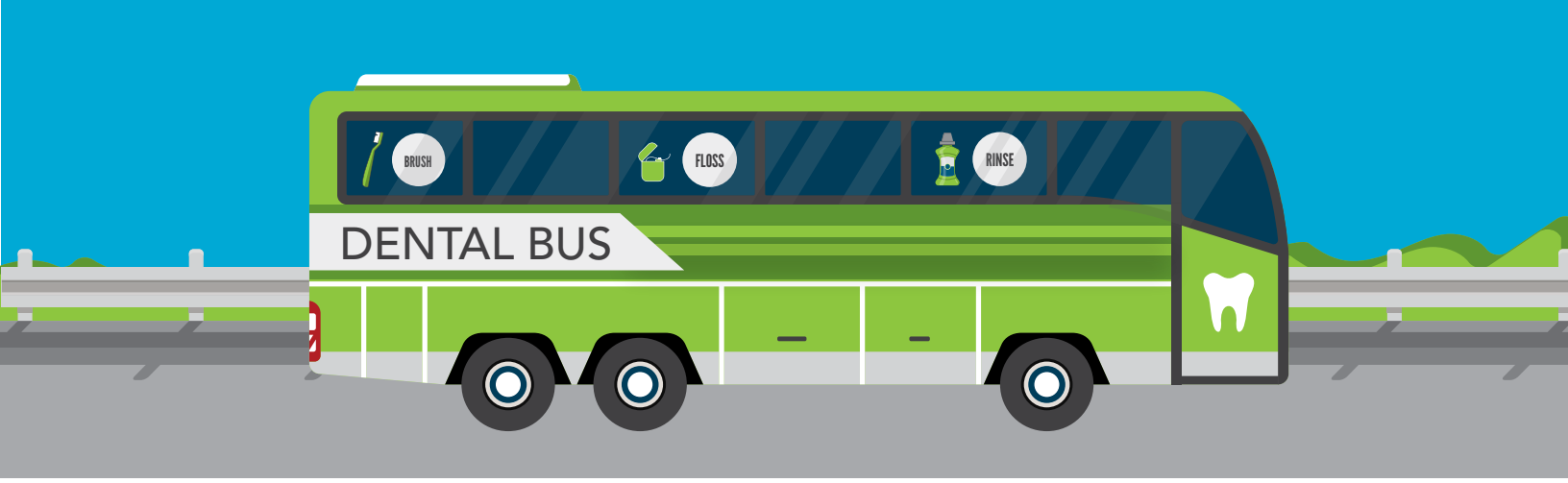

But maybe you wouldn't go to a traditional bricks-and-mortar dental office at all. Increasingly dentists are making themselves easily available to the patient rather than the other way around.

Teledentists

Mobile dentists' vans and dental clinics at community health centres, workplaces, and schools are now all options to the traditional dental office. In addition, teledentistry—virtual online dental visits—is making it possible for people who live in remote locations to have regular access to a dentist. Virtual access also helps people who have difficulty travelling to the dentist, such as people who are elderly or living with a disability. This is in sync with societal trends emphasizing equity and equality. Back to Carlos as his research focuses on the effect of social determinants on oral health:

"In addition to the biological risk factors to oral disease, it's important to gain insight into the social risk factors that undermine oral health. For example, political, social, and economic factors shape people's biology, their access to resources, and how they behave. Understanding both social and biological risk factors, and the interrelation between the two, will help identify people at higher risk for developing oral disease due to adverse social circumstances. This will help us to more effectively prevent and, as needed, control their disease experience."

Fortunately, innovations like tele-orthodontics are helping overcome barriers like affordability and accessibility. For example, as an alternative to traditional braces, SmileDirectClub patients receive kits to make impressions of their teeth themselves at home. Then they receive clear aligners to wear that are basically a plastic form of braces. The cost is estimated at 60% less than traditional orthodontics, making getting that beautiful smile more affordable for more people.[20] And it makes orthodontics possible for those who live too far to make regular orthodontist appointments feasible. Even where affordability and accessibility aren't an issue, as a society we want everything at our fingertips—convenience is a big draw.

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The downside? Traditional orthodontists and dentists say this kind of direct-to-consumer approach poses patient safety and quality concerns.[21] However, the aligner companies guarantee that treatment plans are created by licensed dentists who follow the patient's progress throughout their treatment. Also, they emphasize that their service is for people with mild to moderate tooth crowding or spacing. And that if there is more severe misalignment or bite correction is required, they refer the patient for a traditional orthodontic consultation.[22]

So the vision is there—dentists as health promoters and physicians of the mouth—but is dental training and education keeping pace and evolving to help fulfill this vision?

Making the modern dentist a reality

One school of thought is that "the dental profession is overtrained for what they do and undertrained for what they should be doing." [23] This suggests that dental education is stuck in the past dominated by a technical philosophy that harks back to its surgical origins. How then will dentists be prepared to deliver preventive and personalized care that delivers value to patients, as well as to private insurers, public programs, and society overall?

Once again, it's over to Carlos (remember, one of his many roles is associate professor at the Faculty of Dentistry at the University of Toronto): "The way we educate and train dentists is lagging behind today's realities. We need a paradigm shift in that our model needs to shift away from just skill acquisition toward critically applying knowledge."

Change is never easy, but it's encouraging to see vision statements unveiled in 2018 by a CDA task force established to develop a plan of action to support dentists in navigating the changing landscape of dentistry. The task force envisions Canadian dentists "as lifelong learners… well-prepared to meet the changing needs of society" and "ready to embrace new technologies and models of practice." [24]

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Kudos to that, as technological innovation is taking the dental profession by storm. We'll show you in the next edition of *The Inside Story*.

Want to hear more about dental innovation from Carlos? Don't miss episode 24 of our podcast – *And now for something completely indifferent®*.

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WHAT'S UP

Ontario revamping mental health and addictions system

The government of Ontario announced *Roadmap to Wellness: A Plan to Build Ontario's Mental Health and Addictions System*. The plan's goal is to remap Ontario's mental health and addictions system so that Ontarians have easier access to higher-quality care and support in communities throughout the province. This represents an investment of $3.8 billion over 10 years to create new services and to expand programs.

The plan has four pillars: improving quality, expanding existing services, implementing innovative solutions, and improving access. Central to the plan is the creation of a new agency—the Mental Health and Addictions Centre of Excellence—which will oversee the plan, as well as help coordinate care, standardize treatment, and assess where problems exist in the system.

One of the first initiatives is set to roll out this spring and expand in the fall. Called Mindability, the program will provide cognitive behavioural therapy to Ontarians aged 10 years and older who need support. After an initial assessment from a trained mental health professional, therapy services available will include group and individual therapy (telephone and face-to-face), online modules, and workbooks. It will be government funded with no out-of-pocket costs for participants.

Additional initiatives in the works include creating a single number that Ontarians can call or text to access Telehealth Ontario's nine health information and advice programs. Expansion will include specific mental health services. Ontarians will also be able to access a user-friendly website with resources and online chat, as well as access in-person mental health and addictions navigation support on a regional basis.

For more information, visit ***https://news.ontario.ca/mohltc/en/2020/3/ontario-unveils-plan-to-build-mental-health-and-addictions-system.html***.

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> **"Canadian employees and employers are both generally receptive to digital health benefits."**

Task force provides recommendations for virtual medical services

The Virtual Care Task Force—made up of the Canadian Medical Association, the Royal College of Physicians and Surgeons of Canada, and the College of Family Physicians of Canada—investigated why health care in Canada is falling behind other industries in providing digital services. The task force's report provides a framework for the national standards, legislation, and policy that needs to be put in place to make virtual care a reality across Canada.

With the intent of acting as a starting point for future collaborations with other health care professionals like nurses and pharmacists, as well as with patients, the report includes 19 recommendations. Highlights include:

- Develop national standards for patient health information access
- Simplify registration and licensing processes for doctors to provide virtual care across provincial and territorial boundaries
- Encourage governments and medical associations to develop revenue-neutral fee schedules between in-person and virtual care
- Develop a national standardized vocabulary for virtual care

For more information, visit ***https://www.cma.ca/news/demand-here-technology-exists-cma-led-task-force-releases-roadmap-expanding-virtual-medical***.

Employees *and* employers support digital health benefits

An international survey called *Health in Demand,* by Mercer Marsh Benefits, investigates the receptiveness of digital health solutions among employees and employers. The survey

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polled 16,564 employees and 1,300 employers in 13 countries. For Canada, 1,066 employees and 100 employers were polled. Results indicate that Canadian employees and employers are both generally receptive to digital health benefits. Responses from Canadian employees include that:

- 50% are excited by a vision for the future of health care that includes digital health innovation; 42% said they'd like an app that helps them find a doctor or medical care when and where they need it, and 36% said they'd like telemedicine for minor health issues.
- 26% would be less likely to leave their job if their employer offered digital health benefits.
- 48% would have more confidence in new digital solutions if they were promoted or sponsored by their employer.
- 69% trust their employer to keep their personal health information secure. In addition, 59% would be willing to share their health information to make sure that their medical care is the highest quality possible, 50% would share it to receive tailored health solutions, and 34% to have access to more convenient ways to receive health services.

In terms of drawbacks, preference for human attention, lack of need, and mistrust regarding data security were cited as main reasons for not trying a digital health solution.

Employer responses include:

- 54% said they are planning to invest more in digital health in the next five years.
- 64% believe investing in digital health would positively effect employee energy levels.
- 39% felt that digital health solutions will help retain employees.

Regarding challenges, some employers cite difficulties in ensuring the degree of internal resources necessary to provide effective oversight of numerous digital-solutions vendors to give employees more confidence around data privacy and security.

For more information, visit ***https://www.mercer.ca/en/our-thinking/health/health-on-demand-2020.html***.

Health Canada funds pharmacist-lead pain management pilot project

Health Canada's Substance Use and Addictions Program awarded $1.7M to the University of Saskatchewan over three years to implement and evaluate a new pharmacist-led pilot project:

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an interprofessional model for chronic pain management. The model's focus is on helping patients better manage chronic pain and use medication more safely especially when using high doses of opioids. The aim is to reduce the risk of opioid-related harm and unintentional overdoses, as well as reduce doctor and emergency room visits and hospitalizations.

How does the new model work? Family doctors and nurse practitioners will refer chronic-pain sufferers to pharmacists to receive individualized pain management plans focused on medication management and non-drug options. Pharmacists will also identify patients who are good candidates for tapering down opioid doses and will support them during this process. Ideally, using this new model, the majority of patients will not need referral to pain specialist physicians. However, when needed for complex cases, a pain specialist physician will liaise by phone with the pharmacist and the patient's family doctor.

About 480 high-risk patients will receive consultations per year. If this new model proves successful, it could be considered for expansion to other provinces by building on existing programs and clinics.

For more information, visit ***https://news.usask.ca/media-release-pages/2020/pharmacists-may-hold-the-key-to-solving-the-opioid-crisis-1.7m-awarded-by-health-canada-for-usask-pilot-project.php***.

March/April haiku

Modern dentistry
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