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Mission of the Ontario Dental Association At the Ontario Dental Association we provide innovative and inspired leadership to deliver exceptional value by:

- and inspired leadership to deliver exceptional value by:
 Promoting the highest standards of dental care and supporting our diverse membership in their pursuit of professional excellence and personal fulfillment;
- Fostering a collaborative workplace environment which promotes creativity and personal growth while celebrating achievements; and
- Advocating with a unified voice for accessible and sustainable optimal oral health for all Ontarians.

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from Dr. Deborah Saunders, Editor-in-Chief

Ah, summer. It's that time of year again for enjoying the great outdoors, with lots of reasons to celebrate the season. And this year is a special one not only for our country, but also for the Ontario Dental Association (ODA). Both Canada and the ODA are celebrating milestone birthdays — 150 years young!

The ODA was founded in 1867, and its primary goal was to convince the government to regulate dentistry to protect the public's oral health. On March 3, 1868, the first Act of its kind in the world was passed by the Ontario legislature — An Act Respecting Dentistry gave the dental profession full licensing and self-regulating powers. Prior to the Act, many imposters and frauds advertised themselves as dentists, leaving the public no way of determining good dentistry from bad and putting them at risk of infection, injury and sometimes even death. So the Act, the formation of the ODA and 150 years of organized dentistry in Ontario are indeed worth celebrating for everyone!

Today, the ODA represents more than 9,000 members — or nine out of 10 dentists in Ontario. With each issue of *YourOralHealth.ca*, we continue dentists' tradition of providing the public with a wealth of current, trustworthy information on oral health, and our Summer/Fall 2017 issue is no exception. We cover diverse topics, including the history of toothpaste (did you know that in the 1700s, the ashes of burnt bread were recommended for cleaning teeth?); dry mouth and the diagnosis, symptoms and treatment of Sjögren's syndrome; and the latest on cosmetic whitening (both professional and at-home treatments, and the pros and cons of each). This jampacked issue also covers the top 10 inventions that have revolutionized oral health and dentistry (such as the high-speed dental drill, orthodontic braces and X-rays), as well as some of the intriguing personalities (including Josephine Wells, the first woman licensed to practise dentistry in Canada) who have shaped the dental profession in this province.

As always, we're interested in your feedback, so please let us know what you think of this issue and if there are other topics you'd like us to explore in upcoming issues. Contact us at yoh@oda.ca.

On behalf of this magazine, as well as dentists across our vast country, I'd like to wish the ODA and Canada a very happy 150th! We hope you enjoy this issue of *YourOralHealth.ca Brought to You by the ODA*, and here's to a happy and healthy summer and fall.

DEBBIE Jon-DER

Our Contributors:



Maggie Blood is the ODA's Communications Specialist. After "Healthy Drink Imposters," she was disappointed to learn that her favourite flavored soda water is not tooth-friendly, but she's glad to know that tap water is our best source for hydration.



Donna Paris is a freelance writer and editor living in Toronto. She was an editor at *Canadian Living* magazine for many years, and, because of her teeth, Donna considers her smile her best asset.



Cheryl Embrett has written for and edited many national magazines, including *Canadian Living* and *Today's Parent*. Cheryl, her 17-year-old daughter, Scotia, and their two cats all have regular dental checkups.



Catherine Solmes is the ODA's Communications, Public Affairs and Events Assistant. She has been writing and taking photos since she was a teenager. Catherine lives in Toronto and is determined that her young niece and nephew learn to properly take care of their teeth.



Jennifer D. Foster, our copy editor for YOH.ca, is a freelance writer and editor, and her company is Planet Word. She lives in east Toronto with her husband, their teen son, Darius, and their retired racing greyhound, Aquaman. They're all dedicated to maintaining their gold-star oral health.



Mark Witten is an award-winning health and science writer and editor. He lives in Toronto with his wife, Anne, their daughter, Leah, and their still-frisky poodle, 12-year-old Santo. Everyone has regular dental checkups, but Leah's teeth are the most pristine, thanks to her electric toothbrush.



Catherine Morana is the ODA's Research Coordinator. She lives in Toronto with her husband, Alex, and enjoys nothing more than sifting through old journals and finding historical connections between past and current events.

For information about a variety of oral health-care topics, please visit our public website at youroralhealth.ca. You will also find Patient Fact Sheets, brochures and posters that you can download and recent issues of *YourOralHealth.ca Magazine*.

Brighter Whites

By Donna Paris

Looking for a dazzling smile? There are so many ways to brighten your teeth now, but where do you start?



Some people are born with pearly whites — and some aren't. If you're not happy with the colour of your teeth, then there is an endless variety of options available today — from professional whitening to whitening rinses. But it's important to talk to your dentist first before starting any whitening regimen.

"Whitening has become one of the fastest ways to esthetically improve our smiles, and patients expect whiter teeth now," says Dr. Melissa Milligan, an orthodontist with High Park Dental in Toronto and Bozek Orthodontics in Burlington and a member of the ODA Board of Directors. "It's from this new norm in our society that over-the-counter (OTC) whitening products have become available."

Used in moderation and with the proper instructions for each different method, whitening is safe, says Dr. David Stevenson, who runs a practice in Carleton Place and is President-Elect of the ODA. "But it's best to consult with a dental professional before proceeding, to help you identify the cause of the discolouration of your teeth and what results you wish to achieve," he says.

Some stains are on the surface; these can often be addressed with professional teeth cleaning at a dental office. But some stains are deeper within the tooth structure. The colour of teeth can darken and yellow naturally with age, for example. "To actually whiten the teeth, they must be bleached; products include whitening strips, bleaching gels and professional tooth whitening, in which a higher concentration of carbamide peroxide or hydrogen peroxide than in OTC products is used, and some are activated with a light," says Dr. Stevenson.

The big difference between professional and at-home treatments with OTC products is time. "You will eventually get to the same level of brightness, but how long that will take is determined by the amount of whitening agent in the product," says Dr. Milligan.

Is it safe?

"If at-home products are used aggressively, there is some preliminary literature that shows our enamel may demineralize, which weakens our overall tooth structure," says Dr. Milligan. As well, she adds, people who have had restorations on their front teeth are at a higher risk for tooth sensitivity. As for kids, they really shouldn't need to whiten their teeth, says Dr. Stevenson. "Unless there is an underlying medical condition, most children's teeth are quite light coloured to begin with," he adds. "Teens may want whiter teeth, and moderation is key, as their teeth can become sensitive to temperatures very easily." That's because younger people have larger nerves in their teeth, which gradually become smaller with age. In

fact, teeth whitening is generally not recommended for children under 16 years of age.

Yes, there is such a thing as too-white teeth!

Overwhitening can make natural teeth appear unnatural in both colour and tone. "Our teeth are not just one colour. There are many subtleties that make our teeth look natural," says Dr. Stevenson. By overwhitening, one runs the risk of replacing the problem of discoloured teeth with "fake-looking" monochromatic teeth, he adds.

Dr. Stevenson likes to start a discussion with patients to set realistic expectations. "Existing dental work, the cause of tooth discolouration, sensitive teeth and even the position of the teeth in the mouth can all have an impact on the outcome," he says. "One thing I always tell my patients is that a 'brighter' smile is often more natural than a 'whiter' smile. We smile with our entire face, and when smiling at someone, eye contact is most important. If your teeth become significantly whiter than the whites of your eyes, they will become a distraction to a bright smile."

And, of course, if you have any questions, always ask your dentist!

Proceed with caution: Tips from Dr. Milligan and Dr. Stevenson

- Always start by talking to your dentist first. Existing dental work, such as fillings, crowns and bridgework, will not whiten the same way as natural teeth. Overuse, or improper use, of whitening agents can actually damage the surface lustre of existing dental work. The benefit of using professional techniques is that the whitening product can be selectively placed to avoid crowns, bridges or implants. If you're planning on having restorative dental work done, talk to your dentist about whitening beforehand, then have the dental material shade matched with your new tooth colour.
- If you've had some bone loss, it's a good idea to see your dentist before deciding on a type of whitening procedure. Thinner gums may be at risk of recession if exposed to chemical irritation from the bleaching agent, and exposed roots may be at risk to greater sensitivity.
- The ingredients responsible for whitening in whitening toothpastes can include baking soda, which can be abrasive, especially to exposed root surfaces after gum recession.
- Tooth sensitivity can arise from using whitening products, but it usually decreases over time. If tooth sensitivity occurs, using a toothpaste designed for relieving sensitivity can help.





What you can do at home

Before you start any whitening treatment, it's always a good idea to begin with a great oral health-care regime at home. The ODA recommends:

- Brushing your teeth at least twice a day.
- Flossing and cleaning between your teeth at least once a day.
- Scheduling regular dental exams and cleanings with your dentist.
- Limiting consumption of drinks that can cause surface stains, such as red wine, coffee and tea.
- Quitting smoking and other harmful habits, such as chewing tobacco.

Whitening Options	Pros	Cons
Professional in-office whitening	Dramatic results are quickly achieved, as these treatments offer the highest concentration of hydrogen peroxide or carbamide peroxide; special precautions taken to reduce exposure of gums to whitening material; results achieved immediately, usually in just one session.	Cost.
Professional at-home whitening	Good results; custom-made trays are more costly, but give the flexibility of being worn during the day or overnight; touch-up kits to maintain brightness can be ordered from the dentist at much less cost.	Cost and time; because of the lower amount of hydrogen peroxide, it takes longer to achieve the desired degree of whiteness than with in-office professional whitening.
Over-the-counter whitening strips	Less costly than professional treatments.	Takes longer than professional treatments to achieve results; if applied incorrectly, can irritate gums or cause dental sensitivity; exposed roots may be at risk to greater sensitivity.
Whitening toothpaste	Best used to maintain a degree of whiteness.	Lower concentration of whitening agent; not as effective as whitening gels; can be abrasive; if used incorrectly, can damage tooth enamel or surface lustre of existing dental work.
Whitening pen	Portable brush pen can be used anytime, anywhere; best as a refresher for whitened teeth with new stains.	Serum dissolves over time; results may be gradual on darker stains; may need several pens to notice results.
Whitening mouth rinse	Easy, cost-effective; best used to maintain a degree of whiteness.	Lower concentration of whitening agent; can take months to see even very minor improvements.

It's **time** to measure **your success!**



Sources: Health Canada, Canadian Cancer Society

Did you know?

Former smokers live longer than those who continue to smoke.

You will notice:

- Cleaner, fresher breath
- Fewer colds, coughs and breathing difficulties
- Your hair and clothes don't smell of smoke
- The stains on your fingers will slowly disappear
- Less staining on your teeth
- More money in your pocket

You will experience:

- More energy
- Less gum recession and disease
- Fewer incidences of chronic sore mouth and throat
- Fewer hacking coughs and chest infections
- Less accumulation of tartar and plaque

Be a quitter.

Talk to your dentist about your options.

Visit www.youroralhealth.ca for more information.



Dragon's Blood, Burnt Bread and Baking Soda! A History of Toothpaste

By Catherine Solmes

Whether it's peppermint-, cinnamon- or licorice-flavoured, toothpaste is something most of us (hopefully) use as part of our daily routines, at least twice. Did our ancestors use toothpaste, too? Here is a brief look through the history of the pastes and powders humans have been using to clean their teeth for centuries.



Ancient tooth powders and toothpastes

Long before they began using toothbrushes in 3500–3000 BCE, ancient Egyptians used toothpowder. In the early 2000s, a recipe for a "powder for white and perfect teeth" was discovered on a scrap of papyrus dating back to

the fourth century found in the basement of a Viennese museum. Calling for a mixture of crushed rock salt, mint, dried iris flower and pepper, it was applied to the teeth and when mixed with saliva, created an abrasive and undoubtedly pungent toothpaste.

We definitely wouldn't recommend trying any of these ancient recipes today, as the aim of these early tooth

powders and toothpastes was to literally scrub the teeth clean, something the combination of modern toothbrushes, toothpaste and dental floss do gently and effectively. The ancient Greeks and Romans used such abrasive ingredients as crushed bones, oyster shells, burnt eggshells and the ash from ox hooves. Some



tooth powders incorporated ingredients such as powdered bark and charcoal for flavour, as well as to combat bad



breath. Around 500 BCE in China and India, toothpastes were made using abrasive ingredients like sea salt, but also flavoured ingredients such as ginseng and herbal mints.

Burnt bread, dragon's blood and baking soda For thousands of years, the basic idea of tooth powders and toothpastes didn't change much. People largely made their own teeth-cleaning products, relying on combinations of abrasive ingredients and ones that improved flavour, as well as ingredients that were once believed to benefit oral health. In England during the 14th and 15th centuries, some concoctions included a combination of honey, salt and rye flour/rye meal or a powdery combination of the burnt branches of a broom plant mixed with burnt alum. In the book *Primitive Physic; Or, An Easy and Natural*



Method of Curing Most Diseases, in an effort to provide practical medical advice to those who could not afford medicine or doctors, Anglican cleric John Wesley (1703–1791) recommended cleaning teeth by rubbing them with the ashes of burnt bread.

Another 18th-century recipe for toothpaste called for a bright-red plant resin called dragon's blood, which was thought to be good for mouth ulcers, but it probably wasn't so great at whitening the teeth.

The aristocratic dental cream and toothpaste in tubes

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Dr. Washington Sheffield (1827–1897), an American dental surgeon, is credited with the invention of modern toothpaste. At the age of 23, in 1850, he invented Doctor Sheffield's Crème Dentifrice, "the aristocratic dental cream." It came packaged in a glass jar and claimed to "arrest decay, check infection and keep the oral cavity sweet and pure." In 1892, Dr. Sheffield started packaging his Crème Dentifrice in collapsible metal

tubes made from tin, similar to those containing artist's inks and paints. Colgate began mass-manufacturing its first toothpaste in 1873, packaged in a glass jar like Dr. Sheffield's, and in the 1890s, Colgate also moved to collapsible metal tube packaging. The Second World War (1939–1945) saw a shortage in tin and lead, and this led to the invention of plastic toothpaste tubes.

Getting America (and the world) brushing

A good oral health-care routine that includes brushing with fluoridated toothpaste and flossing at least once a day ideally starts when the first teeth erupt, but that wasn't the case for many people prior to the 20th century. An American advertising executive named Claude C. Hopkins is credited with creating a national toothbrushing habit in the United States, when he developed a marketing campaign for the new, foamy, minty toothpaste, Pepsodent, in the early 1900s. His strategy was to get Americans to want to brush their teeth after they ran their tongues across their teeth and felt "the film" of plaque. Shortly after the first ad campaign was launched, demand for Pepsodent exploded in the United States, and within three years it launched internationally, becoming a global top seller. A new daily habit had been established across the world and it persists to this day.

Fluoride

Na

Si

For thousands of years, toothpaste's main purpose was to scour the teeth clean, and it was during the 1800s that it started becoming less abrasive and more medicinal. The mid-

1800s in Europe saw fluoride being used in dental fillings, and later elixirs and pastilles containing fluoride were made available to the public in the Western world. It was during the late 1800s and early 1900s that the first fluoride-containing toothpastes, tooth powders and mouthwashes were marketed in Europe and North America. Finally, a toothpaste ingredient that benefits the National Statement Statement Statement Statement Statement Statement National Statement Sta

> The first American Dental Association-approved fluoride toothpaste was created in the 1950s by Procter & Gamble and set the standard for what we now see on the pharmacy shelves.

Sugar in toothpaste

Awake or asleep-FILM is

gluing acid to your teeth !

Pepsodent removes FILM-

helps stop tooth decay !

IGHTER TEETH AND CLEANER BREATH W

Pepsodent

THE that collect is film. FILM NEVER LETS UP! In Certainly strange by today's perspective, but perhaps not so strange due to some of the bizarre ingredients humans have used to clean their teeth, toothpaste of the late 1800s and early 1900s used to contain high quantities of sugar or simple syrup. When this was discovered by a group of Ontario dentists in 1906, they decided to fight back. Unable to recommend any of the commercial toothpaste

and tooth powders on the market, most of which contained sugar as their primary ingredient, Dr. Andrew McDonagh and some of his colleagues decided to start their own company and manufactured toothpaste,



tooth powders, toothbrushes and mouthwash that dentists could recommend to their patients without hesitation.

Today

It's incredible to think that our ancient, and not-so-ancient, ancestors cleaned their teeth much the same way that we do today — with toothpastes and powders designed to remove

plaque and debris, freshen breath and prevent damage. Today, toothpaste comes in a variety of flavours and with a whole range of medicinal and cosmetic benefits, and it is the focal point of any good oral health-care routine.



Healthy Drink Imposters

By Maggie Blood

What's really lurking under the lid?

Most of us lead busy lives and depend on the convenience of being able to grab a beverage while on the go, especially if it also offers health or nutritional benefits. But what's so great about these popular drinks, anyway? Let's go behind the branding to see just how helpful and healthy these beverages truly are.



This sure sounds like an appealing concept, but the execution falls short. Toronto registered dietitian Julia Stanislavskaia says it's important to understand the amount of vitamins you are taking in and understand that "certain vitamins are readily available in an average diet, and there is no need to supplement those in an average person." And, adds Stanislavskaia, "it's possible to overdose and get excess amounts of certain vitamins if you drink this water as well."

While you may be getting some more vitamins than drinking plain water, you're also getting a mouthful of artificial flavours and colours, caffeine in some cases and lots of sugar. The average bottle of vitamin water (591 ml/20 oz) can contain 32 grams — or eight teaspoons — of sugar! To put that in perspective, the World Health Organization recommends the average person limit their daily intake of free sugars (such as glucose, fructose, sucrose or table sugar added to foods and drinks by the manufacturer, cook or consumer, and sugars naturally present in honey, syrups, fruit juices and fruit juice concentrates) to 25 grams or six teaspoons.



Vitamin

Water



There are brands of carbonated water that are infused with natural flavours. So while they tend to have no added sugar, they can still pose problems. Toronto orthodontist Dr. Melissa Milligan says "it's important to remember that any carbonated beverage becomes bubbly through the addition of carbon dioxide, which is an acid, meaning that every carbonated drink has some degree of acidic attack on your enamel." Since most of these beverages are naturally flavoured with various citrus fruits, that means they contain citric acid, which is also not toothfriendly.



Sports Drinks

Much like with fruit juice, the decaying combination of high acidity and sugar in sports drinks can really do a number on your teeth. It can soften tooth enamel and lead to erosion over time. And watch out for the caffeine levels in these drinks, along with the artificial colours and flavours.

Dr. Milligan says it's also important to note that "sports drinks were formulated in a lab and tested on athletes in peak physical condition," adding that they were "designed to replace

carbohydrate and electrolyte loss during intense physical activity." But, she stresses, "we are now realizing that these beverages are being consumed at an alarming rate."



Soft

lt's better to replenish electrolytes lost during an intense workout or an active lifestyle by drinking water and maintaining a healthy diet.

There's a reason why soft drinks are getting lots of negative attention these days. Portion sizes and sugar content nearly grew out of control until we realized just how bad consuming that much sugar or artificial sweetener is for the body and teeth. With the average can of Coke ringing in at a whopping **Drinks** 39 grams of sugar, this is one of those beverages that should be enjoyed in moderation. According to Registered Dietitian Julia Stanislavskaia, "A couple of cans of pop per week is reasonable as a treat, just don't keep large bottles or packs in the house to avoid temptation." One serving size for pop is technically 250 ml/8 oz.





Water: The Perfect Drink

We're lucky enough to have easy access to clean, safe drinking water, so why not enjoy more of it? Toronto orthodontist Dr. Melissa Milligan says that "water is our optimal source of hydration, as long as you're not drinking distilled water, which has had all the minerals removed from it." Water is also free from sweeteners, caffeine, calories and artificial flavours and colours. And, it's just a tap away! If the flavour of natural water falls flat for you, Dr. Milligan suggests boosting

it with the addition of sliced fresh pineapple, cucumber, strawberries or ginger. You can also try fresh herbs such as mint, sage or lemongrass.

For more information about registered dietitian Julia Stanislavskaia and her company, Health By Nutrition, please visit hbnlife.com.

Our First Female Dentist in Canada: Dr. Josephine Wells

In Canada's early days, dentistry was solely a male profession. In 1875, the Royal College of Dental Surgeons of Ontario founded Canada's first dental school, but there are no female graduates on record until Caroline Louise Josephine Wells in 1893.

Josephine Wells, as she called herself, was the first woman licensed to practise dentistry in Canada. She may never have intended to apply for a dental licence, but circumstances propelled her out of necessity.

Records indicate that Josephine was born Caroline Louise Josephine Irwin, the eldest of five children, in 1855, in Aurora. In March 1876, Josephine married John Wells in Aurora. In 1882, John graduated from the Royal College of Dental Surgeons of Ontario, the gold medallist in his class. He relocated his family and dental practice to Toronto in 1889, where he maintained a solo dental practice at 259 Spadina Ave., but at some point appears to have become ill. Josephine, eventually the mother of three children, realized she needed to assume some responsibility for the family's business, so she decided to study dentistry. In 1891, Josephine was accepted into the dental class of the Royal College of Dental Surgeons of Ontario.¹

Josephine embraced her role as a dentist, sending her children to live with relatives in order to properly study. Josephine was assisted with her studies by Dr. Luke Teskey, MD, LDS, a professor and one of the founders of the dental school, who likely taught her husband. In 1893, Josephine was granted an "LDS," a licentiate in dental surgery. While able to practise dentistry, she could not call herself "Dr."



Urged on by her friends, Josephine would earn that title and pursue a doctorate in dental surgery. She graduated from the University of Toronto with a doctor of dental surgery degree (DDS) in 1899. Dr. Josephine Wells gave birth to her last child the following year. Historical records indicate that by 1907, she operated a thriving dental practice in Toronto.

What sets Dr. Wells apart from her dental colleagues is her pioneering role in providing hospital dentistry, Dr. Daniel Clark specifically treating patients in provincial asylums. She worked with Dr. Daniel Clark, By Catherine Morana

MD,² superintendent at the Asylum for the Insane, Toronto (1875–1905). How Dr. Wells connected with Dr. Clark is unclear, though it is likely through university.

Dr. Daniel Clark was a noted physician in Victorian Canada. In the 1870s, he was an early advocate for the non-restraint of asylum patients³ and was known for his humanistic approach to the treatment of mental patients.

In 1898, Dr. Clark introduced a non-coercive program of dental care for the patients at the Toronto asylum.⁴ His belief was that "proper dental care would lead to better chewing habits and an improved diet, which would have a positive physiological impact on a person's physical and mental health."⁵

Dr. Josephine Wells was providing dentistry to hospital patients as early as 1901.⁶ In 1911, a report about dentistry in provincial asylums painted a grave picture for the patients: no dental inspections were conducted, and non-paying patients in provincial asylums relied solely on physicians for extractions.⁷ Dr. Wells is singled out as providing dental care to patients in Toronto and Mimico hospitals, as well as at the Mercer Reformatory for women. While funds were set aside

for an appointee in Kingston, a call for an appointment was made and for a more "uniform and systematic policy"⁸ of treatment for this population. It would take another 20 years for the province to adopt a standing policy of a resident dentist assigned to the dental care of patients in mental hospitals, in 1931.⁹ Dr. Wells would devote many years to servicing the needs of this vulnerable population.



The Asylum for the Insane, Toronto, shown here in the early 20th century. (Special Collections Toronto Public Library)

When she gave up her dental practice, she was appointed by the government and placed in charge of dental services in Ontario hospitals in Toronto, Mimico, Hamilton and Orillia. She would retire in 1928, when she was 72 years old.10

Dr. Josephine Wells passed away in 1939, at the age of 83. No lecture or paper is evident from Dr. Wells that offers insight into the care of her patients and how she came to her role in hospital dentistry. Perhaps her powerful body of work speaks for itself.

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Photo Credit: Annie Ramborger Photo used with permission of The Dobkin Family Collection, Glenn Horowitz Bookseller Inc. New York

In 2016, 37 per cent of the licensed dentists in the Ontario were women. And of the 502 dentists applying for a licence that year, 50 per cent were women.¹¹ Dr. Josephine Wells would be proud.

Barer than Hens' Teeth-

Women Dentists in the 19th Century

It appears that female dentists in Ontario didn't face the formal opposition that women entering the profession of law or medicine did.¹² And by the time Josephine Wells received a licence to practise dentistry in 1893, the concept of female dentists had already gained ground and acceptance in the United States. In 1892, the Women's Dental Association was formed in Philadelphia. Lucy J. Hobbs was the first female American to graduate with a doctorate in dentistry from a dental college in 186613; however, she was originally rejected as an applicant in 1861 and practised only after taking private study.

Hobbs was breaking ground, gaining acceptance that women could be more than a homemaker and teacher. The delicate problem of teaching anatomy to women in the presence of men surfaced with both Hobbs

and Henriette Hirschfeld, who was from Germany and graduated from the Pennsylvania College of Dental Surgery in 1869. Hirschfeld would end up learning anatomy at the Woman's Medical College of Philadelphia.¹⁴ But specific insights are offered with Annie D. Ramborger, the second female American to graduate from a dental college in 1874. Never were the objections to women entering a dental college set out so boldly — but this time from dental students in the form of a petition.



Dr. Annie Ramborger

Unlike her colleagues, Ramborger (nicknamed "Fannie") had neither connections to dentistry before applying to dental college, nor family members who practised dentistry.

Penniless at 15, Ramborger had dreamed of becoming a dentist. When she came into a legacy from her uncle, Ramborger applied for admission to the Pennsylvania College of Dental Surgery. Relatives were said to be aghast at her decision. The college took six months to mull over Ramborger's application before finally admitting her. One year into her studies, her fellow classmates began a petition to expel Ramborger. There were several complaints: they could no longer smoke when she was around (gentlemen didn't smoke in the presence of ladies), and when discussions occurred during anatomical lectures, her "being a woman" prevented them from receiving "clear and full explanations of the human organism."¹⁵ Full disclosure of the raw details was being whitewashed for her delicate ears. Perhaps their most telling complaint was that she was taking up operatory time. The implication was clear: the operatory would be better served if used by male students. The Globe and Mail reported on this saga, citing all these complaints as "strong objections surely." Ramborger countered that "science has no sex" and took her case to court, as the college had already accepted her money. After a lengthy battle, she won the right to return to her studies. Ramborger graduated in 1874 and practised dentistry successfully for 16 years, after which she did what all her male classmates expected she would do: give up her practice and marry. Few remarked on the real value that her choice to practise dentistry afforded her: the self-sufficiency and freedom to choose whatever role she wanted. Ramborger's lasting comments were: "I have enjoyed a delightful remuneration for my labour and been free from the unpleasant and oftentimes humiliating restraint to which many occupations pursued by women are subjected."

I guess science never expected Fannie.

Important Inventions in the History of Dentistry

By Mark Witten

Ever wonder where the concept for dentures came from? Or who invented dental floss? Curious about why toothpaste comes in a tube? Dentistry has come a long way in the past century, with inventions and ideas that have revolutionized dentistry and benefited patients along the way. Here are our top 10 inventions that, with significant modernizing, have become staples of dental practices today.

Toothbrush

Twig chew sticks, bamboo, porcupine quills, feathers, boar bristles and soft horsehairs were among the different materials we've used to clean our teeth from ancient times until the late 1700s.

times until the late 1700s. In 1780. Englishman William Addis invented the first massproduced toothbrush of modern design made from horsehair bristles and bone. Natural animal hair bristles were used until 1938. when synthetic bristles made of nylon were introduced by Dupont.



Dentures

In 1774, British doctor Alexis Duchateau crafted the first porcelain

dentures, which chipped easily and looked unnaturally white. For years, human teeth were obtained from corpses in graveyards, executed criminals and dead soldiers or even

purchased from the mouths of the desperately poor. The most famous were called Waterloo teeth, which were reused from soldiers who died in the battle of the same name. In 1820, British silverand goldsmith Claudius Ash mounted porcelain onto 18-karat gold plates with gold springs and swivels, which made the dentures look and work better than previous models.

Thirty years later, vulcanite, a form of

hardened rubber into which porcelain teeth were fitted, became a popular and affordable alternative.

Dental floss

In 1815, New Orleans dentist Levi Spear Parmly began advising his patients to use a thin silk thread to clean between their teeth. In 1882, the Massachusetts-based Codman



and Shurtleft Company began mass producing unwaxed silk floss for flossing at home. And in 1898, the Johnson & Johnson Company of New Jersey secured a patent for dental floss made from the same material used by doctors for silk stitches. When silk was in short supply during the Second World War, Dr. Charles C. Bass invented nylon dental floss. Nylon was more readily available, more durable and paved the way for the development of waxed floss in the 1940s.

High-speed dental drill

American dentist Dr. George F. Green developed and patented the first electric dental drill in 1875. By 1914, electrical dental drills could reach speeds of up to 3,000 rpm. But the first modern, high-speed dental drill driven by compressed air was invented by John Patrick Walsh of New Zealand in the late 1940s. He got the idea of the contra-angle air turbine drill after working with a commercial-use air

ter working with a commercial-use air grinder. In 1957, Washington, D.C., dentist Dr. John Borden introduced the Borden Airotor, which could achieve speeds of 150,000 to 300,000 rpm. By 1962, about 95 per cent of dentists in the U.S. were using a contra-angle turbine drill, showing how quickly the new highspeed technology was adopted.



Local anesthetic

In 1884, Czech-born American ophthalmic surgeon Dr. Carl Koller introduced cocaine as a surface anesthetic in eye surgery, thereby launching the modern era of local anesthesia. Dr. Koller was a surgeon at Vienna General Hospital when his colleague Dr. Sigmund Freud, trying to cure a friend of morphine addiction, asked him to investigate the physiological effects of cocaine as a possible remedy. Koller's experimental results convinced him



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that cocaine could be used as a local anesthetic in eye surgery, since general anesthesia had proved to be unsuitable. Although cocaine was widely used for a while as an anesthetic, it was found to be highly addictive. In 1905, German chemist Alfred Einhorn formulated the local anesthetic procaine, which was a substitute for cocaine and later marketed under the trade name Novocaine. The name comes from the Latin word *novus*, meaning "new," plus "cocaine." Novocaine proved to be very effective and safe as a local anesthetic for most patients. It was used widely by dentists

into the 1950s, when another local anesthetic, lidocaine, became widely accepted.

Toothpaste in a tube

Connecticut dental surgeon Dr. Washington Sheffield got the idea for packaging toothpaste in collapsible tubes from his son Lucius, who, while in Paris, had observed artists using collapsible metal tubes for their paints and inks. In 1892, Dr. Sheffield began selling his Crème Dentifrice in collapsible tubes. This was more hygienic than the previous method in which all family members dipped their toothbrushes into a jar filled with toothpaste. In 1896, Colgate began selling its own toothpaste in collapsible tubes.

Dental X-rays

In 1895, German physicist Wilhelm Roentgen discovered X-rays and used his wife Bertha's hand for the first documented radiograph

of a human body. Because the rays were new and mysterious,

Roentgen called them "X-rays," and the name stuck. A year later, American dentist C. Edmund Kells took the first dental X-ray of a living person. Dental X-rays changed dentistry by helping dentists to see hidden decay, bone loss and other problems that can't be seen during an oral examination.

Orthodontic braces



Dr. Edward Angle, an American pioneer

in orthodontics, coined the term "malocclusion" for a bad bite and misaligned teeth. By the early 1900s, he had been awarded 37 patents for a variety of tools he invented to treat malocclusion. These included a metallic arch expander called the E-arch and the Edgewise appliance, metal brackets that many consider the basis for today's braces. Dr. Angle sold all of these standardized parts, in various configurations, as the "Angle system."

Dental implants

In the 1930s, dentist brothers Drs. Alvin and Moses Strock were the first to experiment and implant orthopedic screw fixtures made of Vitallium (a chromium-cobalt alloy) to replace individual teeth in humans and dogs. In 1952, Swedish researcher and physician Dr. Per-Ingvar Brånemark accidentally discovered that titanium had fused to leg bones during a study of blood flow in rabbit femurs. In a flash of inspiration, he realized that the

bone-bonding properties of titanium might be a way of anchoring artificial tooth roots to replace missing teeth. In 1965, Dr. Brånemark carried out the first titanium dental implant operation on a Swedish patient named Gösta Larsson, who had jaw deformities. His dental implants lasted



more than 40 years and were functioning well when Larsson died in 2006.

Water fluoridation

In 1945, the cities of Grand Rapids, Mich., Newburgh, N.Y., and Brantford, Ont., became the first in the world to add fluoride to their municipal water supplies to prevent tooth decay in children. Brantford was compared to Sarnia, which did not have fluoridated water, and Stratford, which had natural fluoride in its water. Early studies from the 1940s through the 1960s, including the original trials in Brantford, showed that dental cavities were reduced by 50 to 60 per cent in children living in cities with fluoridated water. The U.S. Centers for Disease Control and Prevention has declared community water fluoridation one of the 10 great public health achievements of the 20th century, and that for every \$1 spent on this preventative measure, there is about a \$38 savings in dental treatment costs.



ODA Past President, Dr. Jack McLister, a dentist who has practised in London for 38 years, shares his three favourite dental inventions, chosen for their impact on patient care and oral health.

Dental X-rays give dentists the ability to identify disease processes in the mouth that are not necessarily visible to the human eye, including some periodontal diseases, decay and pathology of bone and soft tissue.

Fluoride in the proper amount, whether in toothpaste or community water supplies, is a safe, effective and economical way to reduce decay across all age groups and socioeconomic groups.

The advent of high-speed dental drills not only allowed procedures to be done faster, but also with much less discomfort for the patient. It was a win-win for both dentist and patient.





Sjögren's Syndrome, Dry Mouth and Oral Health Care

By Catherine Solmes

Cavity prevention and a team health-care approach are key for those living with Sjögren's syndrome

What is Sjögren's syndrome?

Sjögren's syndrome, pronounced "SHOW-grins", is a chronic multisystem autoimmune disease that affects up to 430,000 Canadians. It occurs in two forms: primary Sjögren's syndrome — the disease when it occurs on its own — and secondary Sjögren's syndrome, when it develops in the presence of another autoimmune disease such as rheumatoid arthritis, lupus or vasculitis (inflammation of the blood vessels).

Who gets Sjögren's syndrome and why?

Ninety per cent of people with Sjögren's syndrome are women. It is unclear what causes Sjögren's syndrome, but scientists think it could be due to a combination of genetic and environmental factors and is triggered by a viral or bacterial infection. It is also possible that the endocrine and nervous systems play a role. Sjögren's syndrome can affect anyone at any age, but usually it's women in their 40s and 50s.



Your dentist and Sjögren's syndrome

The most common symptom, and the first to present, is insufficient moisture from moisture-producing glands of the body, most significantly the mouth and the eyes.

Dr. Tanya Rouleau, a general dentist in Calgary who limits her practice to oral medicine, says that having dry mouth does not necessarily mean that you have Sjögren's syndrome. However, for anyone experiencing an abnormally dry mouth, it's important to see your dentist or doctor for advice and treatment.

Having dry mouth (or xerostomia) means less saliva is being produced. Saliva serves many purposes: helping with speech, swallowing, taste, lubrication and keeping

Symptoms of Sjögren's syndrome:

- Dry mouth
- Dry eyes
- Joint and muscle pain
- Skin rashes and prolonged dry skin
- Chronic dry cough
- Vaginal dryness
- Prolonged fatigue

the mouth clean, advises Dr. Rouleau. antibacterial Saliva also has properties. "Sjögren's syndrome patients may have more dental decay, may be more prone to fungal infections, may have eating/swallowing, problems have speech difficulties, may have trouble wearing dentures, may be more likely to have mouth ulcers from poor lubrication and report a lower quality of life," says Dr. Rouleau. Also, "low salivary

flow may make these patients more prone to salivary blockages or infections."

If you have xerostomia or you've been diagnosed with Sjögren's syndrome, Dr. Rouleau says cavity prevention is paramount. A good oral health-care routine that involves brushing with a fluoride toothpaste and flossing twice a day or more is key. And depending

on your needs, your dentist may recommend custom-fitted fluoride trays, the use of mouth rinses made with baking soda and water or saltwater, using gum, breath mints or lozenges that contain xylitol, a dry mouth rinse/ spray/gel or a prescription that combats dryness.

Causes of dry mouth:

- Medication
- Radiation from cancer therapy
- Dehydration
- Smoking
- Diabetes
- High blood pressure
- Sjögren's syndrome

Diagnosing Sjögren's syndrome

There is no single test that can confirm a diagnosis of Sjögren's syndrome, since symptoms frequently overlap or mimic those of other diseases, including multiple sclerosis, lupus and fibromyalgia. And xerostomia can occur for other reasons, such as side-effects from antidepressants and high blood pressure medication. Diagnosis of Sjögren's syndrome can take an average of three years from the onset of symptoms. Xerostomia can lead to significant oral health problems, and early diagnosis and treatment of Sjögren's syndrome is important in order to prevent future complications. You should let your dentist or doctor know if you are experiencing an abnormally dry mouth, so they can identify the cause of it and advise you on the best treatment.



Online resources for Sjögren's syndrome:

- Sjögren's Society of Canada: sjogrenscanada.org
- •Sjögren's Syndrome Foundation: sjogrens.org
- •National Institute of Arthritis and Musculoskeletal and Skin Diseases: niams.nih.gov/health_info/sjogrens_ syndrome/default.asp



A team approach

Treating Sjögren's syndrome is a team approach, and medical professionals who can help with diagnosis and treatment include:

- Dentist
- Oral health specialist
- Internal medicine physician
- Family medicine physician
- Rheumatologist
- Ophthalmologist
- Neurologist
- Gastroenterologist
- Pulmonologist

How Sjogren's syndrome can affect the body

Neurological problems, concentration/memory-loss, dvsautonomia

Dry nose, recurring sinusitis, nose bleeds

Dry mouth, mouth sores, dental decay, difficulty with chewing, speech, taste and dentures

Fatigue, vasculitis, dry skin

Abnormal liver function tests, chronic active autoimmune hepatitis, primary biliary cirrhosis

Peripheral neuropathy, Raynaud's Disease Dry eyes, corneal ulcerations and infections

Swollen, painful parotid/salivary glands

Difficulty swallowing, heartburn, reflux, esophagitis

Recurrent bronchitis, interstitial lung disease, pneumonia

Arthritis, muscle pain

Stomach upset, gastroparesis, autoimmune pancreatitis

Irritable bowel

Interstitial cystitis

Vaginal dryness, vulvodynia

For more information on xerostomia (dry mouth), visit youroralhealth.ca and search for "xerostomia."

Can a Healthy Mouth Equal a Healthier Body?

By Cheryl Embrett

Regular brushing, flossing and dental checkups may be more important than you think

Regular brushing and flossing may seem like a chore some days, but consider it an investment in your overall health. Increasingly, studies show that maintaining good oral health not only keeps your mouth healthy, but may also keep the rest of your body healthy, too.¹

Good oral health does more than prevent tooth decay and gum disease, says Dr. Jack McLister, Past President of the Ontario Dental Association (ODA). The inflammation that causes gum (periodontal) disease seems to play a role in many health conditions, including heart disease and diabetes. So simple habits such as daily brushing and flossing may be more important than you think.

What, exactly, is inflammation?

Inflammation is the body's natural response to damage or disease in your tissues. It can help you heal or, if it becomes chronic, it can lead to more serious problems.

"Inflammation in the gums might also trigger inflammation in other parts of the body and vice versa,"says Dr. David Stevenson, an Ottawa dentist and President-Elect of the ODA. He offers the following analogy. "If you're in an apartment building, and a fire alarm goes off on the third floor, the entire building knows there's a fire alarm on the third floor, and everyone may overreact because of the alarm. It's possible the same can happen in your body. When inflammation is triggered in one spot, it can fire up all of our defence mechanisms in other areas; even though they may not be necessary, they still react, and that may cause some problems."

The oral health — diabetes link

Diabetes is one example of how inflammation in the mouth can cause problems elsewhere in the body. The two have a negative synergy in which each condition makes the other harder to manage. "Periodontal disease is typically associated with some degree of subclinical, or low-grade, inflammation or inflammatory response that can increase insulin resistance and theoretically contribute to worsening of blood glucose control," says Dr. Ravi Retnakaran, an endocrinologist and clinician-scientist at Mount Sinai Hospital in Toronto and spokesperson for Diabetes Canada. And high blood sugar can put people with diabetes at an increased risk for periodontal disease, since it has many effects on the body's ability to heal and deal with infection and tissue injury.

The oral health — heart disease link

Inflammation has also emerged as a factor in cardiovascular disease (CVD), which commonly results in heart attacks and strokes. "The connection between periodontal disease and heart disease is well-established in medical literature," says Dr. McLister. In fact, periodontal disease increases the risk of heart disease and can also exacerbate existing heart conditions, according to the American Academy of Periodontology.

Oral health and other conditions

While the impact of oral health on the body is a relatively new area of study, research is beginning to show many other mouth-body connections. For example, studies have found that periodontal disease increases the risk of low birth weight and premature labour.² There also appears to be an association between periodontal disease and certain types of pneumonia,³ as well as rheumatoid arthritis.⁴ And there's a theory that both periodontal disease and osteoporosis may lead to more rapid bone loss than osteoporosis alone would⁵, says Dr. McLister.

Adds Dr. Stevenson: "If you have poor oral health, you're probably not eating well and you're not able to get proper nutrition. And if you have pain, I can assure



you that you're not sleeping well and you're under stress. All those things can contribute to poor overall health or exacerbate it."

An ounce of prevention

Brushing, flossing and regular dental visits are the best ways to keep periodontal disease, and therefore inflammation, under control, says Dr. McLister. But there are other steps you can take to reduce inflammation and improve your oral and overall health.

Maintain a healthy weight and get moderate exercise. "Inflammation can generally be reduced by weight loss," says Dr. Retnakaran.

Make healthy food choices. Try cutting back on refined carbohydrates (potato chips, pasta and bread, for example) and consuming more lean protein, says Toronto-based registered dietitian Julia Stanislavskaia. "We overconsume carbs because the protein (and vegetables) in our diet is lacking, and too many carbs provide food for the bacterial action, which, in turn, can lead to inflammation in the body and the demineralization of teeth over time."

Keep the lines of communication open between you, your doctor and your dentist. "We're in an era of preventative medicine, where we're trying to prevent conditions before they develop," says Dr. Retnakaran. As a result, physicians and dentists are starting to work more closely together as they recognize the relationship between oral and general health. If you're diagnosed with periodontal disease, let your dentist know if you or someone in your family has diabetes. Conversely, if you have diabetes and you develop periodontal disease, let your doctor know.

Tell your dentist if you're taking any medications or have had any changes in your overall health. "Patients need to understand that the medications they're taking may have an impact on their oral health," says Dr. Stevenson. Many medications cause dry mouth, for example, and that can exacerbate any condition.







Don't neglect Fido and Fluffy's oral health

"There is a growing body of evidence that in dogs and cats, as in human patients, chronic dental inflammation/infection can have effects on the body far from the mouth", says Dr. Fraser Hale, a veterinary dental specialist in Guelph. "One study found an increase in microscopic lesions in the liver, lungs and kidneys of animals with advanced periodontal disease, compared with animals who had good oral health." And "while it would be a stretch to say that dental disease causes kidney or liver failure, it can be said that the constant barrage of bacterial, toxins and pro-inflammatory mediators do put strains on major organ systems, and this can age an animal at an accelerated rate,' says Dr. Hale. Aside from the systemic effects of dental disease, there are major qualityof-life-implications. Dental disease is often accompanied by significant pain, and so having undiagnosed and untreated problems means that pets are living with pain and suffering in silence, says Dr. Hale. "While many owners fail to notice that their animal is in pain (because the pets are eating and do not seem to be complaining), they will often report a dramatic improvement in their pets after proper dental care has been provided."

No matter how good a job of plaque control owners do at home (regular tooth brushing, proper diet, Veterinary Oral Health Councilaccepted plaque-control products — visit vohc.org), pets should still have periodic professional assessments with whole-mouth, intraoral dental radiographs and periodontal maintenance therapy every year or two, advises Dr. Hale. And if you are noticing bad breath, changes in chewing/eating habits, damaged tooth crowns, gaps where teeth ought to be, crowns covered by tartar and inflamed gum tissue, these are all red flags that your pet needs an examination.

One more tip:

Owners should never give their dogs hard things to chew on (bones, antlers, hard nylon toys), as these items cause a lot of dental fractures, warns Dr. Hale.

"I use the 'knee-cap rule,' which says that if your dog would not want to be hit in the knee cap with an item, they should not be chewing on that item. Owners should also be aware that tennis balls can be very abrasive and should be avoided. Better to go with a smooth ball like a Chuckit! or road hockey ball."

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